A webinar report: Sharing findings and lessons learnt from aquaculture project reviews in Africa

Eugene Rurangwa, Li Hongxia and Ingrid Gevers

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A webinar report: Sharing findings and lessons learnt from aquaculture project reviews in Africa

Upscaling the FAO-China South-South Cooperation Programme through triangular cooperation with the Government of the Netherlands (part I)

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Photo cover: Fish pond in Karatina, Central Kenya
Photo credit: Eugene Rurangwa

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1 Background

1.1 The triangular cooperation programme

The triangular cooperation (TrC) builds on the complementary strengths of different development partners to bring innovative and flexible solutions to address development challenges by sharing costs and responsibilities. It is a multi-partnership tool used to collaborate and share knowledge, skills, know-how, and good practices, learnings to perform successful initiatives in specific areas (Figure 1). "Through triangular co-operation, the partners involved share knowledge, learn together, facilitate capacity development, collaborate and jointly create solutions to development challenge"- OECD 2015 (Dispelling the myths of triangular co-operation – Evidence from the 2015 OECD survey on triangular co-operation).

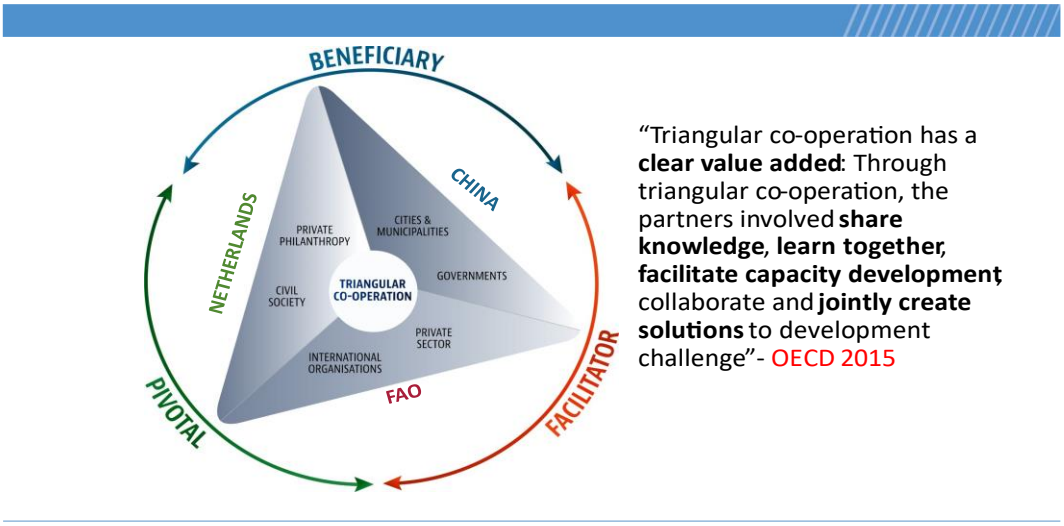


Figure 1 *The added value of triangular cooperation.*

South-South cooperation (SSC) refers to development cooperation between developing countries in the Global South. When SSC is implemented with the support of a Northern partner, it is referred to as South-South Triangular Cooperation (SSTC).

During a 3-year cooperation programme initiated in 2019 by FAO, the Chinese and Dutch Governments, a project named "Upscaling the FAO-China South-South Cooperation Programme through triangular cooperation with the Government of the Netherlands (part I)" has been implemented. The programme is co-funded (50:50) by the Government of the Netherlands and the Government of China for a total budget of US$ 3 Million for phase 1 (2019-2024). Wageningen University & Research (WUR) has contributed to strengthening the development of key institutions in China who are engaged in coordinating and managing the international cooperation programmes with the aim of increasing their effectiveness and impact of international development efforts. The institutions of interest are the FAO-China SSC programme, and more specifically two FAO reference centres: the Freshwater Fisheries Research Centre (FFRC) of the Chinese Academy of Fisheries Sciences, and the Foreign Economic Cooperation Centre (FECC), both under the Ministry of Agriculture and Rural Affairs (MARA).

The capacity development and learning exchanges between China and The Netherlands have been facilitated in different areas: research, innovation and training, knowledge sharing and public-private partnerships, new concepts and good practices in aquaculture, amongst others.

1.2 Aquaculture project review in Africa

Various activities have been carried out under the project's four work packages. This includes the "**Review of China- and Netherlands- supported aquaculture projects in Africa"** which lies within work package two, titled "Collaborative research on, share experience in and draw lessons on aquaculture in broad terms and specifically on the development of selected aquaculture value chains in an international cooperation practice".

The project review study had two objectives:
1. To collect experiences and generate lessons from supported projects,
2. To constitute the basis for the design of a joint China-Netherland-FAO PPP aquaculture pilot project in a selected African country in phase 2 of the trilateral cooperation programme.

During the start-up phase of the project, selection criteria for the reviewed projects were identified by the WUR and FFRC teams. The selection criteria are as follows:
- Aquaculture should be the main focus
- Projects should be aimed at improving the food security situation in the country or contribute to raising household incomes
- Projects should aim at a visible and/or lasting effect in the country
- Chinese and/or Dutch governments are an important (or only) source of funds
- Chinese or Dutch staff should play major role in project implementation
- Project must have started form 2010
- Short-term, one-time consultancy projects should be excluded

Using the selection criteria, the following countries and projects were retained as the most representative aquaculture development project for extended review study.

Countries and projects supported and implemented by the Chinese Government included:
- Ghana: Technical support on Ghana Tilapia program
- Egypt: Establishment of Fish Farming and Technology Institute of Suez Canal University
- Namibia and Mozambique: Technical Extension and Application of Sustainable Aquaculture
- South Africa: Agricultural Technology Demonstration Centre (ATDC) project
- Malawi Pilot Development Project: improving tilapia production

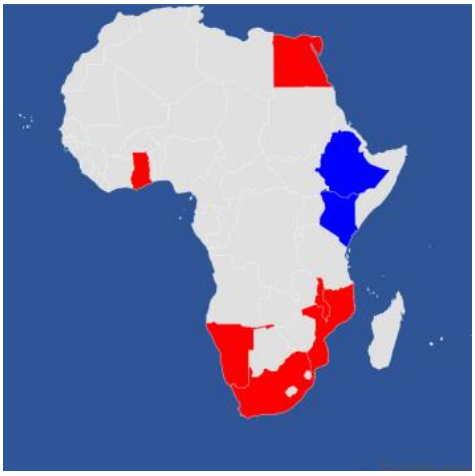
Countries and projects supported and implemented by the Dutch Government included:
- Ethiopia: Agribusiness Support Facility (ABSF) for the Addis Ababa Chamber of Commerce and Sectoral Associations (AACCSA)
- Kenya: Capacity building to deliver competent human resources in IWRM and aquaculture of equitable and sustainable livelihoods in Kenya's Arid and Semi-arid Lands and beyond
- Kenya: Kenya Market-led Aquaculture Programme (KMAP)
- Kenya: 3R Kenya – from aid to trade
- Kenya: Food Tech Africa

The selected project characteristics including start and end dates, executing organisations, partners, funding institutions, budget, objectives, activities and outputs are found into the reports in Annex 3.

The joint WUR-FFRC review study was carried out in 2022 on 10 selected projects implemented after 2010, that targeted small-scale farmers and supported private sector development in 8 African countries (Figure 2).

■ CHINA-supported aquaculture projects:

Ghana
Egypt
Namibia
South Africa
Malawi
Mozambique



■ Netherlands-supported aquaculture projects:

Ethiopia
Kenya

Figure 2 *Countries hosting Chinese and Netherlands supported aquaculture projects in Africa.*

The review focused on experiences and lessons learnt by the various stakeholders who were involved differently in the projects. In total, 67 stakeholders were interviewed. This included representatives from project funding organizations, project implementing organizations, project managers, private companies, knowledge institutes, NGO's, fish farmers, fish farmers organizations and extension organizations. Additional information was collected from reviewed project documents.

A comparative analysis of China- and Netherlands- supported projects, identified factors that contributed to a project success or failure, harvesting the lessons learnt from the field visits and interviews from a broad range of project stakeholders. Lessons learnt and general recommendations regarding design and implementation of foreign-funded aquaculture projects have been formulated, based on the findings of this review and compiled in different knowledge products or reports listed in Annex 3. These are publicly accessible for consultation.

2 The webinar as a tool to share results and collect feedback

The webinar had two objectives:

1. To share and discuss the results of the aquaculture project reviews with stakeholders involved in aquaculture development in Africa and,
2. To obtain feedback from partner organizations and from the audience that might be useful for the next phase of the trilateral project.

Learning together, sharing knowledge and experiences have been the cornerstone of the triangular cooperation programme. The findings of the project review are thought to be interesting to a wider audience of people engaged in aquaculture development in Africa, some of which could be potential partners in phase 2 of the project. Many people interviewed had already expressed their interest in the overall results of the review. Therefore, a webinar was found a more appropriate way of sharing findings beyond the distribution of the reports of the review study.

For this purpose, WUR led a live webinar titled "Aquaculture project reviews in Africa: sharing findings and lessons learnt" which was held in collaboration with FFRC and FAO (South-South and Triangular cooperation division), and with contributions from managers of public and private funded aquaculture projects in Africa. The webinar was hosted on 28 May 2024 by Aquaculture Africa Media (AAM), an Africa-based aquaculture network platform.

3 The webinar audience registration, attendance and participation

3.1 Registration

In total 1 034 participants, from 89 countries of which 42 were African countries, registered for the webinar. Registrations from Africa were dominated by Kenya with 20.9% of the African registration pool. The African countries that followed were South Africa (10.3%), Nigeria (9.5%), Uganda (7.7%), Zambia (7.4%) and Tanzania (5.5%). The leading countries outside of Africa from which registrations were received, included India, the Netherlands and the UK – respectively accounting for 21.4%, 13.7% and 8.3% of the non-African registration pool.

The following pie chart, Figure 3 illustrates the representation of global regions from which the registrations originated.

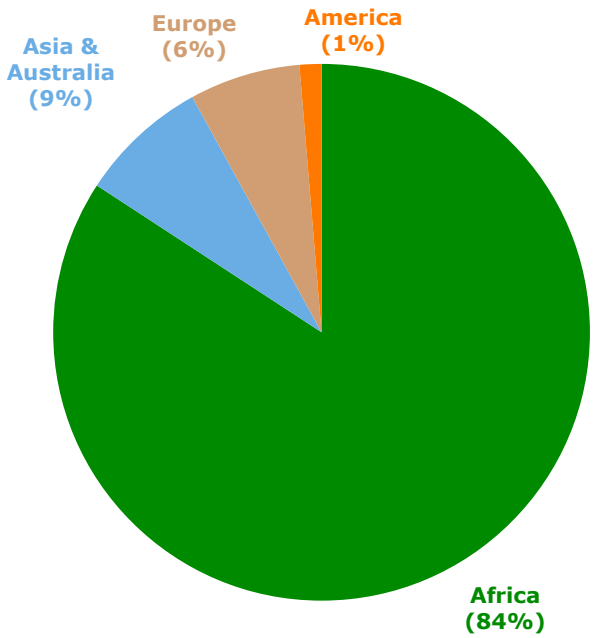


Figure 3 *Representation of global regions of the registrations to the webinar.*

3.2 Attendance

All or part of the live session was attended by 422 unique viewers and maximum concurrent attendance reached 315. A total of 958 people used live and post-event materials.

Cumulative attendance from 42 African countries (out of a total of 54 countries) followed the same trend as the registration and was dominated by Kenya (177 persons), followed by South Africa (85 persons), Nigeria (80 persons), Uganda (63 persons), Zambia (59 persons) and Tanzania (46 persons), Ghana (32 persons), Egypt (28 persons), Malawi (27 persons), Namibia (26 persons), Ethiopia (22 persons), Mozambique (20 persons), Algeria (19 persons), Rwanda (14 persons), Madagascar (12 persons), Senegal (12 persons), Zimbabwe (12 persons). Other African countries each had less than 10 persons that attended the webinar. The leading countries outside of Africa for which attendance was higher than 10 individuals included India

(27 persons), The Netherlands (23 persons), United Kingdom (15 persons). Figure 4. presents the global attendance of the webinar.

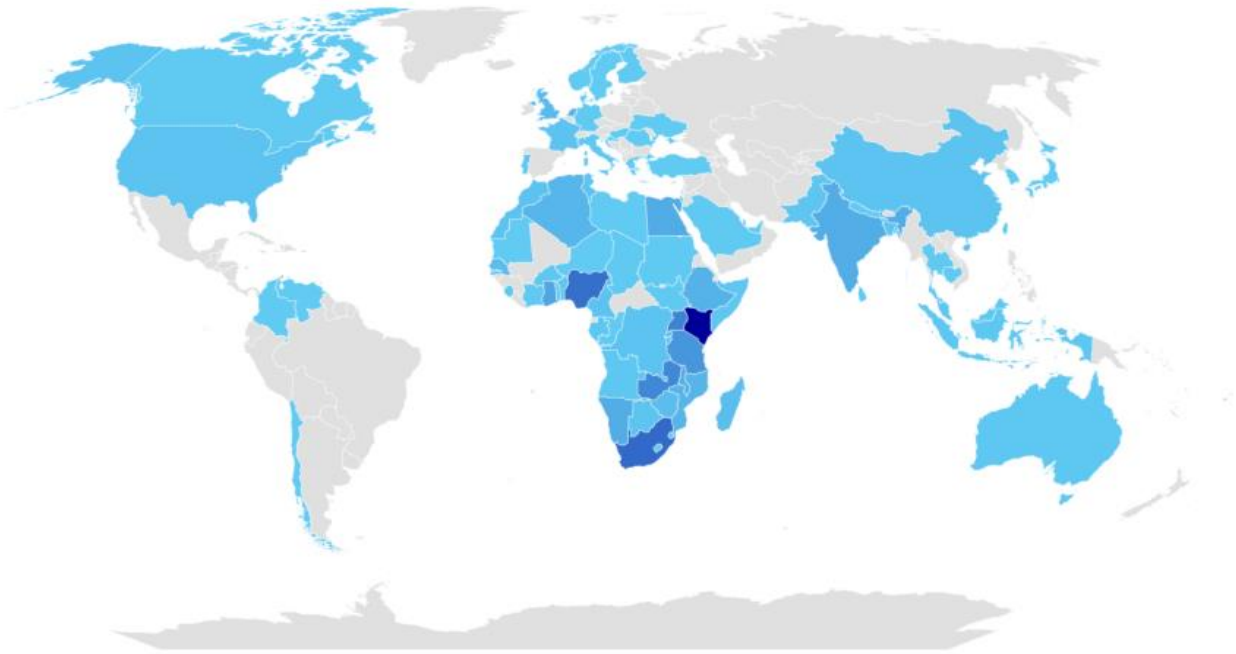


Figure 4 *Representation of countries (in blue) by number of people who attended the webinar on a scale of light to dark blue whereby dark blue represents a higher number of participants.*

Most participants worked at university and research institutions (32%), for the government (24%), companies (17%), NGOs (10%) or were farmers (10%) as shown in the pie chat Figure 5.

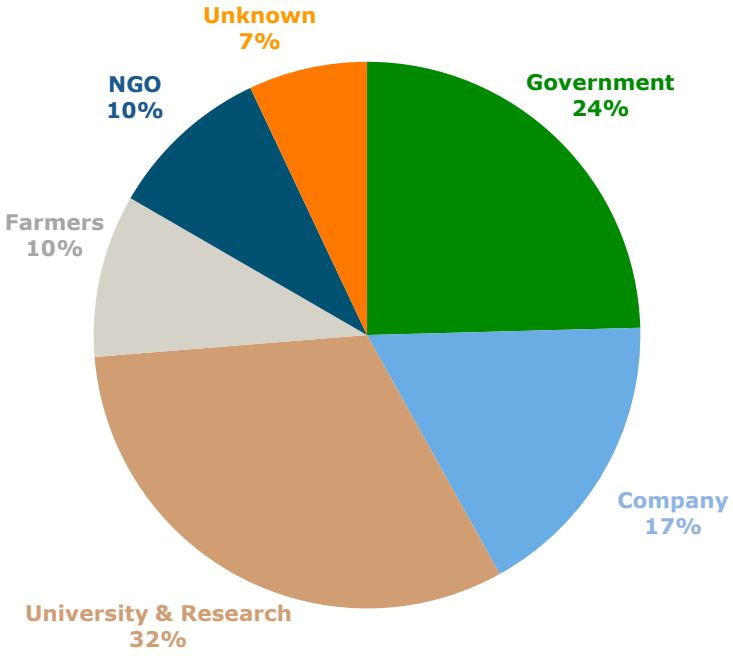


Figure 5 *Representation of employment of webinar participants.*

3.3 Participation

222 people from 45 countries (excl. those who did not communicate their country) of which 35 African countries, 5 European countries (Netherlands, France, Portugal, Norway, United Kingdom), 3 Asian countries (China, India, Indonesia), Canada, Australia participated in the chat mainly with greetings, introducing themselves or thanking for the presentations but also asking questions. The list of questions is available in Annex 4. The activity in the chat was dominated by African countries with participants from Kenya (41) followed by South Africa (20), Uganda (14), Zambia (13), Netherlands (9), Nigeria (9), Tanzania (9), Ethiopia (7), Ghana (6), Malawi (6), Rwanda (6), DRC (4), Mozambique (3) and other countries within and outside Africa with participants equal or below from 3 to 1. Figure 6 illustrates the number of attendees per country that used the chat during the webinar.

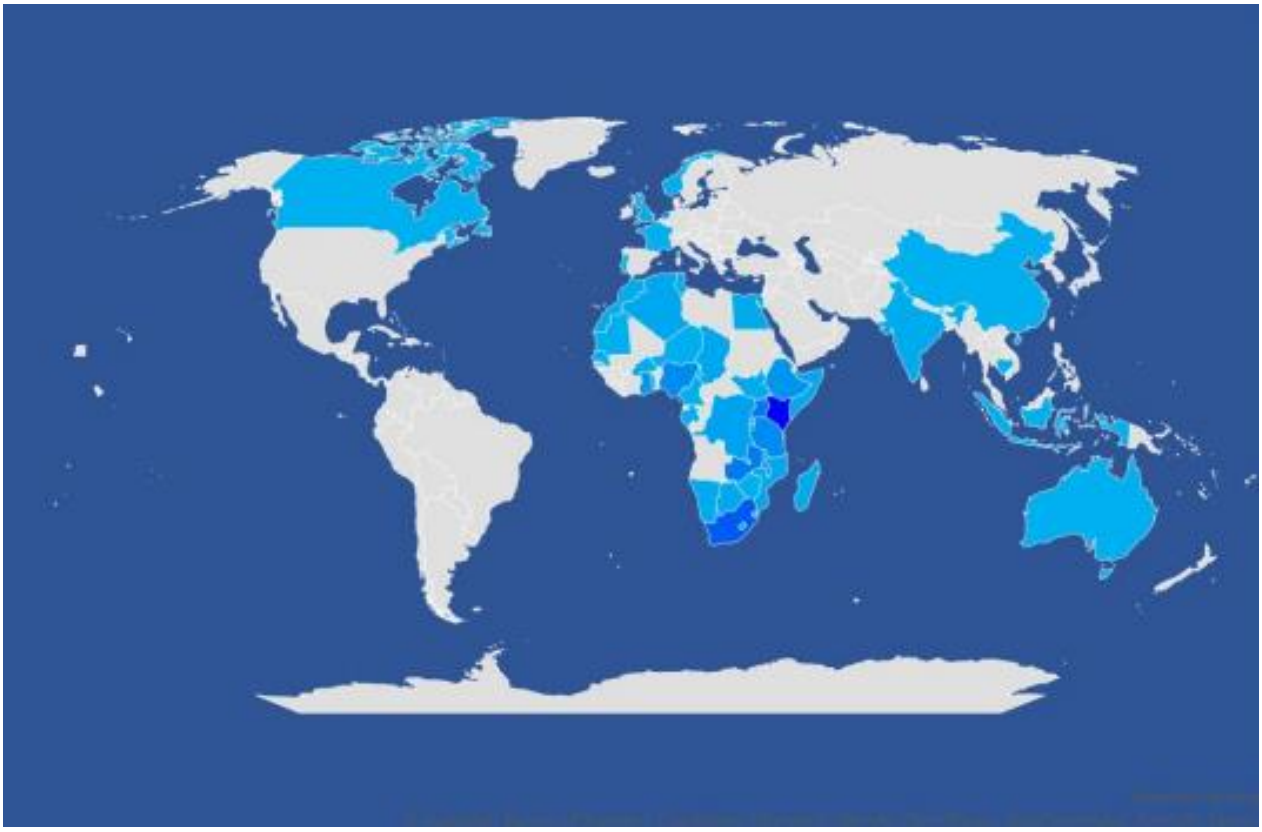


Figure 6 *Representation of countries (in blue) by number of active participants in the chat during the webinar on a scale of light to dark blue whereby dark blue represents a higher number of participants.*

4 The webinar presentations, shared information and results

This chapter introduces the speakers during the webinar and summarizes the key take-home message from the keynote speech (4.1), followed by the presentation of the South-South Triangular Cooperation Programme (4.2), the key findings and results of the joint aquaculture project review study (4.3), the lessons learnt and recommendations from both the Triangular Cooperation Programme and the joint project review study (4.4), and the lived aquaculture project experiences from a Dutch-funded project in Kenya (4.5) and from a Chinese-funded project in Ghana (4.6).

For more information, the webinar PowerPoint presentations (pdf) are accessible online via this link www.rb.gy/02b71j. The access to the recording of the webinar session is accessible via this link www.rb.gy/o83huw.

4.1 Key note by Dr. Yuan Xinhua (FAO's Fisheries and Aquaculture Division)

Dr. Yuan Xinhua is the FAO Deputy Director of the Fisheries and Aquaculture Division. Joined FAO in 2018 and mainly supports the Blue Transformation roadmap, the FAO guideline for Sustainable Aquaculture and the Global Sustainable Aquaculture Advancement Partnership. He has more than 30 years of experience in aquaculture and a rich experience in working with partners both in Asia and in Africa on solutions in hatcheries, grow-out, value chains, policy matters and economic analysis. Dr. Yuan Xinhua works closely with FAO country members in promoting aquaculture for food, livelihood and socio-economic development.

4.1.1 Keynote messages from FAO by Dr. Yuan Xinhua

- FAO has collaborated with The World Bank to organize a special aquaculture event at Aquaculture Africa 2023 in Lusaka, Zambia to unlock the potential of aquaculture development with the Aquaculture Network for Africa (ANAF). FAO has been promoting aquaculture and the global agri-food transformation. The aquatic food proved to be an important nature-based product in satisfying the growing population, nutrition and healthy food, and as well as income and livelihood.
- FAO 's publication on Blue Transformation Roadmap was promoted in 2024 at the Regional Conference in Asia, Africa, Latin America and the NENA region as well as Europe. This is a great initiative to promote the aquatic food and in contributing to the food security and nutrition. The Blue Transformation Roadmap has three objectives:
  1. Sustainable aquaculture intensification and expansion
  2. Managed capture fisheries
  3. Upgrading value chains
- FAO has been working closely with the African continent in aquaculture development and in 2023, started to develop a knowledge hub for the African countries to document the successful indigenous knowledge in aquaculture to benefit more people in Africa.
- FAO has initiated platforms for policy, dialogue and support to the capacity building in Africa: Aquaculture Network for Africa (ANAF), World Aquaculture Society Africa Chapter (WAS-AFRC) and the Committee for Inland Fisheries and Aquaculture of Africa (CIFAA).
- FAO collaborates with different partners and stakeholders in aquaculture development, especially, promoting South-South and Triangular Collaboration. FAO does not only contribute in terms of financial resources, but also provides technical input for sustainable aquaculture development on a global scale. FAO supports the partners to transfer technology and pilot aquaculture development programs between regions, such as from Europe to Africa and from Asia to Africa, and from Europe to Asia and so on.
- This webinar will be showcasing the findings and the lessons learned from the review of aquaculture projects, supported by FAO, the Netherlands and the Chinese governments.
- FAO will continue to enhance the partnership with governments, academia and universities as well as the sector players.

4.2 Up-Scaling the FAO-China SSC Programme through Triangular Cooperation with the Government of Netherlands (Part 1) by Athifa Ali (FAO, South-South and Triangular Cooperation Division)

Athifa Ali is a project officer at FAO in the South-South and Triangular Cooperation Division. Athifa Ali has worked with FAO for over 13 years, including 3 years at the FAO Regional Office for Africa in Ghana. Athifa Ali is the project coordinator of the FAO-China-Netherlands Triangular Cooperation Project.

4.2.1 Shared background and rationale of the South-South and Triangular Cooperation programme by Athifa Ali

- China is one of the first FAO South-South and triangular cooperation partners and one of FAO's most important and strategic partners. China was one of the first countries that set up a trust fund with FAO specifically dedicated for the FAO China South-South Cooperation Program.
- China and The Netherlands have been supporting technically, providing experts as well as knowledge and funding for FAO's South-South and Triangular Cooperation Program since 2019.
- FAO and China began their strategic collaboration back in 2019. Overall, China has provided nearly US$ 130 million dedicated to South-South and triangular cooperation programs.
- Using this funding, China and FAO have jointly implemented over 30 projects, transferring technology expertise and knowledge from China to other countries.
- Over 300 Chinese experts have been fielded from China to several countries, mostly in Africa, almost, 95% of the trust fund projects have been thus far in Africa with several in Asia.
- Mostly Chinese experts stay over a period of two years working with local institutes and local experts to promote this technology transfer process.
- Currently the FAO, China, South-South and Triangular Cooperation Program is in its third phase and has a project portfolio of over 26 projects in different phases of formulation, implementation and a few under concluding phases.
- We discovered during these three phases of the FAO, China South-South cooperation program that, as the program began to grow and to expand, the kind of implementation challenges both FAO and China were facing in scaling up were quite a bit challenging due to the way the program is organized from China's side.
- The program is supported by the Chinese Ministry of Agriculture and Rural Affairs while the implementing and coordinating body is the Foreign Economic Cooperation Center (FECC) of China, which is one of the reference centres, based in China.
- There are four other reference centres in China that also directly support the implementation of the FAO-China South-South program. One such is the webinar co-organizer, the Freshwater Fisheries Research Centre (FFRC), part of the Chinese Academy of Fisheries Sciences.
- The rationale underlying the collaboration with Netherlands is to use the knowledge and technical expertise from the Netherlands through Wageningen University to upgrade the capacities of the two FAO reference centres (FECC, FFRC) to better support the implementation of the FAO China South-South Cooperation program.
- Within this collaboration there are seven project outputs which are mainly focused on strengthening research and innovation capacities and strengthening the strategy and action planning of the reference centres, knowledge generation and knowledge sharing capacities.
- The seven outputs of the Triangular cooperation programme are:
  1. Research & innovation
  2. International training
  3. Strategy and Action Plan
  4. Knowledge Sharing
  5. Knowledge products
  6. Public-Private Partnership (PPP)
  7. Business case for PPP Pilot project

- Outputs number six and seven are important for building the public private partnership (PPP) approach for future South-South cooperation projects and a second phase of the current collaboration to develop a business case for a PPP project in aquaculture in one of the African countries.
- The project is in its final year of implementation. By the end of the project, through the collaboration between WUR and the two reference centres, we hope that the reference centres have improved their research and innovation capacities in a two-way flow of information sharing. Through this process, there has been a huge learning experience.
- The project started in 2019 and immediately faced the challenges elicited by COVID-19 for the next two years. Implementing a project that is focused on capacity building, collaboration, knowledge exchange through virtual means was extremely challenging. Building desired working relationships was a challenging process, however it did bring lots of learning and richness to the three partners. The webinar highlighted learnings that have occurred between the two institutions along the way.
- The webinar contributes to output seven -business case for PPP pilot project- as this project is seen to foster long term and sustainable partnerships between The Netherlands and China, in addition to implementing our learnings on building a business case for a PPP aquaculture project in a second phase launched in one of the selected countries in Africa.
- During the webinar, we heard aquaculture priorities and challenges from aquaculture experts and from the countries in Africa. The information shared will be used to build a PPP project proposal for the next phase.

4.3 The joint aquaculture project review study by Dr. Li Hongxia (Freshwater Fisheries Research Center, Chinese Academy of Fishery Sciences, FFRC-CAFS, China)

Dr. Li Hongxia is an associate researcher who has been working with Freshwater Fisheries Research Center (FFRC) for 17 years. FFRC is one of the FAO Reference Centres for Aquaculture and Inland Fisheries Research and Training. FFRC is a very active contributor to the South-South cooperation. Li has been working on the FAO-China South-South Triangular Cooperation Programme with the Netherlands from the FFRC side since the program's initiative started.

4.3.1 Key findings and results

Identifying and interviewing relevant stakeholders of selected projects is the main way of collecting information of this joint review study. Figure 7 illustrates the relevant stakeholder groups in Netherlands- and China- supported projects in Africa, by the guidance of which, totally 67 stakeholders were identified and interviewed. Additional information was collected from reviewed project documents and questionnaires.

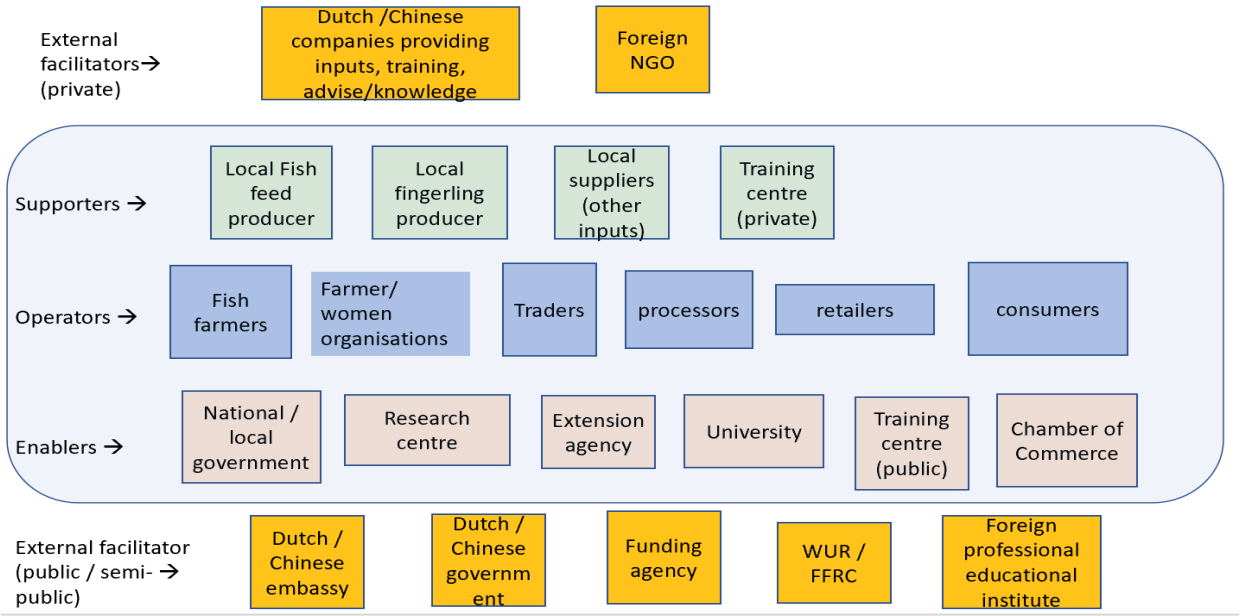


Figure 7 *Overview of stakeholders in NL / China supported aquaculture projects in Africa.*

The food systems framework lens in Figure 8 was adopted to assess the impact of the selected projects, which was used to describe the activities undertaken by each project, from the segments of the food value chain in blue to the enabling factors (socio-economic drivers in red and environment drivers in green) that can be supportive or against with the production/socio economic /environment outcomes in pink.

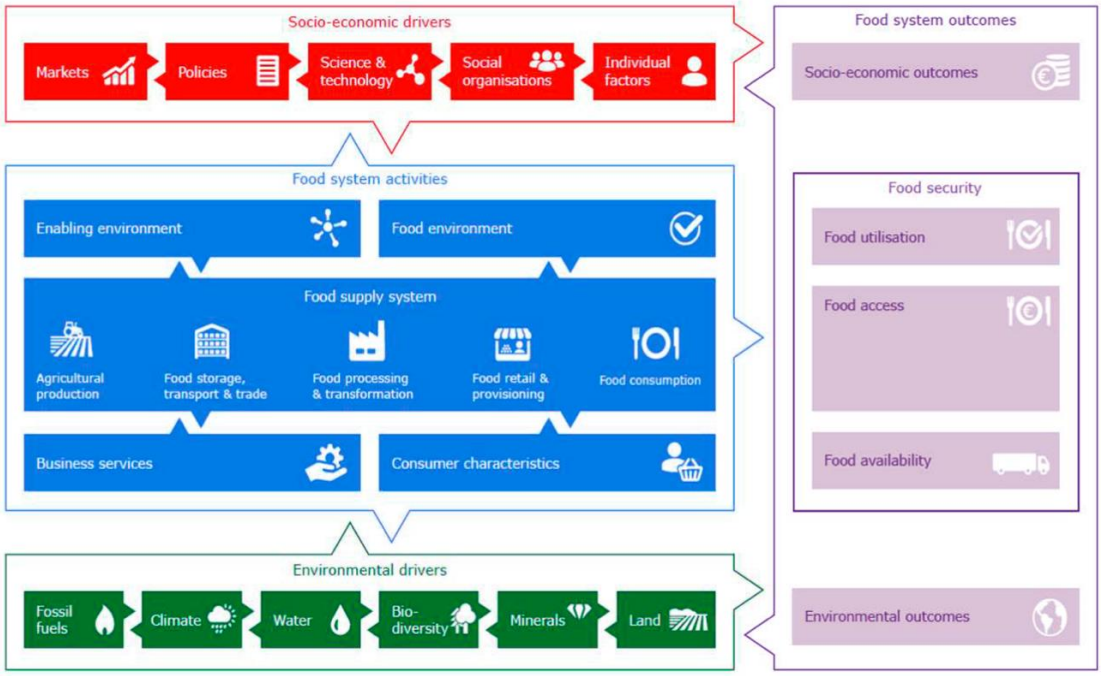


Figure 8 *Food systems framework as proposed by van Berkum et al. (2018).*

The key findings from the 10 aquaculture projects review study were elaborated into six parts as shown in Figure 9, including the project objectives and targets to improve: fingerlings and market-size fish, quality and affordable feed, introduced technologies, project duration and implementation, and the capacity building.

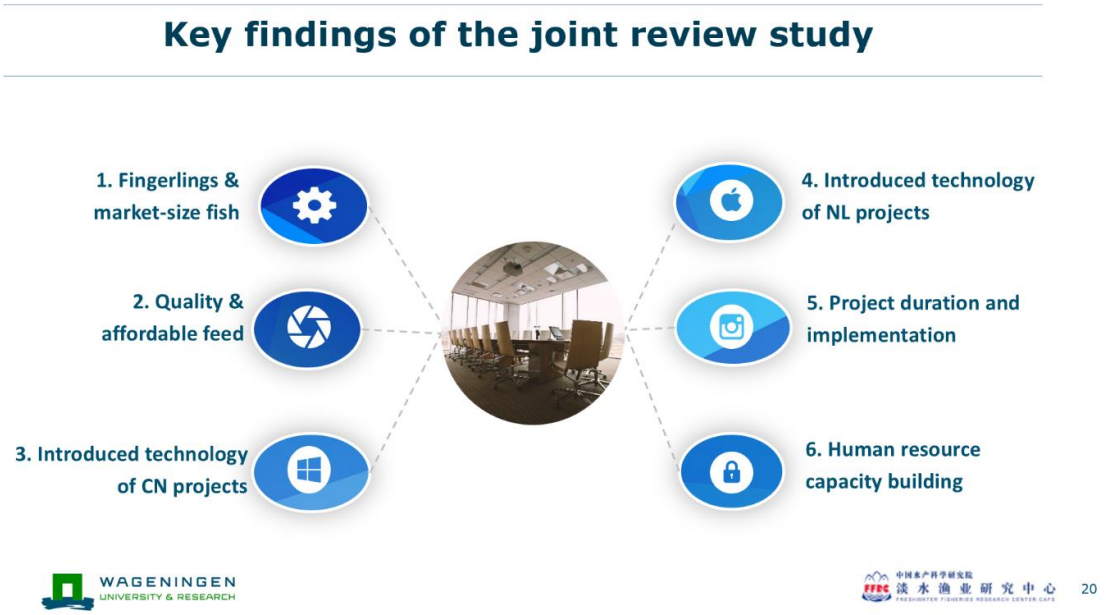


Figure 9 *Key findings of the Chinese and Dutch supported projects joint review study.*

- All projects that aimed at improving and increasing the production of fingerlings or market-size fish by means of training, demonstration, providing infrastructure, providing better or more technically advanced equipment etc. claim to have achieved this to some or to a large extent.
- The China-supported project (Malawi Pilot Development Project: improving tilapia production) and the Netherlands-supported FoodTechAfrica project in Kenya addressed the "lack of affordable quality feed" issue explicitly; the results enhanced the availability of a locally produced fish feed.

- Two China projects introduced technologies that were (relatively) new to the recipient county (deep-large ponds, aquaponics, rice-fish integration, hormone induced fish reproduction, low-cost feed formulation, and selection of broodstock of indigenous aquatic fish species). The large deep pond technology initiated in Malawi by a China-supported project has been translated into the local language (Chichewa) by the staff of National Aquaculture Center (NAC) in Malawi and adopted across the country.
- (Relatively) new technologies were also introduced by two Dutch projects (hatchery and grow-out of tilapia in Indoor water recirculation system, in-pond RAS system, production of extruded fish feed). The RAS technology introduced by the Dutch funded FoodTechAfrica project has been adopted by other farmers in the East African region in Kenya, Tanzania and Rwanda.
- Delays in project implementation and equipment delivery hindered proper outreach of the products and new technology developed by one China project. Projects that provided only short training to professionals and farmers seemed to have limited success due to lack of consolidation and follow-up. The Netherlands supported projects in Ethiopia could only support one company with the establishment of a commercial fish farm during its lifetime.
- Local aquaculture professionals working in enabling or supporting entities benefited directly from the training provided by the projects' experts and from provided the infrastructure and equipment. Farmers have benefited directly from the training provided by the projects and/or indirectly from the enhanced training facilities and more knowledgeable and better equipped professionals in the enabling institutes and in the value-chain supporting companies.

4.4 Lessons learnt and recommendations by Dr. Eugene Rurangwa (Wageningen University & Research, WUR, The Netherlands)

Dr. Eugene Rurangwa works at the Wageningen Marine Research (WMR) Institute of Wageningen University & Research (WUR) in the Netherlands. He worked before at the University of Rwanda for the Pond Dynamics Collaborative Research Support Program (PD/CRSP) and the K.U.Leuven in Belgium. He is a researcher in sustainable aquaculture development with more than 38 years of project work experience in sub-Saharan Africa and Europe. He has a wide range of publications on aquaculture in Africa. He is part of the WUR team working on the FAO-China South-South Triangular Cooperation Programme with the Government of the Netherlands.

4.4.1 Shared lessons learnt

4.4.1.1 Lessons learnt from the TrC programme

- Some lessons learnt from the implementation of the Trilateral cooperation programme have been on how to dive through and learn from challenges and complex working processes to achieve results.
- A big part of the project work has been done during the covid 19 lockdown period. Without the possibility to travel nor to meet in office, the team has worked virtually, in a hybrid mode and in the field to review aquaculture projects in Africa when the pandemic situation permitted.
- The team has managed to build trilateral business relationships remotely between participants and was able to deliver most of results in due time.
- The project involved different institutions: FAO, the Dutch Ministry of Agriculture, Fisheries, Food Security and Nature (LVVN, formal LNV), the two Chinese Ministries of Agriculture and Rural Affairs (MARA), and the Ministry of Finance (MoF), different WUR research and education entities and two FAO-China SSC reference centres: FECC, FFRC, all with different working processes.
- The project benefited from the hard work of a strong and diverse project and management team of experts from different culture backgrounds, that kept rolling in and out overtime for different reasons, whether joining or leaving the project for other responsibilities, for the retirement but this did not affected much the project work.
- Overall, project researchers and managers have learned that leadership, teamwork, collaboration, having shared vision and common goals are key to success in a complex project. They have shared knowledge, new concepts, faced challenges together and learned from each other to overcome them.
- During this critical time, researchers have generated a long list of project outputs ranging from reports on different aquaculture topics: international cooperation policy, good practices, Nutritious Pond Concept (NPC), PPP models, e-learning course modules, aquaculture project review reports.

4.4.1.2 Lessons learnt from the aquaculture project review study

From 10 aquaculture projects reviewed, researchers involved have identified three phases (Figure 10) of a project lifecycle for which the stakeholders interviewed have shared their inputs for improved project formulation. The process indicates aspects communicated by the stakeholders as important during different phases of the project. Stakeholders should be consulted as early as possible to collect need-based ideas and baseline data during the preparation phase. A co-creation during the design phase is needed to ensure a project ownership by the partners and the beneficiaries during the implementation phase and after the project ends.

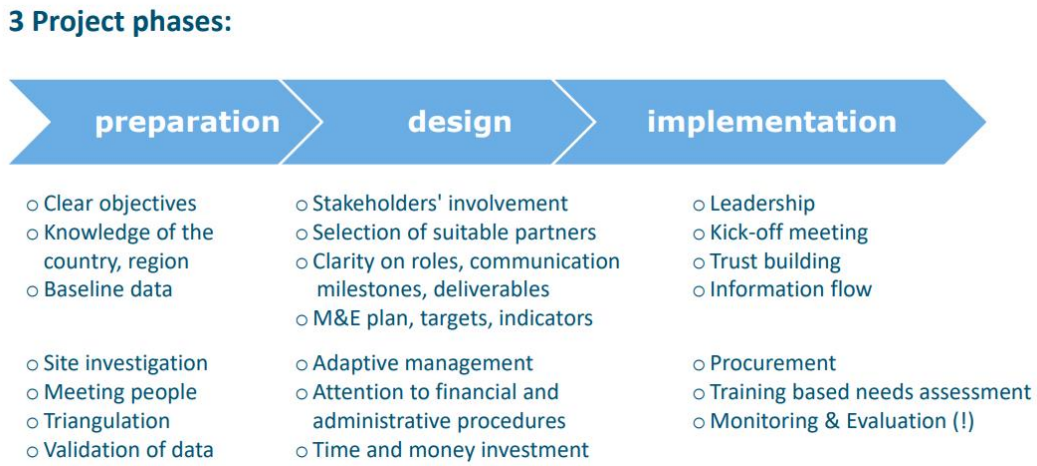


Figure 10 *Lessons learnt from the aquaculture project review.*

4.4.2 Recommendations from the aquaculture project review study

Building on lessons learnt from the project review interviews, recommendations have been formulated for each of the three phases for international Public Private Partnership Projects. A fourth phase has been added to ensure a continuation of lasting business to business into new ventures among partners at the end of the public subsidies. These recommendations are shared below per project phase in Figure 11.

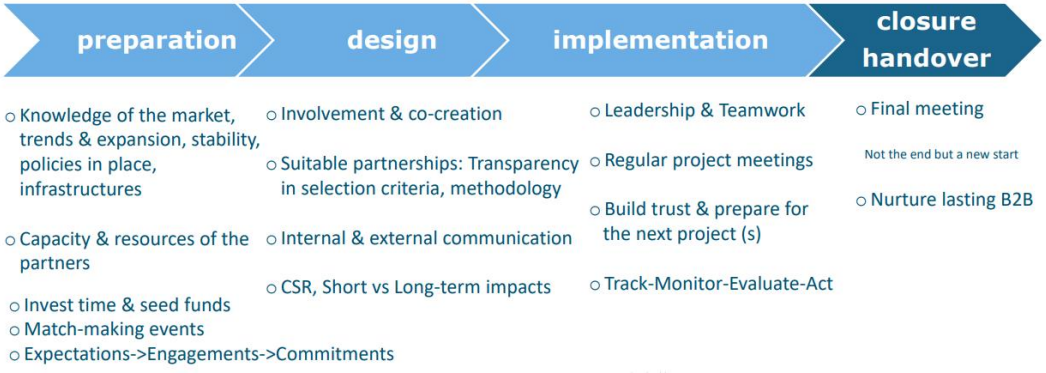


Figure 11 *Recommendations for an international Public Private Partnership Project.*

4.5 Lived aquaculture project experiences from Dutch-funded Kenya Market-led Aquaculture Programme (KMAP) by Arnoud Meijberg (Manager Netherlands-public funded aquaculture project in Kenya)

Arnoud Meijberg is an independent consultant in aquaculture and an investor in aquaculture based in Mombasa, Kenya. Has worked in aquaculture and fisheries sector since 2010 in the implementation, design and evaluation of projects. He has also found Samaki Express, which supplies aquaculture inputs to the sector. He was team leader of the Kenya Market-led Aquaculture Program (KMAP), a four-year program funded by the Dutch embassy, implemented by Farm Africa that closed in December 2019. For the past three years, he has worked for the GIZ Governmental Blue program to develop aquaculture and mariculture along the coastline in Kenya.

4.5.1 Shared lived experience from a public-funded aquaculture project in Kenya

Success factors, key challenges, policy environment and investment climate have been largely elaborated in the webinar power point presentation of the KMAP project in Kenya and are available online using the link provided in Annex 1. The project manager has judged more important for the report to summarize the lessons learnt from his project in Figure 12.

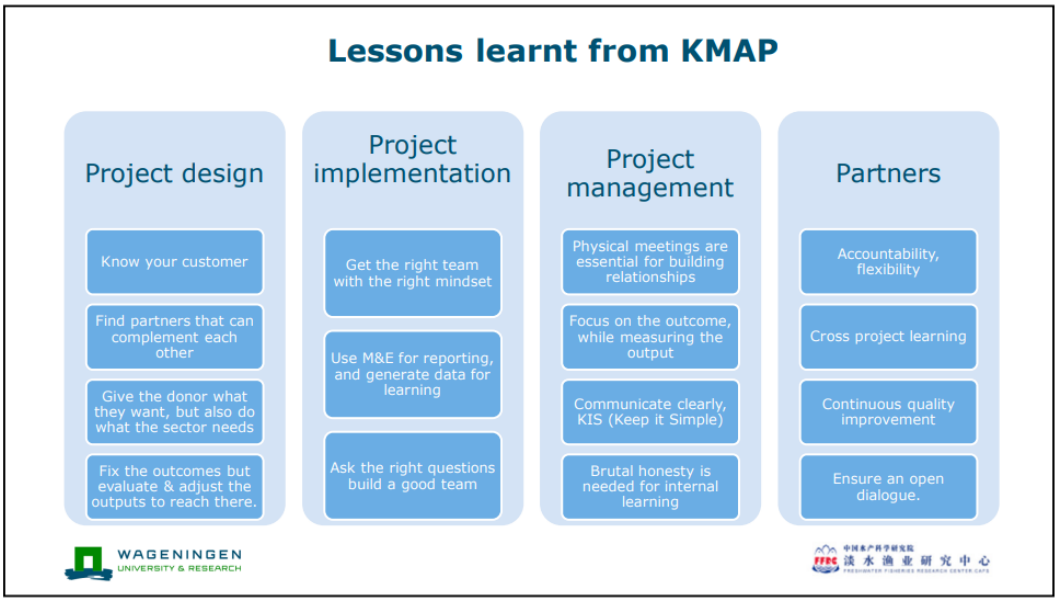


Figure 12 *Key Lessons learnt from KMAP.*

4.6 Lived aquaculture project experiences from China-funded Technical Support on Ghana (TSG) Tilapia Programme by Yundong Peng (Manager China-private funded aquaculture project in Ghana)

Yundong Peng is working with CHEN's Group, China Agriculture Science & Technology Development (GH) Limited, the implementation partner of the only one 100% private sector supported programme (Technical Support on Ghana Tilapia programme), the one out of five China-funded programmes of this study. Now he is the acting manager of the aquaculture panel "China Aquaculture Development (GH) Limited".

4.6.1 Shared lived experience from a private-funded aquaculture project in Ghana

- **Lasting success:** Foremost, the leadership of CHEN's Group had clear technical needs and developmental blueprint for the aquaculture panel, which is the deep internal driving force for its development. Secondly, the long-term technical support from FFRC solved the key technical dilemma, such as a fundamental fish brooder population establishment, hatchery and fingerling nursing technology, and adult fish farming technology. Thirdly, the win-win model established by the company between the enterprise and the local community economy, ensured the normal operation of the company in local area.

Lessons learnt: Getting a professional manager, also entrusted by the investors, is the most vital part when operating the company. Additionally, the capacity of human resources, especially for the technicians working with the company should be built sparing no effort by the company. The company needs to keep smooth and non-interval communication with its technical support institution within a necessary duration of the program.

Key challenges: shortage of quality fingerlings; shortage and varying quality of feed raw material; many facilities need purchase from China, production delay because of costly and time-consuming transportation of the oversea purchase; working efficiency usually needs promotion; poor infrastructure, frequent power cuts (interrupting normal production), poor roads (increase transportation cost and time-consuming).

Policy environment: China and Ghana have a long-standing friendly relationship, with extensive cooperation in areas such as economy, healthcare, culture and agriculture, etc. The Ghanaian government has also actively promoted trade with China, providing a favourable policy environment for the development of Chinese enterprises in the local area.

- **Investment climate:** As for animal protein, Ghanaians have a preference to fish. With a population of over 30 million, Ghana has a huge consumer market. The country has low investment cost; Rich in human resources; Professional service and support; Relatively stable of social security; Relatively lower cost of labour, rent and raw materials provided investors with a broader profit margin; more Chinese start-ups find their career in Ghana, bringing in more diversified services; Ghana also has a stable public social security environment, ensuring the basic investment security.
- **Partnerships:** Technical support –FFRC; raw material suppliers; dealers and retails.
- **Contribution to local industry:** Create as much as employments directly for the local community; create small businesses for local community, such as facilities (cage, ponds, road, electricity network) maintenance and repair; provide qualified fingerlings; provide technical guidance, regularly conduct training and on-site guidance; provide new aquaculture concepts and models.

5 Feedback and learnings from the webinar

5.1 Feedback on the webinar

Many words of appreciation, interest in collaboration, and more learning and sharing needs have been expressed in the chat during the webinar and in emails to the presenters that followed the webinar. Figure 13 details a word cloud that highlights key descriptive words and sentiments expressed in feedback comments in the chat. Additionally, participants requested to share the findings and materials of this study highlighting their interest in the content.

Figure 13 *A Word cloud generated by AI (GPT-4o.) highlighting key sentiments and adjectives webinar participants expressed in the chat upon conclusion of the webinar.*

5.2 Learnings from the webinar

Forty-two (42) questions in total have been asked in the chat during the webinar. Some of them have been instantly and after the webinar answered (Annex 4). Others still need to be answered. The questions posted in the chat represent the concerns, the needs and priorities of the stakeholders working in aquaculture in Africa. By grouping the questions per topic, 4 key priority concerns or needs were identified based on the number of associated questions. The priority themes are as follows:

1. Inputs**:** seeds (quality fingerlings and reliable hatcheries) and feed (feed cost reduction, farm-made complementary feed).
2. Sustainability: achieving scale beyond pilot projects, sustainable aquaculture plans and policies, impact on local communities, more successful fish farmers needed.
3. Capacity building: needs of mentorships to widen expertise and experience, teaching sessions for project writing, investment in training of farmers, offering work opportunities.
4. PPP and collaboration: private sector to play a role in scaling up lessons learnt, translation of pilot projects into economic development and improved livelihoods, improvement of feed production in quality and quantity, intensive production, increasing domestic production to reduce fish import, collaboration with specialists.

Interesting ideas were raised from the questions of the participants during the webinar on the key themes above and other aquaculture aspects. Secondary questions covered topics including: capital, inclusion, new technologies, fish market and farmed species, diseases and fish processing and sharing information. Figure 14 visualises the size of each theme.

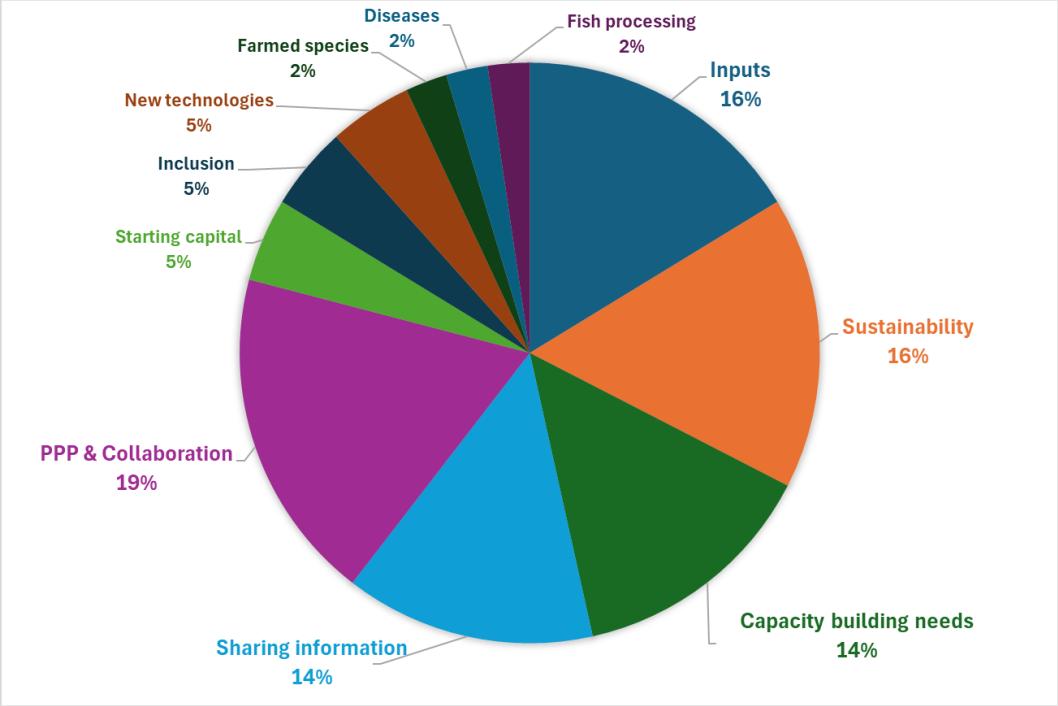


Figure 14 *Priority areas for interventions based on number of questions per topic from the webinar. The higher the relative percentage (%) the higher the number of related questions per theme.*

6 The way forward: lessons for phase 2

As a result of the webinar, the project team has learnt the most important concerns and the current priority areas of interventions for the development of the aquaculture sector in Africa. Although many concerns are shared between countries, some might be country specific. Therefore, further consultations with African stakeholders will deepen the researcher's understanding of the continent priorities in general and of countries in particular. The national public private sector can play a role to scale these lessons and to contribute to the design of the PPP pilot.

7 Annexes

Annex 1. Webinar material
PPT presentations (www.rb.gy/02b71j) and audio (www.rb.gy/o83huw).

Annex 2. Webinar Reach Report
Webinar Reach Report: Aquaculture projects (review) in Africa. June 2024. 55 pp.

Annex 3. African Aquaculture project review reports (available on request)
- *Joint comparison of results and recommendations of the study of China-supported aquaculture projects and Netherlands-supported aquaculture projects in Africa.* Peter G.M. van der Heijden, Li Hongxia, Eugene Rurangwa, Abbink Wout and Ye Wei. March 2023. https://edepot.wur.nl/590827.
- *Review of five Netherlands government funded aquaculture projects in Africa.* Peter G. M. van der Heijden, Wout Abbink and Eugene Rurangwa. March 2023.
- *Review of aquaculture sector projects in Africa supported by China.* Work package 2 Activity 2.1. Li Hongxia and Ye Wei. March 2023.
- *Start-up phase Joint review of aquaculture sector support projects in Africa.* Peter G.M. van der Heijden, Wout Abbink and Li Hongxia. February 2021.

Annex 4. Some questions asked during the webinar and their answers *(in italic)*
1. Is there a limit to the growth of aquaculture in Africa (SUS-OCD-UGA)?

Currently the per capita consumption of fish in Africa is below the world average. Fisheries seems not to grow anymore in Africa, so aquaculture has to fill the gap of the current under supply and the additional supply needed for the growing population. In addition, fish is a commodity for the global market and can therefore be grown where there is water. Yes, it is limited, but there is so much space to expand.

2. What is your advice to address the policy environment (SUS-JBM-KEN)?

Policy is there to promote growth when it is not existing and slow growth/stop when it is harmful to the local ecosystem. In areas where you need growth, the entry should be made easy, in areas where there is high potential risk, there should be slow down of the growth. In general, the aquaculture sector is still very small in Africa and overregulation and lack of clear ownership/ access to land/water, will only scare away large investors.

3. Are we confident that the research, project implementation, training and skills development are covering enough for farmers? Research is valuable and needed, however with a population of 1.4 billion people, Africa needs farmers, successful farmers. After nearly 40 years in the sector I have witnessed very little change (SUS-CDO-UGA).

I think there is need for a rethinking on how donors set indicators for development partners. They should be more ambitious and more rigid in their evaluation. I would propose to focus less on quantity, but more on quality of implementation and long-term impact. For research: there should be differentiation between addressing actual problems and future/wild ideas. Business principles should come first, of course within a sustainability framework, after which one should look at technical issues focusing on lowering risk, increasing income/ lowering cost of production. Other issues will be after that.

4. How do you plan to make the farmers understand that training is an investment (CBN-VO-KEN)?

Let them pay for it. This will empower the farmers and change their evaluation. E.g. if I get a free car with a full tank, I will not be that picky. But if you ask me to pay 100USD for it, I will closely evaluate what is best for me. An evaluation of a training where all costs were covered might be more positive than a training where I had to pay for, as I will be more critical for my perception of value for money.

5. AM mentions low Return on Investment of training. This indicates rather that the training method is not well chosen. Our Indonesian project reached an ROI above 100% within one year, while we used the costly Fish Farmer Field School approach that was adapted to Aquaculture (CBN-RB-NLD).

Trainings have a high ROI (if done well), that might not have come out clearly, apologies. Though sometimes training alone is not enough, sometimes investment is needed to change a certain farming system.

6. Did one of the projects also teach farmer groups to make their own feed using the FeedCalculator to save cost of feed? Did one of the projects work on concentrated supplements that farmers can use to complement the feed available locally (at the farm) to save transport cost (FEE-RB-NLD).

KMAP didn't work on that, as we saw that the biggest problem most people had were more basic, such as absence of water quality management, absence of record keeping etc. When focusing on tilapia a lot can be achieved by having good algae in the pond and in the end, it is about bottom line, profits; if feed transport is expensive your proposal could be one of the many ways to reduce cost of production. But also understand this would need serious record keeping, to be able to monitor on -farm the difference.

7. How can Africa benefit from the new technologies available in aquaculture especially with respect to feed availability looking at the financial constraints (FEE-MTOM-CMR)?

The most important thing is to have a group of such professionals who can truly absorb these new technologies, to transfer, and to make necessary adaptive changes under the conditions of their real situation.

8. The major challenge in Ghana is high cost of fish feed. Are there projects to help with that (FEE-DS-GHA)?

If you do intensive fish farming, feed will be between 60-70% of your cost of production, that is globally the average, your benchmark. Farming for profits is balancing feed, seed, skills and risks, anything you can do to reduce your cost of production is a good thing to do. So it needs a bit of on-farm experimenting and comparing different management systems.

9. DR Congo shows great potential for aquaculture (great hydrographic network, high temperature, and so on). Are you interested to go into discussions to implement an aquaculture project? I saw that you have some projects in some parts of Africa where the climate is not really optimal for aquaculture (PPP-GK-COD).

The fish demand is high and we import fish from many countries. We recommend FAO to run a project with qualified private compagnies (intensive production) instead of rural people and subsistence projects.

10. Is there a project you fund in Kenya, if so which one (SHR-AN-KEN)?

Current Kenyan projects in aquaculture are currently funded by MasterCard, World Bank, IFAD, EU, etc. and new projects are coming up along the coast, some also privately funded. Reach out to them in the field or online to get more info of the different projects going on in Kenya.

11. Are there ongoing projects in Nigeria (SHR-FN-NGA)?

As far as I know, there is indeed ongoing projects in Nigeria, for example, the capacity building projects on cage farming tilapia funded by IFAD, which are already running in their second stage.

12. Is there a possibility to have a similar programme in Uganda (SHR-CDO-UGA)?

There have been many similar programmes in Uganda, you could reach out to the "Uganda-China Friendship Agricultural Technology Demonstration Center" located in Kajjansi, where the Aquaculture Research and Development Center lies in for many years under the framework of China-FAO SSC programme. Of course, there are also several EU funded programmes for example, PESCA, TRUEFISH, etc.

13. How did you market the fish in Kenya (MKT-MPM-ZAF)?

KMAP did studies into value addition, I think they might be available on the Farm Africa Website, otherwise you can request Farm Africa to share some details. The value addition was most profitable in samosa form, but fish chunks was the least amount of work. By then the main problem was the prejudice that pond fish would have a muddy taste (off-flavor). With market testing it was shown that most consumers could not differentiate between wild catch and cage/pond fish. We linked local farmers to local buyers of fish, which is caused by poor water quality.

14. Good presentation on the Kenyan case. Any statistical finding related to the project, especially on the status of mariculture vis a vis how communities would benefit from the project other than capacity building (INC-MC-KEN).

You can find these on the Farm Africa website. There are many more interesting products, a policy brief, baseline, lessons learned, business cases, links to youtube videos, etc. etc.

15. How do we intend to involve more youths and women across the aquaculture value chain (INC-VO-KEN)?

The average age of a fish farmer in Kenya is 50+, about 30% are women in the sector. KMAP worked on including more women and youth in the sector through: succession planning, lowering the entry fees for women and youth in trainings/field days, have women staff training people, special focus on successful women as role model etc. etc. Currently FA has another project ongoing focusing on inclusion of women and youth in Kenya, find out from their website what they are doing.

16. During winter in Zambia the culturing of tilapia is a challenge in cages (on the lake) as temperatures drop, feeding drops (growth) and fungal diseases are more. What can you do to control fungi on the lake in cages to reduce mortality (DIS-LS-ZMB)?

No matter in which country, once water temperature drops, fungal diseases stand their chance to break out, always remember to enhance the immunity of fish. To control fungi on the lake in cages, the most important is to reduce any damage of the fish body, disinfection should be done timely once already damaged. Moreover, daily management should be more dedicated, maintain the water exchange, and remove the sick and dead fishes from the cages.

17. How did you remove the muddy taste from the fish (PRO-MPM-ZAF)?

Generally, if you maintain the water environment well, use quality feed, there will not be strong muddy taste from the fish. Once the fish tasting is strong muddy, before the harvesting, you could stop feeding, move the fish into a tank/pond/container with good quality water, best to create some water current, let the fish stay for some days.

18. Culture of Nile tilapia has really made notable progress, how about catfish and other food fish (SPC-VO-KEN)?

Tilapia is a cheap fish to produce and has more consumer preference in general. Catfish is a carnivore and needs a higher protein level in its diet. In Kenya, catfish is only promoted in a few places, where there is also seasonal availability of wild caught catfish. In the ocean there are a few interesting mariculture activities started, but if you look at a new species, from the first growth trial (with specimen caught from the wild) to a fully developed value chain, it needs 10+ years to close the cycle.

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Report WCDI-24-334

To explore the potential of nature to improve the quality of life

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The mission of Wageningen University & Research is "To explore the potential of nature to improve the quality of life". Under the banner Wageningen University & Research, Wageningen University and the specialised research institutes of the Wageningen Research Foundation have joined forces in contributing to finding solutions to important questions in the domain of healthy food and living environment. With its roughly 30 branches, 7,700 employees (7,000 fte), 2,500 PhD and EngD candidates, 13,100 students and over 150,000 participants to WUR's Life Long Learning, Wageningen University & Research is one of the leading organisations in its domain. The unique Wageningen approach lies in its integrated approach to issues and the collaboration between different disciplines.