AQUAPONICS in Finland
Status, challenges & future prospects

Frog farming in Europe – potential cut short?

AAC Recommendations on Climate Change
It has been almost 4 years since the last international trip of the Aquaculture and Fisheries (AFI) group of Wageningen University (WU). Every couple of years, the AFI PhD students knock on the door of their group leader and request for a knowledge exchange activity out of boarders in order to broaden their horizons and expand their network. After two formerly successful trips to Japan and China respectively, AFI students decided to visit Indonesia. With the kind support of Wageningen University as well as the financial contribution of various sponsors, 12 WU students from the AFI and Environmental policy chairgroups travelled to the Southeast Asia to learn from a world’s key player in the aquaculture and fisheries industries.

“At Wageningen University we are aware of the vast amount of Indonesian knowledge on aquaculture and fisheries, and the enormous growth potential of Indonesia. We look forward to exchanging our ideas and together build on a Blue Future.”, shared the head of the AFI group, Geert Wiegertjes, with the hosts before the commence of the trip.

The kickoff visit took place at the De Heus feed production plant in Bekasi. There, Kadi Mey Ismail, an AFI alumnus and current Project & Sustainability Manager of De Heus Indonesia, welcomed the AFI delegation and walked them through the company’s long history in animal nutrition. Even though aquafeeds accounted for ~30% of its production output in 2020, De Heus Indonesia managed to increase shrimp feed production from 15k to 20k tons in two-years’ time and is currently considered one of the global leaders in the industry. Meeting the increasing market demand, the company had recently expanded its facilities, which participants had the opportunity to explore. Guests and hosts engaged in vivid discussions about future perspectives and sustainability in the sector. According to Kadi, floating feeds will become more prominent in the future while imported raw materials will be gradually replaced by local ingredients.
“Even though shrimp is the most cost-efficient species in Indonesian aquaculture, finfish production still dominates, with African catfish being more common in the East and tilapia on the West.” - Kadi Ismail, Project & Sustainability Manager of De Heus Indonesia

AFI students got an insight into the Indonesian educational system by visiting two distinguished universities in the Java area, Bogor Agricultural Institute (IPB) has a Fisheries and Marine Sciences faculty that offers 5 different study lines, among which the ‘Aquaculture Technology and Management’ program. A bit down the road, Insitut Teknologi Bandung (ITB) besides its long-established education in aquaculture, has recently introduced a new study program that includes one exchange year to a partner institution abroad, with Wageningen University being one of them. The activities of both Indonesian universities lie beyond education, as they both hold research facilities with great capacities. Biofloc technology in shrimp and tilapia is a common interest that they share which is however examined under different farming approaches: IPB works extensively with pond culture since it houses a total of 200m² fish pond area, whereas ITB focuses on developing closed aquaculture systems.

Professor Gede Suantika in ITB stressed the importance of microbial management in land-based aquaculture through the successful results he recently obtained using a hybrid system which combines a zero-waste discharge system and a recirculating aquaculture system. Despite these promising findings, he highlighted that implementation and scaling of such innovative technologies necessitate knowledge transfer between research and industry.

“Implementation of innovative technologies, like biofloc systems, necessitate knowledge transfer between research and industry. University is important to stay in close contact with the farmers in order to guide them to independency.” - Prof. Gede Suantika

Embracing the same passion towards technological advances, Gibran Huzaifah founded the aquaculture tech startup named eFishery. Gibran walked the WU group through his inspiring journey which started more than 10 years ago while being himself a biology student enrolled in an aquaculture course. At the time, the success of his first business project to establish a catfish farm was compromised by the limited access to the market due to intermediaries. To gain leverage over the market demand, he created his own catfish food and within the first month, his business yielded a 12% profit margin. To capitalize on this success, Gibran eventually created his own catfish food production plant in Bekasi. Gibran Huzaifah founded the aquaculture tech startup eFishery.

PhD students Anne-Jo van Riel and Tynke Siegersma gazing a black tilapia pond at IPB.

Kickoff visit to the De Heus feed production plant in Bekasi. Photo: Haniswita

Fish pond culture of Nile tilapia variant at the IPB research facilities.

Aruna is involved in various initiatives for the sustainability of Indonesian fisheries which involve restocking of natural fish populations and valorizing fisheries waste. Their future aim to establish MSC certified fisheries products is in line with current WU research projects on yellowfin tuna which are carried out in collaboration with Indonesian partners.

Revolutionizing the aquaculture supply chain, eFishery has brought together fish farmers, processors and harvesters in 27 provinces of Indonesia, and has recently launched its own shrimp brand. With over 2,000 employees, eFishery is now the largest feed distributor and financing provider in the Indonesian aquaculture scene, supplying domestic fish and shrimp while exporting to six countries.

“It took almost 6 years to build communities and data, and it did create social friction. However, eFishery eventually integrated the middlemen in the process, providing transparency, fair prices, and logistical support.” - Gibran Huzaifah, CEO of eFishery

Along the same lines, Aruna has been recruiting technology to promote small-scale fisheries since 2016. Founded by three graduates of the Telkom University, Aruna has tackled challenges related to quality control, supply chain management and data management. Providing tracker devices and selling apps, it allows fishermen to monitor fish stocks and reach out easily to their customers. To familiarize fishermen with this digital technology, it has employed “local heroes” that provide technical support on site. To further foster local communities and empower gender representation in the sector, it offers training and job opportunities especially for women. Alongside, Aruna is involved in various initiatives for the sustainability of Indonesian fisheries which involve restocking of natural fish populations and valorizing fisheries waste. Their future aim to establish MSC certified fisheries products is in line with current WU research projects on yellowfin tuna which are carried out in collaboration with Indonesian partners.

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PhD students Ruben Groot and Eleanor Greenway receiving gift bags from Aruna representatives.

Photos: Donné Mathijssen
Besides private endeavors, the Indonesian government has been trying actively to bridge the gap between science and industry. The Marine Aquaculture Development Centre (Balai Perikanan Budidaya Laut) located in Lombok is a public institution which provides tailored technical guidance to fish farmers upon request. Hosting extensive and versatile facilities, it provides low-cost testing services and hatchery seed to local producers while it puts special emphasis on economically valuable marine commodities like pearl oysters and abalone.

Knowledge exchange was also encouraged during another seminar organized in Bandung in collaboration with ITB. The event titled “Integrating Insights for Sustainable Aquatic Systems” was highly attended by local university students who had the chance to get introduced into a wide range of research topics. As part of the event and paying homage to IDH for its financial support, a “Women in Science” special session was organized. During her talk, researcher Magdalena Lenny Situmorang highlighted the importance of gender equality in science and, as a former awardee, she encouraged her fellow female colleagues to apply for the L’Oréal-UNESCO For Women in Science National Fellowship.

After 10 days of exploring the potential of Indonesia as a maritime power, the WU delegation returned back to the Netherlands to share their experience with their fellow colleagues and put forward new ideas on how to place Europe at the forefront of global aquatic food production. “It was a very interesting experience which puts a lot of the things we do in Europe in a new perspective”, said Ruben Groot, Quality and Nutrition Manager at Alltech Coppens and PhD student at the AFI group, after the completion of the trip.

Acknowledgements

The AFI group would like to express its gratitude to Hendrix Genetics, De Heus, Darling Ingredients, Fish Forward, Alltech Coppens and IDH for their generous financial support to this initiative. Participants would also like to thank all visiting partners for their warm welcome and all volunteers involved in the organization and execution of this trip. The author would additionally like to thank all people that provided input for this article and Haniswita for editing.