



ENHANCING BIOSECURITY GOVERNANCE TO SUPPORT SUSTAINABLE AQUACULTURE PRODUCTION IN EGYPT

November 2022

SDGs:



Country:

Egypt

Project Code:

TCP/EGY/3705

FAO Contribution:

USD 500 000

Duration:

1 June 2019 – 31 December 2021

Contact Info:

FAO Representation in Egypt
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Implementing Partners

General Authority for Fish Resources Development (GAFRD); Ministry of Agriculture and Land Reclamation (MALR); World Fish.

Beneficiaries

Fish farmers and producers; Government staff; Veterinarians.

Country Programming Framework (CPF) Outputs

CPF Priority 1: Improved agricultural productivity.

Output 1.5: Surveillance, control and early warning of trans-boundary animal diseases and zoonoses, plant pests, and fish diseases strengthened.

CPF Priority 3: Sustainable use of natural agricultural resources

Output 3.1: Innovative technologies and practices for increased water productivity and availability in irrigated agriculture and for climate change adaptation enhanced.



BACKGROUND

Aquaculture, or the farming of fish, crustaceans and molluscs, is one of the fastest expanding food sectors. Despite this, the sector faces biosecurity issues posed by the spread of exotic, endemic or emerging diseases, and aggravated by significant commercial exchanges of animal products, a lack of pathogen knowledge and effective aquatic animal health management, and rapid ecosystem changes. If not addressed properly, these challenges will have a severe impact on yields, as well as on earnings and investment in the sector.

Every three to five years, a transboundary aquatic animal disease (TAAD) emerges and quickly spreads, resulting in considerable production losses. However, detecting and identifying an outbreak often takes time, delaying the implementation of monitoring systems and interventions.

In 2018, FAO established the Progressive Management Pathway for Improving Aquaculture Biosecurity (PMP/AB) with the objective of developing sustainable and resilient national aquaculture systems via a combination of bottom-up and top-down approaches and a strong stakeholder participation. Improving biosecurity allows farmers to produce food more effectively, boost their incomes, improve their resilience and strengthen their capacity to respond to the effects of increasing food prices and other food security challenges.

Aquaculture has continued to grow in Egypt over the last three decades, becoming the primary source of high-value protein for Egyptians. However, in a context of rapid environmental changes, which can stress farmed fish at a time when they are expected to grow rapidly, the country lacks the required infrastructure for efficient aquatic animal health management. Under the Ministry of Agriculture and Land Reclamation (MALR), the General Authority for Fish Resources (GAFRD) is in charge of developing aquaculture, creating and implementing policies, giving guidance and extension services to the private sector, and upholding laws that regulate fisheries activities and lake protection.

The objective of the project was to support the sustainable development of aquaculture in Egypt, improve the technological expertise of veterinarians, government staff, producers and farmers, as well as to promote an enhanced aquaculture biosecurity governance. It is consistent with Egypt Vision 2030 and the Sustainable Agriculture Development Strategy, which both encourage an increased animal production. It also aligns with the 2030 fish production goals, which advocate for biosecurity measures and promote the development of sustainable capture fisheries, local sufficiency and cleaning of waters.

IMPACT

The project successfully supported Egypt in the sustainable development of its aquaculture for domestic sufficiency and export. It enhanced the capacities of competent authorities, farmers and other stakeholders in supporting responsible aquaculture production and mitigating biosecurity shocks and risks, in the pursuit of a sustainable and resilient aquaculture sector.

Implemented activities contributed to protecting food production, maintaining animal genetic resources and safeguarding farmers' livelihoods, thereby contributing to Sustainable Development Goal (SDG) 2, which is geared towards ending hunger by 2030. By strengthening the Government's ability to manage the sustainable recovery of aquaculture, this project contributes to SDG 14, which aims to conserve and use the oceans, seas and marine resources for sustainable development.

ACHIEVEMENT OF RESULTS

Through the organization of national consultations and dialogue, the national strategy on aquatic animal health (NSAAH) 2022-2028 was developed and validated by the Government through stakeholder discussions and meetings. This comprehensive strategy seeks to increase fish production, through the implementation of a strong biosecurity governance, for the development of a sustainable and healthy aquaculture sector. In addition to this institutional support, key laboratories were assessed and equipped to ensure that Egypt has the technical capacity to manage diseases of aquatic organisms.

The concept of biosecurity has been incorporated into governmental regulations, as well as in farm operational plans. Biosecurity governance capacities have been strengthened at the political, technical and farm levels, and best practices have been promoted.

The project also contributed to the enhancement of local capacities and raised awareness to promote and implement biosecurity measures in aquaculture production and tackle fish diseases. Communication and awareness materials on specific technical aspects of aquaculture have been developed in Arabic. Finally, technical trainings on farm-level biosecurity governance, emergency preparedness and response to aquatic animal diseases were conducted to promote responsible aquaculture production and reduce biosecurity shocks and risks in order to achieve a sustainable and resilient aquaculture environment.

IMPLEMENTATION OF WORK PLAN AND BUDGET

Due to internal delays in the implementation process, and difficulties in procuring laboratory equipment, a six-month extension was agreed to allow all activities to be completed. However, owing to the restrictions on gatherings as a result of the COVID-19 pandemic, some activities were cancelled. Despite this, all activities were completed within the planned budget.

FOLLOW-UP FOR GOVERNMENT ATTENTION

The NSAAH is expected to be signed and endorsed by the Government in 2023. FAO will support this process and organize a specific event. Actions are also required to ensure the completion and implementation of active surveillance guidelines.

FAO will ensure a proper follow-up on the equipment provided to the laboratories and will hire national experts to further develop the FAO 12-point checklist for the design and implementation of a risk-based surveillance for priority species, diseases and pathogens.

Competent authorities and other relevant stakeholders need to prepare risk profiles, biosecurity action plans (BAPs and prudent use of antimicrobials).

SUSTAINABILITY

1. Capacity development

The institutional, technical and farm capacities in biosecurity governance were strengthened.

A training of trainers (ToT) for selected veterinarians was conducted, thus ensuring the creation of a pool of expert trainers. Selected trainers subsequently assisted in conducting technical seminars for veterinarians, producers and smallholder farmers.

In coordination with the Government, the project provided a series of technical trainings on tilapia health, prudent and responsible use of antimicrobials in aquaculture, disease awareness, farm-level biosecurity and emergency preparedness and response to aquatic animal diseases. A total of 750 individuals participated in these trainings. The trainings were organized by GAFRD and held at the Faculty of Veterinary Medicine of the Suez Canal University.

The virtual training course on the design of an active surveillance for diseases of aquatic species using a 12-point checklist for a multidisciplinary team was carried out by FAO. This training places the emphasis on practical aquaculture and fundamental aquatic animal health guidance and provides guidance for the design and implementation of active surveillance for targeted diseases. The training was attended by 130 government employees, researchers and producers from Egypt, Ghana, Kenya, Nigeria, the Philippines, Saudi Arabia, Thailand, Uganda and the United Arab Emirates.



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DOCUMENTS AND OUTREACH PRODUCTS

Documents

- ❑ **Abdel Fattah Mohamed / Suez Canal University.** November 2021. *Veterinary drugs in aquaculture.* 43 pp.
- ❑ **Adel Shaheen / Benha University.** December 2021. *Manual of common aquatic animal diseases in Egypt.* 90 pp.
- ❑ **Amany Ahmed / GAFRD.** August 2021. *Economics of aquaculture diseases and epidemiology.* 160 pp.
- ❑ **Amany Ismail / GAFRD.** September 2021. *Communication and awareness materials on fish diseases.* 25 pp.
- ❑ **Amira El Hanafy / Central Laboratory for Aquaculture Research, Agriculture Research Center.** September 2021. *Guideline for assessment of laboratory capacity and facility.* 48 pp.
- ❑ **Soad Sabry A. Salama / Animal Health Research Institute.** October 2021. *Biosecurity on the farm level report.* 26 pp.
- ❑ **FAO / GAFRD / World Fish.** December 2021. *National Strategy on Aquatic Animal Health of Egypt (2022-2028)* (in English and Arabic languages). 59 pp.



Outreach Products

- ❑ **Amany Ismail / GAFRD.** September 2021. *Awareness materials on bacterial diseases in fish.* 3 pp.
- ❑ **Amany Ismail / GAFRD.** September 2021. *Awareness materials on biosecurity measures in hatcheries.* 3 pp.
- ❑ **Amany Ismail / GAFRD.** September 2021. *Awareness materials on biosecurity measures on the farm level.* 3 pp.
- ❑ **Amany Ismail / GAFRD.** September 2021. *Awareness materials on fungus on aquarium fish.* 3 pp.
- ❑ **Amany Ismail / GAFRD.** September 2021. *Awareness materials on non-infectious fish diseases.* 3 pp.
- ❑ **Amany Ismail / GAFRD.** September 2021. *Guidelines for fish trade.* 3 pp.
- ❑ **Amany Ismail / GAFRD.** September 2021. *Awareness materials on shrimp diseases.* 3 pp.
- ❑ **Amany Ismail / GAFRD.** September 2021. *Awareness materials on parasitic diseases.* 3 pp.



ACHIEVEMENT OF RESULTS - LOGICAL FRAMEWORK

Expected Impact	Food security and nutrition improved through adaptation and implementation of effective biosecurity governance for a sustainable and healthy aquaculture sector development		
Outcome	Enhanced capacities of competent authorities, farmers and other stakeholders to support responsible aquaculture production and reduce biosecurity shocks and risks towards achieving a sustainable and resilient aquaculture sector		
	Indicator	Number of stakeholders (including women and men fish farmers and fish farmer organizations) with enhanced capacities on various aspects of biosecurity governance.	
	Baseline	0	
	End Target	50 to 100 people from 12 organizations (government institutions, research centres, universities and the private sector).	
Comments and follow-up action to be taken	Over 200 participants representing key members of the Government, competent authorities, research institutions, academia, fisheries managers and technicians, private fish and shrimp farmers, and a number of value chain actors contributed to the SWOT analysis and the FAO national fish health capacity and performance survey. This collaboration led to the successful completion of a national strategy and to the definition of programmes and projects under the NSAAH.		
Output 1			
The aquaculture stakeholders (public and private) engage in a productive partnership towards strengthening aquaculture biosecurity governance and jointly develop and adopt a National Strategy on Aquatic Animal Health (NSAAH) Management within the Progressive Management Pathway to improve aquaculture biosecurity (PMP/AB)			
Indicators		Target	Achieved
– Number of multistakeholder meetings and consultations held to develop NSAAH within the PMP/AB.		– 10	Yes
– One NSAAH developed and endorsed by government and multistakeholders.		– 1	
Comments	FAO, in close consultation with government authorities, organized national awareness events, such as consultations, dialogues and round-table discussions for different stakeholders on the concepts, principles and application of NSAAH and PMP/AB.		
Activity 1.1			
Awareness-raising events on NSAAH and PMP/AB			
Achieved	Yes		
Comments	<ul style="list-style-type: none"> – The development of the NSAAH report was guided by the principles of the PMP/AB initiative, which ensures the full participation of stakeholders throughout the process. FAO's PMP/AB approach has been adopted to develop, formulate and implement NSAAH. The formulation and proposed activities of NSAAH were guided by the World Organization for Animal Health (OIE)'s aquatic animal health code and FAO's code of conduct for responsible fisheries. – During the initial phase of the project, strengths, weaknesses, opportunities, and threats (SWOT), gap and sector risk analyses were performed and allow for the identification of aquaculture biosecurity areas that can be improved. The NSAAH defines the 16 programmes and 24 proposed projects necessary to build a solid aquatic animal health management in Egypt over seven years. It also includes an implementation plan that identifies ranking priority, time frame and the entity in charge of carrying out each assignment. – NSAAH was translated into Arabic. – The 16 programmes include: <ul style="list-style-type: none"> - Policy, legislation and enforcement. - Risk analysis. - Pathogen list - Border inspection and quarantine. - Diagnostics. - Farm-level biosecurity and health management. - Chemicals, veterinary drugs, effective microbes and antimicrobial resistance (AMR) in aquaculture. - Surveillance, monitoring and reporting. - Communication and information systems. - Zoning and compartmentalization. - Emergency preparedness and contingency planning. - Research and development. - Institutional structure (including Infrastructure). - Human resources and institutional capacity development. - Regional and international cooperation. - Ecosystem health. 		

Activity 1.2	Establishment of a Task Force		
	Achieved	Yes	
	Comments	A task force was established to oversee and strategically steer the process of development, modification and completion of NSAAH to guarantee that Egypt has an effective and practical five-year strategy on aquaculture biosecurity and aquatic health management. The task force consists of researchers and national experts in fish diseases, as well as members from the General Authority for Fish Resources Development (GAFRD) and World Fish.	
Activity 1.3	Pilot testing of PMP/AB		
	Achieved	Yes	
	Comments	Thanks to a number of meetings of the national working group and two workshops, held on 12 September 2021 and 8 October 2021, 16 programmes and 24 proposed projects were included in the NSAAH. Three additional workshops took place on 26 October 2021, 9 December 2021 and 19 December 2021. During these workshops, representatives of key government agencies, research centres, academia and the private sector discussed each programme and project in details, determined their relevance to the current situation in the country and agreed on a time frame, a priority ranking and the responsible entities in charge of each project.	
Activity 1.4	Laboratory capacity assessment		
	Achieved	Yes	
	Comments	At the request of the Ministry of Agriculture and Land Reclamation (MALR), FAO conducted a capacity assessment of laboratories involved in the management of diseases of aquatic organisms in Egypt. A consultant was recruited to prepare a list of existing laboratories and assess their services, facilities, equipment and materials. The consultant prepared a list of priority materials and equipment required, with detailed specifications as well as other information needed to support the procurement process. The needs assessment highlighted the priorities and needs of the laboratories affiliated under the GAFRD. Two local suppliers were selected for the provision and installation of laboratory equipment. They also provided training on the use of this equipment.	
Output 2	The health status and impact of diseases on the aquaculture sector are determined and improved through risk-based surveillance and cost-benefit analysis		
	Indicators	Target	Achieved
	Number of active surveillance guidelines for at least three diseases developed, finalized and implemented.	3	Partially
Comments	<ul style="list-style-type: none"> – The virtual active surveillance course is a practical guide to designing and implementing active surveillance using a FAO 12-point checklist. – Activities under Output 2 were not all completed. Follow-up actions by the Government are required to ensure the development and implementation of active surveillance guidelines. 		
Activity 2.1	Laboratory capacity assessment		
	Achieved	Yes	
	Comments	Using a 12-point checklist for a multidisciplinary team, a virtual training course module on the design and implementation of an active surveillance for diseases of aquatic organisms was developed, and took place from 31 August to 16 September 2021. The training focused on practical aquaculture and basic knowledge of aquatic animal health, guidance for the design and implementation of an active surveillance for targeted specialists, and awareness for non-specialists in Egypt and Arabic-speaking countries facing common technical, environmental, infrastructural and financial challenges. The course was attended by 130 government staff, researchers and producers, with 86 coming from Egypt and the remaining 44 from Ghana, Kenya, Nigeria, the Philippines, Saudi Arabia, Thailand, Uganda and the United Arab Emirates.	

Output 3	Biosecurity governance capacities at different levels (policy, technical and farm levels) strengthened and good practices promoted		
	Indicators	Target	Achieved
	<ul style="list-style-type: none"> – Antimicrobials guidelines developed and implemented. – Aquaculture biosecurity communication materials and training modules developed. 	<ul style="list-style-type: none"> – 1 – 3 	Yes
Comments	Information on disease risk profiles (defined under Outputs 1 and 2) and hazard analysis and critical control points (HACCP) have been used to prepare good practices.		
Activity 3.1	Preparation of risk profiles and Biosecurity Action Plans (BAPs) for specific sectors/commodities and guidelines for prudent use of antimicrobials		
	Achieved	Yes	
	Comments	Ten communication and awareness materials in Arabic were developed, focused on bacterial diseases, biosecurity measures in hatcheries, fungus on aquarium fish, biosecurity measures at farm level, non-infectious fish diseases, fish diagnostics, shrimp diseases, fish viruses, parasites and guidelines on fish trade.	
Activity 3.2	National workshops and training courses on disease awareness, farm-level biosecurity and emergency preparedness and response to aquatic animal diseases		
	Achieved	Yes	
	Comments	<ul style="list-style-type: none"> – The institutional, technical and farm capacities in biosecurity governance were strengthened. Good practices were promoted through technical trainings. Courses included the responsible use of antimicrobials in aquaculture, tilapia health, disease awareness, farm-level biosecurity, emergency preparedness and response to aquatic animal diseases. These trainings were conducted under a letter of agreement (LoA) and signed by the GAFRD. While 250 veterinarians, producers and farmers were initially targeted, a total of 750 participants were effectively trained. – The virtual training on biosecurity in aquaculture (under South–South Cooperation) took place in December 2021. – National experts conducted a ToT for selected veterinarians, ensuring the creation of a pool of expert trainers. Selected trainers then assisted in conducting technical seminars for veterinarians, producers and smallholder farmers. Workshops were held at Canal El Suez University: <ul style="list-style-type: none"> - fish health, fish diseases and biosecurity measures in aquaculture for technical staff - theoretical and practical (October 2021) - biosecurity measures in aquaculture for technical staff (October 2021) – The LoA was amended to incorporate hands-on trainings and strengthen the capacities of veterinarians to provide guidance to farmers in aquaculture. Field visits were organized in five governorates (Kafer El Sheikh, Fayoum, Damietta, Port Said and El Beheira) and biosecurity measures have been implemented. 	

Partnerships and Outreach

For more information, please contact: Reporting@fao.org

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