



Photo credit: WorldFish - Egypt

WorldFish in Egypt

Healthy People. Healthy Planet. Shared Prosperity.

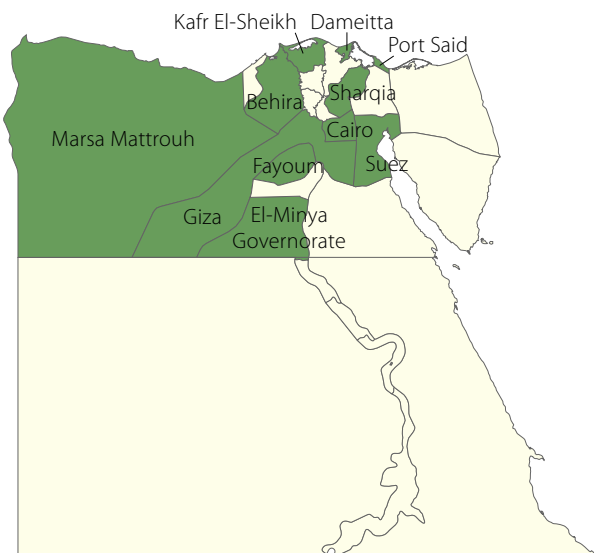


Country profile

Egypt is the leading aquaculture producer in Africa. The country's aquaculture sector generates **1.6 million tons of fish per year** and is valued at **USD 3.5 billion**. Aquaculture accounts for **80 percent** of fish production, and is almost entirely composed of private farms.

The aquaculture sector in Egypt employs approximately **300,000 people**, whereas the fisheries sector employs **135,000 people**. Most of the fish produced is consumed domestically, providing the equivalent of one fish per person per week for the country's 105 million people. The sector has significant potential to address some of Egypt's most critical development challenges.

Where We Work



Egypt is the most populous country in North Africa and is highly vulnerable to the adverse impacts of climate change, including water scarcity, drought, extreme heat and rising sea levels. A resilient aquatic foods sector is essential for economic stability and to reverse worsening issues like food insecurity, gender inequality, unemployment rates, growing food costs and malnutrition.

FAST FACTS

- Tilapia are the most farmed fish species in Egypt.
- Malnutrition is a public health concern, as the country has a **13 percent** stunting rate.
- Fish accounts for **25.3 percent** of the average household's protein intake.
- **260,000 people** have exited poverty through livelihood improvements related to fisheries and aquaculture value chains through WorldFish initiatives.



WorldFish's research area

WorldFish has operated a regional research and training center in Egypt since 1997, in accordance with a country agreement established with the Government of Egypt, Ministry of Agriculture and Land Reclamation (MALR) and the Agricultural Research Center (ARC). In collaboration with national and development partners and CGIAR, WorldFish is supporting the development of aquaculture sector in Egypt and Africa through promoting aquatic food innovations such as genetically improved tilapia and climate-smart aquaculture systems. WorldFish delivers high-quality, practical research related to the country's aquaculture and fisheries sector. A key focus has been on the Nile tilapia genetic selection program to transform Egypt into a role model for African aquaculture development.

Aquaculture in Egypt generates **19.56 full-time equivalent jobs per 100 metric tons** of produced fish along the entire value chain. Most of these jobs are occupied by men over 30, with few jobs for women or younger people. Most jobs for women in the sector are in retail. WorldFish works closely with aquaculture stakeholders, the private sector, and government and public institutions to expand aquaculture productivity, increase the benefits of fish farming to women and youth, and enhance fish value chains. This is being achieved through the following:

- **Genetic improvement:** Further development and dissemination of the Abbassa strain of Nile tilapia, and adding resilience to the breeding program.
- **Feed research:** New feed ingredients, improved feed efficiency and feeding systems, and best management practice training.
- **Fish health:** Investigating new disease issues affecting Egyptian fish farms.
- **Improving fish markets:** Group-based organizations of informal retailers, product development and improved postharvest handling.
- **Managing the Africa Aquaculture Research and Training hub** as a regional center of excellence for genetics research and training in best management practices.

Enabling impact

Water scarcity is one of the most critical challenges for aquaculture expansion. The **Advancing Climate-Smart Aquaculture Technologies (ACliSAT)** project, which concluded in 2023, aimed to achieve an economically vibrant and climate-smart sustainable increase in fish production and productivity through improved pond designs for efficient water use and by adopting improved fish feeding practices and culture practices for the Nile tilapia. Through ACliSAT, which worked across Egypt, Eritrea and Ethiopia, WorldFish scaled water efficient culture systems and supported **1000 farmers** to improve pond aquaculture systems, **trained 45 local aquaculture experts and extension staff** on best management practices and **30 postharvest practitioners** on best harvest handling and processing practices – with around 75 percent of these results occurring in Egypt.

The role of women in aquatic food systems is critical to the development of the sector and to addressing the issues faced in Egypt. In 2018, WorldFish Egypt launched the **Empowering Women Fish Retailers (EWFIRE) Project**, which ran until March 2023. The project supported vulnerable women retailers and processors to develop their businesses in five centers across the Sharkia Governorate, in northeast Egypt. Through EWFIRE,



I learned tips and tricks for buying and selling processed fish products to increase my income and profits during the COVID-19 lockdown. WorldFish research assistants were in close contact with me and other retailers as well, and they provided me with guidance on how to navigate the rapidly increasing prices that were affecting our industry and work.

– Ahlam Mohamed El Saeed

Woman retailer and the founder of a retailing and processing center in Zagazig, Sharkia Governorate.



WorldFish provided technical assistance and socioeconomic support to women, empowered existing and new fish retailers through training in product development, increased their market visibility and supported community-based market development initiatives. The project generated **400 additional full-time jobs** by establishing **50 new enterprises** and improving the profitability of **150 existing women retailers**.

The rapid expansion of the aquaculture industry to meet the needs of local and regional markets has resulted in more innovative practices in various production systems. Alongside this, renewable energy presents a viable and promising path for more sustainable development of the sector.


In response to the needs, challenges and opportunities of the aquaculture value chain in Egypt, WorldFish is partnering with the Royal Norwegian Embassy in Cairo to create the **Center for Renewable Energy in Aquaculture (CeREA)** in a four-year project that runs until 2027. CeREA aims to refine, test and scale innovative renewable energy solutions to enable **5000 fish producers, processors and other fish value chain actors** to increase their productivity and incomes.

WorldFish is also exploring the potential of climate-smart solutions such as **Integrated Aquaculture-Agriculture (IAA) and aquaponics** to enhance productivity and sustainability in the face of environmental challenges. IAA enables maximized water use efficiency while increasing food security and farm income.
















Another innovative way WorldFish is unlocking Egypt's potential for sustainable aquaculture systems is through its **In-pond Raceway System (IPRS)**. Founded in 2017, the IPRS is advancing climate-smart fish farming in Egypt. It is designed to increase yield, improve water use efficiency and reduce greenhouse gas emissions. The IPRS involves the use of raceway cells (rectangular basins with continuous water flow-through) inside existing ponds to culture fish, allowing for higher fish production compared to traditional pond systems.

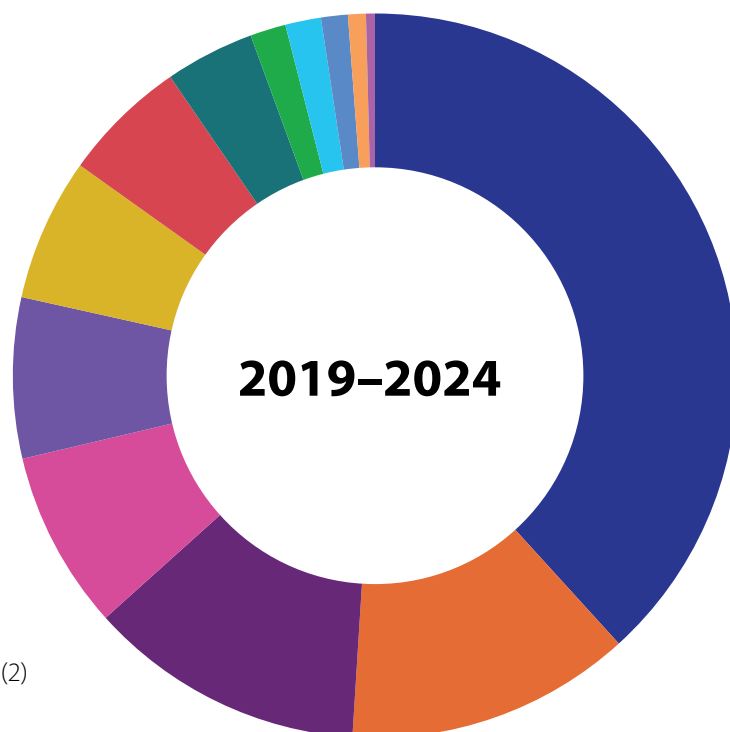
Scientific Excellence in Egypt

 **251** publications

 **24** project leaders

 **13** types of publications

- Type**
-  Report (96)
 -  Journal Article (32)
 -  Donor Report (31)
 -  Other 20
 -  Presentation (18)
 -  Manual (16)
 -  Brief (14)
 -  Dataset (10)
 -  Conference Paper (4)
 -  Tool (4)
 -  Working Paper (3)
 -  Conference Proceedings (2)
 -  Policy Contribution (1)



Moving forward

Egypt is increasingly adopting solar-powered, climate-smart aquaculture systems, which are revolutionizing fish farming by combining cutting-edge technologies to develop more efficient and sustainable production techniques.

The **Soybean Excellence Center (SEC)**, inaugurated in 2019 at WorldFish's Abbassa facility, has been investing in training and building the capacities of small-scale farmers, producers and researchers in Egypt and the Middle

East and North Africa region. This major investment has been a result of cooperation with the U.S. Soybean Export Council and the United Soybean Board, the SEC delivered 78 aquaculture training programs – 59 virtually and 19 in-person – to equip aquaculturists with various technical, innovative and practical skills, including the use of artificial intelligence in fish cages, additives and feed formulation.

WorldFish's innovative initiatives will support improved food and nutrition security, balance gender and youth inequality, reduce food waste and loss, and create more energy-efficient and climate-smart food value chains in Egypt and across Africa.



Donor and Partners

- The Ministry of Agriculture and Land Reclamation, Egypt (MALR)
- The Agricultural Research Center (ARC)
- The Central Laboratory for Aquaculture Research (CLAR)
- Lakes and Fish Resources Protection and Development Agency (LFRPDA)
- The Ministry of Marine Resources, Eritrea (MMR)
- Faculty of Fish Resources of Suez University
- Bahir Dar University, Ethiopia
- The Royal Norwegian Embassy in Cairo
- The Soybean Excellence Center (USSEC)
- The International Fund for Agricultural Development (IFAD)
- European Commission (EuropeAid)
- Swiss Agency for Development and Cooperation
- The Food and Agriculture Organization of the United Nations (FAO)
- The Norwegian Agency for Development Cooperation (Norad)

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About WorldFish

WorldFish is a leading international research organization working to transform aquatic food systems to reduce hunger, malnutrition and poverty. It collaborates with international, regional and national partners to co-develop and deliver scientific innovations, evidence for policy, and knowledge to enable equitable and inclusive impact for millions who depend on fish for their livelihoods. As a member of CGIAR, WorldFish contributes to building a food- and nutrition-secure future and restoring natural resources. Headquartered in Penang, Malaysia, with country offices across Africa, Asia and the Pacific, WorldFish strives to create resilient and inclusive food systems for shared prosperity. Learn more at www.worldfishcenter.org

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