

SSNS Project Mid-term report – online

A – General Framework

Request for Pre-financing

- a) Technical implementation Report
- b) The Financial Statement – Excel File
- c) Duly signed Statement of incurred and ad second refinancing

B – Content of the Tabs of technical implementation report

1. General information – prefilled, correct if necessary
2. Contractual data – pre-filled, correct if necessary
3. Project Summary and Horizontal issues
 - 3.1 Project description – prefilled, update if necessary
 - 3.2 Horizontal issues:
 - 3.2.1 Previous recommendations, if any.

IMPORTANT NOTE:

All the documents or links referred in this report are available in Google drive folder “SSNS” i.e. <https://drive.google.com/drive/u/0/folders/1k-z5v2JqljrHSLJWdk2qwrnFCclj21Pj>

All the Coordinators (1-2 persons) of each partner have the access to upload and download files. A new person has to request to get access and Project Coordinator will receive message and he/she will see whether or not to give access.

Responses to the previous recommendations based on project evaluator’s comments are given below:

Relevance (3,800 characters)::

Detailed explanation of Needs analysis was missing

The submitted proposal had envisaged that organizing a stakeholder’s meeting in each partner institution to gather their opinions about curricula, courses, contents/field visits or practices as part of the courses, and having a focus group discussion to brainstorm and rigorously select courses based on the needs. Major stakeholders were supposed to be from the private and public sector (outside academia), and students (direct beneficiaries). Then focus group discussion was thought to be organized involving education experts of the relevant discipline from within the partner institution as well as from outside. However, it has been realized that stakeholders meeting has not been an easy task to be organized, as professionals are not available due to their heavy duties. Finding common and free time is a problem. For example, during Kick-off meeting or Inception Workshop, AIT has invited 15 stakeholders from outside AIT; however, only three (20%) were present. (Report is available at:

<https://drive.google.com/drive/u/0/folders/11ebIgpsyKvllwL-hC79VLn-2XHy2v8o0>

Alternative option needs to be explored . One of them is sending questionnaires through email or hard copies by post. However, even that has some difficulties. Therefore, project team is considering to find some alternative ways to get inputs from stakeholders i.e. visiting major private farms/companies and consulting with them about the courses developed so far and getting ideas for new courses. At the same time, arranging internship placements in their farms or companies which is happening in some of the partners institutions e.g. Khon Kaen university (P3), Nong Lam (P13). Other partners have also been suggested to do more during the period of course development and refinement (April – July, 2019) so that their views inputs can still be incorporated.

Course delivery and continues updating involving industries:

As mentioned above, the Project Team has planned for a greater involvement of the industry by creating linkages for internship programs. Internship will provide opportunities to the teachers to interact with industry professionals and frequently visiting the real field. Normally, teachers visit the field when students are working with industries. The Asian partners have been made clear that the partnership with internship hosts should be continued beyond the project period. The process of curriculum development and importance of updating information from the real field to incorporate in classroom teaching have been clearly communicated with all the partners during inception workshop and two trainings or workshops at NTNU and the Univ. of Stirling. From two study visits, all participants were very clear that university's connection with the communities is very valuable if they are incorporated into the courses. They also have realized that courses need to be updated regularly as community move their ways with new problems and developments. In addition, the Project Management team has also emphasized that the courses developed during project period should serve as models for other existing courses offered in the same department and also in other departments.

Quality: (3,800 characters):

More emphasis on course development

Yes, the Project Team has been pointing out the teacher's way of following the tradition, often limited capability and problem of motivation due to lack time and incentives hampering the teaching learning process. Most teachers either teach the course already developed by seniors, or offer the courses, which might be brought from developed countries where they get higher degrees. Some of the courses might be less relevant. Therefore, teachers have to learn how to develop by themselves or at least improve the existing courses to make more relevant and need-based with rapid technological, environmental, social and economic changes occurring in the world. However, most teachers have no opportunities to get trained in developing skills of doing so, and neither learning how to do effective teaching and learning or pedagogy. Therefore, the project team emphasized more on course development after training workshops/tour to European universities.

Need more collaboration across sectors

It has been realized that some courses need collaboration e.g. the Seafood and human nutrition, course will require medical doctors or from medical field. In order to develop Health Management course, veterinary doctors will be needed. Similarly, Farm design and management related course needs help from the engineering field. At the same time, collaborations from social science, economics, and environmental disciplines are necessary. All partners have realized these issues after their Study visits to Norway and UK. Asian partners plan to have collaboration across sectors and this will happen especially while refining the MSc and VET courses.

Rational behind involvement of staff and students poorly addressed

There was no explicit plan to involve staff members, especially technical and administrative members except assisting to implement the project. However, there is learning from the professors who are undergoing curriculum development process. Students have not been involved directly in the project; however, they have been consulted or asked to express their opinions during the inception workshop (11 AIT students), study tours in NTNU (group) and Stirling (5 students). Whereas at Asian partners universities, consultation from students is limited most probably due to the culture. However, it has been agreed that students should have the opportunity to evaluate each course and make suggestions during or after the delivery of the curricula. An online system (VLE) will assist this function. Some of the universities do have (e.g. AIT, Can Tho university etc.). Student's role in curriculum development will be more prominent when internship programs are incorporated because they will have experience form the

real field and they can bring wealth of experience and make good suggestions and recommendations when they give seminars about internship and also write reports.

Little consideration for follow-up action on developed curricula

The project team has a plan to monitor how many courses developed or improved will be offered via VLE/online system. It will be possible to track and make reports from VLE system. All the teachers have agreed during NTNU and Stirling workshops to use this Moodle based online platform. It has also been discussed to transfer VLE system in each of the partner universities so that they can use for all the courses in the department as well as in the whole university. Project Coordinator and the EuroTraining team responsible for quality will work on the follow-up action. At the same time, partners are also aware that the project will be evaluated by an external evaluator near the end of the project who will assess the sustainability and exploitability of the courses developed. More importantly, the same project team is committed to work together beyond the project period to expand it to other countries or build on from the current project to similar programs in Bangladesh, India, Myanmar, Nepal, Pakistan and so on. A proposal has already been submitted to Erasmus+ program in February 2019 with the partners from Myanmar (4), Bangladesh (2) and Nepal (2) coordinated by the current partners in Europe and Thailand. Therefore, the project team will continuously keep track of what goes on in partner countries and make plan to move ahead keeping the goal in mind striving to making teaching and learning more effective.

No. of courses – either module titles or no. of units within?

No. of courses are full semester courses with at least 2 credits which are given on right hand top corner of each course e.g. 3(2-3) means 3 credit hour courses with 2 hour theory and 3 hours practicals. Within each course, there will be several 5-10 chapters depending upon the total credits, few practical classes, field visits, field work, self learning assignments and so on.

Too short time for accreditation

Preparations for accreditation in terms of recognition and approval for the courses by each institution has started after the courses were developed by the end of March 2019. Some of the universities are already trying to offer courses in August semester 2019, which means they do have around 3-4 months for internal accreditation. While others may offer from January 2020. For them they will have full semester to work on accreditation. Therefore, There are two full semesters to do accreditation and/or offer the new or improved courses and test. During these two semesters in-country trainings have been arranged (September 2019 for Thailand, November 2019 in Vietnam and February 2020 in Indonesia) so that suggestions can be incorporated to launch in the third semester that starts from August 2020. The project team will still have time to observe the results for more than half of that part of that semester and incorporate the results in the final report of the project. However we agree that the time for recognition by international organizations is limited. It may take several years of improvement and monitoring of the curricula, delivery methods and also outputs such as publications, and employability of graduates and so on.

Less consideration on cultural perspectives:

Culture, tradition and customs influence the society and often science. Integrated farming such as pig cum fish farming is common in Vietnam, whereas it is not acceptable in Indonesia. Although, two teachers are from different countries, cultures and traditions, they speak the same language and talk about fish. During the meeting, they interact but ultimately they design the courses considering their own country and culture. Therefore, the interesting thing about fish it is the fact that this is accepted as food commodity by all religious groups, often also by vegetarians, and thus it brings people together from different cultures.

Monitoring is for the process or for the outcomes not clear:

Monitoring and quality assessment has been for both; the processes and the outcomes. For examples, each event have been being evaluated by each participant anonymously e.g. inception workshop, Study tour to NTNU and University of Stirling through online questionnaire survey developed by EuroTraining (P8) responsible for quality Workpackage (WP5). Similarly, the Quality Board members (<https://www.seafood-security.org/copy-of-management-board>) have been asked to help to improve the quality of WP1 outcomes i.e. needs assessment reports which are available at: (<https://drive.google.com/drive/u/0/folders/1kQMMlf5w6tr3KS6ykuB6Tk8HuTk2yggy>).

Challenges working between the region and across country

Time difference between Europe and Asia is causing somewhat problem especially if we organize any Skype meeting. By the time, office starts in Europe, its late office hour in Asia. However, most of the communication was done by email. Therefore, there is no big problem. Another difference was about the culture species and farming methods. Asian partners are from the hot and tropical climate and seafood grown and processed are different from Europe where cold-water and temperate species especially salmon is the main species cultured. During the training workshop and field visits, Salmon farming / products were frequently given as examples, and also organized visits were salmon farms in both the tours. Sometimes, technologies shown were not directly applicable. Similarly, some of the lab equipment were high tech and costly which are not often possible in Asia. Even then, all the participants showed good interest of learning about salmon and observing labs. There were no major issues out of these differences. Teachers have expressed that they could incorporate some of the methods and equipment in their courses as examples. There is not much difference within Asian countries as these are all in the tropical climate and they have common species. These challenges are always there. The best strategy to cope with the advanced technologies seen in northern parts of the globe is to consider them as example or model but ultimately, finding indigenous ways and low cost technologies to suit the local conditions. Those teachers, who have seen and know high tech, can give guidance to the students to find ways. Within the ASEAN differences are less, although they do have specific problems such as Thailand is suffering from shrimp diseases and environmental issues whereas Vietnam is more on Pangasius, and Indonesia is more on

Project teams:

Non-academic partners (or Associated partners) – not listed.

Although, there were not mentioned in the proposal, the following public and private institutions that have great roles the fisheries and aquaculture in SE Asia, and globally, were invited to take part in Kick-Off meeting to give some inputs, and being consulted for the review of curricula developed and also being considered for internship:

1. Department of Fisheries (DoF), Thailand
2. Department Seafood Product Processing, Can Tho University
3. Network of Aquaculture Centres in Asia Pacific (NACA), Bangkok, Thailand
4. SEAFDEC (South East Asia Fisheries Development and Extension Centre), Bangkok
5. CP Company, International Company
6. Biomin, Austria (produces phytogenic feed supplements)
7. Trouw Nutrition, Thailand (produces feed additives, HQ in the Netherlands)
8. BluAqua (Sells Shrimp products and production designs, Bangkok / Singapore)
9. Nam Sai Farms International (Tilapia Hatchery)
10. INTECQ, Thailand (Feed Company, Thailand)

Similarly, all other Asian partners have developed linkages with the non-academic stakeholders in each country and location to discuss about industry need e.g. Nong Lam University had it on June 20, 2018 while having a curricula restructuring discussion. The following public and private institutions for the purpose of internships who will be consulted while continuing curriculum development and improvement process.

1. Khon Kaen farm Thailand (Fish Hatchery, a SME)
2. Thapra Fish Farm, Fish Hatchery
3. Phaka Farm, Thailand (SME)
4. Can Gio Mangrove Forest Management Board, Vietnam
5. Centre for Coldwater Fisheries Research, Vietnam
6. Center for Environment and Disease Monitoring in Aquaculture, Vietnam
7. National Broodstock Center for Mariculture Species in Northern Vietnam
8. Mangrove extensive aquaculture integrated with ecotourism, Vietnam
9. The Center for Coastal and Marine Resources Studie, Indonesia
10. PT KML Ichimasa Foods, Indonesia
11. PT Kurnia Mitra Makmur Purwakarta, Indonesia
12. Aqua Global Environs Co., Ltd., Myanmar/Thailand

Meetings Skype or emails or face-to-face

We tried first Skype meeting on February 9, 2018. However, it was not very successful due to time difference. Not many were available at the same time. There was also problem of connecting all who were waiting in their places. Someone mentioned that many people can't be connected with Skype. Therefore, we decided not to choose Skype. We also did not plan for face-to-face meeting just for the project planning and implementation. Instead, we combined with workshops. Kick off meeting was with inception workshop. Similarly, other two face-face meetings were during the Study tours in Norway and UK where activity planning and scheduling were done with the agreement from all the partners. Most of the communication was done through email. Some months, there are over 100 emails sent by Project Coordinators, and most of the months above over 30 or even 50. Minimum number was 20 emails per month. Partners found it is easier to understand as it can be seen clearly in written form, without any difficulty of voice, accent or technical problem in case of Skype or telephones.

Too little details about project management body

Although it was not explicitly given the management body, it was understood that the project planned to have a Local coordinator in each institution and other teachers to back him/her as experts and administrative personnel for support in terms of financial, event management and others. Nevertheless, a clear structure of the project Management (MB) as well as the structure of the project idea are provided at: <https://www.seafood-security.org/copy-of-management-board-1> and <https://www.seafood-security.org/management>

Organizations benefitting from the past projects was not clear

All the SSNS partners from Europe, and AIT and RIA1 have had some projects as Lead Partners. In Fisheries and aquaculture or seafood sector, two Asia Link programs (TH/Asia-Link/007 (104797) and (TH/Asia-Link/016(141-287)) funded by EU were led by AIT developed curricula for "Aquaculture" and also developed internship programs in which RIA1 (P12) and Nong Lam University (P13) were partners from Vietnam. However, focus was on improving the existing curricula for aquaculture. Only five key courses were improved. Other partners were not involved in those projects; therefore; a lot of lessons (such as formats of course outlines with learning outcomes and templates of internships) learned from the previous projects have been useful for all the new partners of SSNS.

Among the SSNS partners, Maejo Univeristy (P2), Khon Kaen University (P3) and Nong Lam University (P13) are partners in TUNASIA (EPP586144-2017) project i.e. Tuning Environmental Competencies in Asian Fisheries Education for Sustainable Development funded by EU Erasmus+ Programme. However, this project focuses on trans-disciplinary environmental education to fisheries and mostly focus on **Bachelor degree**. However, that project is trying to tune with environment aspects and follow Bologna process as they do not have credit transfer system and neither their curricula meet the level of European standards. If the TUNASIA achieves their objectives SSNS project could take advantages as SSNS focuses on MSc degree for which Bologna process is more necessary. SSNS also has a wide range covering all aspects of seafood and nutrition security and emphasizes on more and stronger linkages with industry and value-additions as well as product standards. They can move easily to MSc course accreditation and may be able to claim the quality and acceptable to European universities so that mobility of students form Europe to Asia and vice versa can be expanded.

Impacts and sustainability:

Too little about institutional impact is given e.g. international modernization and lack of focus on institutional level.

Priority has been given more to strengthen the fisheries/aquaculture or seafood related areas hoping that it will serve as model for other departments/faculties. The developed courses will be made available online or share among teachers. All partners will be asked to organize institute-wide seminars, curriculum development trainings and communication system so that lessons learned from SSNS can be transferred to other faculties/departments which can bring some changes in the institution level. During the VLE session in NTNU, Norway, it was discussed and agreed to have VLE system in each partner institution so that other teachers can also register in VLE system as teacher. A series of sessions (department/faculty wise) will be planned to train on how to use VLE for effective teaching.

Multiplier effects not adequate

All partners are aware that they need to carry out communication institute and department wide communication to invite for participation, they need organize seminar / workshops to share lessons learned, and give presentations during international conferences. Similarly, partners will also translate and produce outcomes to distribute. More importantly, the courses developed during the SSNS project will serve as model for other courses within the department and across the department. Three main universities taking part in the SSNS project can even influence in the country's policies to incorporate ideas and MS course outlines, VET courses and internship programs. Project team will be keep track of these multiplier effects as much as possible.

Industry should have included from the beginning

All the partners have consulted with some professionals from industries. For example, Nong Lam University (P13) had a seminar and discussion on 20th June 2018 during which they asked the human resource demand for them in the next 5, 10 or 20 years so that universities could plan to offer relevant programs and courses. They also discussed about internship programs in those companies which were very willing to offer internship opportunities for aquaculture students. Similarly, others do have reported in country reports (WP1). However, in some cases as mentioned in earlier section, getting enough industry professional is difficult to involve. For example, when AIT invited 15 different people/organizations, only 3 turned up on the first day of inception workshop. Most of them are busy and can't afford to sit in and give inputs. Some may think they won't be much helpful for such academic

programs. Therefore, new strategies have to be developed and practiced. SSNS Project Team thinks, internship would be the best option, which provides opportunities to the professors to visit them in their facilities and interact with appropriate person. Similarly, student who works in private sector internship will have better inputs about the course and curricula. Teachers will be guided or oriented towards revising the curricula regularly with the inputs from their own observation and interactions, industry professionals and intern students.

Little evidence planned dissemination beyond the project

Although it was missing or not planned, the project team will work on publishing the articles in journals, magazines, monographs, proceeding of the final conference and continue writing papers and give presentation during other national and international conferences. These are possible to do as no project funds will be needed as these are necessary for lecturers to produce outputs as a part of their progress for career and the requirement for the promotion in their job. If necessary and available, some partners may also find local resources. More importantly, when partners establish Sustainable Seafood Centre or similar names, they plan to produce brochure for MSc program and also VET courses and also internship programs. As VET courses will generate income for them, they will have incentive to disseminate. Similarly, most impactful dissemination is the use of social media and it is free. The social media group created for SSNS project i.e. <https://www.facebook.com/groups/Sustainableseafood/> As it is free to keep the group running, this will continued. Similarly, project web-sites are also almost free, it can be continued.

Other recommendations (by EU officer at Brussels, during January 28-29, 2018):

Budget: EU officer during the Project Coordinators meeting had suggested revising budget especially to increase so that cost of management for AIT will be adequately covered. A revised budget was submitted to the EU officer after careful consideration and detailed workout. However, the limit for each category was within that limit. A new budget file is available in shared Google drive.

3.2.2 Transversal issues – how project addresses gender balance, sustainable development, unemployment, social cohesion?

Gender: The project is balancing well in terms of gender. For examples, during the inception workshop in Bangkok, total of 28 males and 22 females participated which means 44% were women out of 50 participants. Similarly, during the trip to NTNU, Norway for Study and training visit, a total of 28 Asian lectures attended out of which 8 were females i.e. 29% which is almost one-third. Whereas during the trip to Univ of Stirling, UK, exactly 50% women out of 28 from Asia got chance to get involved in the Study tour and training for curriculum development. Whereas in Europe, more women were involved than men in the workshop as trainers and organizers; eight were women out of 10 in NTNU and eight women out of 15 at Stirling. In the 52 courses developed, one fourth of them will have the gender component as a part of each course.

Sustainable development – as the main emphasis of the project to ensure seafood security in the long run. Most of the course are explicitly or implicitly addressing the issue of sustainable aquaculture and fishery.

Unemployment – project emphasized the entrepreneurship to incorporate in each curricula especially the courses such as product development, diversification, business management courses. About one-fourth of the courses will include some part to deal with unemployment problem. It is hope that some of the graduates would start their own business.

Social cohesion – although courses may not have explicitly to promote social cohesion, the courses promoting sustainable development, enemployment and gender address this issue.

3.2.3 Involvement of people with fewer opportunities e.g. migrant, refugees, internally displaced people and disable people.

Project was not specifically designed to address this issue; however, while giving opportunities to the students, message will be made clear among the partners for consideration when MSc programs and VET courses are launched i.e. second of the project period.

4. Award criteria

4.1 Typology – prefilled tick boxes

4.2 Assessment criteria – 1) Relevance, 2) Quality of the project implementation, 3) Quality of cooperation, 4). Impact and Sustainability

GUIDING QUESTIONS TO THE 4 AWARD CRITERIA

SECTION 1: Relevance

1) Relevance to the objectives

In comparison to the original proposal, describe **any change that may have affected the project relevance and added value for the partner countries involved.**

Explain or justify in particular:

The project has been considered still highly relevant. The seafood production industry is still highly vulnerable. Fish catch from the sea is further declining. There are several news about it e.g. Southeast Asia's Fisheries Near Collapse from Overfishing, published on March 28, 2018 at:

<https://asiafoundation.org/2018/03/28/southeast-asias-fisheries-near-collapse-overfishing/>

Overfishing and destructive fishing in Southeast Asia is still an issue, which is attributed to illegal, unreported, and unregulated fishing (IUU). Thailand reported as overfished country where marine catch has steadily decreasing for last 25 years after mid-90s. Therefore, Thailand is considering increasing trawlers' mesh net from 4 cm to 5 cm so that fishermen will catch only bigger ones leaving small in the sea to grow. There are several news about decline in seafood supply and efforts to make it sustainable. Farming of aquatic animals have been emphasized. However, conflicts on the use of resources such as land, water and forest/mangroves have been major challenges. For example, viral diseases and EMS in shrimp is still affecting their production. Thailand, once leading exporter of shrimp is now importing shrimp from India due to sharp decline in farmed shrimp production. Thai lost about 2 billion annual income from shrimp export due to diseases. Thailand is trying hard to explore various system to make sustainable such as growing shrimp together with tilapia, using biofloc or aquamimicry systems.

Indonesia is emphasizing in seafood production and export. It is the largest producer of several species and the world's largest tuna catching nation and accounted for 16% of global production in 2018. However, IUU is a big issue. Having more than 17,000 isolated islands, its not easy to monitor and control fishing industry. FAO data showed wild catch is stable slight over 5 million tons per year. But production from farming has been 4-5 times higher than fishing.

Similarly, Vietnam is emphasizing on rapid growth and seafood export to EU, US and recently to China targeting at 10 billion USD in value in 2019, 11% annual increment, according to the Ministry of Agriculture

and Rural Development (at: http://seafood.vasep.com.vn/seafood/701_12940/fisheries-sector-aims-at-10-billion-usd-in-export-value.htm). Recent seafood export to China has indicated that big market is opening next door. Due to increase in income of Chinese population, demand for seafood is rapidly increasing. More seafood is likely to be pumped up by China very soon creating some challenges for seafood supply to Europe. In 2018, Vietnam has already exported seafood valued at over 1.2 billion USD worth of seafood to China, 70% of which were official and the remaining might be un-official (source: http://seafood.vasep.com.vn/seafood/701_13006/seafood-businesses-advised-to-boost-official-exports-to-china.htm). Especially, seafood export Europe and USA is challenge due to requirement of quality and certification process concerning the use of antibiotics and environmental issues. According to Seafood source (<https://www.seafoodsource.com>) FDA refused seafood imports over antibiotics, salmonella by Christine Blank on 8th May 2018. Similar cases are occurring time and again. Thai union and WWF released first sourcing transparency: wild caught fish and shellfish report on 11 February 2019. Thai Union is a leading global seafood company with a portfolio of brands worldwide, and the partner WWF (Worldwide Fund for Nature).

More human resource and experts are needed for the industry; however, the enrollment in higher education in the fishery and aquaculture is very low and unstable. The proposal to develop new and need-based curricula/courses for MSc programmes and vocational education training (VET) are badly needed. The development of courses with more field based experiences involving industries to utilize their knowledge, experience and even facilities has tremendous scope. seafood industry and its roles in human nutrition. More importantly, internship programmes developed have already gaining momentum to link with the industries. However, there are some challenges of establishing completely new MSc programmes as it has be approved by higher level; possibly ministerial level or national policy level. Nevertheless, the team in each partner universities has agreed to create a “Specialization” within the broad marine science, food technology, fishery or aquaculture.

· **_how the consortium dealt with internal and/or external constraints (e.g. legislative changes, labour market needs, lack of motivation/commitment of partners, lack of availability of staff, cultural differences, visa issues, exchange rate fluctuations etc.);**

The project brought together three distinct cultures of three countries in Asia in addition to being different between Europe and Asia. However, all have a good level of motivation and commitment despite having difficulty in getting visa to Norway and UK, and some fluctuation in exchange rate, Euro is falling down as compared to Asian currencies. As the unit rates for travel are very tight, and falling exchange rate, has made difficulty in covering the costs; however, the partners are finding a way from either local sources or readjusting internal budgets.

The good motivation and commitment of partners is reflected in terms of no. of participation during three main activities i.e. 1) Inception workshop in Thailand, 2) Study visit and Curriculum Development workshop at NTNU, Norway and 3) Study visit and Curriculum Development workshop at the University of Stirling, UK. For the inception workshop, most partner institutions were represented by two experts as planned except University of Stirling and Khon Kaen Univ. Only one expert participated from each of them because of family problems. How two Indonesian partner sent more than two representatives bearing from their own institution’s budget; namely JFU had persons i.e. one was additional, and IPB had five, i.e. two were additional. All the Asian partners had three experts. Only RIA1 (P12) sent two for NTNU but four for Univ of Stirling. Among the consortium partners from Europe, Univ of Thessaly sent two experts to all the three events as planned. Whereas EuroTraining had three for NTNU; one extra expert on VLE to give basic idea to participants, then only one was sent to Univ of Stirling. Participation from the University of Stirling at NTNU was hampered again due to family problem. However, they have promised, additional trip to Asian partner countries during delivery or on-the job training, that should be

more useful. All the three reports are available at shared Google drive at:

· **_to what extent the project is still relevant to their national context (how does it address the national strategies and policy development)**

Thailand suffered the most due to problem in shrimp industry. Thailand was no. 1 exporter of shrimp for over two decades earning over 2 billion Euro per year. As industry collapsed due to EMS and other viral/bacterial diseases, Thailand is now importing shrimp from India. Royal Thai Government, as well as private sector is trying to regain the position by developing various systems which could be more sustainable or do not collapse again such as growing shrimp with tilapia in polyculture, bio-floc or aqua-mimicry system and so on. They are also trying to explore other species such as snakehead breeding and grow-out farming to expand in larger scale. Therefore, sustainable seafood is still a high priority area in Thailand. As mentioned in Relevance section, Vietnam is targeting to increase seafood export valued at US\$10 billion in 2019. The main species is Pangasius, however, due to falling price and tough competition, many farmers are go out of business, and they try to find alternative species such as tilapia or others. Similarly, Thailand and Indonesia both consider seafood is important in terms of foreign currency earning, important item of common people's diet and are giving high priority to seafood production and export. Human resource development in seafood industry is one of the main strategies.

How the activities implemented are contributing to reaching the project objectives as specified in the proposal in accordance with the following topics:

_Improving quality of education and teaching (priority B)

All the participants of consortium partners have felt the WP1 activities and two European trips were very useful. The WP1 provided opportunities to know what other universities are offering the courses, and assess the needs and analyze the gap for the country as well as for the partner universities. In both the universities, teaching and learning was more student centered and more emphasis on soft skills e.g. communication, interaction, group learning, distant learning, i.e. more self learning rather than rote type in Asia. At NTNU, a subject/program called, "Experts in Teamwork (EiT) was very much interesting and was very much appreciated by the participating teachers. It involves 20 -30students in each team to solve a pertinent problem faced by a community. The teams, also called, "Villages" are created involving students as experts, of various backgrounds e.g. food technology, sociology, environment, economics, engineering, sociology, etc. It provides them to interact each other, and learn how the people with different background might the same problem who might come up several ways of solutions. Similarly, at Stirling, participants were very much amazed with the opportunities for students to go abroad and face real problems of developing countries such as Bangladesh, Malaysia, Thailand and African countries, and do research based on the real problems. Although brief, but the laboratory visits of both the EU institutions were very useful to learn how high quality research are being done using sophisticated equipment. At Stirling, participants learn specifically about animal welfare, ethical procedures, safety requirements and legal issues while doing research using live animals, which are often overlooked in Asia. Similarly, Advancement occurred and being done in Salmon industry was like an eye opening for Asian aquaculture industry. For examples, use of under water camera to feed the salmon to save feeding cost and reduce feed waste, use of robots in grading salmon by size and detecting defects in fillet. Most participants are going to use these knowledge and lessons learned in their existing or new courses incorporating in appropriate part of some relevant courses, which would help shaping higher education sector to benefit the society.

_Improving management and operation of HEIs (priority C)

The SSNS is a collaborative project between universities in Asian and European countries. During

the meeting and other activities, we share our experience on managing and operating the institution. The sharing brings a new knowledge that could be used to improve our management and operation. Moreover, from this SSNS project, we could establish other collaborations on research and other opportunities in the future.

_ Developing HE sector within society at large (priority D)

One of the outputs of the SSNS project is to develop VET courses and internship programs. The VET and internships involve not only the academics but also the society and the real world both public as well as private sector. Connections with the community to learn and also be part of the solutions were the main emphasis of the two study visits i.e. NTNU and University of Stirling. The participating lectures are very clear about that and they have promised to utilize this knowledge as much as possible.

SECTION 2: Quality of the project implementation

1) Description of the activities implemented

Summarise the activities implemented so far addressing in particular the following issues:

- **_Extent to which these activities are in line with (or diverge from) the work programme, timetable and partners' share of responsibilities presented;**

The project activities have been well aligned with the plan. WP1 was about to identify existing curricula/courses in Europe and Asia, and analyze gap to recommend for the development of new courses (MSc and VET courses). European group, conducted desk research through literature and website and also conducted a survey whereas Asian partners had stakeholders meeting and desk study to do the same. The initial plan was to produce a single report from Asia; however they kept the report separately by country thinking that it would be easier for users to go through and grasp, especially other universities and departments, and also for the purpose of further work of publication such as monograph or articles for magazines/journals for wider dissemination. Although it was not planned. Considering the comments by proposal evaluators, we are working on this. Four draft papers (1 from Europe and 3 from Asia) have been already produced and will be refined to submit immediately after mid-term report submission.

Only problem we faced was timing. As the grant agreement signing was late, it has affected in keeping the deadlines. Although, grant agreement between EU and AIT was signed in January end of 2018, the project start date was considered as 15th October 2017. It took another 3-4 months to sign MoAs between AIT and all the partners. As a result, Kick off meeting was possible in mid-April. Therefore, deadlines were considered by about 6 month late, but we had to catch up and carrying out some background work as a result some partners started produce WP1 draft reports (identification of existing curricula of MSc degree and VET courses) in May 2018 and the project team continued to make revisions, at the same time to conducted a survey by European partners. A final compiled report and three country reports were provided to the quality board to check their quality. While still working on WP1 activities, the project team started planning WP2 activities. As a result, it was possible to organize the first trip to Europe i.e. NTNU in early November (5-9th Nov, 2018) six month later than planned and the second in February 11-15, 2019 about five month later. First visit was supposed to be Stirling and the second to NTNU but due to semester time availability in each university, we had to swap it. Although, these tours were about 5-6 months late, there is no impact on overall implementation. Our teachers were able to develop course by mid-March instead of mid-January 2019 planned. We are catching up time. With the experience and skill learned, the main activity of WP2 is development of courses and internship, took place rapidly and over 50 MSc courses (against 20 planned) have been newly developed or improved from existing ones and about 39 VET courses (against 27 planned) have been developed. Partners accelerated the activity as basic background work were already happening before the tours. Finally, these courses were ready by mid-March 2019, which were supposed to be ready by January 2019. It was

only 2 months late. There is enough time to refine them, and offer from August 2019 semester. During the period between April and July 2019 period the confirmed courses ready to offer or confirm to offer will be uploaded onto VLE system by individual lecturers. VLE platform is ready from mid March, which was supposed to be from mid February 2019. There is no effect on overall course launching due to late study tours and late creation of VLE platform. Our target is to launch about half of these courses from August semester, 2019 and the remaining for the following semester that starts from January 2020. So there will be full two semesters (complete 1 year course work for MSc degree) to test the courses or curricula, and improve further incorporating the feed back from students and stakeholders during the remaining project period i.e. June – October 2020. These courses will be accredited by the relevant agencies in each partner institution before offering them or during the process of delivery and refinement. At the same time, attempts will be made to be accredited by international agencies and collaborations with European universities whatever and wherever possible.

Sharing responsibilities:

Project coordination and implementation – As planned, the Lead partner AIT organized the kick-off meeting and inception workshop during April 18-20 to give comprehensive/in-depth information of the project plan and activities. Project Coordinator is working in full swing, doing a lot of communications and providing guidance to the partners. There are records of emails at least 40-50 emails per month starting from January 2018, even reaching over 100 in some months. For **WP1** to identify existing curricula and assessment of needs in Asia (D1.1) was divided by country i.e. Thailand, Indonesia and Vietnam. Maejo University (P2) took a lead for Thailand, IBP (P4) led the Indonesian and Can Tho University (P11) led the Vietnamese part taking help from all other partners of their respective countries. Whereas in Europe, NTNU (P7) led the European group for the report on existing MSc curricula, which included a desk office work and a questionnaire survey covering Europe and Asia. They compiled data, analyze and prepared the report (D1.2). Together with Project Coordinator, they also prepared the Final report (D1.4), which is a summary of all the four reports (3 from Asia and 1 from Europe). As per the plan EuroTraining conducted a survey and compiled the report on existing VET courses in Europe and Asia (D1.3). For **WP2**, partners are developing curricula using the skill learned from Study tour / training workshop and taking ideas from WP1 outcomes. Two educational tours and training workshop were successfully organized with good impression. As planned NTNU (P7) and University of Stirling (P6) did they their wonderful job. After returning from each trip, every instructor from all the Asian partners is working to develop a course each. Therefore, the number of courses developed/Improved has been more than double 50 courses (out of 20 planned). About 40 VET courses have been developed, a course by each instructor. Similarly, some internship programs have been already developed and some more are being developed by instructors of various partners. No. of courses to offered will still be more depending upon the need and the requirement by each institution. EuroTraining (P5) has been very active in taking full responsibility of check quality since the beginning. Questionnaires were sent to participants of each event such as Inception workshop and two study tours. One periodic evaluation has also been completed.

· _The applicability, added value and impact for the partner countries involved in the activities implemented so far

The quality report has very positive reports on the activities organized so far i.e. inception workshop at AIT and two trips to Europe (available in Google drive). In addition, participants were asked to write a brief summary what they learned during the study visits and how they could apply upon return. These reports are enclosed with their trip reports in an addition page each. According to their trip reports, they have learned the following major points and have expressed how they are going to apply:

Lessons for Curriculum development process and delivery methods

- Learning outcomes
- Course such as EiT (Experts in Teamwork) in NTNU was appreciated by all the participants which is likely to be incorporated by some of them at least.
- Student centered teaching and learning such as students are given group assignments so that they could learn from each other instead of lecture only. University has small rooms for group discussion which they can book and sit together to discuss each others.
- Teaching learning is aligned with the community problems and priorities
- Linkages with industry is very important

Mass spectrometry (MS) and Nuclear magnetic resonance spectroscopy (NMR) Labs were examples of expensive but efficient and sophisticated lab equipment where participants were immediately asking for research collaboration for sample analysis. There was positive response from the NTNU staff who mentioned that if there is project collaboration, samples can be analyzed free under the agreement.

Similarly, Laboratory visit at the Stirling University, UK gave more insights about a wide variety of sections very specialized research can be done such as histopathology, molecular lab, nutrition lab and so on. More importantly, participants observed a warm and tropical house especially built for research on tropical fish e.g. tilapia, in cold Scotland which has a number of aquaria with water recirculating system, is a good example what can be done to control environment for the research purpose. More importantly, the safety measure and guidelines, also animal welfare and ethical procedures applied in the lab are certainly adoptable for the benefits of students, researchers and the partner institutions in Asia.

Salmon farm visits in Norway and Scotland, of course were one of the best events for learning purpose. Almost all of the Asian participants had no chance to visit salmon farms and walk around the cages and see real live salmon in side. More interestingly, the setting up of underground camera and continuous watching of feeding on the large computer screens and control the feeding based on the fish behavior was very much exciting to all the lecturers. Many lectures have expressed that they will use these pictures and video clips they have taken in teaching their courses, which may bring big change in fish farming in Asia in the near future. Salmon farming is the leader in terms of research and innovation, and also commercialization worldwide.

Collaborations – Some of the partners are already having a collaboration in writing a book on Aquatic Food Security (AFS) to be published by 5M Company based in UK with the lecturers of the University of Stirling led Prof Rachel Norman and Dr Margaret Crumlish, both are involved in the SSNS project. The Study visit provided the opportunities to interact each other and know expertise, which turned to a collaboration in writing the book. At least three chapters are being contributed by Asian partners; namely, Global Seafood Products but Different markets by Dr Ram C. Bhujel, AIT, Role of processing and retail sectors in aquatic food Supply Chains by Prof Mala Nurilmala and her team from IBP, Indonesia. Aquatic Food Safety (biological, chemical and physical) by Prof. Nguyen Thanh Phuong and his team. Other European partners; namely, Jorgen Lerfall and Ioannis Karapanagiotidis are also contributing to two addition chapters i.e. Quality issues in our global seafood and nutrition in aquatic animal production respectively. The project team is contributing half of the book in addition to the introduction and summary by Dr Margaret Crumlish and Prof Rachel Norman respectively. University of Stirling had also presented information about the funding availability from various sources in UK, which might be helpful to develop proposals within the period of project implementation. Previous there was another collaboration happened during NTNU visit. A university professor in Pakistan asked the Project Coordinator to find an expert in fish processing for a conference to an invited speech during a conference in Lahore during January 30-31, 2019. It was announced in the group, and a professor (Mrs Mala from

IPB) immediately showed the interest to grab the opportunity. Although she herself could not attend, one of her colleagues presented the paper.

· **Describe any obstacle/difficulty encountered and the measures taken to address them.**

1. Establishing SSNS centre has been a debate. Some of the partners are having difficulty in establishing the centre, as it requires more financial and human resources, partners are still optimistic will try their best. Whereas some other partners are planning to establish centres in Maejo University (P2), different name e.g. Center for Sustainable Aquaculture or Aquaculture Center of Excellence i.e. at Nong Lam University (P13), Gadjah Mada (P5) and JFU (P10). AIT already has Aqua-Centre, therefore, is in dilemma whether renamed as Sustainable Seafood Centre or keep as it is because it is serving the similar purpose.
2. Creation of new SSN MSc programs: Some of the partners are having difficulty as the process of developing new program requires longer time than thought earlier and also more preparations. Therefore, partners have agreed to start from the newly developed/improved courses, show the good impacts and if the responses from the students are good, then before the end of project efforts will be made giving these evidences, the programmes might be approved within the project period, or after, but if evidence of process will be enough to see the impacts of the project.
3.
 - Finding a convenient time of many people for the study visits was very difficult
 - Organizing a trip to engage all in a big group was also quite challenging
 - difficult to manage with the airfare rate and living cost within the eligible rates
 - ??
 - ??

2) Quality Assurance

Please describe the quality assurance (QA) measures applied to the activities implemented so far as well as the measures foreseen for upcoming activities.

You should address in particular the following elements:

· **Provide the electronic link to the project quality assurance plan, if available;**

https://drive.google.com/drive/u/0/folders/1MtJs8WI_l38ke1agLYX52wcHATJFcIIt

· **Describe the functioning of the internal QA (i.e. composition of the team(s), roles and actors involved; type and frequency of measures envisaged; feedback mechanisms in place; etc.), the measures already implemented and the remedial actions taken if any;**

According to the project's work plan and timetable, a Quality Assurance Plan has been delivered during the first months of implementation, describing the Quality Assurance Process that will be followed until the end of the Project. Taking the requirements set in the Quality Assurance Plan into consideration, every partner has delivered an evaluation of the project's implementation progress for every semester so far, and also contributed to the peer reviewing of results already produced. In addition, all activities/events organized so far (one Project Meetings and two Study Visits) have been evaluated by participants, using a specifically designed questionnaire for each occasion. All of these processes will be continued until the end of the project on a periodical basis and when needed. The results of the Quality Assurance and Evaluation procedure have been summarized in a Quality Assurance Report. Similar Reports will be produced every semester, gathering the data received through the process.

The Quality Assurance Plan included, also, a risk assessment and proposed remedial actions for each risk identified. So far, there has been no need to implement any of these remedial actions, as no serious internal or external risk has come into reality.

A Management Board (MB) consisting of one representative per partner organization was established during the Kick-off Meeting. Its role will be to make strategic decision, adjustments, conflict resolution, and approving all final public documents and deliverables, among others. A Quality Board (QB) has, also, been established consisting of 13 experts mostly external. The main tasks of the QB are to overview the technical reports produced, perform quality control to all deliverable produced, and guide WP Leaders on the expected characteristics and contents of the deliverables.

· **_Describe the functioning of the external QA (i.e. identity of the external evaluator(s) and criteria used for their selection; type and frequency of measures envisaged; feedback mechanisms in place; etc.), the measures already implemented and the remedial actions taken if any;**

External QA has been planned that an independent local expert on curriculum development of higher education for each country (Thailand, Vietnam and Indonesia) will be hired based on the open calls or suggestions by each local team. At least three CVs per institution will be obtained from online application system/emails or from different sources to compare and select by the Management Board. Each evaluator should have PhD/doctoral degree with minimum 5 years experience of working as a lecturer in another university or a free-lance person. He or she will be hired for 6 days (3 days for face-to-face interview and 3 days for report writing) each time twice during the project period (total 9 evaluators, 12 days total/evaluator). The 1st evaluation near the end of course delivery of the first semester i.e. November 2019, and near the end of 2nd semester i.e. April 2020. These evaluators will visit their respective institutions to talk and interview face-to-face. Three sets of questionnaire will be developed to interview students, lecturers, and the local project coordinator. Each evaluator will interview 3-6 students taking the new/improved courses, and 3-6 teachers participating in the curriculum development process, and the Local Project Coordinator. The purpose of the external evaluation is to judge the project impacts and also monitor the curriculum development process based mainly on the outcome indicators. The report will be required to submit within three weeks of visiting the last institution. The budget will be divided into three countries. Based on the first report, partners will have opportunity to improve in the second semester. The second report will provide progresses made or still remaining will be presented as recommendations, so that partners will still have chance to improve and implement in the third semester i.e. August – November 2020 which can still be included in the Final Report of the project as deadline for the final report is 14th December (2 months from the end of the project deadline i.e. October 14, 2020). Basically, these external evaluators will evaluate based on the outcome indicators as well as the process both accomplished so far at the time of evaluation. More importantly, their evaluation reports will serve as guidelines for improvement for the following semester(s). Therefore, evaluation has been planned to see actual impacts selecting the critical times, and not been planned at the end only as thought earlier, because there will be no chance to improve if it is done at the end only.

3) Visibility

· **_Please indicate the address of the **project website** and describe briefly its structure (including the purpose and content of sections restricted to the beneficiaries), the maintenance and updating plan in place, as well as the actions implemented for ensuring its visibility to all interested stakeholders.**

Project website: <https://www.seafood-security.org/>

Logo of SSNS project is on the left hand top corner and EU Erasmus+ on the right hand top corner. The followings are

main pages and their drop down menus hang from horizontal menus i.e. structure of the webpage:

Home: introduction of the project

About us – Project structure, Management Board and Quality Board

Partners – task division, List of Teachers, Asia, Europe,

Activities – Inception workshop, WP1, 2, 3, 4, 5...

Documents – Brochure, Outcomes

VLE platform – VLE site, Teachers' manual and Users manual

Photo gallery – Several photographs of major activities with some description

Inquiry form – interested person can send email to Project Coordinator

Contact address of Project Coordinator – on the left corner at the bottom

Link to Facebook group – on the bottom of the page on the right hand corner at the bottom

All the pages of webpage are open for all partners as well as other users as webpage contain only public information. Internal documents are in Google drive.

- Maintenance plan – updating is done whenever any project activity occurs. A consultant has been hired under sub-contracting provision.
-

· **Describe and, if applicable, provide the electronic link to any information and support material produced by the project for visibility and promotion purposes.**

AIT-Lead partner:

1) <https://www.seafood-security.org/> is the project website which contains all the public information about the project and its activities (more descriptions are provided above). It is often shared by the Project Coordinator and other partners via social media.

2) <https://www.facebook.com/groups/Sustainableseafood/> is the link for the social media (Facebook) “Sustainable-Seafood-Net” group. Anyone who finds it, can join subject to approval by administrator. All the project activities have been posted along with some pictures and video clips. At the same time, news concerning seafood security are also posted or shared which could be helpful understand the industry and useful for some courses. It also attracts the attention of common people towards the issues. When Ram (Project Coordinator) shares on his time line, nearly 5,000 people who are in his friend list will get the message. Similarly, other people and groups also share it. For example, SEAT (Sustaining Ethical Aquaculture Trade) also shares it which has over 1,500 members. Another project administrator of another project, SARNISSA (Sustainable Aquaculture Research Network for Sub-Saharan Africa) also shares quite frequently which has over 5,000 members. Project activities such as NTNU and Stirling visits, salmon farms and other have been shared by few people. When few of their friends share, it can reach easily over 100,000 people via social media. Therefore, visibility of the project has been made way ahead due to social media.

3) <https://www.facebook.com/275260965909092/posts/congratulations-drram-and-the-entire-team/1137701696331677/> This is the social media post sent by the President of AIT. All of his followers can see it and also share which can reach thousands of people. For example, it was shared by the AIT School of Environment, Resources and Development which has over 11,000 members in the group. When this was shared by the Project Coordinator, his friend, Mr Kapil shared who has over 3,000 in his list. Therefore, social media is making the project spread throughout the world.

4) <http://serd.ait.ac.th/2019/01/07/aarm-continues-to-lead-curriculum-development-program-in-asia/> This site contains the news about SSNS project activities within the AIT School which belong to the Aquaculture academic degree program and Aqua-Centre.

Other partner webpages are provide below:

<http://ssns-vle.eu/>

<https://www.researchgate.net/project/Sustainable-Seafood-and-Nutrition-Security-SSNS>

<http://www.fishtech.mju.ac.th/WEB/main/index.php>
<https://www.ntnu.edu/ibt/research/food-safety/projects#Curriculum>
<https://app.cristin.no/projects/show.jsf?id=608879>
<http://fof.hcmuaf.edu.vn/fof-32878-1/en/on-going-project-ssns-curriculum-development-for-sustainable-seafood-and-nutrition-security.html>
<http://www.susaquastirling.net/blog/2018/8/30/eurastip-europe-asia-collaboration-workshop-on-education-training>
<http://eurastip.eu/education/stakeholder-needs/>
<http://fof.hcmuaf.edu.vn/?lng=en>
<http://fof.hcmuaf.edu.vn/fof-32878-1/en/on-going-project-ssns-curriculum-development-for-sustainable-seafood-and-nutrition-security.html>
<http://thp.fpik.ipb.ac.id/program-erasmus/>

· **Explain how the consortium ensures that the visibility, exploitation and publicity obligations described in the grant agreement (art. 1.10.8, 1.10.9) are respected.**

Response based on Article 1.10.8:

a) **Website** – has been already created which will be up and running at least during the project period, and we find a way to continue even beyond (Address: <https://www.seafood-security.org/>). The website has details of the project with SSNS and EU Erasmus+ logos in each page, list of all beneficiary partners with their logos, roles and responsibilities, details of the Coordinator, project activities,

c) **Update project summary** – during the mid-term submission, it has been done.

d) Use Erasmus results platform

Mid-term and final reports will be submitted along with all supporting documents. All required information will be submitted accordingly when time comes.

Exploitation – **how many courses have been already offered**, and how many are planned?

Response to Article 10.9:

Publicity obligations – Logo of EU with the text “Co-funded by Erasmus+ Programme of the European Union” in every outcome such as WP1 Reports, website, VLE site, social media head banner etc.

Publication – Logos of the SSNS project and EU Erasmus+ programme appeared in all the WP1 outcome documents. Presentation template with SSNS and EU Erasmus+ programme on the top of each slide has been developed and shared among partners so that they can use it whenever they prepare and present during any conferences.

Events: The logos of the SSNS project and EU Erasmus+ programme along with all consortium partners logos have been used or will be used in the banner, backdrop or poster or any other form of all the events including inception workshop, Study tours and stakeholders meeting. A door sticker has prepared and provided during the inception workshop for them to use whenever events occur. Which was used by during inception workshop, and two study tours.

4) Equipment

· **Describe the equipment(s) already acquired by the project and, if applicable, present the timetable and type(s) of equipment still to be acquired (by and for whom).**

As soon as the mid-report is submitted, further steps in purchasing procedures will be taken. The following time-table is likely to follow:

- 1) May, 2019 – discussion about purchasing arrangement with partners and establish a set of common guidelines
- June – July, 2019: getting 3 quotations for each equipment and purchase first lot of easily available ones e.g. lab/computers, cameras, LCD Projectors, microscope, water pumps etc.
- 2) August – December: purchasing of second set of scientific equipment that require some time e.g. DO meter etc.
- 3) Jan – April, 2020 – purchasing of remaining equipment which may require import from abroad.

It was thought that if we could buy all equipment from one sources, it could be a lot cheaper and could have bigger discount. However, now Asian partners have realized that transferring equipment from one country to another will be a problem. On the other hand, different types of equipment cannot be purchased from a single source even within each country. Therefore, they feel its easier to arrange purchase by each individual partner institution; however, all of them will follow the best practice i.e. by receiving at least three quotations for each equipment and choose one based on the lowest price and quality following their own institutional guidelines.

· **Justify how equipment items have been used in the project activities (for teaching, learning, research, the provision of new services, etc.) for the different target groups (specifying the nature of these target groups and the estimated number of final beneficiaries of the equipment on a yearly basis) and describe the actions implemented (/foreseen) for maximizing their usage;**

- Equipment have not been purchased yet. It has been made clear that the equipment are for the purpose of teaching and learning or in other words, to help students learn by doing. The estimated number of students or users are 10 MSc and 5 PhD students per year per partners i.e. $(10 + 5) \times 9 = 135$ students. The no. of users can be a lot higher than this as the equipment will be in the main lab which is shared by many students other programs and departments.

· **Indicate where it has been installed.**

- They will be installed in well-protected existing laboratories in each institution associated with Sustainable Seafood Centre or similar name given to it.

· **As compared to the proposal, what changes have occurred (/do you foresee) for the purchase and/or usage of equipment?**

- Yes, changes have been made in the list. In the proposal, a provisional list of same equipment was given for all partners. However, most of the partners did rigorous process of discussions and consultation with concerned authorities, current students and lab staff to make the list based on the real need. A final list has been prepared to make ready to purchase which is available at shared Google Drive i.e.:

<https://drive.google.com/drive/u/0/folders/1x41c8rcW6bVrhEctv4hklpbucoNap7KZ>

Almost all the partners have changed the list compared to the one mentioned in the proposal. For examples, AIT would like to purchase UV visible spectrophotometer, crucibles, fat extraction cups, for existing machines in the lab, at the same time an amino acid analyzer to add amino acid analysis for teaching and learning, a under water video camera to watch behavior of fish during feeding and other situation. A desk computer instead of a laptop. Similarly, other partners such as Mejo (P2) wants hot air over, UV visible spectrophotometer and KitchenAid mixer model 5K5SSWH Mix on top of the existing list without additional total cost. Khon Kaen (P3) has Autoclave (1 pc) and Compound Microscope HumaScope Advance LED (2 pcs) as added in the list hoping that total cost will not increase. IPB (P4) has come up with completely new set of equipment as their focus is on seafood processing. Similarly, UGM (P5) also has three new and good equipment in the list i.e. 2 D electrophoresis CO2 Incubator Biosafety Cabinet. JFU (P10) has added a Multi-parameter water quality checker, UV visible spectrophotometer,

Recirculation System Tank and a Desktop Computer. Whereas in Vietnam, Can Tho (P11) has added an incubator, LED TV screen, orbital shaker, homogenizer, UV Specto-photo meter, electrophoresis system, water bath, oven, refrigerator and photo colorimeter. RIA1 (P12) has mentioned that they want to have a good sound system and large screen (LED TV) for teaching and learning purpose so that they can use videos and even virtual class, whereas Nong Lam University (P13) is adding equipment to support mainly food technology course such as Biosafety cabinet, Semi automatic can screamer, Vacuum packaging machine, Autoclave steam sterilizer, Fish meat grinder machine, Sausage stuffer and Food dehydrator machine

OPTIONAL (yes/no)

The project includes activities relating to Curriculum Development

5) Higher education: promoting internationalisation, recognition and mobility, supporting changes in line with Bologna principles and tools 7

Explain to what extent the new curriculum takes into account the principles set out in the Bologna process (e.g. integration in the 3 cycles, definition of learning outcomes in accordance with a national or European Qualification Framework EQF, application of student-centred approaches, compatibility with European Credit Transfer System ECTS and with the European Standards and Guidelines ESGs for QA, etc.)

Yes, off course, the project is trying to modernize the curricula/courses promoting innovation and entrepreneurship and high skill based education system so that graduates can be accepted not only within the country but also in the region and around the globe including Europe. There are trends in Asia that students look for opportunities of studying Europe or abroad either after bachelor's degree. Many students from ASEAN countries join Erasmus Mundus and similar student exchange programs each year. More will join from the partner countries such as Indonesia, Thailand and Vietnam in the future. However, there is still problem in direct transfer of credits from Asian countries to ECTS and vice versa mobility is restricted. More importantly, developing skills in ASEAN students to the level of European standards and acceptance for jobs in Europe is still long way to go. European students are easily accepted for jobs in ASEAN countries. Only limitation is the language skills. In ASEAN countries, high tech equipment and laboratory facilities are normally weak, and teaching learning methods are far behind. As a result, graduates from ASEAN universities might not be capable of doing work in Europe. On the other hand, due to language skill (spoken and written) graduates fall even far behind. Therefore, even within the region, they face difficulties for mobility across ASEAN countries. Therefore, courses have been developed using a common international language i.e. English, and teaching learning also need to be English. Best practices of teaching and learning have been explored under WP1 in order to apply. The main goal of this project is to improve basic needs of higher education in partner countries. Courses are harmonized so that they learn the same thing either in Europe or ASEAN countries taking the same course. Universities are also moving towards offering courses online. VLE system has been developed for that purpose, and all participating lecturers have promised to use it. This has many benefits including computer skills, language skills in addition to increase integration with teachers.

6) New/updated courses

For each of the courses intended to be developed (/updated) for the benefit of the partner country Higher Education Institutions (HEIs), specify

· _The title of the course, its volume (when applicable, in ECTS),

There are 53 MSc courses developed so far by nine Asian partners (Table 1). Twenty of them are newly developed and 33 are improved from the existing courses. The courses are either 2 or 3 credit courses.

Table 1 List of courses and no. of credits:

SN	MSc couress	No. of credit hours
1	Sustainable Seafood & Human Nutrition	2
2	Seafood Value Chain	2 (2+0)
3	Aqua-ponics	2 (2+2)
4	Cleaner aquaculture technology	3 (3-0)
5	Aquaculture Economics and marketing	3 (3-0)
6	Seminars on Sustainable Seafood	2 (0+2)
7	Internship in Seafood Industry	6 (0+5)
8	Aquafeed formulation & feeding	3(2-3-5)
9	Aqua Farm Business Management	3(3-0-5)
10	Fisheries Business management	3(2-3-5)
11	Fishery Technology Development	3(2-3-5)
12	Aquatic Resources Management	3(2-3-5)
13	Advanced research methodology	3(2-3-5)
14	Aquatic Feed	3(3-0-5)
15	Broodstock maangement	3(3-0-6)
16	Diseases and water quality	3(3-0-6)
17	Fish product quality & safety	3(3-0-6)
18	Seafood Marketing	3(3-0-5)
19	Seafood processing	3(3-0-6)
20	Seafood safety	2(2-3)
21	Fish quality and traceability	2(2-3)
22	Seafood Enzymes	2(2-3)
23	Seafood handling and transportation	3(2-3)
24	Aquatic BioResources	3(2-3)
25	Advanced lab technology	2(2-3)
26	Sustainable Seafood & Human Nutrition	3-1
27	Tropical Aquatic Bio-resources	3-0
28	Seafood Functional property	3
29	Atmospheric ocean-Atmospheric Interaction	3
30	Fish immunology	3
31	Fish viral diseases	3
32	Smart & Env Friendly Aquaculture	3
33	Product Development & Economic Valuation	3
34	Aquafeed Technology	3
35	Aquaculture Production System	3
36	Water Quality and Env. System Management	3
37	Aquabusiness Management	3
38	Seafood Innovation and Technology	3
39	Fisheries Modelling System	3
40	Sustainable Seafood & Human Nutrition	3
41	Aquaculture & Environment	3

42	Food safety and quality management	3
43	Research methodology & communication	3
44	Feeds and feeding management	2
45	Marine fish breeding & farming	2
46	Seafood and human nutrition	2
47	Aqua Tech & Aquatic Animal Health & Biosecurity	2
48	Environment Impact Assessment (EIA)	3
49	Fisheries Resource Management	3
50	Sustainable seafood & Human Nutrition	3
51	Biotechnology in Aquaculture	3
52	Adv Nutrition and feed formulation	3
53	Statistics for aquaculture	3

Table 2. VET course developed new or improved from existing ones.

SN	VET Courses	New/improved
1	Tilapia farming	Improved
2	Pangasius farming	Improved
3	Seabass farming	Improved
4	Snakehead farming	Improved
5	Shellfish breeding & culture	New
6	Aquaponics	New
7	GAP & Organic fish farming	New
8	Tilapia health management	New
9	Organic Fish feed	Improved
10	Seafood products	Improved
11	Disease management	Improved
12	Water quality monitoring	Improved
13	Seafood traceability	Improved
14	Seafood safety	Improved
15	Sensory evaluation	Improved
16	Molecular technique (PCR)	New
17	Seaweed farming	New
18	Product development	New
19	Product diversification	New
20	Fish Feed Production	New
21	HDPE-lined Shrimp Farming	Improved
22	Seaweed farming	New
23	Catfish farming	Improved
24	Advance catfish farming	Improved
25	Advance shrimp farming	Improved
26	Aquaculture standards	New
27	Shrimp disease diagnostic	New

28	Tilapia broodstock management and seed production	New
29	Market structures marine fish	New
30	Health & Biosecurity marine fish	New
31	Genetics	New
32	Marine fish breeding	New
33	Marine fish culture	New
34	Nutrition and feeding management	Improved
35	Aquatic Animal Diseases	Improved
36	Seed production-Freshwater	Improved
37	Water quality monitoring	Improved
38	Aquatic Animal Nutrition	Improved
39	Environmental Risk Assessment	New

· *The HEIs (or other type of training organisation) that will include the course in their curricular/training offer, and the degree/diploma it will be part of*

· *The level of development reached as compared to the final product*

In terms of no. of courses, we have achieved more than targeted. Out of planned 20 MSc courses we have altogether 53 courses. Although some are improved from existing ones. We will need to worked out and select the most important ones at the time of offer and delivery. Similarly, 39 VET courses have been developed whereas planned was 27. We will also need to be selective at the time of offer and delivery. Therefore, the Project Team has achieved more than 100% of the target from the activities that have been completed so far. While considering all indicators (some activities such as training and delivery have not been started yet), we have achieved about at least 50% of our target in terms of final products.

· *Describe for each of the partner countries involved, the recognition and accreditation procedures to be followed and the activities already implemented in this respect. In case the Partner Countries involved are Bologna signatory countries, explain to what extent the accreditation process will be done in accordance with the EQAR (European Quality Assurance Register) Guidelines.*

AIT as an international institute established European Credit Transfer System (ECTS= in 2007 based on which 2.5 credits is equivalent to 1 AIT credit, and there are many European students coming to AIT for various exchange programs. <https://drive.google.com/drive/u/0/folders/1H8YodGxahnzn-nAzuFvKq5BRpIA8JLDs>. However, other partners may not have provision for transfer to European credits system. Association of South East Asian Nations (ASEAN) do have their regional credit transfer system i.e. ACTS (ASEAN Credit Transfer System) which is available at: <http://www.aunsec.org/aunacts.php>. It shows that they have been trying to establish with Japanese universities. Next step is likely to be with European universities. As the curricula, delivery methods, etc. are vary country to country within ASAN. Therefore, it has might not have been easy to harmonize the curricula. However, major AEAN countries such as Thailand, Indonesia, Philippines and Vietnam are having some student exchange programs. SSNS project and its contribution in curricula, delivery method and others improvement will certainly be helpful in moving towards establishing ECTS.

Within each of the three partner countries, any new program must be evaluated by the Education ministry and/or other concerned Ministry as well as Higher Education Council (HEC) or similar body. In case of Indonesia, the concerned ministry is Research Technology and Higher Education prior to accepting students. The accepted proposal will be given the minimal accreditation score by the National Accreditation Board (BAN PT). However, for autonomous universities e.g. IPB, the

evaluation can be conducted by the university itself. The evaluation process is started by the faculty academic senate and is continued by the graduate school. Finally, the university academic senate finalizes the evaluation of the proposal. The BAN PT accreditation is obliged to every program and must be renewed for every 5 years. In case of IPB (P4), for example, the SSNS program will be a part of the master degree on Aquatic Product Technology. The master degree program has already achieved the highest level of accreditation (“A”) in 2016 and currently is preparing for renewing the accreditation in 2021. However, IPB Quality Management Office within the Department of Aquatic Product Technology assesses the quality of curricula every year to make sure its quality is maintained as per the request of BAN PT. Similar way, other universities will also have this provision to be monitored by internal quality control before it goes upward.

Globally (i.e. for the totality of the courses intended to be developed/updated) and as compared to the proposal, express in percentage the level of achievement so far concerning

· _The development/update tasks

The number of MSc courses developed or improved has reached 53 out of 20 planned, an achievement of 265%. It is mainly due to higher number of academic staff participated in curriculum development process that was caused by two study visit to Europe which included a training workshop in each country. The number of lecturers reached 48 as compared to the expected 39 (i.e. 123%). It showed enthusiasm among lecturers to learn new subject and method of teaching from Europe. In addition, there are indications that lecturers actual participation during in-country training is going to be a lot higher than expected. Similarly, no. of VET courses has reached 39 developed out 27 planned i.e. 144% achievement. More important is the internship program. Although, they were supposed to develop later, 19 Internship programs have already been listed which is already over 42% of the planned 45 internship placements.

· _The recognition/accreditation tasks · _The percentage of courses already **implemented/delivered** to the target group(s)

We are still at the curricula/course development phase. However, some courses improved from existing courses have been already started to offer in partner institutions e.g. JFU, Indonesia and others. Those partners which plan to offer from August 2019 semester, they will try for accreditation (internal or departmental / institutional level) during April – July 2019 or after. Depending upon the situation, number of courses to delivery in August 2019 semester will depend on approval by their authorities.

OPTIONAL (yes/no)

Teaching / Training Activities

7) Mobility for Teaching, Training and/or project research activities¹

Describe the type and objectives of the teaching / training / research carried out and the mobility flows linked to them.

Explain the methodologies adopted by the partnership for informing, identifying and selecting the participants who have been or will be involved in these activities

Mobility action was not directly included; however, we had two study visits to Europe i.e. NTNU, Norway and University of Stirling, UK, for a week in each case which occur during November 5-9, 2018 and February 11-16, 2019 respectively. Both the tours were successfully organized and the Project Team agreed we have achieved at least 99% participation (1 lecturer was absent due to family health reason from University of Stirling to join other in NTNU only, not from Asian partners). Teachers were selected based on their interest in developing new/improving existing courses and actively participating in curriculum development process. Most partner universities have given opportunities to as many teachers as possible, not repeating the same person to join both, except few important persons. Questionnaire survey (Quality reports) showed that 100% teachers expressed that objectives are met

(positive and very positive). The objectives of the study tour were to:

- 1) Learn about developing course outlines for MSc and VET courses (writing learning outcomes, designing courses to align with learning outcomes).
- 2) Learn about effective methods of delivery of courses.
- 3) Learn about process and importance of student centered learning.
- 4) Learn about the importance of linkages of higher education with community problems.
- 5) Observe and learn about laboratory facilities, procedures and equipment used for teaching learning and also for research
- 6) Learn about advanced aquaculture farming technologies, especially that of Salmon e.g. control of feeding watching on the computer screen, automatic processing, etc.
- 7) Know and interact with lecturers from within Asian partner universities.
- 8) Interact with lecturers/experts of European universities.

These visits were eye opening for most of the lectures most of them had never visited these renowned universities in Europe. They have learned and understood in such a depth about teaching and learning process, which will have big impacts on their teaching career as well as, for the image of their respective institutions. Impacts already can be seen in the course outlines they have developed. Hopefully, they will apply as much as possible while teaching.

SECTION 3: Quality of cooperation

1) Project management

Describe **the project management procedures** and in particular

· **_The process for finalising the Partnership Agreement and, if applicable, the difficulties encountered (and solutions found) in this process**

The bilateral partnership was formalized signing an MoA (Memorandum of Agreement) between AIT and each partner, instead of signing a single consortium document by all the partners. The copies of agreements are available at:

<https://drive.google.com/drive/u/0/folders/1tYUhYaU23xZdY7lh9ZoFXDvcAmZVuNrO>

The hard copies of the MoA together with the proposal was sent to all the partners by AIT at the same time to save time. In each MoA, roles and responsibilities of the partner, and the detailed budgets by category are clearly shown.

For controlling purpose, budget has been split into four installments; i.e. 30% and 20% of the total budget during first pre-financing period. All the partners have already received the funds twice. The remaining will be in the second pre-financing period with the same arrangement of 30% and 20% after receiving the finance report that about 90% funds are spent. However, the final 20% will be at the end after submission of reports and all clearances.

There was no difficulty in disbursing funds except some delays. The grant agreement between EU and AIT was signed at the end of January 2018, whereas the project start date was considered 15th October 2017. It took another 3-4 months to sign MoAs between AIT and all the partners. As a result, Kick off meeting was possible to organize during April 18-20, 2018. By that time all the invoices were obtained and the first installment of pre-financing was already processed at AIT giving assurances of fund availability for their travel mentioning in their invitation letters. Although, the consortium partners did not get money before they left, they were assured and were able to convince their institutions for their travel expenses in advance. There was no effect of delayed fund transfer. The AIT bank finally disbursed the first lot of funds on 21st May 2018 to most of the partners, except few of them. For the second installment i.e. 20% fund, partners started sending the invoices in October 2018 showing their funds were not enough to cover the NTNU study tour. Therefore, second installments were transferred in November 2018. Some of them received before the study tour, some of them later. All the invoices and

fund disbursement document by the banks are made available to all the partners via shared Google drive which is at: <https://drive.google.com/drive/u/0/folders/1bGYhc1yHwnzsjcH-CHLipU5w3aSnb4Qj>

· **The management tools used (e.g. dashboards/roadmaps, data/information collection and sharing systems, etc.)**

A simple Gantt chart in MS Excel programme has been created to show the activities of the whole project and plans and is shared among the partners which is made available online in a Google drive folder at: <https://drive.google.com/drive/u/0/folders/1N7AzYm6dxtJGtXJ2ghxrL3hzjeD3PuwC>

Along with this file, all other files containing the data or reports are uploaded in the same Google drive folder shared among management board (MB) i.e. 1-2 persons per partner. Initially we used DropBox (3GB free space) but due to its space limitation, we started Google Drive to share documents which allows up to 15 GB free space. All local coordinators have access to it to upload their outcomes, Trip reports Time Sheets, etc. So far slightly over 3 GB has been used. It is likely that free space is adequate for the remaining project period. If necessary, space can be doubled with another account.

· **The performance indicators established**

There are about 20 indicators listed in Logical framework matrix (LFM), which have been also compiled in the same Excel file as mentioned above and also in Quality Assurance Plan (Section 6.3). A graph has been drawn showing initial target figures and achievements so far calculating the percentage achievements. The indicators associated with the activities accomplished so far have showed that most of them are over 100% i.e. more than they were planned such as the no. of MSc and VET courses, no. of partner's representation during inception workshop, and also academic staff attending the Study visit to Europe.

· **The internal communication mechanisms adopted (i.e. language, meetings, on-line...) and the decision making processes chosen.**

All communications between the Project Coordinator and Local Coordinators are in English. There was no issue of language. However, communications within each Asian partner institutions, they do in their own languages in terms of communications. They will translate some documents e.g. brochure whenever is needed. Decision making process has been transparent. Opinion of all the members of the management team were gathered before deciding any important matter. For example, while developing the brochures, comments were requested during inception workshop, and then incorporated even afterwards. In some other cases we even conducted online voting through social media and decisions were made based on the majority votes. For example, there was voting for different three designs for SSNS logo. Similarly, for fixing the dates of any event such as inception workshop and two study tours an online voting system i.e. Doodle <https://doodle.com/> was used to find suitable dates, which had availability of highest number of people in the management team.

· **Explain any modification or adaptation of the project management approach as compared to the application**

1. WP1 – Reports: Initially in the proposal, one combined report of existing curricula and needs assessment /gap analysis was planned from Asia. However, when our partners started working, they found it is a lot easier to have a separate report from each country. If combined the size of the report could have been huge. Each report is based on the unique system of each country and policy makers will find conclusions and recommendation more relevant to their country context, instead of spending time to go through the recommendations intended for other countries. Therefore, instead of one combined report, project team decided to have 3 separate reports i.e. one from each country hoping that it is an additional benefits to the project or the stakeholders.

2. Teachers' training: has been planned to be organized in one institution per country. There are

suggestions by Asian partners to split into 3 parts so that a part can be organized in each of them. Simply visiting by European partners and having some rigorous training would make good impacts / perception among the students and stakeholders. Therefore, subject to the budget (from project or external source), project team is considering this as a good suggestion and will plan, if possible with a view to having greater impacts of the project. This was also perceived in previous project while launching curriculum development project under Asia Link programme.

3. External evaluation - instead of having one consultant for external evaluation of the project near the end, we are planning to local independent expert. More details are given above in Section 2) Quality Assurance

2) Involvement of partners and stakeholders

- Describe the share of **responsibilities between partners** and in particular the role given to Partner country partners.
- Explain how **less experienced partners** are involved and, if applicable, why some partners are less (/not) involved.

Responsibility or work Load is well divided among partners. For example, WP1 was divided by country. NTNU led the European side to assess the existing courses conducting a survey and desk studies other European partners assisted them. EuroTraining collected information about VET courses and all the partners especially from Asia provided the information. Similarly, in Asia, Maejo University led the needs assessment and gap analysis for Thailand, Can Tho University for Vietnam, and IPB for Indonesia. NTNU compiled all of them and AIT coordinated. EuroTraining did quality evaluation by sending to the members of quality board. In this initiative, most partners had some experience of working for EU projects except two Thai partners. However, in terms of Erasmus+ or curriculum development programme, most of the partners were actually new except few EU institutions and the Lead Partner AIT. Even the new partners have been learning fast and managing the activities to achieve objectives.

- Explain how the **partner country needs** (for HEIs, the target groups or the society at large) are taken into account by the management teams

The requests from partners have been well accepted. For example, a request made by a partner from Indonesia (IPB) was accommodated who asked to bring three additional lecturers to AIT for the participation and learning about the project during the Kick-off meeting or Inception Workshop bearing the costs by themselves. Similarly, another adjustment was made up the request of RIA1 to send four lecturers for the trip to University of Stirling and two for NTNU instead of three in each place. Their most lecturers were graduated from NTNU but no one was from Stirling; therefore, more people wanted to go and learn from Stirling. Similarly, project team is considering the requests from partners who are asking splitting the teachers training programme and having some activities in each university in each country. In addition to project activities, other requests from partners have also been considered. For instance, IPB (P4) and UGM (P5) have invited the Project Coordinator to present about the project during the conferences organized by each of them; one during 8-9 July and the other in 9-11 September 2019. Similarly, Asian partners have joined European partners in writing at least three chapters of AFS (Aquatic Food Security) book to be published by 5M Company. These are indications of building up good collaborations among partners due to the project as added values.

- Explain how and to what extent the **Public Authorities** (at national, regional or local level) from the partner countries have been involved in the project implementation. Specify their role and the nature of their contribution.

Basically, public authorities have close monitoring and accreditation role on curricula of universities even though autonomous universities are given freedom to some extent. For an example, since 2013, IPB University (previously Bogor Agricultural University) become PTNBH (Perguruan Tinggi Negeri Berbadan Hukum, the State University Owned Legal Entity) based on the Government Decree

Number 67/2013. It means that in connection with opening and closing a study program, IPB has own legal decision. However, there are several other government regulations from Ministry of Higher Education and Research to organize all universities in Indonesia connected to number of teachers whom dedicated to a study program (at least one professor and 5 doctors), basic curriculum for the same cluster of study program, and others requirement (e.g. overlapping courses allowed less than 30%).

After several discussion with the Dean of Faculty of Fisheries and internal staffs of Department of Aquatic Products Technology, and having difficulties on teachers recruitment, than the easier way to set up the SSNS Program is just only in form of a concentration under the Aquatic Products Technology Study Program (master program). So until now, the program is managed only at IPB University. In the future, the SSNS program will set up a mutual collaboration with other authorities such as Ministry of Marine and Fisheries Affairs and National Accreditation Board (BAN PT) for accreditation of the program as explained above in earlier section.

· **Explain how and to what extent students and other external stakeholders are involved in the project management and/or implementation. Specify the type of stakeholders, their number, their role and the nature of their contribution**

IPB University (P4) engaged students and the external stakeholders in SSNS project particularly during focus group discussion (FGD). In 2018 IPB university, the Faculty of Fisheries and Marine Science, Department of Aquatic Product Technology has held two FGDs involving active undergraduate and graduate students as well as numerous fisheries industrial representatives (businessman/woman and business association). The FGD resulted fruitful discussion regarding SSNS curricula development in Faculty of Fisheries and Marine Science, IPB University. During the discussion and sharing session, the fisheries industry representative contributed their professional suggestions on the course topics (e.g. seafood industry, seafood safety and traceability) should be included in the newly design curricula. Furthermore, the role of external stakeholders in implementation of SSNS curricula can be seen in their active contribution for developing our VET courses and Internship. We developed 3 different VET courses and 3 different Internship programs based on their suggestions and the notes gained from FGD. In the future, we do hope that the students and our external stakeholders from government, private and business sectors will be more active participate in the VET courses and internships offered by SSNS program of IPB university.

Universities have always close relation with stakeholders especially Department of Fisheries (DoF) within the government system through alumni network. Most of the employees at DoF are graduates of the partner universities. Therefore, they also have their interest to keep linkages with universities.

Similarly, many private companies work with partner universities to carry out research especially in testing their new products and publishing trade magazine or even journal articles as free advertisements e.g. AIT is currently testing the phytogenic products for tilapia from Biomin (<https://www.biomin.net/en/contact/>) and Delacon (<https://www.delacon.com/>) companies both are from Austria. They also have worldwide presence such as in Vietnam. Universities such as Nong Lam University (P13) and Can Tho University (P11) do have similar relationship.

Partner universities invite people from the government

From European partners, supports of external stakeholders were well received. The followings are the examples:

- Kompeten Center
- MarinTek
- Ley Roy in Norway and Marine Harvest / Mowi Farm in Scotland were very helpful in accepting our teachers' team during the Study visits. It showed that our European partners have good connection with private sector which Asian

partners have learned and expressed that they will try to do in similar way which are mentioned in their individual travel reports as well as in the project reports of the Study Tours.

Some of the Asian partners have reported already some attempts they have already made especially for the purpose of developing internship programme. Although development of internship programmes is still in the process, a total of 15 internship programmes have already been developed connecting with private/public external stakeholders, some of them are as follows:

Maejo (P2) has mentioned that Graduate students are convinced to join an academic meeting or internship both national and international levels. External stakeholders including government and private sectors as well as alumni are invited to be guest lecturers and develop research proposal or comment about curriculum and teaching.

Khon Kaen University (P3) has already communicated with three fish farms; namely, Thapra Fish Farm, Khon Kaen Farm, and Phaka Farm especially for the purpose of internship programme. They have already signed agreements with them.

College of Aquaculture and Fisheries at Can Tho university (**P11**) is expanding its partnership with other departments such as Department of Seafood Product and Processing, and hatchery units of shrimp, mud-crabs etc.

RIA1 (P12) is have some research institutions other than their own as a partner such as Centre for Coldwater Fisheries Research.

Nong Lam University (P13) has already communicated in Binh Dai, Ben Tre with Can Gio Mangrove Forest and De Heus for internship program.

If applicable, explain to what extent the project contributes to increased cooperation between universities and non-academic sectors of the society?

The project plans to have at least internship programmes per partner. Most of the internship placements are from non-academic sectors. For internship, when the process is completed, many hosts will be from external stakeholders and are non-academic sector. Our target is to reach about 45 SMEs by the time internship programs are launched. Khon Kaen University (P3) has already made agreement with three fish farms where they have agreed to place students for internship. As mentioned in earlier section, list of private companies have been provided which were communicated during inception workshop. Further communication will be done to get inputs for curricula and also for internship placement arrangement.

According to Maejo University (**P2**): There are great opportunities to visit universities and exchange students, researchers, and teachers. In addition, the public hearing from non-academic sectors has been important in re-shaping the curriculum and training.

The Faculty of Fisheries and Marine Sciences, IPB University has considered that the SSNS curricula development project will be valuable in the future especially related to the issue of fisheries sustainability. Indonesia is the biggest fisheries producer country after China (FAO, 2018), therefore, the SSNS project will provide a better solution regarding the good governance of fisheries stocks and aquaculture prospects. Because of the SSNS curricula development project, in 2018 we start to evaluate our curricula and intensify our existing collaboration into broader topics with our non-academic's partners. For example, we developed our VET courses and internship curricula based on the suggestions and the needs of our stakeholders from government, private and business sectors, thus we hope they will participate in the training offered by SSNS program.

3) Management of the grant

Describe the **grant management procedures** in place and explain how the partners have been familiarized with the rules for managing the grant.

Since the beginning of the project, email communication has been the main way of communication. A Skype meeting was also arranged on February 9, 2018; however, it was not very successful as there was

a large number of people to involved. The face-to-face kick off meeting organized during April 18-20, 2018 was the first activity during which most of the rules along with activities were discussed. Management team also had two major occasions i.e. NTNU trip (Nov 5-9, 2018) and Stirling (February 11-15, 2019) during which all the EU rules were discussed and clarified.

If applicable, describe how the specific concerns, needs or constraints of the partners (particularly from Partner countries) have been taken into account

One of the concerns about offering MSc courses and programmes at RIA1 has been realized. They were offering academic degrees jointly with Hanoi Agriculture University. However, government has restricted them to offer; therefore, the teachers who are involved in curriculum development will use the courses to teach other universities which can be seen good opportunity to try to expansion as well. They will also focus on VET courses and also organizing internship in their places for students from other universities and also from Europe. Similarly, some of the universities are facing challenges in opening the centre due to internal policy and procedures, shortages of funds and human resource required for the centre.

How is the project coordinator informing the consortium members on the use of the grant? Please specify the internal methodology used to communicate the financial reports on the use of the grant.

In terms of financial management there are only two major items of expenses; 1) personnel costs and travel costs. Costs of travels were made clear by giving some examples of one partner. Project Coordinator communicated several times with partners answering specifically e.g. Maejo University, Univ. of Thessaly, Can Tho Universities and so on. The per diem rates for each country, airfare based on the distance and cost of stay have been clear via emails with explanation and reporting methods have been clarified well. One of the emails sent to partners can be seen as an example:

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11 February 2018

Dear Chanagun (also all other colleagues),

You have raised a good point. Please note that sub-contract cost is NOT OVERHEAD. Sub-contracting costs are actually costs of materials and supplies which you may get services from outsiders (outsourcing). These have been specified in the Excel sheet named "Sub-contracting" sheet" please take a look. Your sub-contracting costs are as follows:

- printing materials - brochures, leaflets, posters etc. (D6.4)
- cost of organizing info day for stakeholders (D3.5)
- Printing teaching materials
- Translation (if needed)

Overhead is your internal matter and it differs country to country and also institution to institution. Total budget is fixed but line items you can play around 10% plus or minus. You need to arrange to pay your OVERHEAD internally. We do the same here too. There will be plenty of space to manage from Travel and Staff costs.

For example, when you come to AIT for Kick-off meeting, you will charge the project based on the unit rate fixed by EU, not the actual costs.

First you need to find out the distance from EU webpage i.e. http://ec.europa.eu/programmes/erasmus-plus/resources/distance-calculator_en

1. Chiang May Airport to Pathum Thani distance is 556 km (from that page).

You are eligible to charge the project 275 Euro for airfare including visa, local transport etc. (see unit cost Excel sheet, the last one) but you may not pay that much. That saving can be used to pay overhead or keep for extra travel.

2. Other costs are staff costs (honorarium) and cost of stay (hotel and accommodation) for the travel.

As a Manager, you are eligible to charge honorarium of 108 Euro per day for actual working days (excludes the days for travel). Please also note there are different rates for other teachers and staff. If we organize 3-day workshop, we can charge only for 3 days. Travel time you may need 1 or 2 even 3 days, but you can't charge for that.

For living cost or COST OF STAY as a staff, you are also eligible to charge 120 Euro per day (includes hotel and food), but you may not spend all.

For the Kick off meeting you, as a Manager, are eligible to charge the followings:
= 275 + 108 x 3 + 120 x 3 = 959 Euros (your other teach colleagues will charge 80 Euros/day for honorarium, others will be the same)

But when you go to , maximum travel cost is 1,100 Euro because distance from Thailand is more than 8,000 km. Similarly, honorarium will 280 Euro per day and living cost will be the same 120 Euro per day.

You keep the actual receipts for your institution, but we need only proof of your travel and work. Say for example, you just give us the copies of "boarding passes" as a proof of travel, and time sheet (will need to be approved by higher authorities) with description of work done during the workshop.

I hope I have made clear to everyone. European colleagues, who have the experience of other projects, please correct me if I am wrong.

Best regards,
Ram C. Bhujel, PhD
Coordinator, SSNS Project Co-funded by EU Erasmus+
Research Associate Professor
SERD, Asian Institute of Technology (AIT)
Tel: +662 524 5222
Mob: +66817346934
Email: bhujel@ait.ac.th

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On 11 Feb 2018, at 02:52, <chanagun1@hotmail.com> wrote:

Dear Dr Ram,

Is subcontracting cost allocates to Maejo University , main office (5%) ?

According to Maejo U rule, they will take 10%.

If it is possible to modify the budget.

Best regards,
Chanagun

Explain any difficulty encountered (or that could be encountered) concerning the management of the grant (transfer of funds to partners, reimbursement of costs, tender procedure ...)

So far funds have been transferred twice to each partner. All the MoAs between AIT and partners (<https://drive.google.com/drive/u/0/folders/1tYUhYaU23xZdY7lh9ZoFXDvcAmZVuNrO>) were signed during April-May, 2018. Invoices for the 1st installment were obtained during April-May, 2018 and the funds were disbursed by the end of May, 2018. The first installment was 30% of the total budget for each partner as stipulated in MoAs. For the second installment (20%), invoices were obtained in October 2018 considering that partners were in need of fund to arrange for the trip to NTNU, Norway. Funds were transferred by November to most of the partners, except for Univ of Thessaly which managed to issue invoice late due to change in (rector/President). Similarly, it took little bit longer to transfer funds to two Thai partners new rules to get clearance. It took place in December 2018.

Maejo: This grant does not provide for overhead charge or administrative costs directly for the institution. However, partners have to keep timesheets of the administrative people who are involved in

handling the project documents, funds, invoices and so on. The staffs mostly are busy with their main duties.

In Indonesia, financial grants, wherever they come, is subject to be monitored by Bappenas (Badan Perencanaan Pembangunan Nasional (National Board for Planning and Development) connected to the expenses whether fit to existing regulation. There are national and IPB University standards for the rate of expenses (include wage, transportation cost, accommodation class, etc.). The most difficult part is the tender procedure, which should be implemented for buying goods or services worth more than 50 million rupiah (around US\$3,500). This procedure hinders the laboratory equipment procurement.

Similarly, financial transaction is quite complicated and difficult in Vietnam. There are many documents to prepare.

SECTION 4: Impact and sustainability

1) Awareness raising, dissemination, sustainability and exploitation of the project results

Explain briefly the actions already taken (as well as those envisaged until the end of the project) for raising awareness and contributing to the dissemination, exploitation and sustainability of the results achieved (/products delivered) by the project. In particular:

· **_Provide an electronic version of the project Dissemination and sustainability/exploitation if available;**

Dissemination and sustainability/exploitation plan and publications are available at:
<https://drive.google.com/drive/u/0/folders/1LoGnRE07wIwTWvaQ41V8wwRKF5GMIBw>

· **_Explain the role (and commitment) taken by the partner country beneficiaries in this respect and the concrete measures taken for:**

The project has addressed the real challenges of the partner countries. All the Asian partners are actively participating in MSc course/curricula development showing their enthusiasm. It can be seen by the number of courses developed which has reached over 50, which is more than double the number we were expecting at the time of proposal writing. Although, we may not expect all of these courses may not be offered at the end but efforts will still be made even to explore and add more courses. Similarly, VET courses are also almost double and there is still possibility of adding few more. Similarly, partners are now moving towards developing internship programs understanding the value of working with the communities and importance of learning from the real world to help solve their problems. There are good indications, the project will have a good impacts in attracting more and smarter students, and help make their programs more sustainable. Organizing training under “Sustainable Seafood Centre or in similar name,” to generate additional income can provide extra boost and added value to the institutions and attraction of students/trainees. For example, Nong Lam University, Maejo, JFU and UGM have already started the process. At the same time, internship program will build good bridge with industry. KKU has already signed agreement with three fish farms to run the internship. Others are also working towards this direction, and will follow the same soon.

· **_ensuring the visibility of the project at all levels (i.e. department and faculty, institution, local and regional, national, international);**

At AIT, project activities are posted as news as they happen at School level. Similarly, activities are also shared through social media at institute level. Similarly, during the inception workshop, all institute staff and students were invited for the kick-off meeting. All the partners have various opportunities to give a

talk about the project or give a seminar during internal/departmental or institute level meetings, education offices/ministry or various other levels. [Partners any concrete examples?](#)

At international level, Amaya from University of Stirling, gave a seminar about the project during EURASTiP Capacity Building Foresight Workshop: “Ensuring Aquaculture Education Meets the Needs of the Aquaculture Sector” held in Montpellier, France during European Aquaculture Society conference on 25 August, 2018. Konstantinos Polymeros presented a paper about the project during an international conference HydroMedit 2018 - 3rd International Congress on Applied Ichthyology & Aquatic Environment in Volos, Greece, where over 600 participants attended held during November 8-11, 2018 available at: <http://hydromedit.gr/index.php/hydromedit-international-congress-is-expanding/>

Similarly a presentation was given by Dr Ram C Bhujel (Project Coordinator) during a workshop organized for EU project partners of Thailand in Kasetsart University, Bangkok, held on 21 November 2018 where about 70 partners from all over Thailand were present. Ram also presented about the project objectives, activities and progress so far during an international conference “Asian Aquaculture” held at AIT during December 3-6, 2018 where about 300 participants from all over the world attended.

At least 10 presentations have been planned by several partners; namely, NTNU, RIA1, Nong Lam Univ, Maejo, IPB and UGM during national, regional and international conferences, which are given in detail in dissemination plan (Section 2.10).

At national and local levels Asian partners have presented during meetings and seminars.

There are news are shared via email and social media. Social media has been very powerful tool now a days. The project Facebook group (Sustainable Seafood Net i.e. <https://www.facebook.com/groups/Sustainableseafood/>) was created on 12th January 2018 has now 577 members and its increasing day by day. All the project activities have been posted immediately along with pictures and video clips. Many teachers and students use Facebook for effective teaching and learning platform. More importantly, the posts related to project activities are also shared in and by other groups including created for other EU projects such as SARNISSA (Sustainable Aquaculture Research for Sub-Saharan Africa, <https://www.facebook.com/sarnissaafrica>, over 5,000 members), Sustaining Ethical Aquaculture Trade (SEAT), Sustainable Aquaculture, Stirling, groups, AIT-Aqua-Centre (<https://www.facebook.com/groups/aqua.centre/>, over 12,000 members), AIT-Tilapia-Net (<https://www.facebook.com/groups/Tilapia.world/>, over 12,600 members)etc. Similarly, the info day and Final Conference are still in plan. In addition, special education fairs and conferences, academic journals and networking and synergies with HEIs, VET providers, fishery and aquaculture businesses as well as associations / networks of HEIs, research institutes at regional, national, EU and Asian levels are all under plan.

· [_guaranteeing the sustainability of the project outcomes beyond the project lifetime \(specify the funding sources if known\)](#)

All the partners are planning to expand collaboration and relationship with international and local businesses, government departments, in order to optimize the resource use. The most partners are planning to establish a Center. It acts as a research center to solve problems facing the aquaculture industry and communities. Nong Lam University of Vietnam (P13) for example, has already decided to establish a Centre to offer VET courses and generate income and have realized great opportunities for several staff to use their experiences in generating income, and also help other staff improve skills in teaching and doing research who will join the Centre as a team. Similarly at Maejo University (P2), The Center of Excellence in Fisheries and Aquatic Resources (CEFAR) has initiated which will continue even beyond the SSNS project. The following objectives and activities to carry on such as: 1) Grant Proposal Preparation / Fund seeking; 2) Supporting

the research; 3) Training new researchers; 4) Prepare research publications; 5) Develop new products; 6) Academic Service / Extension; 7) Short course training.

IPB University (P4) recently established a Master's degree program of Aquatic Product Technology (APT) in 2005. SSNS program will be a specialization under this program. SSNS program is being setting up with basic courses of Aquatic Product Technology program with addition of some new elective courses. Attempts to launch SSNS specialization will be launched this year. As far as Aquatic Product Technology program exists, there is the possibility of continuing SSNS program. In addition, information of SSNS program is being distributed producing leaflets as well as promoted using a website to attract the students. Collaboration with industrial and government partners will be established in the future to guarantee the continuation of the program and the courses. Similar attempts have been promised by other partners to continue SSNS program beyond the project period.

Please add a list of realised deliverables/project products:

All the deliverables are in a Google drive folder "SSNS" which is accessible subject to permission the Project Coordinator. Only Local Coordinators of each partner institution have the access. New person can get access after clicking on the following link, or copying the link shown below onto the browser. It immediately give message to request access. A message immediately goes to the Project Coordinator who can give access immediately. As it is in Google drive, an email might require in getting access to it. SSNS folder: <https://drive.google.com/drive/u/0/folders/1k-z5v2JqljrHSLJWdk2qwrnFCcIj21Pj>

List below are the deliverables from **WP1** which are available at:

<https://drive.google.com/drive/u/0/folders/1kQMMlf5w6tr3KS6ykuB6Tk8HuTk2ygyg>

- D1.1a Thailand needs (assessment report)
- D1.1b Indonesia needs (assessment report)
- D1.1c Vietnam needs (assessment report)
- D1.2 European-report-final (assessment report)
- D1.3 VET Courses needs (assessment report)

List below are the deliverables from **WP2** which are available at:

<https://drive.google.com/drive/u/0/folders/1IRC3UhX8eAcfXro7cBiiBU1HLiwVT77d>

- D2.1 VLE Specification template
- D2.2 Europe Visit Reports
- D2.3 VLE System
- D2.4 Training Tools
- D2.5 MSc course outlines
- D2.6 Teachers guide
- D2.7 VET Courses

WP3 and WP4 – to be carried out – no deliverables yet.

List below are the deliverables from **WP5** which are available at:

https://drive.google.com/drive/u/0/folders/1BWCxc0KTYZA0I6_LiOLh8ztlqBfBzao-

- D5.1 Quality Board
- D5.2 Quality Assurance Plan
- D5.3 Periodic Quality and Evaluation Reports
 - 1st Quality Assurance report (Semester 1&2)
 - Evaluation of study visits (NTNU & Stirling visits)
 - Project Meetings Evaluations (kick off meeting)

List below are the deliverables from **WP6** which are available at:

<https://drive.google.com/drive/u/0/folders/1LoGnRE07wIwTWvaQ41V8wwRkFn5GMIBw>

D6.1 Dissemination plan

D6.2 SSNS Website

D6.3 Stakeholders analysis

D6.4 Dissemination portfolio

D6.5 Final conference (planned 23-25, 2020)

D6.6 Exploitation/sustainability

List below are the deliverables from **WP7** which are available at:

<https://drive.google.com/drive/u/0/folders/11dserkIIIsoFEK0UVw76eVZLcWqV5cj5>

D7.1 Technical coordination (Project Management tools and data)

D7.2 Admin reports

D7.3 Contingency plan

D7.4 Communication and conflict resolution (included in quality plan)

D7.5 Consortium agreement (MoAs)

D7.6 Communication platform and data sharing (Google drive)

<https://drive.google.com/drive/u/0/folders/1k-z5v2JqljrHSLJWdk2qwrnFCclj21Pj>

Explain and justify any change as compared to the dissemination and sustainability measures envisaged in the application.

Dissemination will be continue updating and delivering the MSc programme, by the SSNS alumni community and the SSNS VLE community. SSNS and Erasmus+ logos in flyers, posters, policy briefs, policy recommendations etc. SSNS website (including electronic news items), SSNS VLE, web 2.0 tools, web ads, Erasmus+ dissemination platform will be continued or transferred to local hosts. More importantly, social media i.e. Facebook group (Sustainable Seafood Net i.e. <https://www.facebook.com/groups/Sustainableseafood/>) was created on 12th January 2018, which was not envisaged at the time of proposal writing, but it has now over 577 members and is increasing. It has been very useful to use as a communication platform with partners as well as outsiders. All the project activities have been posted immediately along with pictures and video clips. In addition to the project activities, news articles and others posts related to seafood production, technologies, issues, markets, trade and its sustainability of supply are shared. File sharing option is also available and its unlimited. Many teachers are using this platform for effective teaching and learning platform. Social media is increasingly important nowadays. The group can easily continued as long as we want as its free. The posts related to project activities are also shared in and by other groups including created for other EU projects such as SARNISSA (Sustainable Aquaculture Research for Sub-Saharan Africa, <https://www.facebook.com/sarnissafrica>, over 5,000 members), Sustaining Ethical Aquaculture Trade (SEAT), Sustainable Aquaculture, Stirling, groups, AIT-Aqua-Centre (<https://www.facebook.com/groups/aqua.centre/>, over 12,000 members), AIT-Tilapia-Net (<https://www.facebook.com/groups/Tilapia.world/>, over 12,600 members)etc. Similarly, the info day and Final Conference are still in plan. In addition, special education fairs and conferences, academic journals and networking and synergies with HEIs, VET providers, fishery and aquaculture businesses as well as associations, networks of HEIs, research institutes at regional/national/EU/Asian levels are all in plan.

· **Explain to what extent the new curriculum takes into account the principles set out in the Bologna process (e.g. integration in the 3 cycles, definition of learning outcomes in accordance with a national or European Qualification Framework EQF, application of student-centred approaches, compatibility with European Credit Transfer System ECTS and with the European Standards and Guidelines ESGs for QA, etc.)**

As in Europe, ASEAN countries are trying to harmonize and standardize the education in member countries. Within ASEAN, student mobility and credit transfer system is going on regional basis only. Master of Science (Fisheries Technology and Aquatic Resources) curricula are being established. This year the ASEAN University Network Quality Assurance: AUNQA will be used for quality control and improvement. In some universities such as Maejo, Master of Science (Fisheries Technology and Aquatic Resources) curriculum was revised in 2017. The focus groups from stakeholders had been discussed and set up the Expected Learning Outcomes. After European universities visits, the gained experiences are applied to improve teaching styles. The project-based and student active learning education has been

used taking advantage from SSNS activity. The focus groups from stakeholders had been discussed and set up the Expected Learning Outcomes. After European universities visits, the gained experiences are applied to improve teaching styles. The project-based and student active learning education has been used. It indicates that partners of SSNS will have a lot easier to maintain and achieve the regional quality standard. However, they may not have curricula to meet the level of European standard; therefore, no credit transfer between Europe and Asia has been common except at AIT ECTS has been established i.e. 1 AIT credits is equivalent to 2.5 ECTS. However, other partners are trying their level best or on the way to move. Three SSNS project partners (Maejo, Khon Kaen and Nong Lam) are also partners in TUNASIA which has a plan for applying Bologna process for Bachelor's degree curricula. If the TUNASIA achieves their objectives, they can move easily to MSc course accreditation and be able to claim comfortably for the quality and acceptable to European universities so that mobility of students form Europe to Asia and vice versa can be expanded. SSNS project would take advantage as SSNS focuses on MSc degree for which Bologna process is more necessary. SSNS also has a wide range of disciplines covering all aspects of seafood and nutrition security and emphasizes on more and stronger linkages with industry and value-additions as well as product standards.