ACADÉMIE
DE RECHERCHE ET
D'ENSEIGNEMENT
SUPÉRIEUR

FINAL EVALUATION

MASTER IN FOOD TECHNOLOGY, SAFETY AND QUALITY MANAGEMENT

C-lever.org
Collaborative leverage towards inclusive development

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AVERTISSEMENTS

L'évaluation dont le présent document constitue le rapport de synthèse a été réalisée par Julien Moriceau, partenaire de C-Lever.org, à la demande de l'Académie de recherche et d'enseignement supérieur (ARES).

Les opinions exprimées dans ce document n'engagent que la responsabilité de leurs auteurs dont ils représentent les points de vue. Elles ne reflètent pas nécessairement celles de l'ARES et n'en représentent pas une position officielle.

ACRONYMS

FTSQM: Food Technology, Safety and Quality Management (title of the master degree set up through the project)

HERA: Higher Education Reform Agenda (2006-2020)

HUA: Hanoi University of Agriculture (former name of VNUA)

HUST: Hanoï University of Science and Technology

ITC: Institute of Technology of Cambodia

RUA: Royal University of Cambodia

UCLouvain: Université catholique de Louvain

ULiège: Université de Liège

VLIR: Vlaamse Interuniversitaire Raad

VNUA: Vietnam National University of Agriculture

WHO: World Health Organization

01. EXECUTIVE SUMMARY

01.1 / PRESENTATION OF ARES AND JUSTIFICATION FOR THE EVALUATION

The Académie de recherche et d'enseignement supérieur (ARES) is the federation of Wallonia-Brussels federation higher education institutions. ARES is a public body in charge of supporting Universities and Superior Schools in their role in education, research and services to the community. ARES groups 6 universities, 16 superior schools (hautes écoles), 16 art superior schools, and 86 superior social promotion schools (établissements d'enseignement supérieur de promotion sociale); ARES promotes their dialogue and collaboration at national and international levels. ARES ensures the overall coordination of Wallonia Brussels higher education institutions.

In the frame of development and research projects (PRD) and education in the south projects (PFS), the academic partners have the possibility, after the completion of a project, to introduce a continuation project (projet de poursuite). The criteria for a continuation project are: (i) same location, (ii) same discipline/theme, (iii) same Belgium partner team, (iv) same South partner team. Conducting an external evaluation of the initial project, and including the results of this evaluation in the continuation project's application, is a condition for ARES to grant a continuation project. This evaluation of the PFS project 'Master in food technology, safety and quality management' has been organized to comply with such requirement.

The expected results of this project were:1) An advanced Master in "Food Technology, Safety and Quality Management" (FTSQM) is set up and taught at the HUA with partner universities (ULiège, UCLouvain, ITC, RUA and HUST) during 3 years, and 2) A junior teacher-researcher from the HUA improves her/his scientific skills related to food chain quality management issues. The (higher level) specific objective of the project is for Southeast Asian universities to strengthen their training –to students and professionals - and research capacities in the field of the food quality management all along the food chains, through a partnership for technical support with Belgium Universities.

01.2 / EVALUATION OBJECTIVES

The general objective of the evaluation is to assess the implementation of the PFS project, Master in Food Technology, Safety and Quality Management (FTSQM). The evaluation has three main objectives:

- Inform the project's stakeholders and funders in Belgium and Vietnam about the results of the project.
- Provide recommendations and useful information for a potential new project.
- Contribute to improve practices of ARES-funded projects.

The evaluation will assess the following aspects of the project:

- CAD criteria: relevance, effectiveness, efficiency, ownership, impact, sustainability.
- The project's governance and management (tools development and use, monitoring, internal evaluation, etc.)
- Cross-cutting criteria: human rights, gender, environment.

01.3 / OVERVIEW OF EVALUATION QUESTIONS

The following evaluation questions have been developed and accepted based on a desk review (ToR of the evaluation, project proposal, budget, reports) and an initial briefing:

- The quality of the project proposal's narrative. What are the strengths and challenges of the narrative in the approved project proposal? Are the indicators used in the project proposal relevant and appropriate for monitoring and reporting on activities, relevance, effectiveness, efficiency, ownership, impact and sustainability of the project?
- To what extend has the project been implemented in line with the proposal? What changed, why and how the changes in the R2 and R1 have been decided, approved and implemented? Is the number of beneficiaries adequate?
- What are the project's results?
- What are the links between activities (train students using an innovative approach; build capacities of young researchers) and final beneficiaries: companies, researchers, farmers, consumers, through: (i) the dissemination of knowledge in companies, public agencies, etc. (ii) the development of academic cooperation beyond the scope of the project.
- To what extent were the different academic institutions committed and pro-active in ensuring the success of the project? How did they collaborate?
- What were the benefits and positive impact(s) of the project for the different (Vietnamese but also Belgian) stakeholders, especially with regards to its innovative aspects?
- Are the stakeholders and beneficiaries satisfied with the project and its outcomes, and especially its innovative aspects?
- To what extent is the project sustainable in the following areas: (i) funding leveraged from other sources, (ii) continuation of the master in English and Vietnamese, (iii) implementation of new knowledge in agricultural practices in Vietnam and the region, (iv) sustainable development of research skills and activities.

01.4 / MAIN CONCLUSIONS AND RESULTS

Overall the project has been well designed and implemented. Its relevance is high, it targeted important needs to be addressed in the country and many activity targets were achieved properly. About 30 students were trainedtrough a unique Master program, one of a kind in Vietnam and South East Asia, with innovative aspects, such as field visits and practical learning. Both Belgian and Vietnamese promoters and stakeholders were highly committed for the success of the project.

At the university level, the Master program was perfectly integrated into the University education program portfolio and became an excellence program for the University. The program comprised high-level lecturers involving professors from other Universities in Vietnam and Cambodia and contributed to the visibility of the VNUA. The main outcome of the project is the significant improvement in the identification and high quality training of young promising and excellence Vietnamese researcher in the field of food sciences through the master, with a good level in English and a strong background in food safety and quality management.

At sector/national level, the project allowed training of high qualified professionals and researchers, who contribute to improve practices and research for a strategic sector in Vietnam and at a global level.

From a Belgian perspective, the project drew on and contributed to strengthening the long and close collaboration between French speaking Belgian universities and Vietnamese universities in general and particularly in the field of agriculture.

However, the evaluation reported the following weaknesses and points of attention:

- A decision related to the name and scope of the Master degree was made in response to administrative rules of the Ministry of Higher Education (requiring that any Master program should be preceded by a Bachelor program with the same name) and affected the effectiveness of the project. The initial project proposed a Master degree in “food safety”. This naming put the emphasis on safety, quality and control of food processing with the final aim to contribute to improve nutritive quality, public health, and biodiversity. The implemented Master, however, was a “Master in food technology” putting the emphasis on improving food processing and engineering in general, including food safety among other topics, with the final aim to improve quality and economic opportunity for agro-industrial sector in Vietnam. This change, explained by several factors, significantly affected **the relevance** of the project, as food safety and environmental/health issues were pointed out as important justifications in the project proposal. Furthermore, this change may have reduced the attractiveness of the master program for students. It also affected the potential long-term impact of the project.

- **The efficiency** of the project, as well as its potential impact, remained limited by low student participation. The master had only 8 to 10 students per academic year, although the targeted (maximum) number of students was 20 and the number of available scholarship was 12 per academic year. A total of 25 students obtained the Master’s degree; the final objective of only 36 graduations has not been reached.
- One of the main innovations envisaged in the project document, the lectures conducted by a pair of lecturers, one from Belgium and one from Vietnam, was not fully implemented, thus reducing the project’s

effectiveness. In practice, for some courses (i.e. advanced chemical and biological food safety, food contaminant analysis, food chain integration), the course was mainly taught by Belgian lecturers taught and Vietnamese lecturers "assisted"[1] them (attended to the course, helped the understanding of students during sessions, and facilitated the communication after the sessions). The expected added value of pair teaching (mutual learning between lecturers, learning by doing, etc.) was not achieved as presented in the project document. The level of English of VNUA lecturers and students, the practices of lecturing in Vietnam, and the lack of time and attention paid for pair lecturing preparation are among the main reasons that explain this situation. Indeed, the implementation of pair teaching, with high involvement and substantial contribution of the two lecturers, requires a 'long' time of syllabus and course preparation, which was not possible with teaching visits of one week or ten days. There was a trade off in the implementation of the project: to launch the Master as soon as possible and to benefit a maximum from foreign lecturers, it was a better option to implement this minimal version of pair teaching (Belgian lecturer as principle lecturer). Implementing a maximal version (co-development of the course and co-animation of lecturing and practical learning), including fostering ownership of VNUA, would have been required significantly more time of key actors invested in the inception and preparation phase.

» As stated above, the **potential impact** of the program remains limited by the change of name and focus of the Master and the limited number of participants. In addition, the potential spillover effect of the project outside of VNUA is limited: while the participation of regional and (inter)national partners was real it remained peripheral.4 Cambodian students (among 28) participated in the Master, and only 2 of them have graduated. 3 students applied from Lao Universities, but they were not accepted, because of their background (land management and crop science)[2]. At a national level, only 4 among 24 Vietnamese master students came from other universities in Vietnam.

» **The sustainability and ownership** of the project obtain a mixed appreciation.

- On the positive side: (I) a master degree in food technology in Vietnamese has been set up at VNUA, with a similar curriculum and the Vietnamese lecturers involved in the PFS master, and is continuing after the end of the project; (II) seven graduated students from the PFS Master are involved in the academia, contributing to improve research and higher education (four as lecturers at VNUA, One as lecturer at Royal University of Cambodia, two as one-year employee for the faculty, waiting for lecturing/PhD opportunities).
- On the negative side: (i) The Master in Food technology in English initiated through the project finished with the end of the project and (ii) the Master in Vietnamese does not offer much guarantees with respect to quality assurance, practical and innovative learning, and research or international perspectives.

[1]According to interview 1, 3, 5, 6 and 10.

[2]To inform Lao students about the Master, Prof. Nguyen Xuan Trach, vice president of VNUA has visited to Agricultural University of Laos and information on the master has been circulated to Agricultural University of Laos.

01.5 / MAIN RECOMMENDATIONS

At a strategic / national level:

- The Belgium – Vietnam Academic cooperation is ancient, rich and allowed to build strong and fruitful personal and institutional collaboration. More specifically, ULiège and UCLouvain developed a rich relationship with VNUA, as acknowledged all Vietnamese academics interviewed. Nowadays, Vietnamese academic institutions are becoming stronger and could further evolve into real strategic win-win research partners for Belgian Universities, especially in the field of nature sciences and agriculture. It is strongly recommended to continue this partnership, with the development of a country-specific and regularly updated approach. The organizational and institutional capacities of Vietnamese Universities (i) are far higher than those of most African or Haitian Universities and (ii) change very rapidly. So, it would require ARES to develop and use specific strategies and approaches for partnership with Vietnam and other Middle Income Countries (MIC), to be reviewed at least every two years.

- The win-win partnership concept, stated in the ARES PFS evaluation grid (Grille d'analyse dossiers complets PFS, 2014) is appropriate for and should be effectively implemented by Belgian and Vietnamese partners. It implies clarifying and putting in practice a double objective (development of Vietnamese universities and development of Belgian universities) which is not so clear in ARES programmatic documents. An example among others: the obligation for PFS to implement most of activities in the south country might be relevant in Low Income Countries (LIC) to ensure that most of resources effectively contribute to develop local capacities. But it is recommended to be more flexible for project with MIC such as Vietnam.[3]

At a sector level:

- In order to address the national public health and public safety issue in Vietnam, such project should better develop and explain its strategy and collaboration with other stakeholders: (i) public institutions in charge of national regulations and policy in the field of agriculture and economy/foreign investment, (ii) public institutions in charge of food and veterinary controls, (iii) private agro-industrial companies, (iv) NGOs and nonprofit sector.

[3] For instance, the long-term PhD training of Vietnamese young researchers in Belgium, which contribute to the academic education of future professors, also contribute to the dynamism and development of Belgian academic laboratories. While on the other hand extended research stays in Vietnam of Belgian PhD scholars may contribute to their international and inter-cultural skills and understanding and also benefit future win-win relations between the concerned universities in Vietnam and in Belgium.

At a project level:

- The sustainability approach of the project is questionable. The proposition of pair lecturing indeed seemed a good idea; but in practice it proved difficult to implement and therefore the approach did not provide the expected contribution to program's sustainability. The conditions of success of this mechanism had not been properly assessed and discussed at the inception phase. As this mechanism is also proposed in other ARES funded projects, it is strongly recommended to develop further discussions and to explore its conditions of success.

- It is recommended for further projects to set up a joint steering or technical group including the two promoters and a sample of South and Belgian stakeholders, twice a year and prepared by the two promoters. The ownership is a key aspect of the PFS project and it is good that the "South partner" was responsible for the management of the project. However, it remains necessary to ensure that both parties are not only informed but also involved in the decision process for key decisions of the project (i.e. it would have been useful to inform Belgian partners on the administrative difficulties and involve them in the strategy/solution to change the name of the master, instead of informing them afterwards). Current digital communication tools allow for easy and low-cost organization of such (distant) meetings and joint decision making.

02. INTRODUCTION

02.1 / INTERVENTION LOGIC SUMMARY (AS DESCRIBED IN THE PROPOSAL FORM)

02. 1.1 / OBJECTIVES AND RESULTS

The specific objective of the project is for Southeast Asian universities to strengthen their training –to students and professionals - and research capacities in the field of the food quality management all along the food chains, through a partnership for technical support with Belgium Universities.

The expected results (as mentioned in the initial project narrative – which has however changed during the implementation of the project) are:

- (R1) An advanced Master in "Food Technology, Safety and Quality Management" (FTSQM) is set up and taught at the HUA with partner universities (ULiège, UCLouvain, ITC, RUA and HUST) for at least 36 students (minimum 12students/year, maximum 20 students/year, during 3 years), and
- (R2) A junior teacher-researcher from the HUA improves her/his scientific skills related to food chain quality management issues.

02. 1.2 / JUSTIFICATION

Master program in food technology, safety and quality management, specially focusing on food industry, was essential to develop human resources to be employed in food chain management, bringing high abilities to control food quality and safety along production and distribution.

So far, in Vietnam this discipline had not been trained and educated, while it was getting special attention of the government and society, thus implying development opportunities for graduated students. Such a program was not available in neighboring countries, although some courses related to this area were included in some other training curricula.

Training and education on high technology and quality in the field of bio-food tech-management were urgently needed to contribute to the development of Vietnam and Cambodia. Collaboration by establishing an international Master between universities and institutes was expected to enhance capacity of each member in training and research. Integrated curricula for higher education were needed to enhance training quality and to meet the development demand in many fields of the region.

Links between universities in the field of education were weak in Vietnam and Cambodia. The added value of international cooperation in setting up this international Master was to help combining and complementing partners respective strengths, while enhancing their training and research capacity. For example, HUA required access to food safety and quality management competencies, which had been developed strongly since a long time in some universities in Belgium (Université de Liège, including Gembloux Agro-BioTech, and UCLouvain).

02. 1.3 / TARGET GROUPS:

The Master training program provides participants with a deep knowledge about food technology, food safety and quality management. The teachers and the students are equipped with the overall knowledge about the management quality of the whole food chain, the methods of producing safe food products and organizing the control of the safety of the food chain.

The Master training program was taught in English. This was expected to help students access the advanced concepts of food technology, quality and safety management, in the world and in the region, and apply them into professional activities after graduation. Each course was lectured by multiple lecturers from different universities, supporting each other (diversity); while the students exposed each other to information from the different regions involved in the project.

02. 1.4 / FINAL BENEFICIARIES:

- Employers: Enterprises, state-owned management agencies, universities, institutes, schools, etc. were expected to employ graduates of the program as competent employees with the required overall and specific knowledge of the food chain. The employers were expected to benefit from high-level skills and to save on re-training cost and time. In addition, the program committed to use feedback from employers about the quality of human resources (knowledge and skills) to update the program as required to suit new needs or trends.

- Training institutions: This program was considered highly relevant for Vietnam, Laos and Cambodia. It draws the attention not only in the country but in the whole region. The Master training program was expected to contribute in bringing agricultural products in Vietnam, Laos and Cambodia closer to regional and international standards.

- Agro-food industries will be able to apply the advanced process technology to create high-quality products that meet the increasingly stringent requirements of domestic and international markets. Exporters may use the developed professional skill to maintain and expand sustainable export markets through consistent high quality and safety of food products. This will increase the revenue and benefit of the whole sector.

02.2 / CONTEXT OF INTERVENTION

Three aspects of the project context have been explored: (i) the economic & social situation of the country of implementation, (ii) the academic sector in Vietnam, and (iii) the history of collaboration between Belgian and Vietnamese academia.

02. 2.1 / THE ROLE OF HIGHER EDUCATION IN DEVELOPMENT

Vietnam has achieved tremendous development improvement in the last decades. The economic reform (Doi Moi, launched in 1986) *"transformed Vietnam from one of the poorest countries in the world, with per capita income below $100, to a lower middle income country with per capita income of $1,130 by the end of 2010; this was achieved within a quarter of a century [...] The ratio of population in poverty has fallen from 58% in*

1993 to 14.5 % in 2008, and most indicators of welfare have improved." (BTC, 2014) Vietnam has attained most of its ten Millennium Development Goal targets in 2015.

In 2010, Vietnam has become a middle-income country. This is a positive indicator, but it also means that new challenges are rising for Vietnamese society and leaders. Higher education is a key sector to tackle these challenges. *"The biggest challenge is moving from resource-driven growth that is dependent on cheap labour and capital to growth based on high productivity and innovation. This requires investments in infrastructure and education. How to best develop human resources is a real concern; it requires a good understanding of human resources and skills needs in Vietnam's fast changing economy. To effectively implement the sustainable economic growth policies 2010-2012, experts recommended that, besides promoting different solutions, Vietnam would need to boost the knowledge-based economy, which depends very much on human capital and technology innovation, among other factors."*(BTC, 2014)

02. 2.2 / FOOD TECHNOLOGY AND SAFETY

According to all actors, as well as external sources, food safety and/or technology is a key issue in Vietnam nowadays, a "hot topic". There are several reasons why, which are not systematically linked or complementary:

02. 2.2.1 / Economic competitiveness and development

As previously explained, Vietnam is now a middle-income country. In terms of agriculture sector, it implies some changes in economic activities and perspectives. Vietnam used to export primary goods (coffee, tea, rice, etc.) that were transformed abroad, with a limited added value for Vietnam. Since a couple of years, Vietnam is increasing its industrial capacity. Many industries – both Vietnamese and international companies- set up to produce (exportable) manufactured goods in Vietnam. It is a national policy priority to support the development of the food processing industry. Thus, Vietnam needs a wide range of highly qualified human resources that are lacking now (technicians, engineers, quality managers and controllers). To support this development, universities shall improve the training of students and professionals in this field. As the vice president of VNUA reported during the evaluation, the Ministries of Agriculture and Rural Development had explicitly asked VNUA and other universities to develop education programs in the field of food technology and food safety.

02. 2.2.2 / Environment, bio diversity and climate change

Environment is a major issue in Vietnam; soil, water and air pollution, as well as related risks, are among the worst in the world. The current challenges are due to specific factors as (i) the effects of the Vietnam War[4] and (ii) the rapid and uncontrolled industrialization starting in late 1980s. According to the State of the Environment 2001 published by the government, the main issues are: land degradation, forest degradation, loss of biodiversity, water pollution, air pollution and solid waste management. More recently, climate change was added as a major concern as Vietnam is one of the countries most seriously impacted by climate change,

[4] According to the site http://www.agentorangerecord.com, more than 19 million gallons of herbicidal agents have been dispersed over the Republic of Vietnam in the 1960s, including more than 12 million gallons of the dioxin-contaminant containing herbicide commonly known as Agent Orange. There is very few research that studied subsequent effects of the contamination.

according to a World Bank study in 2007[56]. The air pollution in Vietnam is also one of the highest in the world and is increasing rapidly.

These issues dramatically affect and threaten the bio diversity in Vietnam, which is still one of the richest in the world. *"Vietnam is within the Indo-Burma Biodiversity Hotspot (IBBH). The country is ranked as the 16th most biodiversity rich country in the world."*[7]This means that environmental issues affect Vietnam for sure, but also the bio diversity at a global scale.

02. 2.2.3 / Food safety and public health issues

As referred to in the project proposal*, "The World Health Organization (WHO) estimated that Vietnam loses VND 340 billion (USD 15.96 million) from food poisoning annually. Last years, more than 50% of the Vietnamese agri-food products were banned from the EU because of exceeding mycotoxins content, according to EU regulations"*(Scippo & Thuy, 2013b).Environmental issues affected people's health, including through food. Few major sanitary disasters have been reported since few years[8]. According to the World Health Organization (WHO), Vietnam has one of the highest rates of cancer in the world. In Vietnam "agents from unsafe food take the lead among the carcinogenic factors - accounting for about 35% of cases, while genetic factors account for only 5-10%" reported Dr. Nguyen Ba Duc in 2016, Deputy Chairman of the Vietnam Cancer Association[9].

02. 2.3 / ACADEMIC INSTITUTIONS AND EDUCATION IN VIETNAM

The main source of this section is the Vietnamese official *'Higher Education Reform Agenda 2006 – 2020',* the report on *'Facility for capacity building in Vietnam. Technical & financial file'* developed by BTC in 2014, and interviews conducted during the evaluation.

As other sectors, higher education is improving rapidly in Vietnam. For example, Can Tho University (on which the evaluator conducted an in-depth observation for another assignment) ranked as the 5th University in Vietnam showed outstanding changes and growth expressed in: infrastructures, number of students, human resources, libraries, number of highly qualified professors and lecturers and international cooperation.

According to the Higher Education Reform Agenda - HERA (2006-2020), the higher education sector should become *"advanced by international standard, highly competitive and appropriate to the socialist-oriented market mechanism"* by 2020. The specific objectives are to: i) dramatically increase the participation rate in universities ii) simultaneously boost quality and efficiency of higher education system, iii) strengthen research capacity in universities in order to upgrade the quality of teaching; and to provide a research base for the development of industry and enterprises, and iv) improve governance of higher education system.

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[5]Cited by Waibel, Michael. 2008. "Implications and Challenges of Climate Change for Vietnam," *Pacific News*, 29, pp. 26-27

[6] «Vietnam tropical forest and biodiversity assessment », USAID, Section 118/119 Report August, 2013.

[7] Cited by «Vietnam tropical forest and biodiversity assessment », op. cit.

[8] For instance, millions of fishes and shellfish died in 2016 due to the pollution of a steel mill in the north of the country https://www.francetvinfo.fr/monde/asie/scandale-ecologique-au-vietnam-des-millions-de-poissons-morts-decouverts-sur-les-plages_1438199.html

[9]Cited in https://english.vietnamnet.vn/fms/society/153124/unsafe-food-is-the-top-cause-of-cancer-in-vietnam.html

Vietnamese universities have developed and are developing collaborations with universities in the region (Laos, Myanmar, Thailand, Cambodia), in the continent (Singapore and Japan especially), In Australia, in the US, in Europe (Belgium, Czech Republic, Denmark, France, Italy, UK, Sweden, etc.).

A dozen of universities have the capacity to develop doctoral programs, research initiatives that lead to ranked publications, develop curriculum in English, attract foreign students, etc.

Nevertheless, the academia in Vietnam still suffers from some weaknesses:

- Independence and governance: Unlike economic development, public governance improves slowly in Vietnam, according to international observers. In 2014, Vietnam has been ranked 119th on 175 in the corruption perception index[10]. The democratic opening is still at its infancy, while nongovernmental public bodies, such as the judiciary and universities have very little independence or autonomy in practice, especially in the development of their research and training policy. For instance, the creation of higher education program is subjected to a strict assessment by the Ministry Of Education and Training (MOET), which for example doesn't allow new master program if the same program doesn't exist at undergraduate level. The historically developed authoritarian practice of power typical for socialist-oriented systems still transpires I na top-down approach in the public governance, often linked to high levels of bureaucracy.

- The funding of Vietnamese universities is quite good compared to other South countries targeted by ARES. Lecturers are paid on time, their salary is relatively low but they benefit from a descent social security system and their working environment is good (infrastructures, electricity, etc.). Nevertheless, public funding is not sufficient to promote research programs, to allow sufficient young lecturers to get a PhD, to build or maintain high level research facilities. No Vietnamese University is in the Shanghai ranking 2017 (500best world universities) nor among the 200 best Asian Universities, according to UniRank[11]. The salary of lecturers largely depends on the number of their lecturing hours. Therefore, the temptation to dedicate more time to lecturing and less to research or revising/update lectures to the current state of the art is high. This has a negative impact on the quality of higher education.

- The number of Universities in Vietnam is high (more than 50), while only a few of them provide education of good quality. Also the competition between these universities is high.

- The language is an important challenge for the Vietnamese higher education sector. English is of primary importance for Vietnamese universities and scholars to: (i) develop international partnerships, (ii) access up-to-date literature, (iii) undertake an academic career, (iv) publish academic papers and increase Universities' visibility, (v) attract foreign students, young researchers as well as professors. However, the level of English in fundamental education is still low in Vietnam. Most of young students, as well as many professors are not able to teach, follow a course, make a speech or understand an academic paper in English. One consequence is that the level of English is a very important success factor in an academic career, and sometimes more important than technical knowledge/capacities. This also underlines the key importance of studying abroad to develop an academic career in Vietnam. Such challenge is linked to the few numbers of doctoral programs, the lack of laboratory and research facilities in Vietnam and the need

[10] Transparency International, « Corruption perception index », 2014.
[11] https://www.4icu.org/

to master the English language. This also underlines the necessity to develop international partnership and co-funding of PhD with foreign Universities/Governments.

02.3 / METHODOLOGY AND LIMITS

02. 3.1 / AN EXTERNAL EVALUATION

The evaluation is carried out by an external consultant, who is entirely independent, and who was not involved in the development or the implementation of the project. The evaluator worked in close relationship with the two project promoters (Belgian and Vietnamese), and ARES's evaluation officer. His analyses and recommendations were developed independently and impartially; while ensuring impartiality and consistency with the objectives and terms of reference for the evaluation.

Belgian and Vietnamese partners applied for a continuation project in 2017, for which funding has not been granted; they now intend to apply again in 2019. Conducting an external evaluation of the initial project, and including the results of this evaluation in the continuation project's application, is a condition for ARES to grant a continuation project. This evaluation of the PFS project 'Master in food technology, safety and quality management' has been organized to comply with such requirement.

02. 3.2 / COLLABORATION AND PARTICIPATIVE APPROACH

In line with ARES' approach and discussions during the briefing, the evaluation has been carried out in close collaboration with the project's partners (Vietnamese promoter, Belgian promoter, ARES) in a participative approach. The following steps have been followed:

- A briefing has been organized by ARES in July 2018 with the evaluator and the Belgian promoter.
- All partners had the opportunity to contribute to the evaluation, by providing comments and suggestions (i.e. on expected results and evaluation questions) to the methodological note and to the draft evaluation report. Several meetings have been organized to facilitate the participation of the partners.
- A field visit preparation meeting has been held (using Skype) prior to the field visit (10th of August 2018) with the evaluator, and the two project promoters. The evaluation methodology, the list of people to be interviewed, the interview questions, and field visits have been discussed.
- During the field visit, a mid-term meeting has been organized on Friday 24th of August 2018 with the evaluator and the two promoters to share the evaluation preliminary findings, to discuss provisional recommendations and to discuss recommended outlines of a potential future project proposal to ARES.
- A meeting has been held the 17th of October with ARES and the Belgian promoter to discuss evaluation results and recommendations, in order to facilitate the finalization of the evaluation and the ownership of recommendations.

The advantages of such participative approach are:

- The documentation of project results and their analysis / appreciation shall be more precise and accurate; as they draw upon information and insights from the actors involved directly in evaluated activities.

- It enables a shared learning process and fosters the ownership of recommendations while preparing for their implementation, as the analysis is partly based on a consensus between partners.

- It might contribute to expand the knowledge on project implementation, monitoring and evaluation and lessons learned among project partner's staffs.

This approach also has constraints and limits: projects partners needs to be available to collective working session, and it implies a feeling of trust between the evaluator and the project partners, which is not easy to build within a very limited timeframe.

02. 3.3 / AN ILLUSTRATIVE AND QUALITATIVE APPROACH

Often the evaluation of development projects or policies is drawn on quantitative data (i.e. increase in growth, household income, level of education, improvement of public perception, etc.). The main advantages of quantitative approaches are that it allows to measure and compare (with numbers, rates, or level of satisfactions) the results between affected and non-affected population by the projects, or between provinces, countries etc.

This evaluation is mainly *qualitative* for three main reasons:

- In the field of higher education and research, quantitative data often lack or fail to appreciate with accuracy if the project met its objective. In this sector, project objectives are mainly expressed in a qualitative way and not in a quantitative way; such as increasing knowledge, teaching skills, research skills, institutional partnership between academic entities. In principle such qualitative targets may be appreciated using quantitative data; but the required data and corresponding monitoring and evaluation systems are generally lacking.

- The project focused on high quality and specialized knowledge at an advanced level (Master's degree and young lecturer skills). In practice the number of direct beneficiaries remained limited (up to 30 students, one young lecturer). Given this scope, it would not be relevant to use quantitative method because the number of beneficiaries doesn't allow statistic representativeness. The evaluation will rather focus on the qualitative aspect of the project, and especially on its positive impact on the direct beneficiaries and project partners, which are mainly qualitative.

- The time and resource allocated to the evaluation (13 working days for one evaluator) is very limited; they force the evaluator to use already available data and complement this by applying qualitative and deductive evaluation methods.

A qualitative evaluation is generally less systematic and more 'case specific' than a quantitative evaluation with reliable counterfactuals. Nonetheless, a rigorous and grounded methodology was used (semi structured interviews, budget and expenditure analysis, triangulation of data, etc.). Therefore, the results and

recommendation are reliable enough to inform ARES and project partners and provide them with robust and well-informed data and analysis. More specifically, the evaluation focused on drawing findings and recommendations on innovative activities (i.e. teaching as a pair, integrated seminars) that could be useful for current and future ARES funded academic projects in other contexts and other academic fields.

03. DESCRIPTION OF THE EVALUATION, ACTIVITIES AND CONSTRAINTS

03.1 / EVALUATION QUESTIONS (EXTENDED)

The evaluation questions have been developed based on a desk review (ToR of the evaluation, project proposal form, budget, reports) and an evaluation initial briefing:

- The quality of the project proposal's narrative. What are the strengths and challenges of the narrative in the approved project proposal? Are the indicators used in the project proposal relevant and appropriate for monitoring and reporting on activities, relevance, effectiveness, efficiency, ownership, impact and sustainability of the project?

- To what extend has the project been implemented in line with the proposal? What changed, why and how the changes in the project have been decided, approved and implemented? Is the number of beneficiaries adequate?

- What are the project's results? Sub questions:
  - What are the specific results for the innovative aspects of the project: teaching as a pair – binôme- and integrated seminars driven by teachers and professionals? Why have some results not been met entirely? What were the obstacles and external factors that affected the implementation? What are the links between the two results of the project?
  - Were the advertising and communication activities around the project successful?
  - Are there some unexpected results – positive or negative-? To what extent was the project linked and/or benefited it to other Master's programs in food technology at HUA?
  - To what extent did the project contribute to building capacities of teachers from South and North academic institutions?
  - To what extent did the universities involved collaborate effectively, within and beyond the scope of the project?
  - What was the process for allocating the scholarships? What was the percentage of acceptance?
  - What were the causes of the low numbers of students participating in and graduating from the Master Program (R1)?

- What are the links between activities (to train students using an innovative approach; to build capacities of young researchers) and final beneficiaries: companies, researchers, farmers, consumers? To what extent did the final beneficiaries benefit through: (i) the dissemination of knowledge in companies, public

agencies, etc. (ii) the development of academic cooperation beyond the scope of the project; (iii) the employment of graduates from the master program or (iv) other means? To what extent was a result chain explicitly conceived and implemented, targeting the final beneficiaries.

- To what extent were the different academic institutions committed and pro-active in ensuring the success of the project? How did they collaborate?

- What were the benefits and positive impact(s) of the project for the different (Vietnamese but also Belgian) stakeholders, especially with regards to its innovative aspects?

- Are the stakeholders and beneficiaries satisfied with the project and its outcomes, and especially the innovative aspects?

- To what extent is the project sustainable in the following areas: (i) funding leveraged from other sources, (ii) continuation of the master in English and Vietnamese, (iii) implementation of new knowledge in agricultural practices in Vietnam and the region, (iv) sustainable development of research skills and activities.

03.2 / EVALUATION SCHEDULE AND ACTIVITIES

03. 2.1 / LITTERATURE REVIEW

Prior to the mission, the following documents have been used:

- Project official documents: project proposal, logical framework, proposal evaluation, budget, project amendment, activity reports.

- Master documents: curricula, list of students, results, scholarship process documents.

- ARES and DGD strategic documents related to aid policy and approaches in the field of higher education, and in South East Asia region.

03. 2.2 / FIELD VISIT SCHEDULE

<table>
<tr><th>Monday
20/8</th><th>TUESDAY
21/8</th><th>WEDNESDAY
22/8</th><th>THURSDAY
23/8</th><th>FRIDAY
24/8</th></tr>
<tr><td>9h-10h30. Meeting and check on the work schedule</td><td>9h-10h30. Visit and interview lecturers from Hanoi University of Science and Technology (HUST) (Partner) (Dr. Nguyen Thi Minh Tu, Dr. Nguyen Tien Thanh, Dr. Tu Viet Phu)</td><td>10h-11h: Interview Dr. Tran Huu Cuong - lecturer from Faculty of Accounting and Business management - who participated in teaching PFS master students</td><td rowspan="2">9h-13h. Visit and interview with CP Vietnam Joint Stock Company</td><td rowspan="3">10h-14h. Review meeting. Discuss about expanding cooperation and building new projects</td></tr>
<tr><td>10h30-12h: Introduction about Faculty of Food Sciece and Technology (FST), Interview Dean of the FST - VNUA</td><td>10h45-12h30. Visit and Interview Dr. Chu Van Tuat - The National Center for Veterinary Hygiene Inspection No 1 - Introduce the lab where students have visited</td><td>11h-12h: Interview Dr. Nguyen Thi Bich Thuy - Head of International Cooperation Department - VNUA. Lecturer participated in teaching PFS master students</td></tr>
<tr><td>12h00-13h30. Lunch break</td><td>12h30-13h30. Lunch break</td><td>12h00-13h30. Lunch break</td><td>13h00-14h. Lunch break</td></tr>
<tr><td>13h30-14h45: Interview secretary of the project (Dr. Tran Thi Dinh - FST - VNUA)</td><td>14h-15h15: Interview Prof. Nguyen Xuan Trach - Vice president of the Vietnam National University of Agriculture</td><td rowspan="2">13h30 -16h. Interview 04 lecturers and staff who were sent for training in Belgian (Mr. Nguyen Vinh Hoang, Dr. Pham Kim Dang, Dr. Nguyen Thi Thanh Thuy, Dr. Nguyen Hoang Anh)</td><td rowspan="2">14h-17h.Collective focus group with Master students (Nguyen Thi Quyen, Nguyen Vinh Hoang, Vu Thi Lan, Le My Hanh, Pham Thi Luyen, Dang Thao Yen Linh, Than Thi Huong)</td></tr>
<tr><td>14h45-17h. Interview Vietnamese promoter (Dr. Nguyen Thi Thanh Thuy - FST - VNUA)</td><td>15h15-17h: Interview Dr. Do Duc Luc - lecturer from Faculty of Animal Science - who participated in teaching PFS master students</td></tr>
</table>

The evaluator spent most of his time in the field at VNUA, meeting different professors and lecturers involved in the project or in the Belgium-Vietnam cooperation. 3 external visits have been conducted: in an academic institution (HUST), a public safety control laboratory (The National Center for Veterinary Hygiene Inspection No 1), a private company that hired a former Master student and hosted field visits during the Master (CP Vietnam). All planned activities and interviews have taken place, the Vietnamese promoter of the project was always available to facilitate the evaluation process and she was really committed in contributing to the

success of the evaluation. In addition to interviews, the evaluator had the opportunity to visit different sites and facilities at VNUA.

03.3 / CONSTRAINTS

The evaluation was short (13 working days in total, including 1-week field visit). The given limitation in budget and available working days for the evaluation are logic for a project of this scale; but it is still challenging to capture and understand the multiple aspects and the complexity of a 5-year project in such a short time. All people interviewed had regular contacts with foreigners before and speak fluently English, while the evaluator had extensive prior experience and social contacts in Vietnam. Nonetheless, it must be acknowledged that all communications were held in English a non-native language for everyone involved, including the evaluator, implying that the communication may have been less free-flowed and subtleties less easy to notice. Furthermore, it is never easy to speak freely about failures or weaknesses of a project with an unknown evaluator; this is not particularly easier in Vietnam than elsewhere.

04. DESCRIPTION OF THE PROGRAM AND ACTIVITIES

04.1 / PREVIOUS STEPS AND PROJECT PROPOSAL PROCESS

As already described, there is a long partnership history between VNUA and Belgian Universities. Many VNUA lecturers studied or undertook research visits at ULiège (included Gembloux) or UCLouvain in the field of agronomy, biology, agriculture and/or veterinary sciences. The Belgian promoter and VNUA submitted a PFS proposing the set-up of a Master program in food safety in 2008. That initial project was rejected for two main reasons: (i) the absence of regional partners (Cambodia, Lao), (ii) the fact that the project planned a funding of 60.000 € for a Belgian NGO –Louvain Cooperation-, given that PFS should mainly support south partners and implement activities in the South (Scippo & Thuy, 2013b).

The promoters re-submitted a pre-project in 2012, addressing the previous negative assessment 'RUA and ITC have been associated to the project, and the e-learning component was abandoned, whereas it could have improved efficiency and innovation in the project. This pre-project proposed to set up a Mater in quality management and food safety (*Management de la Qualité et de la Sécurité Sanitaire des Aliments*) (MQSA). The general project's rationale underlined the need to improve quality processes, control and food safety in South East Asia (Larondelle, Scippo, & Thuy, 2012). After pre-selection, the two promoters worked on the final proposal, making best use of a field visit in Hanoi and the support of a project development expert commissioned by ARES.

The specific objective of the final project proposal is that "Southeast Asian universities strengthen their training –to students and professionals - and research capacities in the field of the food quality management all along the food chains, through a partnership for technical support with Belgian Universities".

The expected results and activities (as mentioned in the initial project narrative – which changed during the implementation of the project) are:

» (R1) An advanced Master in "Food Technology, Safety and Quality Management" (FTSQM) is set up and taught at the HUA with partner universities (ULiège, UCLouvain, ITC, RUA and HUST) for at least 36 students (minimum 12students/year, maximum 20 students/year, during 3 years). This Master will contribute to achieve the global objectives, and in particular to sustainably improve teaching in South universities, one of their 3 fundamentals missions, as well as interuniversity collaborations. Year 1 of the project will be dedicated to the preparation of activity n°1 (practical organization of the master). This master (of 18 months) will begin in year 2 of the project, and will be organized 3 times during the project, meaning that it will end during year 5 of the project.

» (R2) A junior teacher-researcher from the HUA improves her/his scientific skills related to food chain quality management issues and coordinate the master program. At the end of the project, this young teacher will have a transversal knowledge allowing him to contribute to achieve the global objectives to sustainably improve the 3 fundamentals missions of the South universities (teaching, research and services), as well as interuniversity collaborations : ensure the sustainability of the master (keeping the collaboration with other South Asian universities), to initiate research project in this field (PhD students and grant proposals for national and international subsidiary bodies), as well as set up, in HUA, continuous training for food chain quality management stakeholders (public authorities and agro-food industries). This activity will thus contribute to strengthen the research and services (continuous training) capacities of HUA and collaborating universities.

04.2 / IMPLEMENTATION OF THE PROJECT

Before the implementation of the activities, the project has been screened by the authorities of the Faculty, of the University and MOET in order to be integrated into the VNUA curriculum.

In less than one year, the Master has been checked and fully integrated into the official curriculum of VNUA and Vietnamese Master Diplomas could be delivered.

But two major changes have been made during the first year of implementation.

» The initial master proposed in the pre-project focused on quality management and food safety only (Larondelle et al., 2012). The final proposal mentioned a “Master in FOOD TECHNOLOGY, SAFETY AND QUALITY MANAGEMENT (FTSQM)” (Scippo & Thuy, 2013b). The final name of the Master was “Master in food technology” (Scippo & Thuy, 2013a). The main reason for such changes, as explained by actors interviewed, was an ‘administrative’ or ‘bureaucratic’ reason: a Master program in Vietnam should follow the same title of an existing undergraduate program. In other words, it is not possible to create a Master program if no undergraduate program already exists with the same title. In 2013, no undergraduate program existed in food safety / quality management. This change had consequences on the content of the Master and, therefore, on the success of the project. It might not have been possible to anticipate this difficulty (at least for the Belgian promoter), but it would be useful in the future to implement a communication and management process that ensure all partners are aware of those difficulties as soon as possible and are able to discuss about strategies and potential solutions (see recommendations for details).

  - The program of the Master also changed, reflecting the title of the program. Nonetheless, even though the program included courses in food technology (food processing, food biotechnology,

etc.) it kept a main emphasis on food safety and quality management issues (advanced chemical and biological food safety, food nutritional quality, food quality management system, food contaminants analysis, etc.).

- As described in the context, studies related to food are of primary importance for two main reasons: (i) Improvement in food technology would mainly contribute to develop export and international economic competitiveness of Vietnamese agro-industry and (ii) improvement in food safety / quality management would mainly increase public health, environment (and therefore economic development). The evaluator has no reason to believe that the VNUA deliberately changed the name of the Master to emphasize the economic motivation rather than safety and quality. But we must at least observe that this change had consequences on the skills developed by the students and on the type of employment they might seek after graduation.
- This change also impacted on the attractiveness of the Master. Some people interviewed argued that students interested in food safety and quality management may not have applied to the master, as the program's title mentioned food technology only. This aspect is important, as the number of master students was less than expected.
- This change also resulted in a kind of mismatch, as the name of the project was 'Master in food technology, safety and quality management' and the name of the master implemented was 'master in food technology' only.

» The second major change modified the character of result 2. Initially the project envisaged an in depth training for one young teacher-researcher from VNUA to Belgium to improve her/his scientific skills related with problematic on food chain quality management, including academic visits to Belgian universities. Instead, six mid-term trainings (6 weeks each) have been organized for 6 lecturers / professors form VNUA in Belgium universities. Lecturers were both confirmed lecturers and young researchers (including one former student from the first promotion of the master). This change was proposed by VNUA and accepted by the Belgian promoter. The main purpose of this training was to involve VNUA lecturers in practical activities undertaken by Belgian academics, especially food and veterinary control processes and farm/industries visits. The aim was to develop practical skills of Vietnamese lecturers, being responsible to organize practical learning as integral part of the master. The evaluation considers that this change affected the project in a positive way, as it allowed a larger number of Vietnamese lecturers (involved in the Vietnamese master program) to benefit from practical learning and trainings in Belgium. This change, made in the course of the project fostered and demonstrated the ownership of the project by the VNUA and the willingness to maximize the use of project funds and opportunities to develop VNUA lecturer' experience.

05. ANALYSIS PER CRITERIA

05.1 / RELEVANCE

05. 1.1 / STRENGTHS

The project's relevance is very high; it addressed important needs in the country of implementation. Master program in food technology, safety and quality management, specially focusing on food industry, is essential to develop human resources to be employed in food chain management, bringing high abilities to control food quality and safety along production and distribution. In Vietnam, these topics are of primary importance at an environmental, public health, nutrition level. As Vietnam is aiming to become a top exporter of agro food products, food safety in Vietnam might also impacts public health at a global level, including Belgium. The project proposal met these challenges as well as policy objectives, as the Government of Vietnam expressed explicitly its high interest in developing food sciences. About 30 students were trained trough a unique Master program, one of its kinds in Southeastern Asia, with innovative aspects in Vietnam, such as field visits and practical learning.

The incredible bio diversity of Vietnam also contributes to the relevance of the project: it allow expanding the geographical scope of research in biology and bio technology at Belgian universities (see context of intervention for details).

05. 1.2 / WEAKNESSES

The project implementation lost the specific focus for food safety due to administrative unilateral decisions from VNUA. The official title became "Master in Food Technology", and therefore the project relevance remained below the expected relevance argued in the project proposal. The emphasis on food safety and quality management remained important in the curricula of the master.

05.2 / EFFICIENCY

05. 2.1 / STRENGTHS

The usage of resources was high in the length of the project. High specialist in food tech and safety, from both theory and practice were involved in the project with a high "value for money", as it cost only travel and per diem costs. They remained committed during all the length of the project. Both Belgian and Vietnamese promoters and stakeholders were highly committed for the success of the project.

The Vietnamese part of the project undertook all the major parts of the project management and administration, except the logistic of Belgian lecturer travels and training of Vietnamese researcher trainings in Belgium.

A large part of the project financial resources was dedicated to scholarship for Vietnamese and Cambodian students (around 60% of the budget), meeting ARES key PFS objectives to allocate a maximum of resources to south universities and students from South countries.

05. 2.2 / WEAKNESSES

The project had one key main limitation: there were 8 to 10 students per year, although the maximum number of students planned was 20 and the number of scholarship was 12 per academic year. A total of 25 students finalized their master thesis and graduated with the Master's degree. The final objective of 36 graduated students (36 master thesis in the logical framework) has been reached at 69%, which is a rather low result, given the already limited ambition of only of 12 targeted graduated students (12 per year). This strongly reduces the result of the project and therefore also its efficiency, effectiveness and potential impact.

Why it was not possible to select enough students for this new, unique, excellence master program organized in English focusing on highly important issues? Few answers could be given:

- The number of Vietnamese students who can follow a master program in English is limited, and the level of English required to be accepted might have had an impact on the number of students. For instance, in the new master in Food technology supported by VLIR implemented at Can Tho University in 2018, there is no Vietnamese student. Most of students come from English speaking countries (Kenya, Nigeria, Tanzania), according to VNUA lecturers involved in the partnership with VLIR.[12]

- According to many stakeholders interviewed, the number of students who apply for a master degree in scientific fields is decreasing since a couple of years. Many master programs at HUST or VNUA include less than ten students. This trend doesn't affect business or social sciences studies.

- No students came from Lao PDR, only 5 from Cambodia and only 4 out of 20 Vietnamese students came from other universities. In reality a large majority of students were graduated from the bachelor program in food technology VNUA itself. Furthermore, the selection process was not too picky. For instance, for the 3rd promotion, 14 students applied with a required level of English, and 10 were selected (4 didn't pass the math exam).

- We may thus argue that the communication process for the master, outside of VNUA and beyond the bachelor program in food technology, was not efficient. The high concurrence between universities in Vietnam might also have an influence on the low effectiveness of publicity or the low number of applicants from other universities. The idea that students from other parts of Vietnam didn't want to move to Hanoi to study is less plausible, given there were 12 scholarships per year for master students.

Anyhow one must conclude that:

- The initial ambitions and targets expressed in number of students and graduates were already moderate, in view of the claimed pertinence and aspired effectiveness and impact of the project.

[12]The level of English required to be accepted in this Master is higher than the level required for the PFS master: IELTS 6.0 is required to apply for the master program funded by VLIR, there is no IELTS requirement for graduation of student. For PFS master program, entrance and graduation IELTS of students were 4.5 and 5.5, respectively.

» During the project's design, the attractiveness of the master program was presumed; few initiatives were really implemented to stimulate inflow of participants in the program.

» The bottleneck of insufficient proficiency of English among potential candidates for the master should have been considered when conceiving the project. For example, a selection without major English skills expectations and then a preparatory intensive 6 month's English language course could have been programmed.

» The project also didn't succeed in addressing this issue of low numbers of participants in the master during the project implementation. The project did not initiate effective mitigating measures; neither during the preparatory phase, nor once the low number of participants for the 1st and the 2nd batch became apparent.

05.3 / EFFECTIVENESS

05. 3.1 / STRENGTHS

» According to the evaluation, the main outcome of the project is the significant improvement in the identification and high-quality training of young promising and excellence Vietnamese researcher in the field of food sciences through the master, with a good level in English and a strong background in food safety and quality management. This result is of primary importance to develop the educational and research capacities of Vietnamese universities, which is an expected result of the project.

» At a sector/national level, the project allowed training of high qualified professionals and researchers, who contribute to improve practices and research for a strategic sector in Vietnam and at a global level.

» From a Belgian perspective, the project drew on and contributed to strengthening the long and close collaboration between French speaking Belgian universities and Vietnamese universities in general and particularly in the field of agriculture.

05. 3.2 / WEAKNESSES

The change in naming the master also affected the effectiveness of the project. The initial project proposed a Master degree in "food safety", putting the emphasis on safety, quality and control of food processes with the final aim to contribute to improve nutritive quality, public health and biodiversity. The implemented Master was a "Master in food technology" putting the emphasis on improving food processing and engineering in general, including food safety among other topics, with the final aim to improve quality and economic opportunity for agro-industrial sector in Vietnam. This change, explained by several factors significantly affected the relevance of the project, as food safety and environmental/health issues were pointed out as important justifications in the project proposal. Furthermore, according to lecturers interviewed during the

evaluation, this change might have reduced the attractiveness of the master program for students. It also affected the potential long-term impact of the project[13].

05.4 / POTENTIAL IMPACT

- The training of a group of highly qualified professionals in food technology and food safety, with both theoretical and practical skills may have a positive impact on food safety and quality of agro product in Vietnam. Some graduated students already work in the quality management of agro food companies. More importantly, a pool of graduated students started an academic career straight after graduation. 7 former master students are now assistant lecturer, PhD students or seeking for a PhD scholarship. It depends on their career and on many external factors, but this also might lead to a positive social, economic and environmental impact.

- The extension of focus from “food quality and safety” to “food technology” and the low number of graduates from the master weakened the project’s innovative potential and its capacity to generate the critical mass required to support transformation related to food quality and safety in Vietnam and in the Region.

- In addition to the change of name and focus of the Master, the potential spillover effect of the project outside of VNUA is limited: there was some participation of regional partners and national partners but it remained peripheral (no partners from Lao PDR, only 3 graduated students from Cambodia, only 4 among 22 Vietnamese graduates from other universities in Vietnam). The project envisaged a larger participation of students in general, including a larger participation of students from all parts of Viet Nam and from neighboring countries. From the perspective of targeted students, the potential for impact at national and regional level, as envisaged in the project proposal, will be weak. On the other hand, the project was part of, benefit from and contribute to many other national and regional initiatives in the field of food safety: ASIFOOD, ILRI, FAO, VLIR partnership with VNUA, Hue university and Can Tho University. These initiatives clearly contribute to the mutual long term reinforcement of South East Asian academic institutions and, in turn will lead to improve the education and research capacity and excellence of these universities.

05.5 / SUSTAINABILITY AND OWNERSHIP

The sustainability and ownership obtain a mixed appreciation.

[13]According to Vietnamese promoter: for these reasons, Vietnam National University of Agriculture and other university running program relating to Food technology have asked ministry of education and training (MOET) to open the suitable specialization. From 2018, MOET allows universities to open program in quality assurance and food safety.

» On the positive side: (I) a master degree in food technology in Vietnamese has been set up at VNUA, with a similar curriculum and the Vietnamese lecturers involved in the PFS master, (but without the direct contribution from the project) and is continuing after the end of the project. (II) Seven graduated students from the PFS Master are involved in the academia, contributing to improve research and higher education (four as lecturers at VNUA, One as lecturer at Royal University of Cambodia, two as one-year employee for the faculty, waiting for lecturing/PhD opportunities).

» On the negative side: (i) The Master in Food technology in English initiated through the project finished with the end of the project and (ii) the Master in Vietnamese does not offer much guarantees with respect to quality assurance, practical and innovative learning, and research/international perspectives.

06. MAIN SUCCESSES AND POINTS OF ATTENTION

The project addressed critical needs in Vietnam and globally, and was of primary importance at academic, educational, economic, public health and environmental levels.

Overall the project has been well designed and implemented. Its relevance is high, it targeted important needs to be addressed in the country and many activity targets were achieved properly. About 30 students were trained trough a unique Master program, one of its kind in south east Asia, with innovative aspects for Vietnam, such as field visit and practical learning. Both Belgian and Vietnamese promoters and stakeholders were highly committed for the success of the project. The Master was set up rapidly (after one year of project implementation).

At University level, the Master program was perfectly integrated into the University education program portfolio and became an excellence program for the University. The program comprised high-level lecturers involving professors from other Universities in Vietnam and Cambodia and contributed to the visibility of the VNUA.

At sector/national level, the project allowed training of high qualified professionals and researchers, who contribute to improve practices and research for a strategic sector in Vietnam and at a global level.

From a Belgian perspective, the project drew on and contributed to strengthening the long and close collaboration between French speaking Belgian universities and Vietnamese universities in general and particularly in the field of agriculture.

Parallel to the project, a master in food technology in Vietnamese was set up at VNUA, involving most of Vietnamese lecturers involved in the project. This master continued after the end of the project. The curriculum is different from the master organized through the project, including less practical courses, and almost no field visits. The fact that courses are in Vietnamese also doesn't allow the training of future academics and lecturers, but targets mostly professionals. At this stage, the evaluation considers that this master in Vietnamese only provides sustainability for some aspects of the project.

One of the main innovations envisaged in the project document, the lectures by a pair of lecturers, one from Belgium and one from Vietnam, was not fully implemented, thus reducing the project's effectiveness. In

practice, Belgian lecturers taught and Vietnamese lecturers "assisted"[14] them (attended to the course, helped the understanding of students during sessions, and facilitated the communication after the sessions). The expected added value of pair teaching (mutual learning, learning by doing, etc.) was not achieved as far as envisaged in the project. The level of English of VNUA lecturers and students, the practices of lecturing in Vietnam and the lack of time and attention paid for pair lecturing preparation are among the main reasons that explain this weakness.

The effective establishment of an integrated steering committee, including Vietnamese and Belgian stakeholders, might have improved the level of timely information of Belgian partners about the reasons of changes made, compared to the project proposal, and could have increased the capacity for Belgian stakeholders to influence those changes.

07. CONCLUSIONS AND RECOMMENDATIONS BY STAKEHOLDER

07.1 / FOR ARES

01. The Belgian – Vietnamese Academic cooperation is ancient, rich; it allowed building strong and fruitful personal and institutional collaboration. More specifically, ULiège and UCLouvain developed fruitful relationships with VNUA, as acknowledged by all Vietnamese academics interviewed. Nowadays, Vietnamese academic institutions are becoming stronger and could further evolve into real strategic win-win research partners for Belgian Universities, especially in the field of nature sciences and agriculture. It is strongly recommended to continue this partnership, with the development of a country-specific and regularly updated approach. The organizational and institutional capacities of Vietnamese Universities (i) are very different from those of most African or Haitian Universities and (ii) changes very rapidly. So, it requires ARES to develop and use specific strategies and approaches for partnership with Vietnam and other Middle Income Countries (MIC), to be reviewed at least every two years. The win-win partnership concept, stated in ARES PFS evaluation grid (2014) is appropriate for and should be effectively implemented by Belgian and Vietnamese partners. As stated in a recent report from Belgian cooperation on capacity building in Vietnam *"Partnership and 'win-win' concepts in international cooperation are already a common and accepted paradigm among Vietnamese stakeholders and actors and they consider that these provide very interesting opportunities for sustainable capacity development mechanisms. The Vietnamese stakeholders consider that it is important for Belgium and other countries to focus their cooperation with Vietnam on those areas where they can provide the most added value".*(BTC, 2014)It implies clarifying and putting in practice a double objective (development of Vietnamese universities and development of Belgian universities) which is not so clear in ARES programmatic documents. An example among others: the obligation for PFS to implement most of activities in the south country might be relevant in Low Income Countries (LIC) to

[14] According to interview 1, 3, 5, 6 and 10.

ensure that most of resources effectively contribute to develop local capacities. But it is recommended to be more flexible for project with MIC including Vietnam.[15]

02. It is strongly recommended to translate all strategic and programmatic ARES documents into English and disseminate it widely, especially the strategic plan 2017-2026, to inform (i) national partners from non-francophone countries and (ii) the global academic community about ARES' vision, priorities, and activities.

03. To review and adapt the condition to implement most of activities in the south country especially for win-win projects and collaboration with universities from MIC. Implementing activities in Belgium doesn't mean that the South partners do not benefit from it, especially because Universities from MIC are more attractive and stronger than Universities from LIC. For example, organizing long term or mid-term trainings in Belgium for lecturers/students from MIC countries could have a great added value for both Belgian and South universities and doesn't present major risks that it doesn't benefit the South universities[16].

04. The modality of lecturing as a pair (one lecturer form Belgium, one lecturer from the South) is proposed in several PFS. It might be useful for ARES to ask explanations on how this would be organized and ensure that enough time and resources are allocated to prepare the lectures and to provide information on its conditions of success. It may be an effective approach to implement this mechanism for one or few courses only, and allocate specific time dedicated to developing the methodology of lecturing as a pair, the development of the syllabi and training techniques, with the direct collaboration between Belgian lecturer and South lecturer.

05. Initiate and establish a sustainable higher education program (master degree, undergraduate program) with the support of a PFS project is really ambitious and seems to be an overwhelming challenge. As most of activities of a PFS are lecturing activities in the South University. Supporting a South University to establish a new and sustainable education program requires implementing a large range of other activities: institutional and organizational development support, researcher and PhD training, language course (for Vietnam), etc.

06. The monitoring and evaluation of PFS projects is a bit specific, they somehow differ from development projects for which monitoring and evaluation tools (logical framework, activity and result quantitative indicators, etc…) have been designed and mainstreamed. For instance, the logical framework doesn't seem to be the most appropriate tool to manage and monitor a PFS project: For a PFS project, the number of 'direct beneficiaries' –students- is limited and is easily monitored, as professors has direct and daily contacts with them. However, other parts of the monitoring and evaluation of PFS projects

[15] For instance, the long-term PhD training of Vietnamese young researchers in Belgium, which contribute to the academic education of future professors, also contribute to the dynamism and development of Belgian academic laboratories.

[16] MIC countries has stronger institutions, more academic opportunities, less security issues or risks fo conflicts than LIC or fragile states. So, MIC universities have individual and organizational capacities to apply, transplant or adapt knowledge and skills developed abroad and to institutionalized these knowledge in their University. In addition, the risk that trained students or lecturers, after trainings, didn't come back to their university is really low for MIC country academics, but might be high for fragile states academics.

are very challenging: for example linking project activities with the objective to contribute to the overall development (social, economic, political). Higher education implies long processes (3, 5to 8 years) and the potential impact or social results from an improved higher education might take decades to appear. Furthermore these may be affected by many external factors. Also, evaluation of social results and impacts requires time and specific skills that academics and PFS promoters don't necessarily have. The evaluator recommends ARES (i) to develop and adapt key qualitative tools (or promote the development of such tools by evaluators) in order to evaluate the contribution of PFS to social and economic development, such as Outcome Mapping, Most Significant Change or Case Studies[17], (ii) to plan final / external evaluation from the beginning of the project and ask evaluators to develop a Baseline before the implementation of the project, and then to develop and endline at the end of the project. For project stakeholders

07. At a sector level: In order to address the national public health and public safety issue in Vietnam, such project should better develop and explain its strategy and collaboration with other stakeholders: (i) public institutions in charge of national regulations and policy in the field of agriculture and economy/foreign investment, (ii) public institutions in charge of food and veterinary controls, (iii) private agro industrial companies, (iv) NGOs and nonprofit sector.

08. At a project level, the sustainability approach of the project is questionable. The fact that many Belgian lecturers directly taught master courses, -and that the lecturing as a pair was not implemented properly- allowed to set up the master rapidly (one year) but also jeopardized the possibility to sustain a master in English at the end of the project.

09. It is recommended for Vietnamese partners to continue to develop education and research programs in the field of food security and safety. (I) The master's in food technology in Vietnamese at VNUA currently doesn't provide practical learning (practical seminar, field visits) neither some lecturing in English. In order to continue to implement a high-quality program in this field despite the end of the PFS, it is recommended to organize practical learning and lecturing in English (specific courses in English or English-Vietnamese blending teaching). (II) Some professional training or certificate could be implemented in this field at VNUA, targeting private sector manager, public controller and public administrators.

08. CONCLUSIONS AND RECOMMENDATIONS FOR A FUTURE PROJECT PROPOSAL

010. It is recommended for further projects to set up a joint steering or technical group including the two promoters and a sample of South and Belgian stakeholders, twice a year and prepared by the two promoters. Even if the ownership is a key aspect of the PFS project and it is a good that the "South

[17]ARES already asks to applicants to develop some tools for identification / management purposes (arbre à probleme, arbre à solution). However, without associated qualitative evaluation tools, those identification / management tools are not easy to use during the implementation of the project.

partner" was responsible for the management of the project. However, it remains necessary to ensure that both parties are not only informed but also involved in the decision process for key decisions of the project. Current digital communication tools allow for easy and low-cost organization of such (distant) meetings and joint decision making.

011. It is recommended for further project to integrate or focus on PhD training and programs. Research opportunities and needs in the field in Vietnam are high, and both Belgian and Vietnamese partners have the capacity to manage and support PhD candidates. Supporting PhD programs would allow to strengthen a win-win approach, as both parties will benefit from researches, publications, laboratory activities, etc. Vietnam Government / VNUA also have the capacity to co-funded / co-supported PhD students. In addition, the VNUA will benefit from a high loan from the World Bank to renovate and build new infrastructure. Vietnamese PhD students could be supervised by Belgian professors and do a part of their PhD in Belgium. The opportunity for a/several Belgian PhD student / young researcher to do a part of its PhD research in Vietnam and hosted at VNUA may also be explored. It might increase research fields for Belgian universities, and also strengthen the quality of education program at VNUA (the PhD student / young researcher could also lecture in the master program in food technology, organize some English courses, etc.).

012. If there is need expressed by VNUA, it is suggested for Belgian stakeholders to explore the possibility to continue to strengthen the master of food technology in Vietnamese at VNUA (coaching of Vietnamese lecturers, providing courses, etc.).

09. BIBLIOGRAPHY AND REFERENCES

ARES. (2014). *PLAN STRATEGIQUE 2017-2026*. Bruxelles.

ARES. (2013). *Avis expert projet PFS Master FTSQM 2013*.

ARES. (2014). *Grille d'analyse dossiers complets PFS 2014*.

ARES. (2018). *Avis expert projet PFS Master FTSQM 2018*.

ARES. (2018). *Grille d'analyse des pré-projet 2019*.

ARES. (2018). Termes de Références de l'évaluation du projet Master FTSQM.

ARES-CCD. (2013). *Fiche pays - Vietnam*.

CIUF-CUD. (2014). *Programme de recherche pour le Développement et de formation sud*.

Larondelle, Y., Scippo, M. L., & Thuy, N. T. T. (2015). *PFS Master FTSQM - Formulaire de pré-projet*.

Scippo, M. L., & Th. (2015). *PFS Master FTSQM - Logical Framework - revised 2015*.

Scippo, M., & Thuy, N. T. T. (2013a). *Activity report 1- PFS Master FTSQM*.

Scippo, M., & Thuy, N. T. T. (2013b). *Cadre logique projet PFS Master FTSQM*.

Scippo, M., & Thuy, N. T. T. (2013c). *PFS Master FTSQM - Project proposal form*.

Scippo, M., & Thuy, N. T. T. (2014). *Activity report 02 - PFS Master FTSQM*.

Scippo, M., & Thuy, N. T. T. (2015). *Activity Report 03 - PFS Master FTSQM*.

Scippo, M., & Thuy, N. T. T. (2016). *Activity report 04 - PFS Master FTSQM*.

BTC. (2014). *Facility for capacity building in Vietnam. Technical & financial file*. Bruxelles.

10. ANNEXES

10.1 / LIST OF PEOPLE INTERVIEWED

No	Name	Role
	Lecturer of VNUA	
1	Asso. Prof. Dr. Nguyen Thi Thanh Thuy	Project Coordinator, Head of Department of Food Safety and Quality Management. Teaching food microbiology, advanced chemical and biological food safety. Staff trained in 06 weeks in Belgium
2	Asso. Prof. Dr. Nguyen Hoang Anh	Member of the Coordinator team, Vice Dean in charge of the Faculty of Food Science and Technology. Staff trained in 04 weeks in Belgium
3	Asso. Prof. Dr. Tran Thi Dinh	PFS project secretary. Head of Processing Technology. Teaching Advanced Chemistry biological food safety, Advanced food processing technology. Participate in many training and research projects with VLIR Network
4	Prof. Dr. Nguyen Xuan Trach	Vice President of VNUA, in charge of international cooperation and postgraduate. Teaching the Scientific communication in food technology
5	Asso. Prof. Dr. Nguyen Thi Bich Thuy	Head of Department of International Cooperation of VNUA; Head of Department of postharvest technology and Teaching the Scientific communication in food technology, Postharvest technology of agricultural products
6	Asso. Prof. Dr. Do Duc Luc	Vice Dean of the Faculty of Animal Science. Teaching Advanced biostatistics
7	Asso. Prof. Dr. Pham Kim Dang	Vice Dean of the Faculty of Animal Science. Teaching Food contaminants analysis
8	Asso. Prof. Dr. Tran Huu Cuong	Dean of the Faculty of Accounting and Business management. Teaching the Food Marketing

9	Msc. Nguyen Vinh Hoang	Lecturer in Department of Food Safety and Quality Management. Staff trained in 02 moths in Belgium

	Hanoi University of Science and Technology	
10	Asso. Prof. Dr. Nguyen Thi Minh Tu	Vice Director of School of Biotechnology and Food Technology, Hanoi University of Science and Technology. Teaching the Additives in food preservation, Food quality management
11	Dr. Nguyen Tien Thanh	Head of laboratory of Center for Research and Development in Biotechnology, School of Biotechnology and Food Technology, HUST. Teaching the Additives in food preservation
12	Dr. Tu Viet Phu	Teaching the Food Sensorial properties
	National Center for Veterinary Hygiene Inspection No 1	
13	Dr. Chu Van Tuat	Vice Director of The National Center for Veterinary Hygiene Inspection No 1
	CP company	
14	Mr. Tung	Business Director of CP Vietnam Joint Stock Company
	Master students	
15	Msc. Nguyen Thi Quyen (Batch 1)	Leturer - Dept. Food processing - Faculty of Food Science and Technology, Vietnam National University of Agriculture
16	Msc. Nguyen Vinh Hoang (Batch 1)	Leturer - Dept. Food safety and Quality management - Faculty of Food Science and Technology, Vietnam National University of Agriculture
17	Msc. Vu Thi Lan (Batch 2)	Corporate branding supervisor - Wilmar CLV company (Specialize on oils and fats)
18	Msc. Le Thi My Hanh (Batch 2)	Quality assesement staff - Halal cerificate agency
19	Msc. Nguyen Thi Luyen (Batch 3)	Lab staff - Viet Xo vegetable and fruit joint stock company (Agar powder production)
20	Msc. Than Thi Huong (Batch 3)	In 1 year contract with Prof. Tran Thi Dinh (Dept. Food Processing Technology) in Faculty of Food Science and Technology, Vietnam National University of Agriculture. about drangon wine and then apply for PhD
21	Msc. Dang Thao Yen Linh (Batch 3)	Researcher - Center for advance materials technology - National central for technological progress - Ministry of science and technology
	Belgian Professors	
22	Marie Louise Scippo	ULiège, Belgian promoter of the project
23	Yvan Larondelle	UCLouvain, Lecturer involved in the project, as well as many other cooperation projects in Vietnam.