Final evaluation of the Network University Cooperation in Vietnam (coordinated by Can Tho University)

vliruos
SHARING MINDS, CHANGING LIVES

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Acronyms

CAF	College of Aquaculture and Fisheries
CTU	Can Tho University
DA	Department of Aquaculture
FA	Faculty of Aquaculture
FF	The Faculty of Fisheries
HCMC	Ho Chi Minh City
HU	Hue University
ICP	International Master programme, funded by VLIR-UOS
ITP	International Training Programme, funded by VLIR-UOS
IUC	Institutional University Cooperation
IUPFOOD	InterUniversity Programme Master of Science in Food Technology
MOET	Ministry of Education and Training
NSP	Network Stakeholder Platform
NTU	Nha Trang University
P1	Project 1
P2	Project 2
PP	Partner Programme
RIA2	Research Institute for Aquaculture II
SDG	Sustainable Development Goals
ToC	Theory of Change
ToR	Terms of Reference
VNUA	Vietnam National University of Agriculture
VBFoodNet	Food Science and Technology Network between Vietnam and Belgium
ViFINET	Vietnamese Fisheries & Aquaculture Institution Network
VLIR-UOS	Vlaamse Interuniversitaire Raad – Universitaire Ontwikkelingssamenwerking

Executive Summary

Programme Description
The report at hand is the final evaluation of the 10-year University Network Cooperation Vietnam programme. The focus of this evaluation is on the implementation of the second phase 2019-2023 and builds on the 2018 mid-term evaluation. University Network Cooperation Vietnam includes a collaboration between 5 universities and research centres: CTU (Can Tho University), VNUA (Vietnam National University of Agriculture, Hanoi), HU (Hué University), RIA2 (Research Institute for Aquaculture II, HCMC) and NTU (Nha Trang University); with support from Flemish universities. The main objective of the programme was to develop and organise two masters, namely Master in Aquaculture and Master in Food technology. These two masters can be considered mirror programmes of the Master in Aquaculture (IMAQUA) organised by Ghent University and funded by VLIR-UOS and the Master in Food Technology (IUPFOOD) jointly organised by KULeuven and UGent and funded by VLIR-UOS as well. The lecturers of the English-language masters in Vietnam were retrained in their research capabilities, English language skills and pedagogical skills within the network programme and in cooperation with Flemish partners. In addition, the network programme included activities to enable a common credit system and organise exchanges of Master and PhD students.

Methodology
This report comprises the record of an evaluation study where the DAC criteria are central, with an emphasis on the criteria of effectiveness, sustainability and impact. The methodology of the evaluation has been described in the inception report.
For the latter criteria, a specific impact study was conducted, assessing the impact for the alumni of students of the two master programmes set up. Secondly, the evaluators also examined the impact of the programme on Human capacity building in the partner universities involved. In addition to extensive desk research, online and face-to-face interviews were conducted with various stakeholders. Several group discussions were also organised. Finally, an online survey of all alumni of the two newly established master programmes was also organised. A mission took place from 11 to 16 September visiting 4 of the 5 participating universities and research institutes.

Findings on Relevance
The programme was rated highly relevant by the evaluators. There is high demand in Vietnam and neighbouring countries for highly skilled workers in the fields of Aquaculture and Food Technology. This demand is further fuelled by the establishment of foreign companies in need of English-speaking staff. Nevertheless, the evaluators noted that for the Master in Aquaculture, 43 per cent of the students are from Africa and this is as high as 70 per cent for Master in Food Technology. The main explanation for the low enrolment of Vietnamese students is the language barrier. On top of that, Vietnamese students who get high scores in English often easily get scholarships to study abroad.

Findings on Coherence
The programme's internal coherence also scores high. This is mainly due to the fact that both masters are mirror programmes of similar masters organised in Flanders (also with funding from VLIR-UOS) and that knowledge and skills could be shared. External coherence is also strong due to the expansion of the network of universities from Thailand, Cambodia and Laos (which could participate as observers in the network programme). In addition, complementarity with other donors' projects and programmes seems high and the programme has strong links to several SDGs.

Findings on Effectiveness
The effectiveness of the programme was also rated as excellent by the evaluators. The two masters were set up and more than 100 students enrolled (although few Vietnamese students as already mentioned above). The evaluators further noted that the effectiveness of the programme was largely achieved through the high number of VLIR-UOS grants. The number of local scholarships provided by Vietnamese partners was rather limited. For the Master in Aquaculture, only CTU provided local scholarships. For the Master in Food Technology, this was only CTU, NTU and to a lesser extent VNUA. In addition, networking was strengthened between the Vietnamese partners through joint research (although rather limited), joint PhD degree, exchange of master students (thesis research) and developing credit system within each participating university. Finally, a PhD double degree programme was also developed between CTU, KULeuven and UGent. The evaluators could conclude that teaching skills, English skills and research skills of staff were upskilled during the programme. The evaluators also obtained evidence that the impact of these newly acquired skills transcended the networking

programme. Indeed, several lecturers report that they now also apply forms of activating and differentiated teaching in the courses they teach in other masters.

Findings on Efficiency

The efficiency of staff exchange activities can be attributed to their structured approach, which included training at relevant universities and the exchange of young staff between partner institutions. Staff training in Belgium applied a comprehensive approach, including course attendance, practical laboratory work, and the exchange of valuable didactic approaches, contributing to the development of individual staff members and the overall strengthening of partner institutions. This approach is considered highly efficient.

The organization of the Food Technology master programme initially utilized a rotation principle, moving students to different partner universities for each batch, but this was found to be inefficient. Slow capacity building at partner organizations and the challenges of teacher mobility were key issues. Multiple instructors with busy schedules made scheduling classes difficult, while accommodating educators from diverse institutions posed logistical challenges (see recommendation 3).

Findings on Sustainability

CTU expressed a strong desire to continue the two international master programmes. The participation of other network partners in the post-VLIR-UOS phase was uncertain but desired by all (see recommendation 1). News also emerged of a new international master programme in Tropical Aquaculture organized by CTU and other Asian universities, potentially integrating the existing network masters. The Food Technology programme will be part of the ICP IUPFood Connect from 2022-2027, jointly implemented by KULeuven and UGent, with plans for similar programmes in East Africa and Vietnam but limited funding.

The discontinuation of certain scholarships poses a threat to the programmes, and adjustments will be needed if they are to continue (see recommendation 3). The accreditation by AUN-QA enhances the programme's reputation, potentially attracting more self-funded students in the future. However, particularly for the Master in Food Technology, significant implementation adjustments are required, including potential reductions in travel costs and increased engagement with private sector and neighbouring university institutions to attract self-paid or employer-sponsored students (see recommendation 2 & 5). The programme's main goal was to strengthen the network among Vietnamese partners, resulting in positive outcomes like a credit exchange system, joint supervision of PhD research, and collaborative course development. However, the sustainability of this collaboration is in question as funding may decrease, and it remains uncertain whether the network can generate new funding opportunities independently in the future

Finding on Impact (Impact Case)

The survey results revealed several key points for alumni about the two international master programmes in Vietnam. A majority of students, predominantly from outside Vietnam, enrolled in these programmes, with some having previously applied for similar programmes in Flanders. Employment outcomes varied, with 63% of alumni having jobs, while 20% were actively seeking employment. Notably, no Vietnamese students were unemployed at the time of the survey. After three years of graduation, most students are employed with minimal unemployment across continents. Completing an English international master programme was associated with higher earnings, and most alumni felt that their current jobs aligned well with the programme. Career prospects improved for over 95% of students, and they attributed their employment and increased income to the master’s degree. Interviews and survey data indicated that the degree also contributed to higher social status and respect. While many found the international experience in Vietnam enriching, some students faced challenges in integrating into Vietnamese society, largely due to language barriers. Some students reported that the practical experience in the programme is too limited. They would have liked the number of weeks of internship to be higher (see recommendation 4).

Findings on Learning Questions

The programme has not given explicit priority to gender (or any other background characteristics of students) considerations. The data reveals that approximately 37% of alumni who received VLIR scholarships are female, but this percentage drops to 25% for scholarships granted by Vietnamese universities. However, for scholarships related to master programme in food technology, the percentage of female recipients is higher at 42%. The programme also supported master students through research exchange programmes between universities, leading to an overall female student percentage of nearly 35%.

The Network Vietnam programme initially aimed to rotate the master programmes among participating universities, with each batch of students attending different universities. This approach, applied to the master programme in food technology, led to the programme being successively organized at CTU, NTU, HU, and VNUA. The idea behind this rotation was to involve all partners equally and establish a credit system for courses across universities. However, the rotation approach faced several challenges. It failed to establish a routine for organizing annual master programmes, resulting in extended gaps between cycles for some universities, up to 3-4 years. This hindered the development of institutional capacity, particularly in support services like student recruitment and hosting foreign students. The experience highlighted that the most efficient and effective model is to designate one university in the network as the institutional base for organizing a networked master programme, rather than rotating between institutions.
It is essential to establish clear and concrete financial commitments among network partners right from the outset. Interviews conducted with various stakeholders indicated that CTU played a central role in driving network cooperation. This influence is also evident in the distribution of scholarships for the two master programmes. In the case of the Aquaculture programme, the VLIR scholarship was supplemented solely by scholarships from CTU. A similar trend is observed for the Food Technology master programme, where local scholarships were primarily provided by CTU and NTU, with only one scholarship from VNUA. This discrepancy highlights an imbalance in the financial commitments of different partners within the network.

Recommendations

Recommendation 1.
The collaboration between the different partner universities (in both projects) were considered very valuable by different stakeholders in different areas. The continuity of the master programmes seems to be guaranteed. The MSc Food Technology will be further embedded/connected in the ICP Connect programme; the MSc Aquaculture seems to be linked to a new international MSc Tropical Aquaculture to be organized jointly with several Asian universities.
It is recommended that as many partner universities/research institutes involved in the VLIR-UOS Network programme as possible can continue to be part of the continuation of these programmes. (Main Actor: all Vietnam Network partners).

Recommendation 2. The links with the business community need to be further developed so that they can provide scholarships or enrol employees with payment of tuition fees. (Main Actor: all Vietnam Network partners)

Recommendation 3.
It is recommended to find a good balance between online and live teaching, with the emphasis remaining on live teaching (Main Actor: all Vietnam Network partners).

Recommendation 4.
It would be interesting to explore how more practical experience could be built into the master programmes without compromising the academic nature of the programme. (Main Actor: all Vietnam Network partners & Flemish universities)

Recommendation 5.
It is recommended that regional networking programmes can also be eligible for funding (VLIR-UOS & DGD).

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1. Introduction

1.1. Background

"The overall academic objectives of the programme are to strengthen a collaboration network between Flemish universities and Vietnamese inter-universities and to establish the cooperation with institutions in the neighbouring countries to develop and consolidate the joint degree graduate programmes for MSc level and double degree at PhD level with the Flemish universities in the framework of programme and long-run, definitely in the second phase of the programme and research-based education in bio-sciences for Food.

The overall developmental objectives are to obtain highly qualified human resources for sustainable development of aquaculture sector and to establish a strong and sustainable network system in biosciences for Food.

The specific academic objectives of the programme are:
(1) to develop credit exchange system among universities partners.
(2) to deepen the quality of established curricula and joint graduate degree master programmes in biosciences for food.
(3) to develop joint PhD programme in biosciences for food among university partners between Flemish universities and Vietnamese inter-universities/institutes.
(4) to attract the MSc/PhDs candidates from ASEAN countries.
(5) to explore the international funds based on joint research proposals and
(6) to identify and implement models to strengthen research collaboration and valorisation

The developmental objectives are
(1) training human capacity of each Vietnamese university partner and sharing the research and education experiences between the network partners.
(2) to obtain highly qualified human resources for sustainable development in biosciences for food, and
(3) to strengthen and broaden the network system in and beyond Vietnam border.

In phase 2, the programme aims to strengthen the collaboration between Vietnamese universities/institutes and Flemish universities to sustain a collaborative networking to acquire the objectives efficiently. Based on these objectives, the envisaged result areas during the second phase of the NETWORK cooperation are included:
(1) network-based MSc student credit exchange system will be developed.
(2) network based doctoral level will be operated.
(3) deepening the quality of 2 English MSc programmes in Biosciences for food.
(4) the human resources and infrastructures have been upgraded and strongly developed.
(5) research collaboration in Biosciences for food will be developed and research agenda in Biosciences for food will be integrated at institutional, network and country level; and
(6) Network stakeholder platform will be broadened and kept operational."[1]

Table 1. Projects

Phase	Project title	Objective (Summary of the Project)
1	Joint graduate training and research-based education in Aquaculture	The second phase of the network project was primarily focused on elevating the quality of the international master programme in aquaculture, with the aim of attaining international recognition. This was pursued to ensure the long-term viability of the programme. Additionally, a key focus was strengthening the existing network and expanding it through partnerships with neighbouring countries. These efforts were aligned with the overarching project goal: to nurture

[1] VLIR Vietnam NETWORK Bioscience for food Partner Programme (PP) Phase II, 2019-2022, p.6.

Phase	Project title	Objective (Summary of the Project)
		highly proficient human resources to propel the advancement of aquaculture in the region.
2	Interuniversity research-based education in Vietnam to guarantee the safety and quality of the food supply chain in the South	The network project in the second phase will focus on ensuring the sustainability and the achievement of international recognition of the MSc programme in food technology developed in the first phase through network cooperation. In addition, network-based models for research cooperation and valorisation will be developed and implemented. These will serve the overall objective of the project, long term effects of the network in society (Asia, Vietnam/the South) by providing well trained human resource for the food sector and community at large.

The main focus of the programme in the second phase was to intensify and develop the network among the Vietnamese and Flemish universities to participate in the development of joint degree MSc programme and research-based education programme in Biosciences for food. The programme did also focus on development of the curricula for joint degree MSc courses both in Aquaculture and Food Technology. The contents of the curricula have been updated and modified under a harmonized combination of strength of each partner in the interdisciplinary way. Students had chances to take courses or conduct graduation theses at the different university partners involved in the network.

1.2. Context

Socio-Economic Context

Vietnam initiated its shift from a centrally planned economy to a market-driven economy in 1986. This economic transformation was characterized by active economic reforms, extensive trade liberalization, opening up to international markets, acknowledging the pivotal role of the private sector in the nation's development, and adopting market-based mechanisms for state governance. These reforms yielded significant results, with Vietnam experiencing noteworthy economic growth and a reduction in poverty. However, the economy was also significantly affected by the COVID-19 pandemic starting in early 2020.

Under the transition to a market economy, Vietnam achieved remarkable progress in socio-economic development. A key indicator of this advancement has been the consistent increase in Gross Domestic Product (GDP). This growth was reflected in the rise of GDP per capita, GDP in 2022 was estimated to increase by 8,02% compared to the previous year, achieving the highest increase in the period 2011-2022 due to the economic recovery. Of the increase in the total added value of the whole economy, the agriculture, forestry, and fishery sector increased by 3.36%, contributing 5.11%; the industry and construction sector increased by 7.78%, contributing 38.24%; the service sector increased by 9.99%, contributing 56.65%. This fact partly shows the effectiveness of management work to support recovery and improve the economy's resilience.

Vietnam is in a period of rapid change in population and social structure; The population is aging rapidly. The country’s average population in 2022 was estimated at 99.46 million people, and labour force aged 15 and over was estimated at 52.1 million people. Of which, the proportion of workers with informal employment outside of households in agriculture, forestry, and the fishery was estimated at 54.9%. At the average monthly income of salaried workers was estimated at 7.5 million VND/month for 2022 (equivalent approximately 300 Euro). The middle- class is accounting for 13% of the population. Multidimensional poverty and inequality rates have decreased significantly but unevenly across regions and population groups. An open economy with a high ratio of import-export turnover to GDP continues to create many jobs but the pace is slowing down.

Over the past 10 years, Vietnam has made significant progress in the educational level of the workforce, but the technical and professional level of the workforce is still very low and the improvement is quite slow. In 2022, the proportion of trained labour force accounts for 26.4%, an increase from 15.6% in 2011. Of which, the proportion of labour force with university degrees or higher in 2022 accounts for 11.9%, nearly double of those compared to 2011 (6.1%).

Climate change has exerted detrimental effects on the growth of the agricultural sector in the nation, particularly in the Mekong Delta region. The prevalence of severe drought and extensive salinization has prompted numerous coastal provinces to shift from rice cultivation to the cultivation of salt-tolerant crops and the development of aquaculture. Aquaculture has assumed an increasingly critical role for farmers.

Higher education context

Vietnam aims to strive to develop as an upper middle-income country by 2030. The 10-year strategy on socio-economic development (for period 2021-2030) indicates the pathway to transform economic model to a dynamic, knowledge driven, productivity driven, digital and resilient economy. For this purpose, it is a crucial task to build high quality workforce, and higher education reform is a vital task.

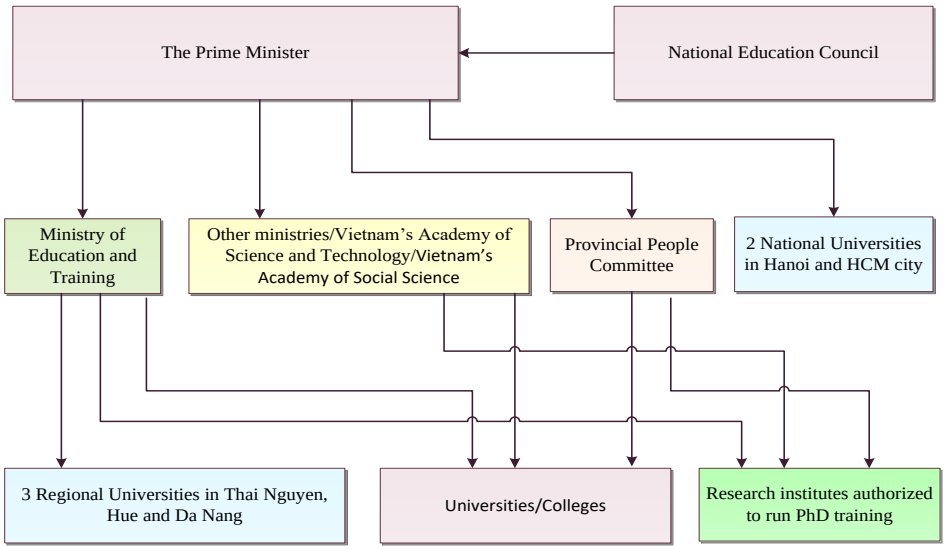
Vietnam's higher education system has steadily developed. The number of universities has increased rapidly. In 2020, Vietnam has 420 universities, of which there were 175 public ones and 60 private universities and 5 with 100% of foreign investment in the country. Now many of them have developed to be multi-field, multi-disciplinary/comprehensive universities offering Associate/college, Bachelor/university, master and PhD programmes. Regarding the enrolment, according to the world bank, of the 6.9 million pupils of post-secondary school age, about 2 million (28.6%) are enrolled in universities and colleges. This rate is quite low compared to the regional countries.

In terms of management structure, universities in Vietnam can be categorized into three primary types: National universities, regional universities, and normal universities/colleges. Two national universities located in Hanoi and Ho Chi Minh City are directly overseen by the Prime Minister. These national universities oversee various universities, colleges, service delivery institutions, and research institutes.

Meanwhile, three regional universities situated in Thai Nguyen, Hue, and Da Nang cities fall under the jurisdiction of the Ministry of Education and Training (MOET). These regional universities, similar to their national counterparts, encompass a range of universities, colleges, and research institutes.

Normal universities and colleges, on the other hand, may be established by MOET, other ministries, Vietnam's Academies of Science and Technology, or Social Science, are under the authority of provincial People Committees. (See *Figure 1. Structure of Higher Education Sector in Vietnam*).

Figure 1. Structure of Higher Education Sector in Vietnam



In terms of ownership, the educational landscape in Vietnam encompasses both government-run and privately-owned universities and colleges. Among the private institutions, there are those that are

entirely foreign owned, as well as joint ventures involving both foreign and domestic investors, as stipulated in Article 7 of the Law on Higher Education 2012.

Policy context

In recent years, Vietnam's universities education system has conducted a number of structural reforms to improve quality on such key areas including: (i) increase of access and equity; (ii) improving of training curriculum to meet high requirement of labour market' needs; (iii) improving financial autonomy; and (iv) bettering governance.

As part of the efforts for accelerating the reforms of universities, in 2018, the National Assembly passed the revised Higher Education Law to update the 2012 Law. The updated Law provides clearer legal framework for reform of the university governance setup to be more flexible and increase of managerial autonomy to the university, especially among the top-tier universities to be able to raise self-finance. As the result, universities have right to determine their own objectives and select a way to implement them. The revised Law also indicates provisions for improving the budget allocation and efficient usage of resources.

Another initiative from Government is the Prime Minister's Decision issued in 2019 (69/QD-TTg), approving a Programme on Quality Improvement for Higher Education for 2019–2025. This Decision pronounces the overall strategic directions and the main principles applicable for all universities. In implementing this Decision, universities have been encouraged to:

- Increase the diversification of income sources and make a more efficient use of resources.
- Enhance internationalization and strengthen employer engagement.
- Ensure equity and competition among universities and strengthen quality assurance.

1.3. Evaluation methodology and process

In this section, we briefly describe the evaluation framework, the main activities carried out and the limitations of the evaluation research.

1.3.1. Evaluation framework

The evaluation framework tabulated below (see *Table 2*) presents the DAC criteria with associated evaluation questions and assessment criteria. This framework was developed for all eight evaluations and includes the classic evaluation questions. In addition, an impact case was also studied which is described below.

Table 2. Evaluation Framework[2]

Criterion	Evaluation Question	Judgement criteria
1. Relevance	EQ1. To what extent are the objectives of the programme/project consistent with beneficiaries' requirements, country needs, global priorities and partners' and donors' policies?	1.2. What is the relevance (ex.ante) of the formulated outcome(s) and objectives?
		1.2. Extent to which changes in the external context or within the organisation influenced the relevance of the intervention, and how this was handled?
2. Coherence	EQ2. To which extent is the partnership programme coherent, internally and externally? What is the level of synergy and complementarity with other relevant (Belgian) actors?	2.1. Internal coherence
		2.2. External coherence

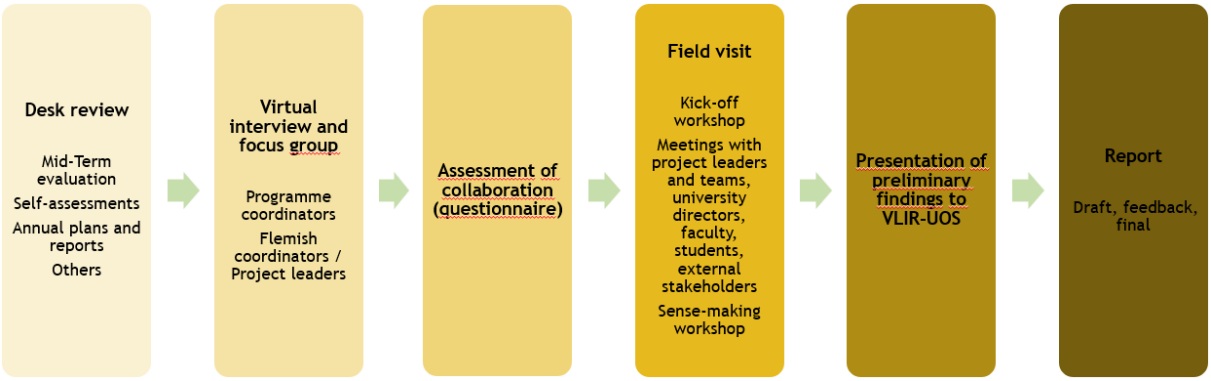
[2] For more information about the evaluation framework, the inception report of the framework assignment can be requested for consultation at the level of VLIR-UOS.

Criterion	Evaluation Question	Judgement criteria
3. Efficiency	EQ3. To what extent are resources/inputs (funds, expertise, time, etc.) converted to results in an economic manner?	3.1. The cost-effectiveness (the usage of resources in relation to the achievement of objectives)
		3.2. The extent to which organisational management and structures of the programme/project are conducive for efficient implementation.
4. Effectiveness	EQ4. To what extent are the programme objectives (expected to be) achieved, taking into account their relative importance?	4.1. The extent to which the programmes outputs and outcomes have been achieved and the likelihood that the predetermined outcomes will be achieved by the end of the implementation period.
		4.2. Inhibiting and facilitating factors and actors
		4.3. Scientific quality
5. Impact	EQ5. To what extent are (potential) positive and negative, primary and secondary long-term effects generated by the programme, directly or indirectly, intended or unintended.	5.1. Changes (intended and unintended, positive and negative) in stakeholders' lives and contexts contributed to by the programme
		5.2. Fostering 'collective impact'
6. Sustainability	EQ6. To what extent will the programme results continue after the programme is completed?	6.1. Level of institutional sustainability
		6.2. Level of financial sustainability
		6.3. Level of academic sustainability

1.3.2. Evaluation process and activities

Below in *Figure 2* is a visual representation of the evaluation process and the activities carried out. Naturally, the evaluation process started with a desk review of documents made available, followed by several consultations with Flemish and Vietnamese coordinators. Before the mission, another consultation with all the Vietnamese PSU members also took place to delineate the impact case. An online survey was also organised before the mission, using the collaboration framework (see inception report) as a guide. All partner universities of the network completed the online questionnaire (statements). The results of this questionnaire were then used during the kick-off meeting of the network evaluation Vietnam.

Figure 2. Evaluation Process (Network)



The evaluation in Vietnam took place from 11 to 16 September 2023. All participating universities were visited except NTU. Due to budgetary reason, it was difficult to visit NTU. Indeed, the network cooperation consisted of universities/research institutes in Can Tho, HCMC, Hué, Nan Thrang and

Hanoi. During the visits, face-to-face individual and group interviews were mainly conducted with PSU members, project leaders, lecturers, and students. Online interviews were also conducted during the mission with some stakeholders who could not attend face-to-face. It should be noted, that given the vastness of the country (and partners), the kick-off workshop was also organised online. Several online interviews were also conducted after the mission. Finally, an online survey of alumni of the two master programmes was also conducted. This tool was mainly used to further triangulate the data from the interviews and group discussions with the students.

1.3.3. Limitations

1. The evaluation consisted mainly of individual interviews, group discussions and document research, supplemented by an alumni survey. Since a significant part of the programme focused on upgrading (research-based) teaching, within an ideal scenario it would have been good if the evaluators could have acted as observers in some lessons. However, this was not possible.
2. For the impact case study, we were mainly able to involve lecturers and students as stakeholders. Unfortunately, time was too limited to include other actors such as MOET and industry in the evaluation.

1.4. Description of impact case

There was fairly quickly a consensus among all network partners to take impact for alumni, being the programme's key target group, as subject of the impact case. After all, the important objective of the project was to build human capacity (see both specific academic and developmental objective). The creation of two masters in Aquaculture and Food Technology was a vital and central component to the network programme. The central question was then of course whether these students are indeed employed within the sectors of the master programmes and whether they hold positions that contribute to the social and economic contexts of the countries where these graduates are active. In other words, a key targeted impact is that these alumni hold positions within society that are a result of the fact that they followed the newly created master programme.
In addition, the aim was also to examine to what extent the human capacity of the stakeholders, i.e. staff, involved in implementing the programme, was built. This focus is incorporated throughout the report, and more specifically in the chapters on efficiency and effectiveness. It basically concerns building the capacities of the professors and support staff to organise a quality research-based master programme.

1.5. Structure of the evaluation report

The report initially focuses on the programme-level findings for each of the DAC criteria. A second section briefly discusses the key elements of the two different projects within the programme. This is followed by a more in-depth look at the impact case. Finally, we end the report with a conclusion and the recommendations.

2. Analysis and findings: programme level

2.1. Overview of programme performance

The evaluators consider the relevance, coherence, effectiveness, and impact of the programme to be excellent. Efficiency and sustainability are scored as good. The justification of these scores can be found below in the various sections (see *Table 3*)

Table 3. Overview of scores & criteria

Criterion	Excellent (4)	Good (3)	Weak (2)	Poor (1)
Relevance	x			
Coherence	x			
Effectiveness	x			
Efficiency		x		
Impact	x			
Sustainability		x		

2.2. Relevance: Responding to the needs

Under the transition to a market economy, Vietnam achieved remarkable progress in socio-economic development. A key indicator of this advancement has been the consistent increase in Gross Domestic Product (GDP). This growth was reflected in the rise of GDP per capita, GDP in 2022 was estimated to increase by 8,02% compared to the previous year, achieving the highest increase in the period 2011-2022 due to the economic recovery[3]. Of the increase in the total added value of the whole economy, the agriculture, forestry, and fishery sector increased by 3.36%, contributing 5.11%; the industry and construction sector increased by 7.78%, contributing 38.24%; the service sector increased by 9.99%, contributing 56.65%. Over the past 10 years, Vietnam has made significant progress in the educational level of the workforce, but the technical and professional level of the workforce is still very low, and the improvement is quite slow. In 2022, the proportion of trained labour force accounts for 26.4%, an increase of 15.6% in 2011. Of which, the proportion of labour force with university degrees or higher education in 2022 accounts for 11.9%, nearly double of those compared to 2011 (6.1%).
Consequently, the imperative of delivering high-quality education is underscored as an essential prerequisite for the sustainable and environmentally responsible development of these sectors.

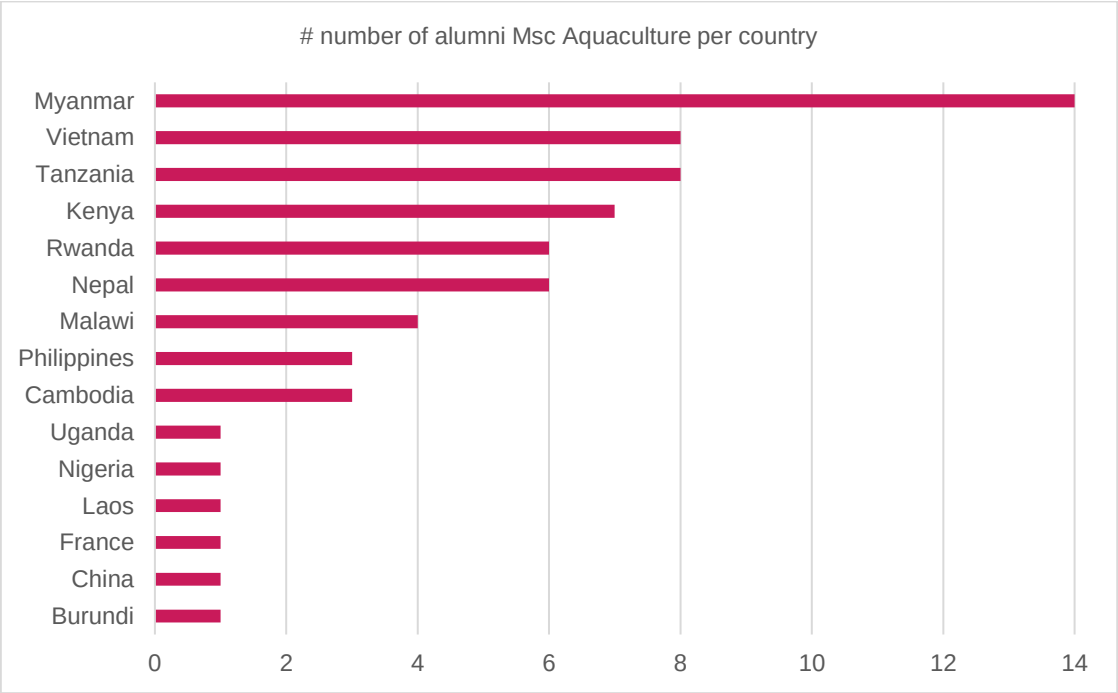
The programme aligns seamlessly with the objectives outlined in the Sustainable Development Goals (SDGs), particularly those related to eradicating hunger (SDG 2), enhancing the quality of education (SDG 4), promoting responsible consumption and production (SDG 12), and sustaining life in aquatic ecosystems (SDG 14). These sectors have also been accorded a priority status by the Vietnamese government.

Aquaculture and food processing have recently gained strategic importance due to their significant contribution to the country's overall income and socio-economic progress, particularly in the Mekong Delta. However, to ensure the sustainability of this vital sector, a comprehensive set of elements must be implemented in harmony. Foremost among these elements is the development of a skilled workforce, which is a priority. As an intended objective of the programme, the cultivation of a highly qualified human resource base stands as a pivotal goal for academic institutions with expertise in aquaculture and fisheries. The training of personnel with a high level of qualification is intricately associated with the development goals of the project. It is imperative to emphasize that this proficient workforce is not

[3] https://www.gso.gov.vn/en/data-and-statistics/2023/01/socio-economic-situation

confined solely to addressing the demands of the Mekong Delta or Vietnam. Instead, it embraces a broader regional outlook, encompassing nations such as Cambodia, Laos, and Myanmar in Southeast Asia, with the potential for expansion into diverse regions across Africa. A similar line of reasoning needs to be constructed within the realm of food technology. Annually, hundreds of cases of food poisoning are reported in Vietnam, occasionally resulting in fatalities. Young children, particularly those under the age of 5, are often the victims. While there has been a significant decline in reported incidents in recent years, it remains a major concern for the Vietnamese government.[4] Consequently, the programme and its projects aim primarily to contribute to the enhancement of human capacity through collaborative research and the graduation of students from the two international English-language master programmes.

Figure 3. # alumni MSc Aquaculture per Country

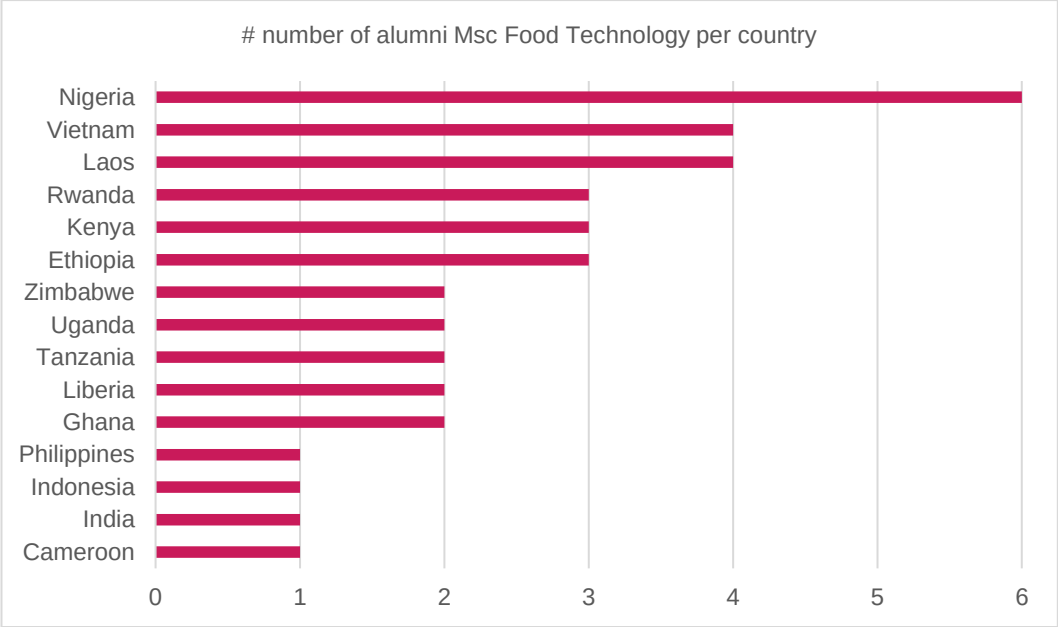


The relevance of the MA-programme Aquaculture in the region, and even for Africa, is illustrated in *Figure 3* above. In total, there are 65 alumni of the English-language international master programme in Aquaculture. Notably, 14 graduates are from Myanmar, followed by 8 students from Tanzania, and 7 each from Vietnam and Kenya. Additionally, there are 6 students from Nepal and Rwanda, 4 from Malawi, and 3 from both the Philippines and Cambodia. When we compare the distribution by continent, approximately 55 percent of the students come from Asia, and roughly 43 percent from Africa. It is worth noting that only 12 percent of the students are from Vietnam. According to various stakeholders, this lower percentage may be attributed to the fact that these international master programmes are also offered in Vietnamese. English is perceived as a significant barrier to the enrolment of Vietnamese students. Although it was not the primary focus of the evaluation study, the evaluation team gathered some indications that there is significant demand for international master programmes in aquaculture in the Vietnamese business sector. Some alumni reported that the positions they currently hold remained vacant for over a year because suitable candidates could not be found. The increasing demand for English-educated masters in aquaculture appears to be driven, among other factors, by the growing internationalization and foreign investments in the sector.
Conversely, from discussions with alumni from Myanmar, the high number of enrolments from Myanmar is attributed to the politically unstable situation in the country. Finally, it can be deduced from the table below that students from no fewer than 15 different countries have enrolled in the master programme in Aquaculture.

[4] Annual Report 2021.

Similarly, in the master programme in Food Technology, there is a broad distribution of students from (15) countries (see *Figure 4)*. The countries with the highest representation are Nigeria (6), followed by Vietnam and Laos (each with 4 students). In total, 37 students participated in the programme, which is slightly fewer than the number of students in the master programme in Aquaculture. However, a notable difference compared to the Master in Aquaculture is that more than 70 percent of the students come from Africa, with just under 30 percent from Asia. Only 11% of the students originate from Vietnam. This last percentage is like the other master programme. The same barriers are highlighted here, namely that English poses a hindrance for Vietnamese-speaking students, although we also identified similar demands from the business sector (although we do not have a clear picture of the scale of these demands) in this case as well.

Figure 4. # alumni MSc Food Technology per Country



As mentioned above, the two master programmes constituted the core of the Network programme. Within this core, various activities and outcomes were achieved that were essential for delivering high-quality research-based education to the students. The significance of these components will be further discussed in the chapter on efficiency and effectiveness.

2.3. Coherence

The programme's **internal coherence** manifests itself in several areas. First, at the programme level, there is a strong coherence between the two projects. Both projects have the central objective of creating high-quality research-related English-language master programmes. To achieve this, both have formulated and implemented similar result areas and activities (such as curriculum development, upgrading skills of teachers...). Moreover, the skills and knowledge needed to organise an international English-language masters with a significant number of foreign students were built up during the programme implementation and then applied in both projects. This is due to the coordination and flow of knowledge and skills in the support services at programme level.
Second, research synergies were created as a result of the programme. A Vietnamese nationally funded study on shrimp EHP disease in which RIA2 had the lead and which involved NTU, CTU, VNUA and HU. In addition, two more successful joint research proposals involving only RIA2 and CTU were developed and concerned diseases in clam and pangasius culture. Finally, a VLIR-UOS South initiative

in Aquaculture was also successfully submitted, involving collaboration between RIA1 and HU.[5] The various stakeholders reported that these joint research initiatives were explicitly the result of collaboration within the network. Nevertheless, it should be noted, which is also reflected in the self-assessment, that the number of jointly funded research projects is rather limited. Several stakeholders indicated that this is largely due to the limited public funds available for applied research in the fields of expertise concerned.
Finally, there is high coherence between VLIR-UOS Network Vietnam programme and the Master in Aquaculture and the Master in Food Technology (IUPFOOD) jointly organised by KULeuven and UGent, both of which are also funded by VLIR-UOS. The curriculum development, upgrading of teachers and development of course materials in Vietnam were done within the framework of the international programmes organised at the Flemish universities. In this sense, the new Vietnamese English-language MSc programmes and the master programmes organised in Flanders can be considered as mirror programmes.

External coherence also includes a number of important dimensions. First, the programme has established privileged relationships with universities in neighbouring countries Cambodia (Royal University of Agriculture), Laos (Champasak University & Savannakhet University) and Thailand (Kasetsart University). This resulted, for example, in the enrolment of several students from Cambodia and Laos in the master programmes.
Second, all partners in the Network cooperation have other partnerships with universities in Asia, Europe and the Americas. Some of the collaborations involve the research areas of aquaculture and food technology. Evaluators noted no overlap with the VLIR-UOS projects. There seems to be a high degree of complementarity between all these collaborations as work is being done in different sub-domains.
Finally, as the programme fully fits within the framework of the Sustainable Development Goals (SDG) – especially the goals on no hunger (SDG2), quality teaching (SDG4), responsible consumption and production (SDG12) and life in the water (SDG14) – it is also in coherence with the corresponding priority sectors and policies defined by the Vietnamese government.

2.4. Effectiveness

In general terms, the evaluators found that all the network partners in the programme have engaged in thorough discussions regarding several components of the programme and have officially signed both the Memorandum of Agreement (MoA) and its associated supplements. These agreements have been executed within the institutions in Vietnam and were witnessed by representatives from Flemish universities, specifically UGent and KU Leuven. The Key Result Area (KRA) provided demonstrates that all partners not only adhere to the MoA but also share a strong consensus on cooperation. The network partners have assumed ownership of the Intermediate Results (IRs) as assigned, actively contributing to staff exchange, and upgrading, credit exchange, and bearing full responsibility for hosting annual meetings of the local National Steering Committee (NSC) and Joint Steering Committee (JSC). This responsibility extends to adhering to the principle of rotating education within the international MSc course in Food Technology.

The credit exchange system has been effectively integrated within the consortium of university partners, marking the achievement of the initial first academic objective. This credit exchange system has been formally established among the collaborative network partners through the execution of a Memorandum of Agreement (MoA). Furthermore, various other modes of credit exchange have been carried out, involving the exchange of lecturers between different institutions. This initiative has been successfully executed and duly acknowledged by the network partners, including CTU, NTU, HU, and VNUA.

A PhD double-degree programme (the 2nd academic objective) has been established in collaboration between UGent, KU Leuven, and CTU. Two PhD students from CTU have been officially enrolled as PhD candidates at Flemish universities, as a result from a formal agreement between the universities and their respective mentors. It is remarkable that only CTU achieved a double degree programme and other partners failed to do so. The main reason for this was that it was very difficult to identify students who had a sufficiently high level of English to qualify for a double degree.

[5] VLIR-UOS, South Initiative, applying gene technology for sustainability: developing dsRNA delivery tools for aquaculture

The third academic objective was also achieved, which involved the development of a curriculum for the master in food technology and the master in aquaculture. For the first Master programme, 37 students enrolled, spread across 5 batches (years). As for the Master in Aquaculture, 6 batches were organized, accommodating a total of 65 students.

The network significantly enhanced teaching and research capacity (4th academic objective) through staff training in Belgium and staff exchanges in Vietnam. These activities facilitated the exchange of experiences among network partners, enriching their teaching and research expertise upon returning to their respective institutions. The curriculum for the master programmes was developed and revised in collaboration with the Master in Food Technology and Master in Aquaculture programmes in Flanders (KULeuven and UGent). This process involved enhancing the content knowledge of lecturers and sharing teaching materials that could be utilized in Vietnam. Lecturers also received training in teaching methodologies, such as active and differentiated teaching. Additionally, English proficiency training was provided for lecturers, with a part of these training sessions taking place in Flanders. Due to the COVID-19 pandemic, a significant part of the training was conducted in Vietnam and online. The evaluators noticed that staff members (academic as well as administrative staff) involved in the Network programme revealed high satisfaction with the knowledge and experience sharing in both (English) teaching and research (*see for more information the impact case section*).
According to the annual reports and the self-assessment, the number of publications (resulting from research activities) has significantly increased over the past four years (53 publications realized, while the target has been 21). However, the evaluation team could not identify whether all these publications were the result of the collaboration between the network partners.

The first development objective (strengthening human capacity of Vietnamese universities) was already partly described above (where we discussed the teachers). Strengthening human capacity at universities also happened in other areas, especially in the supporting services and units of the university. This mainly concerned aspects of receiving and integrating international students, accrediting international courses, practical organisation of courses involving lecturers from different universities (teacher mobility), financial management of such a programme, and building/strengthening a national and international network (3rd developmental objective)[6]. It was noted that network cooperation between academic institutions and universities was (is) new in the Vietnamese academic context. There was a consensus among the different network partners that most of the network partners already knew each other before the network was launched, but that one of the great merits of the network programme was that the functioning was intensified and that partners/lecturers/researchers got a much better idea of each other's expertise. Which in turn led to closer cooperation in research and the writing of research proposals (albeit still rather limited), curriculum development and teaching.[7] These findings have been confirmed during the (online) kick-off workshop.

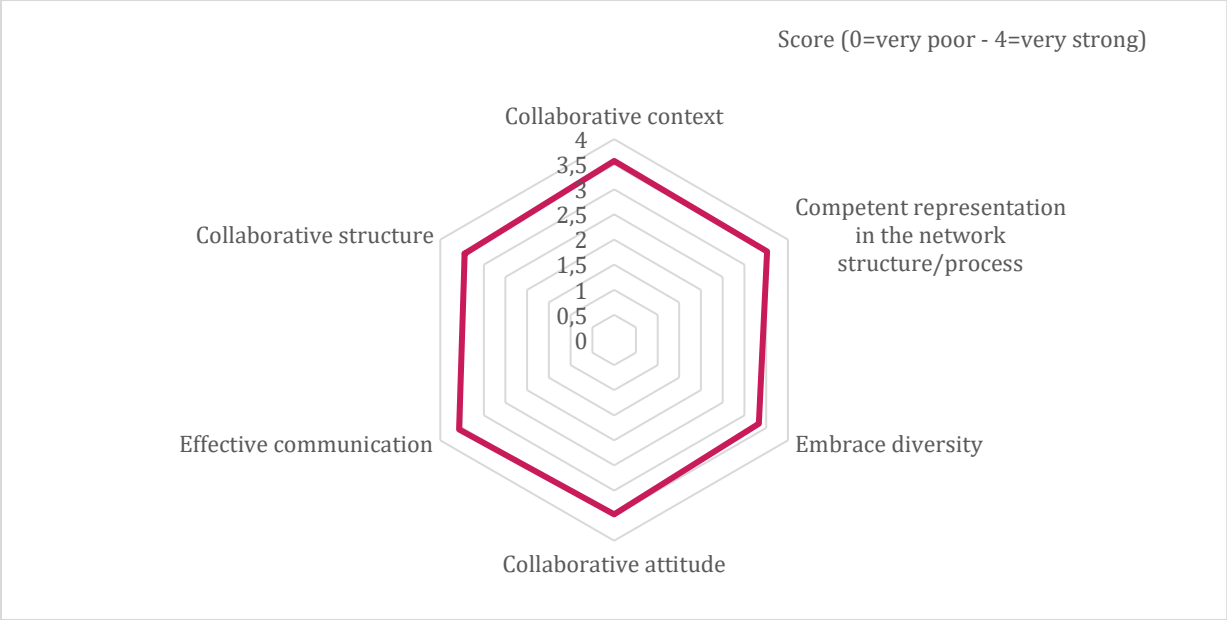
From *Figure 5* it can be clearly seen that all dimensions score very high. All dimensions score on average more than 3.3 on a scale of 0 to 4.[8] The objectives of the programme were very clearly defined (i.e., to create international English-language masters) and the other activities (such as teacher upgrading, master thesis exchange programmes, etc) were to help ensure that the quality of the masters was high and that these master programmes would be research driven. Based on the project documents and workshop discussion, these elements seem to have been well talked through and led to a supported formulation of the objectives and activities. Even when adjustments were needed (such as moving away from the rotation principle in P2), the evaluators could see that there was strong unanimity on this.
We also see very high scores in the area of competent representation. This is explained by the fact that the network partners, especially at the project level, were selected for their subject expertise. In this sense, the different experts are/were obviously very committed to enter the project. This commitment was also externalised by the fact that for one course component several lecturers from different institutions were involved which incidentally led to intensive collaborations.

The evaluators did note that the number of scholarships provided from the participating Vietnamese partners for both masters is rather limited. After all, for the Food Technology Masters, 6 scholarships were provided by CTU, 5 by NTU and 1 by VNUA. For the Master in Aquaculture, all 17 scholarships

[6] Based on interviews with the PSU members and
[7] Based on focus group discussions with the participating partners in the network.
[8] These scores are an average of the scores of the five different partner institutions. Only the consolidated overall results were discussed during the workshop.

were provided by CTU (besides, of course, the scholarships provided by VLIR-UOS funding). This example illustrates that CTU in particular has committed itself (financially) as an institution. It is clear from the kick-off workshop, documents and interviews that CTU has taken up its coordinating role with strong commitment (see also scholarship examples above). As a result, there may be an unequal power relationship within the network. This is further illustrated at the moment when it was decided to abandon the rotation principle for the Master in Food Technology programme, the permanent hosting university became CTU as it was already the case for the Master in Aquaculture. However, it should be explicitly mentioned that this was done with the approval of all the other partners and that the leading role within the network of CTU is accepted by the others. The programme managed to create win-win situations. The prestige of the various lecturers increased by teaching in international masters. This was a strong motivating factor to work together on common courses and to fulfil agreements made.

Figure 5. Collaborative Process | Network Vietnam

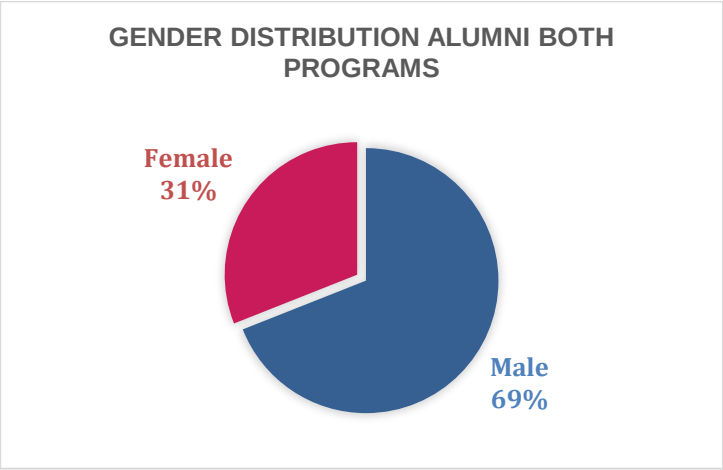


Effectiveness Gender

Based on the alumni database, approximately 31 percent of the student population consisted of women (see *Figure 6* ***Fout! Verwijzingsbron niet gevonden.***).[9]

[9] For the alumni of the master programme in Aquaculture, we only have gender data for the first three batches (26 students; there were a total of 6 batches with 65 students in total).

Figure 6. Gender distribution alumni both programmes



In the *Table 4* below, it can be observed that nearly 37 percent of the Alumni who received a VLIR scholarship are female. This percentage drops to 25 percent for scholarships awarded by Vietnamese universities, although for scholarships granted to the master in food technology programme, this percentage is 42 percent. The programme also supported various master students through research exchange programmes between universities. When these students are included, the percentage of female students reaches almost 35 percent. The differences between the master programmes in Aquaculture and Food Technology are mainly because Food Technology is more popular among female students compared to Aquaculture. It is worth noting that the data for the Master in Aquaculture is incomplete. Therefore, the differences between the two master programmes should be interpreted with great caution.

Table 4. Percentage Female Students

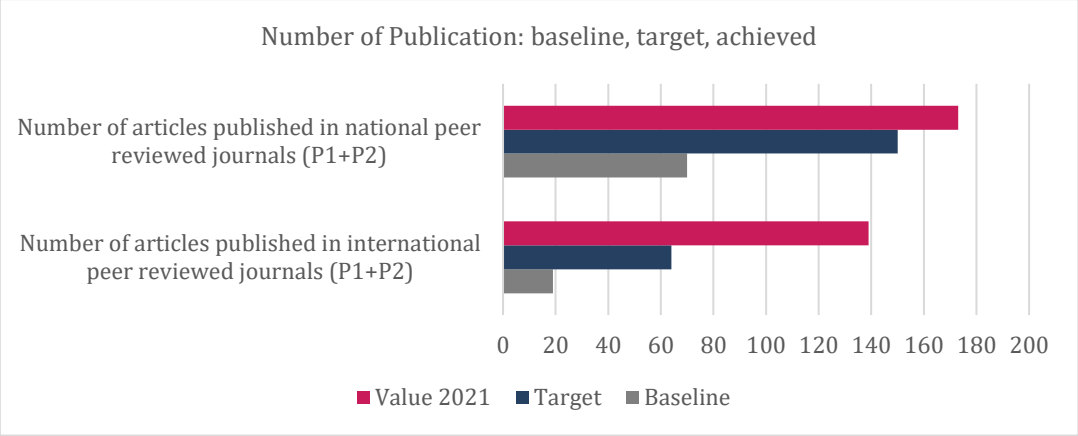
	% Female Students
All Alumni P1 (Aquaculture)	18,52
All Alumni P2 (Food Technology)	40,54
Total Alumni P1&2	31,25
Alumni VLIR scholarship P1	33,33
Alumni VLIR scholarship P2	39,13
Total Alumni VLIR scholarship P1&2	36,84
Alumni CTU scholarship P1	0,00
Alumni CTU/NTU/VNUA scholarship P2	41,67
Total CTU/NTU/VNUA scholarship P1&2	25,00
Students supported by P1	16,00
Students supported By P2	43,75
All students supported by P1&2	34,72

2.5. Scientific quality

As defined in the inception report, the assessment of scientific quality consists of the components "Research Quality" and "Teaching Quality."

One possibility to assess the quality of research is the number of annual publications in international peer-reviewed journals.[10] From *Figure 7* below, it is immediately clear that the targets were met for both types of publications, and that the expectations were significantly exceeded for internationally peer-reviewed journals. The evaluators were unable to confirm whether the high number of internationally peer-reviewed publications achieved by researchers and lecturers involved in the programme were indeed the result of the programme, as reported in the self-assessment.

Figure 7. Number of Publications: baseline, target, achieved (as a result of the programme).



It should come as no surprise that significant progress has been made within this programme in terms of the quality of education. The establishment and development of the two international master programmes were at the core of the programme, accompanied by various supporting activities and outcome areas. In the impact chapter of this report, we delve further into various aspects of education, as they are the main topic of the impact case study. In this paragraph, we provide a brief overview of the key findings:

- Teaching methodologies of lecturers and researchers have been upgraded through updating course content, developing improved teaching materials, and developing practices of activating and differentiated teaching. Lecturers' English proficiency was also upgraded. During the implementation of the second phase, more than 60 staff members from various network partners were upgraded in Belgium. However, the number of lecturers who did receive further English proficiency upgrading in Belgium remained below expectations. This was largely due to the Covid-19 pandemic that led to the inability to hold the training courses in Belgium, replacing them with online courses and a more limited course offered in Vietnam. Drawing from the group interviews, the evaluation team was able to determine that the lecturers possessed better knowledge and teaching skills compared to their pre-project levels. However, the evaluation team did not have the means to directly observe whether the lecturers were actively applying the newly acquired knowledge and skills.
- The international accreditation of the Master in Aquaculture was obtained and this can be considered as a quality assurance of the newly established master. For the Master in Food Technology, however, it was decided to abandon the accreditation process due to the fact that the number of graduating students was too limited to successfully participate in an accreditation process.

[10] Another interesting initiative to measure quality of research is the DORA declaration on research assessment (https://sfdora.org/read/)

- The number of enrolments in both master programmes remained below expectations. A total of 112 enrolments were reported where the ambition was to have achieved 140 enrolments during the implementation of the second phase. For both programmes, 80 per cent of the pre-set objective was achieved. The main reason for the lack or the limited number of Vietnamese students is the English language requirements. English proficiency requirement is defined as scoring at least 5.5 or equivalent (at application) on IELTS and 6.0 or equivalent at enrolment. These scores are considered as too high for most of the Vietnamese students. Consequently, mostly, foreign students are enrolling. The number of students participating in the PhD summer schools and the Applied Statistics course also remained slightly below expectations.
- One of the interim outcomes formulated was double degree PhD (Project 1) and joint PhD co-supervision projects (Project 1 & 2). The number of double degree PhD between Flemish and Vietnamese universities was rather limited (2 students), although a formal agreement was signed between UGent and CTU. The main reason has to do with the strict admission requirements (English language skills) at UGent. In the area of co-supervision and joint PhD projects, an increase in collaborative interaction between the network partners could be observed, although in this area, too, the target figures were just missing (and this for both projects).
- As we will describe further below (in the impact section), the educational initiatives of the implemented programme have had a major impact on students.

2.6. Efficiency

The efficiency of the programme should be measured in terms of several aspects, all of which should have contributed to the development of the master programmes, namely:

1. Upgrading the skills and knowledge of the lecturers involved in the programme.
2. Building research capacity among both students and lecturers.
3. The organisation of master programmes.

Upgrading Skills & Knowledge

The involved lecturers underwent extensive upgrading in three key areas: namely, in terms of their English language skills, enhancement of their subject knowledge, and improvements in their pedagogical methods.
In response to the pandemic, English training was transitioned to an online format, a measure necessitated by the circumstances. While online training had its inherent limitations, it surprisingly yielded quite commendable results, a fact duly acknowledged by the staff who recognized its efficiency. Additionally, in November 2022, an intensive on-site course was organized, further enhancing the English proficiency of the staff, providing a comprehensive approach to language development. The evaluators believe that while English online courses may be an efficient way of working, they do not always lead to greater effectiveness, especially in terms of learning and improving a language. However, given the circumstances, namely the Covid-19 pandemic, the right decision was made to continue the language courses online anyway. The efficiency of the staff exchange activities can be attributed to their structured approach. These activities included two main components: training at relevant universities and the exchange of young staff between partner institutions. In the first case, where staff were trained in Belgium, the strengthening of partner capacity was evident through a multi-faceted approach. This included course attendance, practical laboratory work and the exchange of valuable didactic approaches. This comprehensive approach ensured that the exchanges not only promoted the development of individual staff members, but also contributed to the overall strengthening of the participating partner institutions. In that sense, this can be considered a very efficient approach.

Building Research Capacity

The efficiency of Research Activities saw a strategic change because of financial limitations. Although the first proposal included the implementation of cooperative research endeavours among the various

stakeholders, some practical constraints became apparent. As a result, the degree of engagement of research activities did not meet the expectations, leading to a shift in emphasis towards staff exchanges. The strategic shift facilitated the dissemination of important information, resources, and research experiences across the collaborating institutions, so guaranteeing that, despite financial constraints, the project's achievement was maintained by commitment to cooperation and the transfer of specialised knowledge. Nevertheless, it is important to mention that with very limited research resources, the programme has done excellent research and research-related capacity building such as the numerous scientific publications, the students who participated in joint PhD projects under the supervision of promoters from the different universities and, finally, the student exchanges between the different universities regarding the master theses students made.

The organisation of the Master Programmes

The organization of the Master programme in Food Technology followed a rotation principle (relocate the master programme to another partner university for each batch). This was a deliberate choice at the start of the programme in order to assure the ownership of the programme by all Vietnamese partners and to expose these partners to the processes involved in organizing an international/interuniversity programme. At the end of the network programme this model has been evaluated as inefficient for the further organization of the programme. This was due to the slow pace of organizational capacity building at each partner organization, which hindered the process of implementing the master programmes. Additionally, teacher mobility was not always seen as efficient in both master programmes (food technology and aquaculture). Since certain courses were taught by different lecturers, some instructors had limited teaching time, which was considered highly inefficient due to the significant travel time and accommodation costs involved. The participating lecturers in both master programmes have very busy schedules. This had significant implications for their availability, making it challenging at times to schedule suitable class times and ensure that students had consecutive class slots. So, coordinating a master programme that includes educators from diverse universities and institutions presents distinct logistical hurdles. In this context, multiple parties pointed out that the initial organization lacked efficiency and necessitated a period of learning and improvement.
Especially in support services, a lot of experience building was reported by several stakeholders. These included the welcoming and accommodating foreign students. This was confirmed in interviews with the students with the later batches illustrating greater satisfaction than the first batches, illustrating that efficiency increased during the programme implementation. The accumulated experience also had to do with the timely recruitment of students, accrediting programmes and course components, and planning activities where multiple lecturers from different universities have to be involved.

2.7. Sustainability

2.7.1. Institutional sustainability

Throughout the discussions with the various stakeholders, the evaluators could conclude that there is a strong desire among one of the partners, namely CTU, to continue the two international masters. At the time of this evaluation, it was not immediately clear which other network partners would actively participate in this continuation in the post-VLIR-UOS programme phase, although all involved expressed a desire to continue working together. The international master programmes also fit within a broader CTU university strategy to become a leading university in aquaculture and food technology. Investments from other donors (such as from JICA) also reinforce this ambition and the pooling of financial resources in this direction.
In the final phase of the evaluation, news reached the evaluators that CTU, together with other Asian universities and with support from Erasmus and the Belgian embassy, would organize a new international masters Tropical Aquaculture. It was expected that the network Master in Aquaculture would then slot into the new masters. This would mean that the currently established masters would be continued within a different funding framework.
The Food Technology master programme will be embedded in ICP IUPFood Connect (2022-2027) after network funding ends. ICP IUPFood Connect is a VLIR-UOS north programme jointly implemented by

KULeuven and UGent. Within this programme, the aim is to develop a kind of mirror programmes in East Africa and Asia (Vietnam) and to train students from the respective region. However, funds from this programme for Master in Food Technology in Vietnam are limited. One post-doctoral fellow will be appointed in Vietnam to support the programme until October 2027.

2.7.2. Financial sustainability

The financial sustainability of the programmes remains a thorny issue. The master programmes rely heavily on the scholarships that are made available. For Master in Aquaculture, 4 out of 5 students received scholarships. The number of self-funded students was limited to 14 for all 6 batches combined. For the Master in Food Technology, the situation is even more difficult. For all 5 batches combined, there are only 2 self-paid students, which is barely 5 per cent of the total number of students. Since the VLIR-UOS scholarships are being discontinued and, at the time of this writing, only CTU has made a commitment to provide at least 5 scholarships for each of the two masters, if continued, the implementation modalities will have to change. However, it is very positive that the programme's external accreditation by AUN-QA enhances its reputation and is reasonable to expect that more (self-paid) candidates might be attracted in the future.
Especially for the Master inf Food Technology, significant implementation adjustments will have to follow even if the number of self-paid students were to increase drastically. This presumably means that reductions in travel costs will have to be made which would mean that other partners (i.e., non-CTU partners) would find it more difficult to engage further in the programme. Unless lecturers from the other institutions are engaged via distance learning. In addition, the additional funds that partners are bringing in (as per data available in joint research proposals) are too limited to leverage much additional funding (despite some good practices, see above).
Therefore, according to the evaluators, it remains necessary to expand the network more strongly with the private sector and university institutions of neighbouring countries. If the master programmes can maintain their excellence and become more visible to the private sector, it might be possible to attract more self-paid students or students encouraged by their employers to follow the programme.

2.7.3. Academic sustainability

The teachers and researchers upskilled through this programme in various fields were already working in large numbers at the participating institutions before network cooperation started ten years ago. Those who were subsequently engaged are all also involved in other research and teaching activities in other courses at the participating institutes. In this sense, the programme was not characterized by a high turnover of staff.
Of course, one of the main objectives of the programme was to strengthen the network between various Vietnamese partners spread across the country. This cooperation has several positive results, which can be considered sustainable. Like, for example, the establishment of a credit exchange system between university partners (five institutions) under a signed MoU for both projects. The recognition of a joint-supervision or PhD research was also an important step forward in strengthening cooperation. Developing a course together with several course components and at least two different lecturers from different universities was also an important driving force to institutionalize collaboration. This collaboration also led to joint research proposals being developed and received, albeit rather on a limited scale. For the evaluators, an open question remains whether the collaboration between the various partners will persist when funding dries up and whether the network is resilient enough to generate new funding opportunities on its own.

3. Brief assessment per project[11]

Below *in Table 5* are the scores the project rated themselves in their self-assessment. The minimum score is 0 and the maximum score is 4. Below, we can see that the projects evaluate themselves mostly positively. In general terms, the evaluators agree with this assessment. Below, we briefly describe the two projects in the programme with a brief summary of the projects' efficiency, effectiveness and sustainability, to the extent that these have not already been discussed above.

Table 5. Scores by project, based on self-assessments.

	P1	P2
Sustainability (Q3)		
Finance/economic sustainability	3	3
Level of ownership	3	4
Results will continue	3	4
Partnership (Q3)		
Quality of comm within the project/programme	4	4
Academic interest and commitment	4	3
Project management (Q5)		
Value for money	4	3
Working relations with PSU	4	4
Active involvement	3	4
Mutual trust and joint decision making	4	4

Source: Self-assessments by projects

3.1. Project 1. Joint graduate programmes and Research based education in Aquaculture

In the first phase of the project (2013-2018), efforts were directed towards establishing a credit exchange system among partner institutions, facilitating exchanges in courses, theses, and teaching, and fostering connections through MSc summer courses. Co-supervision was initiated for PhD students, and summer courses were held to enhance their research and academic skills. A common MSc curriculum in Aquaculture was formulated, enrolling students from various countries. Staff upgrading and exchange programmes improved teaching skills and human capacity, while engagement in research collaboration was promoted. Stakeholder meetings were held to support curriculum development and project objectives. In the second phase (2019-2023), the focus shifted to enhancing the quality of the MSc programme through staff training and English skills improvement, along with student exchanges and internships. The MSc programme received external accreditation.

Overall, the project successfully achieved most of its intermediate results, Partner members collaborated engaged and recognized the importance of networking as a new collaborative model.
However, four key indicators were not met, including thesis exchanges and staff upgrades in the first intermediate result (IR1), as well as the number of double PhD degrees and PhD co-supervision in IR4. Challenges in timing and logistical constraints limited the achievement at intermediate level. The pandemic further disrupted staff upgrades in Belgium. Intensive English language trainings were organized online.

Research activity was initially planned but limited due to budget constraints, with staff exchanges becoming a vital substitute for knowledge sharing and capacity building.

[11] To avoid duplication of information, this section focuses on the specificities of each project. Other findings that cut-across the programme level are addressed in the section that discusses findings at programme level.

A decrease in the number of PhD students and candidates was observed, influenced by new MOET regulations affecting the selection of PhD students for double PhD programmes with Ghent University.

Throughout the project's duration, the financial support provided by VLIR-OUS adequately covered all planned activities, including the scholarships. Upon the project's finalisation, the Master programme's operational costs will rely on the university's budget. However, Can Tho University (CTU), where the programme is based, has committed to ensuring its continuity by offering 5 scholarships. Furthermore, the programme has targeted self-funded candidates, with 16 students from recent cohorts financing their education through personal means or support from governmental and non-governmental organizations. Graduates have garnered high praise from stakeholders, especially private companies, some of which have expressed interest in sending their staff for training within the programme. Additionally, the programme's external accreditation by AUN-QA enhances its reputation and is expected to attract more candidates in the future.

3.2. Project 2. Interuniversity research-based education in Vietnam to guarantee the safety and quality of the food supply chain in the South

An international MSc programme in Food Technology was collaboratively developed by all university partners, offering multiple options tailored to local research strengths. While it faced challenges such as student dropout due to the COVID-19 pandemic, the programme maintained its schedule, graduating 26 students in phase 2. A credit exchange system was established among Vietnamese university partners through a Memorandum of Understanding (MoU), resulting in 25 thesis exchanges from 2013 to 2015. This was considered a successful initiative aligned with the project's first specific objective. However, funding for this activity was discontinued from 2016 onwards, saving resources for other activities.

Two PhD studies and numerous local PhD research projects were jointly supervised, fostering cooperation between Flemish and Vietnamese universities. English proficiency was identified as crucial for long-term success in a double degree PhD programme involving Flemish institutions.

Thirty staff members from local university partners received training in Belgium to enhance their teaching capacity in the international MSc programme. The COVID-19 pandemic also delayed staff training in Belgium. The initial plan to include eight staff members per year for a three-week training period caused administrative overload and proved too short for effective training. Adjustments were made to involve six staff members annually with extended training periods of up to three months, aiming for more substantial training and improved English skills.

The network concept has been introduced, strengthening collaboration among academic partners. Involvement of additional staff members from each local partner and engagement of industry and governmental bodies were identified as key (currently lacking) factors that could have allowed for more successful project outcomes. All intermediate results contributed to specific objectives: IR1 built a credit exchange system, IR2 fostered PhD programmes, IR3 developed an MSc curriculum, IR4 strengthened human capacity, IR5 and IR6 facilitated research collaboration, and IR7 enhanced network expansion.

The project achieved most of its intermediate results, thanks to the consensus and enthusiasm of partner members who recognized the value of networking and the efficiency of the new collaborative model. However, two specific indicators fell short of their original targets: 'MSc thesis exchange,' including 'credit exchange' (IR1), and 'staff trained in Belgium,' including 'staff improved English skills' (IR4). Logistic issues hindered the MSc thesis exchange, primarily due to timing differences among institutions, leading to the discontinuation of this activity after year 3. The COVID-19 pandemic also delayed staff training in Belgium. The initial plan to include eight staff members per year for a three-week training period caused administrative overload and proved too short for effective training. Adjustments were made to involve six staff members annually with extended training periods of up to three months, aiming for more substantial training and improved English skills. While this may result in a reduced number of staff trained by the project's end, it offers a more in-depth and impactful training experience.

4. Impact case

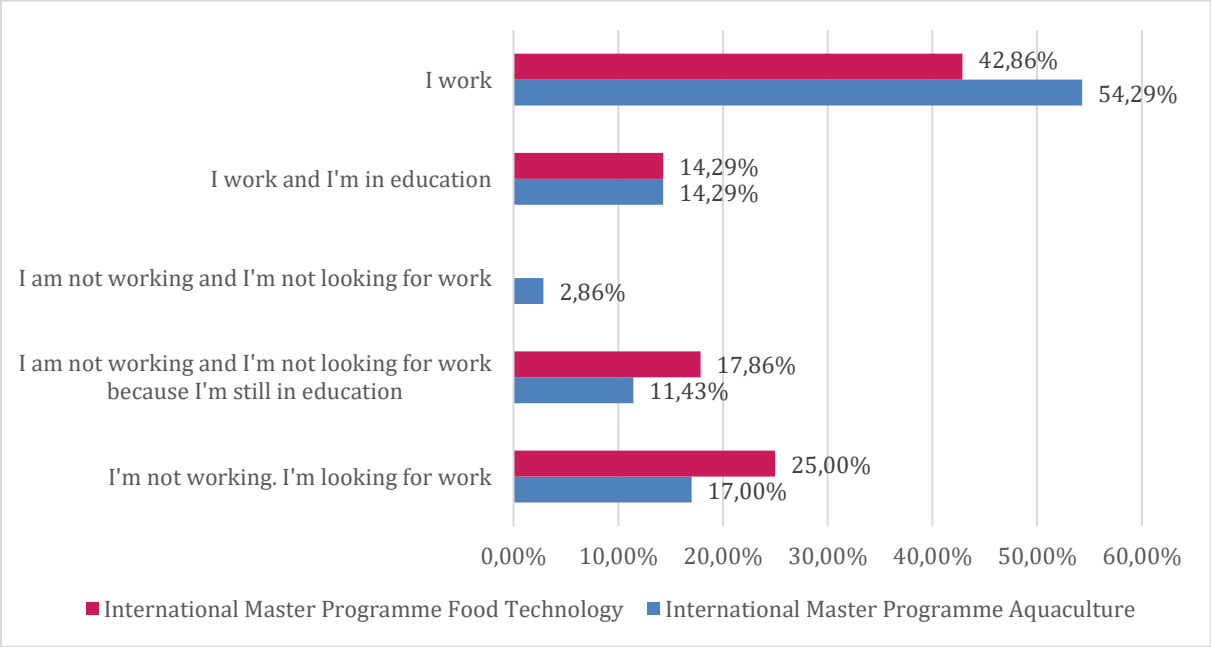
Although in the programme formulation no weight in importance is given to the 4 specific academic objectives that were formulated, it is clear that the most important objective was to successfully launch two international master programmes, namely the MSc in Aquaculture and MSc in Food Technology and that this then had to lead to the main Development objective (To obtain highly qualified human resources for sustainable development in Biosciences for Food). In other words, the master programmes had to lead to students who can make enhanced contributions in the respective subject areas in society. This was the reason there was a consensus among all partners of the PSU to examine in particular the impact of the programme on students and their professional development. In addition, there was also an explicit desire to explore the impact of upgrading staff. More specifically, what skills and knowledge have they gained and what does this mean for the teaching and research institutions themselves. Below, we present the main results. It is important to mention that we started this impact study through individual interviews and group discussions with students, alumni, lecturers, and researchers. These data were then further triangulated with a survey data collected from students. The survey was sent out to 105 alumni. A high response rate of 61% was achieved (64 respondents).

4.1. Impact on Students

As illustrated in the relevance section above (see *Relevance,p.5*) and *Figure 3 & Figure 4*, a large number of students who were based outside Vietnam enrolled in the two masters. During discussions with students, the evaluation team noted that a significant proportion of these students had applied for the mirror masters in Flanders but failed to enrol. The evaluation team also noted that this did not lead to strong frustration among these students, on the contrary some argued that it was better for them to study Aquaculture or Food technology within the Vietnamese context because the Vietnamese context is similar to their home countries' context.
One of the most important questions, of course, is whether the graduates of the various programmes have jobs after graduation in the sectors in which they were trained.

It can be seen from survey data that 63 per cent of alumni work (possibly combined with teaching). However, that a total of 20 per cent alumni are 'not working and looking for work' is remarkable and needs further explanation. It can be seen from *Figure 8* below that there are differences between the two masters.

Figure 8. Current situation of Alumni MSc Programmes



Among alumni of the Master in Food Technology programme, 25 per cent are found to be unemployed while in the Master in Aquaculture, this percentage drops to 17 per cent. This survey data presents a different picture than could be derived from the individual interviews and focus groups with the students, where the evaluators were able to identify several success stories. A key question, of course, is what could explain these differences.

Looking at the *Table 6* below, we can find a potential explanation. Namely, for alumni returning to Africa, it appears to be more difficult to find a job than for alumni returning to Asian countries. This appears to be the case both for alumni of the Master in Aquaculture and the Master in Food Technology. It could be suggested that wider general economic context, which is less favourable in Africa, could explain the difference.[12] From the data, we could further observe that of all Vietnamese students, none were unemployed at the time of the survey.

Table 6. Employment & Unemployment of Alumni

Continent	Master	Work (%)	Unemployed (%)	N
Asia	Aquaculture	87,5	12,5	16
	Food	75,0	25,0	8
Africa	Aquaculture	69,2	30,8	13
	Food	63,6	36,4	11
				48

Of course, the difference is also explained by the timing of graduation. As can be seen from *Table 7* below, almost all students graduating in 2019 and 2020 have since found jobs (either as employees, self-employed or employers). For the graduation years 2018 and 2022, the number of students in the survey is rather limited and a discussion of the figures is useless. What we can deduct from this table with some caution is that after three years of graduation, most students are employed and so there is hardly any unemployment and this among students from all continents.

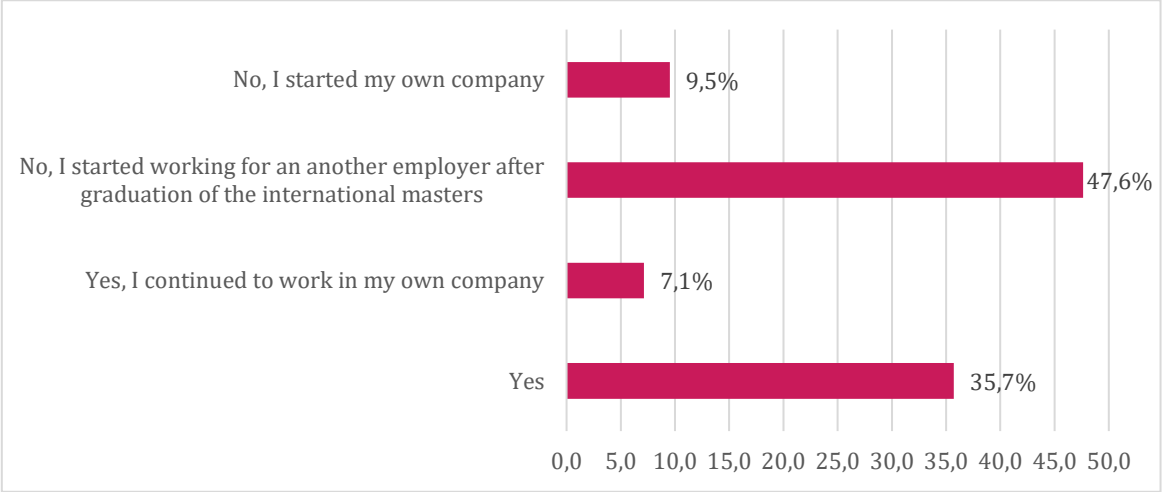
Table 7. Graduation Year and Unemployment

Graduation Year	Working (%)	Unemployed (%)	Other (%)	N
2018	*66,7*	*33,3*	*0,0*	*3*
2019	92,3	7,7	0,0	13
2020	93,8	0,0	6,3	16
2021	50,0	40,0	10,0	10
2022	***20,0***	***40,0***	***40,0***	***5***
2023	40,0	33,0	27,0	15

About a third of students graduating from the master programmes did not have a job before starting the programme. Of the alumni who did have a job before starting the master programme, more than 55 per cent have another job (either another employer or have set up their own business) (see *Figure 9)*.
This finding is in line with the data from another question where almost half of the alumni said they changed jobs as a result of having graduated as masters.

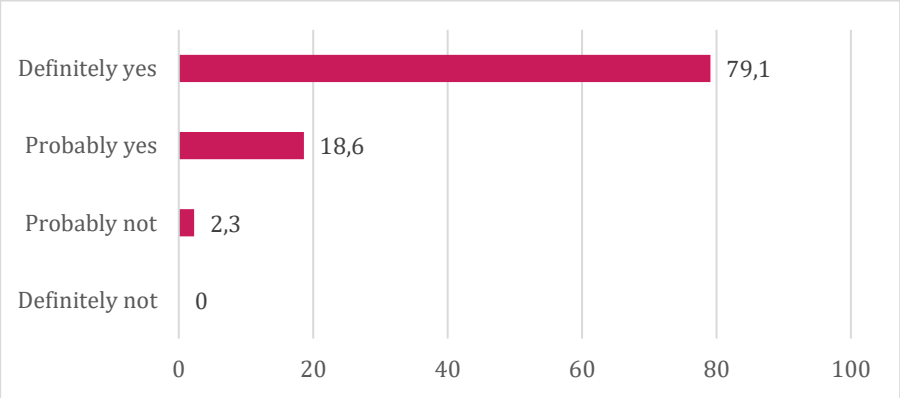
[12] Of course, it could also be that the differences are rather coincidental because the number of students in which the analysis was done is rather limited. Nevertheless, we think that due to the high response rate, the figures may still indicate a trend.

Figure 9. Are you working for the same employer as before you started the programme (only student who had a job before enrolling to the master programme)?



From the interviews, alumni reported that they earned higher wages because of graduating on an English International masters. This is confirmed by the survey results where 70 per cent of students reported receiving higher wages (as a result of having an English-language master programme). Remarkably, no less than 97 per cent of alumni say that their current job (of those who have a job) fits well to extremely well with the master programme. More than 95 per cent of students also assess that their career prospect is better thanks to graduation from the master programme (see *Figure 10*).

Figure 10. Do you have better career prospects thanks to the international master programme?



The results in the following *Table 8* confirm the above data, namely the alumni confirm that to a large extent they owe their current job to the international master programme and that their income increased after they obtained their master's degree.
From the interviews, we also understood that students gained more respect and higher social status. This finding was also confirmed by the survey research.

Table 8. Opinion on Some Statements (I) by alumni

Question	Strongly disagree (%)	Somewhat disagree (%)	Neither agree nor disagree (%)	Somewhat agree (%)	Strongly agree (%)	Total
The international master programme was necessary to get my current professional position.	0,00	0	9,3	18,6	72,09	43
My income increased after getting the international masters.	0,00	2,33	13,95	32,56	51,16	43
I get more respect from my colleagues because I completed the international master programme?	2,33	0	6,98	34,88	55,81	43
My social status has risen thanks to the international master programme	0,00	2,38	9,52	26,19	61,9	42

4.2. Main conclusions of the impact of the Master Programme on Students

- Majority of students from outside Vietnam enrolled in two master programmes. Some students initially applied for similar programmes in Flanders but failed to enrol, without causing significant frustration. Many found it beneficial to study Aquaculture or Food Technology in the Vietnamese context, which resembled their home countries' context.
- 63% of alumni have jobs but 20% are not working and looking for work (unemployed). There are differences in employment rates between the two master programmes, with 25% of Food Technology alumni unemployed compared to 17% of Aquaculture alumni. Graduates returning to Africa seem to have a harder time finding jobs compared to those returning to Asian countries; while Vietnamese graduates are all employed. After three years of graduation, most students are employed with minimal unemployment across continents.
- No Vietnamese students were unemployed at the time of the survey.
- Approximately one-third of master programme graduates did not have a job before starting the programme.
- Over 55% of alumni who had jobs before starting the programme changed jobs, either working for a different employer or starting their own business.
- Most of the graduates reported earning higher wages due to completing an English international master programme.
- 97% of alumni stated that their current job aligns well with the master programme.
- More than 95% of students believed their career prospects improved after completing the master programme.
- Survey results confirmed that alumni attributed their jobs and increased income to the international master programme.
- Interviews and survey data indicated that students gained more respect and higher social status through their master's degree.
- Finally, students reported finding the international experience in Vietnam enriching. Many students did find it difficult to integrate into Vietnamese society. They stated that this was mainly due to the language barrier.

4.3. Impact on Lecturers and teachers

Based on the group discussions with the lecturers and researchers, a number of changes were also identified among this group. We list them systematically below.
A first important change concerns the teaching methods that the lecturers involved in the programme mastered and applied in the master programme. This change involved mainly applying techniques of activated teaching and taking a differentiated approach to students' different backgrounds. These methods were taught during the upgrading courses in Flanders. But the students' backgrounds also forced the teachers to apply the learned techniques. Many students, as described above, already had work experience that they brought to classes. This made these students also actively bring their experience into the class, forcing the lecturers to actively teach. This was new for many lecturers. The significance of this change cannot be underestimated. Lecturers were used to teaching ex cathedra. In addition, several lecturers reported that they now also apply this activating and differentiated teaching in other courses outside the English-language master programme.

These observations were also confirmed by the survey data (see *Table 9*). Students recognized that the lessons were highly interactive and that lecturers took into account students' specific background and knowledge. What is also clear from the table below is that teaching is based on research findings and that students considered the lecturers to be experts in their field. The latter is obviously in line with the fact that the lector-researchers received an upgrading course in their field in Flanders. In addition, responsibility for one course was shared with several lectors from the different partner universities so that the specific expertise of each lector could be used. This was apparently also perceived this way by the students.

Table 9 Opinion on Some Statements (II) by alumni.

Statement (N= 43)	Strongly disagree (%)	Somewhat disagree (%)	Neither agree nor disagree (%)	Somewhat agree (%)	Strongly agree (%)
Most lessons were highly interactive	2,33	2,33	11,63	44,19	39,53
Most lecturers took into account our specific background and knowledge	2,33	0	6,98	41,86	48,84
I was able to gain sufficient practical experience at companies	9,52	2,38	7,14	40,48	40,42
I gained a lot of knowledge during the course	2,33	0	0	34,88	62,79
Teaching was based on research findings	2,38	0	9,52	45,25	42,86
The lectors knew their areas of expertise particularly well	2,38	0	2,33	32,56	62,79

A second major change formulated was to upgrade the English proficiency of the lecturers. This was obviously necessary because mainly foreign students took part in the programmes and the lecturers must therefore be able to express themselves well in English. The midterm review also recommended additional upgrading courses. This was implemented in the second phase, albeit in a more limited version than planned, because of the Covid-19 pandemic. Several stakeholders indicated that the English proficiency of the lecturers also improved significantly although the evaluators found it difficult to validate this. Indirectly, we attempted to question this by adding a question on the lectors' language proficiency in the alumni survey. Students' responses appear to confirm the changes brought along during the interviews and group discussions. More than 80 per cent of the alumni said that most or all lecturers speak English well enough to understand them (*see Table 10*).

Table 10. Student Perception on English Proficiency of Lecturers

Statement	%
Most lecturers in the International Masters did not speak sufficient English. I did not understand them most of the time.	2,38%
About 50% of the lecturers in the International Masters spoke English sufficiently well to make their lessons understandable.	16,67%
Most lecturers in the International Masters do speak sufficient English. I did understand them most of the time.	42,86%
ALL lecturers in the International Masters do speak sufficient English. I did understand them most of the time.	38,10%

5. Findings on the learning questions

5.1. How to support PhD trajectories, with a focus on optimizing diversity/inclusivity (gender and Leave No One Behind)?

The network programme focused mainly on the development and implementation of two master programmes. PhD tracks received only limited support in the programme (mainly through PhD Summer schools, joint PhD degrees and setting-up a double degree system)

The programme has not given explicit priority to gender (or any other background characteristics of students) considerations, although it has indeed incorporated a focus on such aspects within the programme: In the process of student and staff recruitment for programme enrolment, the Selection Committee consistently addressed and considered the aspect of gender equality. Nevertheless, it is essential to clarify that gender equality does not hold a primary position as a criterion. Candidates are still expected to meet the programme's prescribed criteria (in particular English skills).

If the LNOB criteria is interpreted broadly, it is fair to say that the master programmes have played an impact on regional development in general terms, namely by attracting students from Laos, Cambodia, and Myanmar. It can be assumed that returning students can make a greater social and economic contribution in their countries of origin. The partnerships with Laos and Cambodia are particularly promising in this respect, as structural university partnerships have been set up. Given the difficult political context in Myanmar, the evaluation team noted that a large proportion of students coming from Myanmar are employed in Vietnam.

5.2. What factors and measures, at VLIR level and/or at partner institute level, support effective coordination of programmes?

1. **Network & MSc programme coordination concentrated at one university.** At the start of the Network Vietnam programme, the programme has been designed to rotate master programmes among the participating universities. This entailed that the different batches (years of enrolment) would take place at the different participating universities. Thus, the Master in Food Technology was successively organized in CTU, NTU, HU and VNUA. The underlying reason for the rotation principle was to involve all partners equally in the programme and to get a credit system for the courses/programme approved in all universities. However, this rotation principle proved to come with several obstacles. Switching universities did not build up a routine to organize the annual master programmes. For one university, it meant that there were 3-4 years between the two cycles to be organized. This also meant that too little institutional capacity could be built at each of the participating universities, especially in the university's support services (e.g., in student recruitment, hosting foreign students, etc.). This experience showed that the most efficient and

effective model is to take one university in the network as the institutional basis for organizing a (network) masters.
The effective administrative coordination of the programme could also be improved by the following elements.

a. the start of the first semester of this network MSc programme should be concurrent with the programmes in Belgium (i.e., end of September) so that credit exchanges between the programmes in the future can be implemented.
b. the call for applications for the network MSc programme should be announced one year in advance.
c. the admission letters should be sent to successful applicants eight months in advance.
d. the host university must actively coordinate and facilitate the visa application procedure of the applicants.
e. successful applicants should arrive at the host university two weeks in advance for good preparation and adaptation.

2. **Agreements on concrete (financial) commitments between network partners should be strongly developed from the start**. Based on the various interviews, the evaluators could conclude that CTU is the driving force behind the network cooperation. This is also reflected in the scholarships that were distributed within the two masters. For the master programme in Aquaculture, the VLIR scholarship was only complemented by scholarships provided by CTU. A similar pattern is seen for the masters in food technology where only CTU and NTU provided local scholarships. VNUA provided one scholarship. This imbalance obviously illustrates the imbalance in the financial commitment of the different partners in the network.

5.3. How to ensure uptake of research results or new educational practices by political and societal actors and end-users?

1. The model of working jointly with different universities and research institutes to create an international English-language masters as partners was a new phenomenon in the Vietnamese context. This also involved special administrative procedures. The different universities had to recognize the different course units, which also required MOET approval. This new practice thus created experience among various stakeholders (universities and authorities) that can be applied in other contexts, such as setting up new English-language and international master programmes. This seems to be the case, for example, for setting up a new international masters in tropical aquaculture.

2. Networking beyond Vietnam's borders is particularly good practice that led to enrolments of students from neighbouring countries. Thus, strengthening ties of regional networks are useful to increase the impact of a programme.

3. Although links have been established with governments and industry (private sector) from the two master programmes, this has not yet resulted in a sustainable model where companies/governments financially support the new master programmes or enrol employees in large numbers in the master programme. International accreditation of a master programme can be a very important element in convincing the public and private sectors of the programme's added value. Expanding internship opportunities or providing longer internships during the programme can convince companies to support the programme.

4. As shown in detail in the impact study above, the programme's alumni do seem to have a social and economic impact. Indeed, a vast majority of alumni end up in jobs where they can apply their learned knowledge and skills.

5. An uptake could also be identified for the lecturers. The networking programme included upgrading the lecturers' pedagogical and content knowledge and skills. Several stakeholders indicated that this new skills/knowledge were also applied/used in other courses outside the VLIR-UOS Network programme. Obviously, this could not be independently confirmed by the

evaluators (as we did not attend classes). Since several lecturers, independently, reported these elements spontaneously and it is plausible that these learned experiences are also applied in other pedagogical contexts, we have sufficient reasons to believe that this change was also effectively manifested in other courses taught by these lecturers.

6. Conclusions

Relevance

Vietnam's transition to a market economy has led to impressive socio-economic development, with a significant increase in Gross Domestic Product (GDP) per capita, particularly in 2022 with an 8.02% growth. The Vietnamese government prioritizes sectors like aquaculture and food processing for their contribution to income and socio-economic progress, especially in the Mekong Delta. A skilled workforce is essential for the sustainability of these sectors. The programme focuses on developing a highly qualified workforce, not only for Vietnam but also for neighbouring Southeast Asian nations. Demand for English-educated aquaculture masters in Vietnam's business sector is rising due to internationalization and foreign investments. The programme aims to enhance human capacity through collaborative research and international English-language master programmes. The master programme in Aquaculture demonstrates its regional relevance, especially in Africa, with 65 alumni. Notably, Myanmar has 14 graduates, followed by Tanzania with 8, and 7 each from Vietnam and Kenya. There are also students from Nepal, Rwanda, Malawi, the Philippines, and Cambodia. When considering continent distribution, approximately 55% of students are from Asia, and around 43% are from Africa. Interestingly, only 12% are from Vietnam, potentially due to English language barriers as similar programmes are offered in Vietnamese. In contrast, the master programme in Food Technology enrolled students from 15 countries, with Nigeria having the highest representation (6), followed by Vietnam and Laos (each with 4 students). This programme has 37 students, with more than 70% from Africa and just under 30% from Asia. The English language barrier is a hindrance for Vietnamese-speaking students, and there is also demand from the business sector. These figures highlight the international appeal of both programmes.

Coherence

The programme displays internal coherence on various fronts. First, at the programme level, both projects aim to create high-quality English-language master programmes with a focus on research. They share similar objectives and activities like curriculum development and teacher skill enhancement. The programme facilitated the exchange of knowledge and skills between the projects, enabling the successful implementation of these objectives. Second, research synergies were fostered through the programme. Collaborative research initiatives involving multiple stakeholders were established, These collaborations were acknowledged as outcomes of the programme, although the limited availability of public funds for applied research in the relevant fields remained a constraint. Lastly, there is strong coherence between the VLIR-UOS Network Vietnam programme and the Master in Aquaculture and the Master in Food Technology (IUPFOOD) organized by KULeuven and UGent, which are also funded by VLIR-UOS.

External coherence in the programme encompasses several important aspects. First, it has established close partnerships with universities in neighbouring countries like Cambodia, Laos, and Thailand. These partnerships have led to the enrolment of students from Cambodia and Laos in the master programmes, fostering regional collaboration. Second, all network cooperation partners have additional collaborations with universities across Asia, Europe, and the Americas, particularly in the fields of aquaculture and food technology. Evaluators found no redundancy with VLIR-UOS projects and noted a high level of complementarity, as these collaborations focus on different sub-domains. Lastly, the programme aligns effectively with the Sustainable Development Goals (SDGs), notably SDG2 (no hunger), SDG4 (quality education), SDG12 (responsible consumption and production), and SDG14 (life in the water). These sectors are also prioritized by the Vietnamese government, emphasizing their relevance and commitment to sustainable development.

Effectiveness

The evaluation found that all network partners in the programme engaged in extensive discussions and the Key Result Area (KRA) demonstrated that partners shared a strong consensus on cooperation. Network partners took ownership of Intermediate Results (IRs), actively contributing to staff exchange, credit exchange, and hosting annual meetings of the local National Steering Committee (NSC) and Joint Steering Committee (JSC).

The credit exchange system has been successfully integrated within the university consortium, fulfilling the programme's initial academic objective. Additionally, various other credit exchange modes, including the exchange of lecturers between different institutions, were effectively implemented and recognized by network partners.

A PhD double-degree programme (the 2nd academic objective) has been established in collaboration between UGent, KU Leuven, and CTU. Two PhD students from CTU have been officially enrolled as PhD candidates at Flemish universities, as a result from a formal agreement between the universities and their respective mentors

The third academic objective was also achieved, which involved the development of a curriculum for the Master in Food Technology and a Master in Aquaculture.

The network successfully enhanced teaching and research capacity, which was its fourth academic objective. This was achieved through staff training in Belgium and staff exchanges in Vietnam, allowing for the exchange of experiences among network partners and enriching their expertise in teaching and research upon their return to their institutions. This process involved enhancing lecturers' subject knowledge and sharing teaching materials for use in Vietnam. Lecturers also received training in teaching methodologies, including active and differentiated teaching. English proficiency training was provided, with some sessions held in Flanders, although the COVID-19 pandemic necessitated a significant portion of the training to be conducted online in Vietnam. However, while the number of publications resulting from research activities significantly increased over the past four years according to annual reports and self-assessment, the evaluation team could not determine whether all these publications were the result of collaboration between network partners.

The primary development objective, which aimed to strengthen the human capacity of Vietnamese universities, involved various aspects beyond teacher training. This encompassed enhancing capabilities in supporting services and university units, such as receiving and integrating international students, accrediting international courses, organizing courses with lecturers from different universities (teacher mobility), managing the financial aspects of such programmes, and building and strengthening national and international networks, which was the third developmental objective. It is worth noting that network cooperation between academic institutions and universities was a new concept in the Vietnamese academic landscape. The network partners generally knew each other before the programme's launch, but the network programme significantly intensified their interactions and provided partners, lecturers, and researchers with a better understanding of each other's expertise. This, in turn, facilitated closer collaboration in research, research proposal development (though still somewhat limited), curriculum development, and teaching.

The evaluation highlighted the limited number of scholarships provided by Vietnamese partners for both master programmes. Specifically, for the Food Technology Master programme, CTU offered 6 scholarships, NTU offered 5, and VNUA provided 1. In contrast, all 17 scholarships for the Masters in Aquaculture came from CTU, in addition to the scholarships from VLIR-UOS funding. This demonstrates CTU's significant financial commitment as an institution. The financial disparity is explained by the limited resources of the stakeholders. Notably, CTU assumed a coordinating role with strong dedication, as evident from the scholarship examples. This resulted in an unequal power dynamic within the network. Additionally, the decision to abandon the rotation principle for the Master in Food Technology programme led to CTU becoming the hosting university, as it already was for the Master in Aquaculture. It is essential to note that this decision had the approval of all other partners, and CTU's leading role was accepted by the network. The programme effectively created win-win situations, as lecturers gained prestige by teaching in international master programmes.

Efficiency

Lecturers involved in the programme underwent extensive upgrading in three key areas: improving their English language skills, enhancing their subject knowledge, and refining their pedagogical methods. The efficiency of staff exchange activities can be attributed to their structured approach, which included training at relevant universities and the exchange of young staff between partner institutions. Staff trained in Belgium underwent a comprehensive approach, including course attendance, practical laboratory work, and the exchange of valuable didactic approaches, contributing to the development of individual staff members and the overall strengthening of partner institutions. This approach is considered highly efficient.

The organization of the Master in Food Technology programme initially utilized a rotation principle, moving students to different partner universities for each batch, but this was found to be inefficient. Slow capacity building at partner organizations and the challenges of teacher mobility were key issues. Multiple instructors with busy schedules made scheduling classes difficult and accommodating educators from diverse institutions posed logistical challenges (***see recommendation 3***). However, experience building improved support services, particularly in welcoming and accommodating foreign students, leading to greater student satisfaction in later batches. This experience also extended to timely student recruitment, programme accreditation, and planning activities involving multiple lecturers from different universities, demonstrating efficiency gains over time.

Sustainability
CTU expressed a strong desire to continue the two international master programmes. The participation of other network partners in the post-VLIR-UOS phase was uncertain but desired by all (***see recommendation 1***). These programmes align with CTU's strategy to excel in aquaculture and food technology, with additional support from donors like JICA. News also emerged of a new international master programme in Tropical Aquaculture organized by CTU and other Asian universities, potentially integrating the existing network masters. The Food Technology programme will be part of the ICP IUPFood Connect from 2022-2027, jointly implemented by KULeuven and UGent, with plans for similar programmes in East Africa and Vietnam but limited funding. A post-doctoral fellow will support the programme in Vietnam until October 2027. These programmes heavily rely on scholarships, with a significant majority of students receiving financial assistance. The discontinuation of certain scholarships poses a threat to the programmes, and adjustments will be needed if they are to continue (***see recommendation 3***). The accreditation by AUN-QA enhances the programme's reputation, potentially attracting more self-funded students in the future. However, particularly for the Master of Food Technology, significant implementation adjustments are required, including potential reductions in travel costs and increased engagement with private sector and neighbouring university institutions to attract self-paid or employer-sponsored students (***see recommendation 2 & 5***). The programme aimed to enhance the skills of teachers and researchers at participating institutions in Vietnam. Many of the participants were already working at these institutions before the programme started, and they continued to be involved in other teaching and research activities. The programme's main goal was to strengthen the network among Vietnamese partners, resulting in positive outcomes like a credit exchange system, joint supervision of PhD research, and collaborative course development. However, the sustainability of this collaboration is in question as funding may decrease, and it remains uncertain whether the network can generate new funding opportunities independently in the future.

Impact Case

The survey results revealed several key points for alumni about the two international master programmes in Vietnam. A majority of students, predominantly from outside Vietnam, enrolled in these programmes, with some having previously applied for similar programmes in Flanders. However, their inability to enrol did not lead to significant frustration, as they found value in studying Aquaculture or Food Technology in a Vietnamese context similar to their home countries. Employment outcomes varied, with 63% of alumni having jobs, while 20% were actively seeking employment. Notably, no Vietnamese students were unemployed at the time of the survey. After three years of graduation, most students are employed with minimal unemployment across continents. Around one-third of graduates did not have jobs before entering the programme, and over 55% of those who did had changed jobs, often working for different employers or starting their own businesses. Completing an English international master programme was associated with higher earnings, and most alumni felt that their current jobs aligned well with the programme. Career prospects improved for over 95% of students, and they attributed their employment and increased income to the master's degree. Interviews and survey data indicated that the degree also contributed to higher social status and respect. While many found the international experience in Vietnam enriching, some students faced challenges in integrating into Vietnamese society, largely due to language barriers. Some students reported that the practical experience in the programme is too limited. They would have liked the number of weeks of internship to be higher (***see recommendation 4***).

The programme caused a significant change in teaching methods within a master programme. Lecturers in the programme learned and implemented active teaching techniques and a differentiated approach to accommodate students with diverse backgrounds. These methods were initially taught during upgrading courses in Flanders, but the students' prior work experience also compelled the teachers to actively engage and adapt to their students' input. This shift marked a departure from traditional lecture-based teaching methods. Notably, many lecturers have extended these new approaches to other courses outside the English-language master programme, indicating a broader impact on their teaching practices.
The second significant change at the level of lecturers in the programme was the enhancement of the English proficiency of the lecturers This upgrade was crucial to ensure effective communication in English. The midterm review recommended additional upgrading courses, which were partially implemented in the second phase due to the COVID-19 pandemic. Stakeholders noted a noticeable

improvement in the lecturers' English proficiency, although validation proved challenging. An alumni survey indirectly confirmed these changes, with over 80% of respondents stating that most or all lecturers now speak English well enough for students to understand, aligning with the improvements observed in interviews and group discussions.

On the learning questions

The programme has not given explicit priority to gender (or any other background characteristics of students) considerations, although it has indeed incorporated a focus on such aspects within the programme: In the process of student and staff recruitment for programme enrolment, the Selection Committee consistently addressed and considered the aspect of gender equality. Nevertheless, it is essential to clarify that gender equality does not hold a primary position as a criterion. Candidates are still expected to meet the programme's prescribed criteria (in particular English skills). The data reveals that approximately 37% of alumni who received VLIR scholarships are female, but this percentage drops to 25% for scholarships granted by Vietnamese universities. However, for scholarships related to the master programme in food technology, the percentage of female recipients is higher, at 42%. The programme also supported master students through research exchange programmes between universities, leading to an overall female student percentage of nearly 35%. The disparity in female representation between the master programmes in Aquaculture and Food Technology can be attributed to the higher popularity of Food Technology among female students. It is important to note that the data for the Master in Aquaculture is incomplete, so any conclusions about the differences between the two programmes should be made cautiously.

The Network Vietnam programme initially aimed to rotate the master programmes among participating universities, with each batch of students attending different universities. This approach, applied to the master programme in food technology, led to the programme being successively organized at CTU, NTU, HU, and VNUA. The idea behind this rotation was to involve all partners equally and establish a credit system for courses across universities. However, the rotation approach faced several challenges. It failed to establish a routine for organizing annual master programmes, resulting in extended gaps between cycles for some universities, up to 3-4 years. This hindered the development of institutional capacity, particularly in support services like student recruitment and hosting foreign students. The experience highlighted that the most efficient and effective model is to designate one university in the network as the institutional base for organizing a networked master programme, rather than rotating between institutions.
It is essential to establish clear and concrete financial commitments among network partners right from the outset. Interviews conducted with various stakeholders indicated that CTU played a central role in driving network cooperation. This influence is also evident in the distribution of scholarships for the two master programmes. In the case of the Aquaculture programme, the VLIR scholarship was supplemented solely by scholarships from CTU. A similar trend is observed for the Food Technology master programme, where local scholarships were primarily provided by CTU and NTU, with only one scholarship from VNUA. This discrepancy highlights an imbalance in the financial commitments of different partners within the network.

7. Recommendations

Recommendation 1.

The collaboration between the different partner universities (in both projects) were considered very valuable by different stakeholders in different areas. The continuity of the master programmes seems to be guaranteed. The MSc Food Technology will be further embedded/connected in the ICP Connect programme; the MSc Aquaculture seems to be linked to a new international MSc Tropical Aquaculture to be organized jointly with several Asian universities.
It is recommended that as many partner universities/research institutes involved in the VLIR-UOS Network programme as possible can continue to be part of the continuation of these programmes. (Main Actor: all Vietnam Network partners)

Recommendation 2.

The success of both master programmes depends heavily on scholarships. During the 10-year implementation, the vast majority of scholarships were funded by VLIR-UOS supplemented by Vietnamese scholarships. There is a clear commitment from some partners to continue the scholarship system. Nevertheless, additional resources will be needed to maintain or increase enrolment. ***Therefore, links with the business community need to be further developed so that they can provide scholarships or enrol employees with payment of tuition fees. (Main Actor: all Vietnam Network partners)***

Recommendation 3.

Teacher mobility is seen by some stakeholders as particularly time-consuming and expensive. This is largely because most courses involve several teachers from the different partner institutions, which makes the number of effective teaching hours per teacher relatively low. It could be opted to teach most of the classes online. However, online teaching is not perceived very positively by the (foreign) students. ***It could therefore be chosen to organise, for instance, 2/3 of the teaching hours in live context and, for example, 1/3 of time the course continues online. So it comes down to finding a good balance between online and live teaching, with the emphasis remaining on live teaching. (Main Actor: all Vietnam Network partners)***

Recommendation 4.

Many students indicated that they would like to gain more practical experience during the graduate programmes through, for example, more intensive internships in companies***. It would therefore be interesting to explore to what extent more practical experience could be built into the Master programmes without compromising the academic nature of the programme. (Main Actor: all Vietnam Network partners & Flemish universities)***

Recommendation 5.

The added value of regional networking was clearly outlined above, namely the uptake of the programmes has a larger scale and the development objective can be extended to countries where certain training is not present. ***It is therefore recommended that regional networking programmes can also be eligible for funding. (VLIR-UOS & DGD)***

8. Annexes

8.1. List of documents consulted

- Annual planning documents 2020, 2021, 2022
- Annual reports 2020, 2021, 2022
- Government Statistics Office' report "Socio-economic-situation - data-and-statistics" – January, 2023.
- IUC Network, Partner Programmeme (PP), 2018.
- Law No. 34/2018/QH14, Law on Amendments to the Law on Higher Education
- Management Manual IUC HU
- Mid-Term Evaluation Report IUC Network, 2018
- Prime Minister's Decision N. 69 QD -TTg issued in 2019, approving a Programme on Quality Improvement for Higher Education for 2019–2025.
- Self-assessment Report at programmeme level, P1, P2.
- World Bank, The 2022nd World Bank - Vietnam Taking Stock Report - "Education to Grow", 2022 August.

8.2. Field visit programme

Day	Activities
11/9/2023	AT CTU (Patrick): Online Kick-off workshop with all PSU members Individual Interviews with CTU leadership involved in the implementation of the project. At VNUA (Nga): Individual interview and group discussion with VNUA leadership and member of P 2
12/9/2023	At CTU (Patrick): Online group discussion Project 1 leadership & members of all participating universities Online group discussion Project 2 leadership & members of all participating universities Online meeting with NTU lecturers Nga: Individual interview and group discussion with VNUA leadership and member of P 2
13/9/2023	Patrick (at CTU): • Group discussion with Alumni at CTU • Group discussion with lecturers at CTU • Travel to HCMC Nga (at VNUA) Group discussion and individual interviews with Alumni at VNUA
14/19/2023	Patrick (at RIA2) • Interviews with leadership and lecturers at RIA2 • Interviews with Alumni at RIA 2 • Travel to Hué Nga (at VNUA): Group discussion and individual interviews with Alumni at VNUA
15/9/2023	Patrick (at HU) • Interviews with leadership and lecturers at HU Nga (at VNUA • Group discussion and individual interviews with Alumni at VNUA
16/9/2023	Patrick • Online interviews with alumni Nga (at VNUA° • interviews with alumni

8.3. List of people consulted/interviewed

Prior to the visit

Name	University	Position
Prof. Dr. Koen Dewettinck	UGent	Flemish Coordinator
Prof. Dr. Peter Bossier	UGent	
Jean Dhont	UGent	
Katleen Anthierens	UGent	
Prof. Dr. Ha Thanh Toan	CTU	Rector CTU, Programme Coordinator
Prof. Dr. Le Van Khoa	CTU	Programme Coordination
Prof. Dr. Tran Ngoc Hai	CTU	Vice-rector CTU
Prof. Dr. KHONG Trung Thang	NTU	PSU Member
Prof. Dr Tran Thi Ding	VNUA	PSU Member
Prof. Dr. Huy Nguyen Xuan	HU	PSU Member
Prof Dr. Le Hong Phuoc	RIA	PSU Member

Field visit

Kick-off workshop

Name	University	Position
Prof. Dr. Tran Ngoc Hai	CTU	Vice-rector CTU
Prof. Dr. Le Van Khoa	CTU	Programme Coordination
Prof. Dr Tran Thi Ding	VNUA	PSU Member
Prof. Dr Kim Van	VNUA	P2 Coordinator
Prof Dr. Le Hong Phuoc	RIA2	PSU Member
Assoc. Prof. Pham Quoc Hung	NTU	Vice rector, P1 member,
Assoc. Prof. Tong Thi Ngoc Anh	CTU	Head, Dept. P2 project leader,
Prof. Vu Ngoc ut	CTU	Dean, CAF, P1 project leader.
Dr. Khong Trung Thang	NTU	Chairman, University Council, PSU member, Dr.
Assoc. Prof. Mai Thi Tuyet Nga	RIA 1	Dean, P2 member,
Prof. Nguyen Thanh Tung	RIA 2	Vice rector, P1 member,
Dr. Le Hong Phuoc	RIA 2	Director of Research center, P1 and PSU member,

<u>Interviews and focus groups</u>

Name	University	Position	Date
Prof. Dr. Tran Ngoc Hai	CTU	Vice rector CTU	11/09/2023
Prof. Dr. Le Van Khoa	CTU	Programme Coordination	11/09/2023 and several meetings before and after mission
Prof. Dr. Vu Ngoc Ut	CTU	Rector, College of Aquaculture & Fisheries, Project leader P1	11/09/2023
Vu Xuân Nam,	CTU	Vice director, Financial Affairs dept. (FAD)	11/09/2023
Le Thi Thuy Trang	CTU	PSU member (staff of FAD)	11/09/2023
Hua Thai Nhan	CTU	Vice director, Department of International Relations dept.	11/09/2023
Huynh Thi Phuong Loan	CTU	P2 member	12/09/2023
Ly Nguyen Binh	CTU	Project Leader P2	12/09/2023
Tong Thi Anh Ngoc	CTU	Project Leader P2 (from April 2022)	12/09/2023

Kim Van	VNUA	P1	12/09/2023
Pham Quoc Hung	NTU	P1	12/09/2023
Mai Thi Tuyet Nga	NTU	P2	12/09/2023
Mai Thi Tuyet Nga	NTU	P2	12/09/2023
Ly Nguyen Binh		P2	12/09/2023
Tong Thi Anh Ngoc		P2	12/09/2023
Tran Thi Dinh		P2	12/09/2023
Do Thi Bich Thuy		P2	12/09/2023
Nguyen Van Hue		P2	12/09/2023
Mai Thi Tuyet Nga		P2	12/09/2023
Le Hong Phuoc	RIA 2	P1	12/092023 & 14/09/2023
Nguyen Thanh Tung	RIA 2	P1	12/092023 & 14/09/2023
Rejean Marie Darroca	CTU	P2	13/09/2023
Stanley Matonange	CTU	P2	13/09/2023
Blessing Chirinda	CTU	P2	13/09/2023
Nguyen Van Hoa	CTU	P1 Lecturer	13/09/2023
Tran Minh Phu	CTU	P1 Lecturer	13/09/2023
Do Thi Thanh Huong	CTU	P1 Lecturer	13/09/2023
Nguyen Minh Thuy	CTU	P2 Lecturer	13/09/2023
Nhan Minh Tri	CTU	P2 Lecturer	13/09/2023
Tran Chi Nhan	CTU	P2 Lecturer	13/09/2023
Pyae Phyo Hein	RIA2	Alumni	14/09/2023
Khin Thiri Khit	RIA2	Alumni	14/09/2023
Saw Yadanar	RIA2	Alumni	14/09/2023
Dr. Nguyen Van Sang	RIA2	Former Director	14/09/2023
Nguyen Thi Ngoc Tinh	RIA2		14/09/2023
Dr. Le Hong Phuoc	RIA2	PSU Member	14/09/2023
Nguyen Van Sang	RIA2	Lecturer	14/09/2023
Nguyen Thi Ngọc Tinh	RIA2	Lecturer	14/09/2023
Le Hong Phuoc	RIA2	Lecturer	14/09/2023
Prof. Nguyen Quang Linh	HU	Former President HU	15/09/2023
Prof. Dr. Huy Nguyen Xuan	HU	PSU Member	15/09/2023
Nguyen Duy Quynh Tram	HU	P1	15/09/2023
Do Thi Bich Thuy	HU	P2	15/09/2023
Nguyen Van Hue	HU	P2	15/09/2023
Pham Nguyen Duy	CTU	Alumni	16/09/2023
Nguyen Minh Tri	CTU	Alumni	16/09/2023
Prof Dr. Marc Hendrickx	KULeuven	Flemish Project Leader P2	13/10/2023
Prof. Dr. KHONG Trung Thang	NTU	PSU Member	23/10/2023
Prof Dr. Volckaert	KULeuven	Flemish Project Leader P1	10/11/2023
Prof. Dr Koen Dewettinck	UGent	Flemish Project coordinator	Several meetings in the course of the implementation of the evaluation
Prof. Dr Kim Van Van	VNUA	P2 Coordinator	11/09/2023
Dr Truong Dinh Hoai	Deputy head of Department of Aquaculture	P2	11/09/2023
Dr. Tran thị Thu	Senior lecturer of Department of Aquaculture	P2	11/09/2023
Dr. Tran le Van	Head of Department of Aquaculture	P1	12/09/2023
Dr. Vu Thi Kim Oanh	Senior lecturer of Faculty of Food Science and Technology	P2	12/09/2023
Dr. Lai Thi Ngoc Ha	lecturer of Faculty of Food Science and Technology	P2	11/09/2023
MSc. Vu Duc Manh	lecturer of Department of Aquaculture	P1	12/09/2023
Thien Sa	NTU	P 1 Alumni	14/9/2023
Tran Nguyen	CTU	P1 Alumni	13/9/2023
Pham Nguyen Duy	CTU	P1 Alumni	15/9/2023
Dang Thu Tham	CTU	P2 Alumni	13/9/2023
Pham Dang Khoa	CTU	P1 Alumni	14/9/2023
Mai Vu Hoang Giang	VNUA	P2 Alumni	13/9/2023
Vu Quyet Thang	VNUA	P2 Alumni	15/9/2023

Restitution workshop Online

Name	University	Position
Prof. Dr. Ha Thanh Toan	CTU	Programme Coordinator
Prof. Dr. Le Van Khoa	CTU	Programme Coordination
Prof. Dr. KHONG Trung Thang	NTU	PSU Member
Prof. Dr Tran Thi Ding	VNUA	PSU Member
Prof. Dr. Huy Nguyen Xuan	HU	PSU Member
Prof Dr. Le Hong Phuoc	RIA	PSU Member

Restitution with VLIR-UOS and Flemish coordinators / project leaders

Name	University	Position
Prof. Koen Dewettinck	UGent	Flemish Programme Coordinator
Prof. Dr. Ha Thanh Toan	CTU	Programme Coordinator
Prof. Dr. Le Van Khoa	CTU	Programme Coordination
Prof. Dr. KHONG Trung Thang	NTU	PSU Member
Prof. Dr Tran Thi Ding	VNUA	PSU Member
Prof. Dr. Huy Nguyen Xuan	HU	PSU Member
Prof Dr. Le Hong Phuoc	RIA	PSU Member
Katleen Anthierens	UGent	Programme Coordination
Peter Delannoy	VLIR-UOS	
Joshua Eykens	VLIR-UOS	

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