



Photo credit: Sean Wichey/WorldFish

# Securing aquatic food for Cambodians, now and in the future: Operational Plan 2024



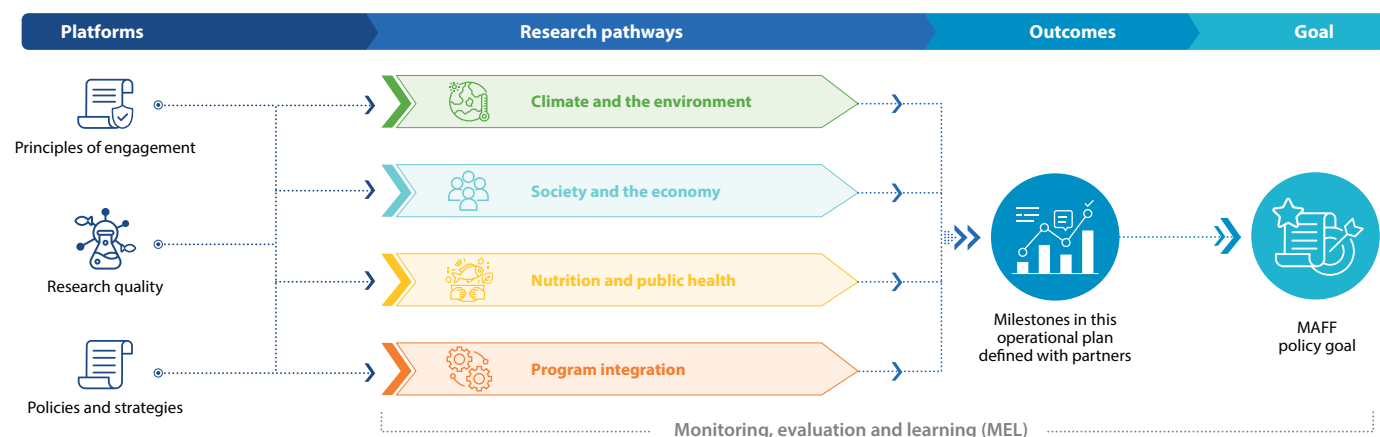
## Goal

WorldFish Cambodia works in the Mekong countries with both government and nongovernment entities, including the private sector. Through these collaborations, our work contributes to the sustainable development of the fisheries sector to improve livelihoods and food security. We do so through academic and action research following Cambodia’s Strategic Planning Framework for Fisheries 2015–2024 and country’s National Strategic Plan for Aquaculture Development 2016–2030 as well as WorldFish Strategies 2030.

A sustainable fishery sector responds to the socioeconomic needs of an inclusive national community of well-nourished people, of all age groups, genders and ethnic origins, living together in a country with rich aquatic biodiversity and sustainable use of its aquatic resources, now and in the future.

## WorldFish Cambodia

WorldFish has worked in Cambodia since 2006. With assistance from the International Water Management Institute and the International Rice Research Institute under the One CGIAR umbrella, we collaborate with the Ministry of Agriculture, Forestry and Fisheries (MAFF), Fishery Administration (FiA) and the Ministry of Water Management and Meteorology (MOWRAM), as well as related public institutions. WorldFish’s program in Cambodia is organized around four main research pathways (Figure 1). The first three are an alignment between One CGIAR and WorldFish Strategic Plans and is oriented with our adopted goal from the MAFF’s Agriculture Development Strategy and Investment Plan. The fourth pathway emphasizes integrated planning and partnerships across our range of bilateral, multilateral and One CGIAR initiatives. Although WorldFish Cambodia has many partners, we particularly integrate our research with local organizations, nongovernmental organizations (NGOs) and community-based organizations while aligning with national strategies toward the MAFF’s policy goals.



**Figure 1.** The four main research pathways for outcomes and impact at scale.

## Climate and the environment



Fish is an integral part of the diet, culture, economy and food security of Cambodia. The country has one of the world's highest rates of fish consumption per capita, at around 52 kg. Fish accounts for 76 percent of protein intake among households and is the second-most consumed food per capita after rice (150 kg).

However, although 27 percent of households engage in fishing activities, the availability and affordability of fish for the most vulnerable is declining. Cambodia's growing population and the accelerating effects of climate change further threaten the country's aquatic biodiversity and food security, and issues of enhanced climate variability persist. This threatens the sector in multiple ways, related to water quality and quantity combined with extreme weather events.

## Society and the economy



Rice and fish were the backbone of Khmer society. Aquaculture remains small, but production is increasing. Normally, cultured fish are relatively expensive for low-income consumers. However, through cooperation with irrigation committees, small-scale aquaculture in the country may have succeeded in lowering prices. Aquaculture of higher value species based on plant feed is trending upward, which could counter increasing demand for imports of large fish for upper-level marketing. The sector employs around 655,000 people directly, and more than 2 million people are thought to derive some type of livelihood benefit from involvement in the sector.

However, resources are slowly dwindling. Dams and irrigation canals block connectivity within the landscape, which affects fish migration. Furthermore, road infrastructure and urban development lead to habitat destruction, as does illegal fishing, and the effect of climate change only adds to these problems. Research focuses on improving the productivity and resilience of wild fisheries in human-modified environments, such as rice fields and reservoirs, and community fisheries. It also helps the aquaculture sector, expands the role of fish in the nutrition security of women and children, and increases benefit-sharing in land and water management.

## Nutrition and public health



Aquatic foods, particularly fish and other aquatic animals, are important sources of micronutrients and amino acids required for cognitive development and growth. In 2022, Cambodia's capture fisheries produced an estimated 862,000 t, while aquaculture contributed 330,600 t. The inland fishery is highly productive, accounting for 600,000 t annually, and is ranked fifth globally after China, India, Bangladesh and Myanmar. Production of aquatic foods from rice fields and other local waterbodies will double due to improved management of inland water bodies. If current production trends continue, this increased supply could improve child nutrition through either direct consumption of fresh fish or inclusion of fish powder in their diet. However, education on the nutritional value of aquatic foods is key to ensuring these foods are consumed by local households and not sold.

Through close cooperation between the Health Sector and WorldFish Cambodia, locally produced small fish powder will be in use in the villages, and malnutrition among minors will drop 25 percent. Efforts to re-establish aquatic biodiversity are expected to further increase the availability of fish for nutritional purposes in 2024.

## Program integration



WorldFish Cambodia will provide sustainable development solutions to address the country's degraded aquatic food systems and support aquaculture development through research and innovation. One pathway for scaling research and innovation is through partnerships. We seek to make our research impactful by working with FiA, MAFF, MOWRAM and the Council for Agriculture and Rural Development (CARD). We also work with several research institutions and universities, such as CDRI, RUPP and RUA, as well as NGOs and the private sector. For aquaculture and capture fishery management, we work closely with FiA and MAFF. We have signed a cooperation agreement with FiA to support the development of aquaculture and management of the capture fishery by developing CFRs and CFIs and by joining the Technical Working Group on Fisheries. We also work with FiA and concerned government agencies to develop the CFR Prakas (legal instrument). To make improvements in human nutrition, we collaborate with CARD and have joined the Technical Working Group of Food Security and Nutrition (TWG-FSN). As a member of the TWG-FSN, provided research outputs into the Third National Strategy on Food Security and Nutrition of the Royal Government of Cambodia. At the local level, WorldFish Cambodia works with local NGOs and government to support CFRs, CFIs and aquaculture development.





## Platforms

To be a locally impactful and globally relevant organization, we stand on platforms that combine national and international structures, emphasize multidimensional research quality and take a deliberate approach to “how” we work. These platforms provide us with our purpose and core values.

## Policies and strategies



A range of external and internal planning documents and processes provide the strategic context for WorldFish’s engagement in Cambodia and the Mekong Region. Our partners and the country’s national plans and strategies guide our work in Cambodia. These plans and strategies include the Strategic Planning Framework for Fisheries 2015–2024, National Strategic Plan for Aquaculture Development, Fishery Conservation Management Plan and FIA’s inland and marine Fishery Management Plans 2024–2028.

In addition, we take guidance’s from the MAFF’s Agricultural Development Policy 2021–2030, the Cambodia National Climate Change Plan 2014–2023 and beyond, MOWRAM’s National Irrigation and Water Resources Management Investment Program 2019–2033, and Cambodia’s Roadmap for Food Systems for Sustainable Development 2030. Regional plans and intergovernmental agreements, such as the Marine Fisheries Strategy and the Mekong Strategic Plan, also guide our work. These contribute to the government’s Pentagon Strategies, NSDP 2024–2028.

Internally, the WorldFish 2030 Research and Innovation Strategy provides the basis for how we engage, our ambitions and how we measure progress. At a higher level, WorldFish’s program in Cambodia is also guided by CGIAR’s Strategy and Results Framework, which emphasizes development outcomes from research and is aligned to global targets on sustainable development. WorldFish’s program in Cambodia is organized around the three impact areas defined by One CGIAR. These strategic documents provide both the platform for our work—“what we do”—and the outcomes we seek—“why we do it.”

## Research quality



WorldFish places the highest emphasis on quality research by following CGIAR’s Quality of Research for Development framework:

Dimension	Requirement
Relevance	Learning is aligned with national and regional priorities and incorporates stakeholder engagement in planning.
Scientific credibility	Dependable and sound knowledge is logically interpreted and gained from rigorous methods and peer-review evaluation.
Legitimacy	Representation is ethical and fair for all involved and sensitive to perspectives of contributors and intended users.
Effectiveness	Knowledge, products and services have high potential to address problems and contribute to innovations and solutions.

## Principles of engagement



WorldFish follows a set of guiding principles of engagement for quality research in Cambodia:

1. Be transparent: WorldFish will be transparent with our partners about intentions and impacts, including communities where we work.
2. Be accountable: WorldFish will be predictable and accountable in planning with our partners, including communities where we work.
3. Be inclusive: WorldFish will actively seek input and participation by all without bias in hierarchy, gender, religion or ethnicity.
4. Be committed: WorldFish will form mutually beneficial partnerships with national agencies and communities built on non-extractive research and a long-term commitment to people and places.

Adhering to these guiding principles is critical for WorldFish to continue to enjoy the trust of our partners and a wholesome reputation and image in Cambodia.



## Research pathways

### Climate and the environment



In Cambodia, WorldFish will continue to upscale CFR and CFi management in Tonle Sap Lake and the Mekong River. Two CGIAR Initiatives—Asian Mega-Deltas (AMD) and (ASEAN)—will work to address climate change and water governance to support CFRs and CFis when it comes to climate change and declining aquatic resources.

2024 Milestone	Application
In the Sustainable Aquaculture and Community Fish Refuge Management (SAFR) project, 21 CFR communities and local authorities improved their drought mitigation management practice.  At least 70 percent of CFRs 'physical are intervened to ensure the suitability for aquatic species habitats.	Conduct refresher training and regular coaching for CFR communities.  Ensure that 21 CFRs sustainability manage the intervention plan.
AMD's Work Package 1 (WP1) develops research papers on fish biodiversity and production in rice field fisheries systems.	Review data that monitored fish catch and abundance in previous surveys.
The Mekong Fisheries Conservation project builds the adaptive management planning capacity of 30 CFis across six provinces.	Improve understanding of fish ecology and EAFm among community-based organizations and mainstream them in their fisheries planning and management processes.
AMD works to improve governance for rice farming and fishery management in the provinces of Prey Veng and Kampong Thom.	Pilot decentralized governance of food systems using the district authority to manage resources.
Work Package 4 of the AMD Initiative pilots integrated climate-resilient water governance for CFis, CFRs and FWUCs to help them work together to share water resources.	Develop a mechanism to integrate the governance of CFis, CFRs and FWUCH at the district level.

### Society and economy



Aquatic resources have been degraded in Cambodia, which has affected food production and consumption in the country. Efforts initiated to re-establish aquatic biodiversity are expected to further increase availability of fish for nutritional purposes in the coming years. As such, aquaculture could make up for the decline in natural fisheries over the long run. Culturing higher value species, such as bighead catfish, using plant feed is increasing. The aim is to counter the demand for imports of big fish for upper-level marketing. It will also contribute to increased incomes and job opportunities for rural households

2024 Milestone	Application
Through the SAFR project, Cambodia's food-insecure population has access to more fish and fish products and higher incomes from resource-friendly rice field fisheries systems.	The amount of fish and other aquatic animals from sustainable rice field fishing increased to 2.055.000 kg annually.  A total of 21 CFRs in Kampong Thom have increased the amount of fish available in surrounding rice fields to 3.677.446 kg annually.  A total of 3703 jobs in the value chain have been created, for 2503 women and 1200 men.
AMD-WP1 improves rice-fish productivity among rural households in the Mekong Delta to help them adapt to climate change.	WorldFish works with FiACs in the provinces of Takeo and Prey Veng to conduct three experiments: (1) nine ponds in homestead aquaculture, (2) nine ponds in rice field fisheries and (3) one site of rice-fish culture.
AMD-WP1 restocks cultured elephant ear gourami ( <i>Osphronemus exodon</i> ) in CFRs and rice field fisheries in the province of Kampong Thom.	Select CFRs in Kampong Thom apply for this activity.
AMD-WP1 conducts an aquaculture pond experiment with farmers at a hatchery station in the district of Tram Kak in the province of Takeo to promote mixing small indigenous species (SIS) of fish with aquaculture.	Select an active hatchery for breeding SIS and build its capacity to produce and supply fingerlings to farmers.
Aquaculture strategies in Cambodia are developed with support from WorldFish Headquarters.	Consult with WorldFish Headquarters and development partners to promote tilapia aquaculture among the poor in Cambodia.

## Nutrition and public health



Production of nonmigrating or short-distance migrating fish species from rice fields and other local waterbodies can improve the nutrition of youths in Cambodia through either direct consumption or by including fish powder in their diet. Normally, cultured fish is expensive for low-income consumers, but cooperation with irrigation committees could make small-scale aquaculture financially viable. Rice-fish aquaculture and CFR management under the AMD-WP1 and SAFR both improve the health and nutrition of local communities.

In addition, the soil fertility and biodiversity of food production systems are decreasing worldwide. Through Intervention Package 1 of the ASEAN program, WorldFish and partners aim to support the implementation of regenerative agriculture practices, such as circular economy principles and reduced use of harmful agrochemicals, in key agroecological systems through public-private sector collaboration, multistakeholder platforms and participatory research practices.

2024 Milestone	Application
Through the AMD's Work Package 2 (WP2), guidelines are developed for implementing nutrient-sensitive actions in deltaic food systems.	<p>Conduct a cost-effectiveness analysis and determine the economic costs of integrating gardening into school feeding programs.</p> <p>Produce a comprehensive guideline for assessing nutrition-sensitive interventions and a policy brief for a school feeding assessment study.</p> <p>Design the guideline in such a way that it helps analysts conduct economic evaluations of nutrition-sensitive interventions in the agrifood sector.</p>
The diet and nutritional well-being of people are improved in CFR communities.	Conduct refresher training for communities and caregiver groups on nutrition and the micronutrients in small fish products.
<p>A set of databases are developed on lowland rice fish systems in Cambodia.</p> <p>A farmer field school is carried out to confirm that the existing rice-fish DSS is suitable and/or adaptable.</p>	<p>Design a database of context-specific regenerative agriculture interventions.</p> <p>Test or adapt an integrated rice-fish culture production system.</p>
Through the AMD-WP2, pilot activities are implemented based on the results of an AMD survey, CSES analysis and NSA policy work on capacity development and the dissemination of knowledge products.	<p>Develop a training manual for farmers and stakeholders to (i) raise awareness among producers and consumers, (ii) establish climate-resilient agriculture models, including trees, livestock, aquaculture and crops, and (iii) establish and strengthen producer groups.</p> <p>Strengthen local financing mechanisms, such as savings and credit groups.</p> <p>Build the capacity of key stakeholders, such as provincial government line departments, collectors, teachers, students and local authorities.</p> <p>Publish and distribute a policy brief, case studies and key highlights of the intervention.</p>
Through AMD-WP2, research papers are published from rural and urban household surveys and a vendor survey.	Analyze data and produce research papers (i) on production and consumption in Cambodia, (ii) comparing results from Cambodia and Bangladesh and (iii) on rural and urban food vendors in Cambodia.
Contributions are made to the Third National Strategies on Food Security and Nutrition.	Develop these strategies by engaging the TWG-FSN of CARD.
Through AMD WP, decentralized food system governance is piloted at the district level.	Develop a working model to promote the governance of food systems (fishery, water, agriculture) by engaging the District Office of Agriculture, Environment and Natural Resources.

## Program integration

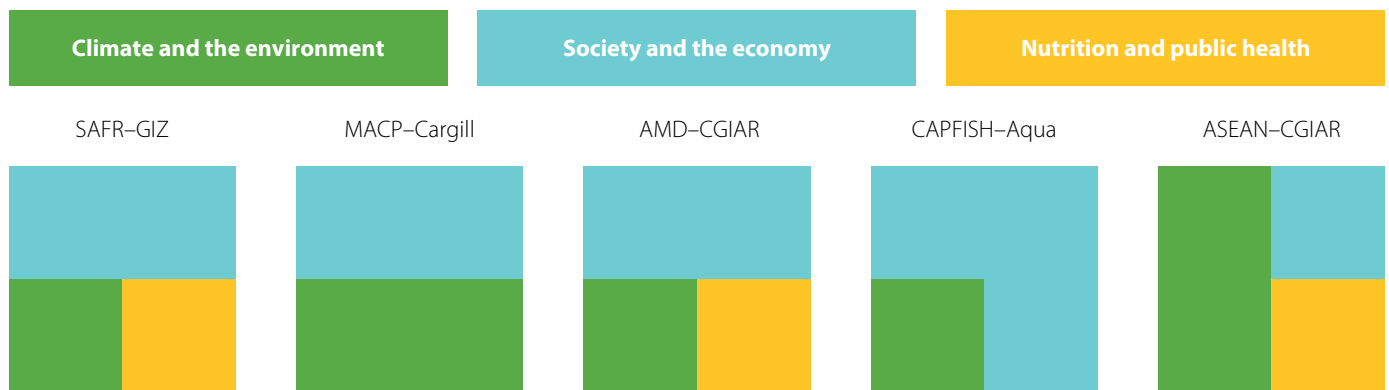


WorldFish will work along its principles of engagement in seeking to be the fisheries research partner of choice in Cambodia and act as a research-practice-policy interface contributing to national learning events and making dissemination products accessible for uptake.

2024 Milestone	Application
One CGIAR interventions are linked with ongoing bilateral projects to ensure that they address both public and private sector needs.	Coordinate and support all fisheries sector interventions as previously done through the WorldFish-instigated Fisheries Sector Partnership.
The monitoring and evaluation team and communication team in Cambodia work closely with colleagues in Penang regarding data management, knowledge sharing across WorldFish regions and producing publications.	Collate and organize multiple data sources for oversight and strategic planning in policy and implementation.
Contributions are made to WorldFish's global science program under an agreed upon updated structure.	Enable effective collaboration and coordination among partners with increased capacity to adjust and implement improved fishery sector service models through regional and global information sharing.
The research capacity of staff is increased for writing, analyzing and publishing research articles with a scientific publisher and then promoted with incentives to support WorldFish.	Work with the human resource manager to review their PAF and to promote them based on their performance.

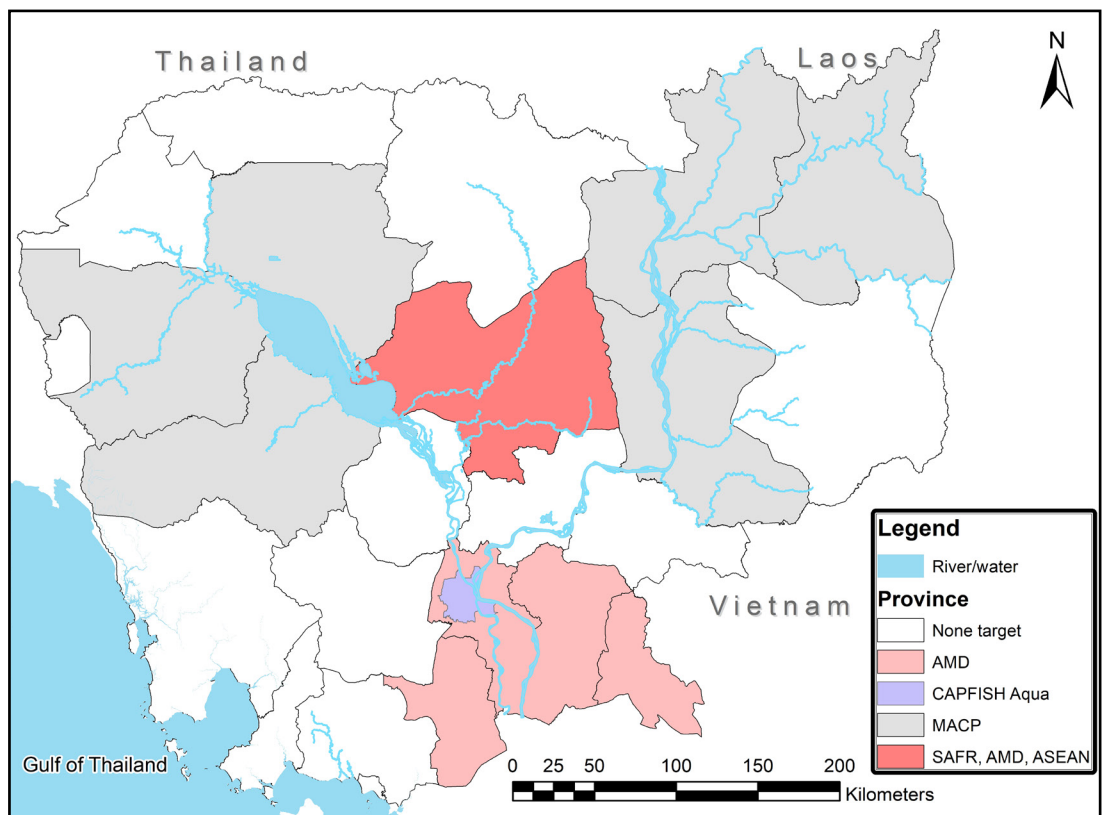
## Delivering 2024

WorldFish's program in Cambodia is financially supported by GIZ, Cargill Foundation, EU-CAPFISH Aquaculture and the CGIAR Initiatives AMD and ASEAN.



## Monitoring, evaluation and learning

For the operational plan to be effective, it must be monitored and tracked against milestones to learn and adjust critical issues in a timely manner. WorldFish uses a CGIAR-developed web-based knowledge sharing and measurement, evaluation and learning platform. The platform is used as a tool to ensure responsible and adaptive program operations and includes the tracking of indicators to assess overall progress toward objectives and targets in the program. In monitoring outcomes, methods are employed to capture the distributional effects of activities on different groups, including disaggregation of age and gender.



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