



# Annual Plan of Work and Budget (POWB) for 2019

CGIAR Research Program on Fish Agri-Food Systems (FISH)

Led by



In partnership with



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## CGIAR Research Program on Fish Agri-Food Systems (POWB 2019)

This document provides the Plan of Work and Budget (POWB) for the CGIAR Research Program on Fish Agri-Food Systems (FISH) for the year 2019.

### **1 Adjustments/changes to your Theories of Change (ToC)**

During 2018, an extensive series of consultations, involving FISH research teams, partners and stakeholders, was held to develop participatory country-level Theories of Change (ToCs) in all focal countries where the FISH program is active (Bangladesh, Cambodia, Myanmar and Solomon Islands in Asia-Pacific, and Egypt, Nigeria and Zambia in Africa<sup>1</sup>). The resultant country-level ToCs and annual milestones now provide improved clarity on the priority research outcomes and outcomes and on the pathways for achieving development outcomes and targets within each country where FISH is active.

The overall program level ToC has been reviewed, and some modifications have been made at Flagship level in both the *Sustainable Aquaculture (FP1)* and *Sustaining Small-Scale Fisheries (FP2)* flagships, reflecting national level insights and learning, and providing greater precision in the development outcomes to be achieved by the FISH CRP in key focal countries. The donor interest in nutritional outcomes from the FISH CRP through bilateral project investments has also led to some revision of the ToC in each flagship to make more evident the connection between research outputs and nutrition-related outcomes. The interconnections with the CGIAR Strategy and Results Framework (SRF) 2016-2030 were also reviewed for both of the Flagships in order to ensure greater consistency and integration among specific FISH development outcomes, sub-DOs and DOs. This has greatly reinforced the inferential logic at the base of FISH impacts, and the plausibility of the related impact story as a CGIAR Research Program. During 2019, FISH will continue to work on articulating the relation between the CRP and key SDGs of interest to the CGIAR.

The annual program-level review of milestones has also led to review of the milestones, with these changes provided in [Table 2A](#).

At Flagship level, the review process of the FP 1 ToC led to more specific refinements on the change mechanisms, research outcomes and development outcomes. The new FP1 ToC version provides more specificity on scaling pathways and related dissemination systems in the focal countries, and clarifies the direct impact pathway to nutrition outcomes (e.g. increased availability of and access to diverse nutrient-rich foods). The FP 2 ToC represents and articulates accurately an overarching frame for the strategies applied, models developed and scaled, and outcomes reflected in country-level ToCs. There are some modest adjustments being made to FP2, particularly to actualize and consolidate the linearity of investments, that will better capture and streamline the programmatic design for 2019-2021. These changes do not represent shifts in the impact pathway, but the food and nutrition security dimension has been made more explicit. Revised Flagship level adjustments to the ToCs will be available on the new [FISH web site](#). During 2019, the interactions and synergies between the FP1 and FP2 ToCs will be further assessed to determine how synergies can be captured and optimized within the overall program level ToC for the FISHCRP.

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<sup>1</sup> The Nigeria ToC workshop is scheduled for Q1 2019.

## 2\_Plans and expected progress towards outcomes

Plans and activities for 2019 are centrally focused on delivering key outcomes that increase the impacts of fish in agri-food systems. Recognizing the broader cross-CGIAR food systems perspective, further cross-CRP cooperation and foresight analyses will also give attention to determining key research gaps for the future and opportunities for increasing the research and development outcomes from the FISH CRP.

### Sustainable Aquaculture

The **Sustainable Aquaculture** flagship will continue to make progress towards Intermediate Development Outcomes (IDOs) and System Level Outcomes (SLOs) targets in 2019. The following are highlighted:

- Genomics information for three key traits (tilapia lake virus (TiLV) response, feed efficiency and aerobic performance) in genetically improved farmed tilapia (GIFT) populations will be generated, the basis for applying the genomics approach in future tilapia genetic improvement programs.
- The first selected generations of catla (*Catla catla*) and silver carp (*Hypophthalmichthys molitrix*) in Bangladesh will be produced, a key milestone in the production of novel improved strains for these important farmed fish species in South Asia. Genetic selection data will be used to calculate the level of expected future improvements and investments.
- Newly developed epidemiological and diagnostic tools will be widely deployed to inform hatcheries, nurseries and private and public extension services to better understand and manage carp and tilapia diseases in focal countries, contributing to increased productivity and reduced risks for fish farmers.
- New knowledge on digestibility and nutritional values of local fish feed ingredients in focal countries will be used to formulate improved fish feeds. The feeds will be made more widely available for fish farmers through new partnerships with national fish feed producers.
- Novel feeds and feed management practices that stimulate natural food production within tilapia aquaculture will be validated and further scaled via partnerships in Africa and Asia.
- Knowledge on improved tilapia health, feed and operational management practices will continue to be packaged and disseminated widely through training programs, networks and partners, and their uptake and outcomes assessed to inform future improvements for sustainable intensification.
- Dissemination systems and on-farm performance of improved tilapia strains in selected countries in Asia and Africa will be assessed, guiding improvements in the overall effectiveness of dissemination and adoption of improved tilapia, while again identifying future interventions for improved dissemination systems and outcomes.

Collectively the approach provides key steps for innovations in sustainable aquaculture and the mechanism for their introduction, dissemination and scaling in particular target geographies and tilapia and carp farming systems, from which wider lessons can be further scaled with partners. During the year, a gradual shifting of data collection and dissemination systems onto digital platforms will provide the basis for increasing effectiveness and efficiencies of future performance assessments and farmer-level advisories.

Key outputs from the **CoA 1.1. Fish breeds and genetics** are: Faster-growing and more robust tilapia generations and first selected generations of catla and silver carp; and genomics information on target traits of: (i) feed efficiency; (ii) fish disease response; and (iii) aerobic performance in GIFT Tilapia strains. The dissemination of GIFT tilapia will continue with partners in Bangladesh, India, Myanmar and Timor Leste and on-farm performance data collected. A genetic improvement program for the indigenous three spotted tilapia (*Oreochromis andersonii*) will continue with the Zambia Department of Fisheries and other partners; and in Malawi a new genetic improvement program will be initiated with partners for tilapia shiranus (*Oreochromis shiranus*) following demand from public and private sectors within the country. Key publications are planned on genomic approaches to tilapia genetic improvement and policy guidance related to the dissemination and use of improved tilapia breeds in Africa.

Key outputs from the **CoA 1.2. Feeds, fish nutrition and health** are: (i) knowledge of tilapia and carp epidemiology and health economics in Bangladesh, Egypt, and Zambia; (ii) better understanding of the nutritional value of local ingredients and sustainable pond feeding strategies in selected countries in Africa and Asia; and (iii) compilation of current tilapia farming practices in Bangladesh, Egypt and Myanmar that will continue to be disseminated widely in FISH focal and scaling countries through partners. A recently developed database for fish feed ingredients will be widely applied among private and public partners in Africa through a new cooperation with the African Development Bank.

Key outputs from the **CoA 1.3. Aquaculture systems** are: (i) increased knowledge about on-farm performance of improved strains of tilapia in production systems across different agro-ecological and social contexts in key focal countries in Africa and Asia, with an initial focus on Bangladesh, Egypt and Myanmar. Gender, youth and human nutrition dimensions in relation to those specific production systems will also be evaluated; (ii) Improved knowledge on the effectiveness of different management practices for improved tilapia strains, with reference to environmental and livelihood outcomes; and (iii) knowledge on dissemination systems for improved tilapia seed through evaluation studies in Bangladesh, Malawi and Myanmar. The integrated assessment framework for improved tilapia breeds, developed in 2017 and 2018, will be progressively rolled out across FISH focal countries in 2019, using mobile technologies as appropriate, providing rigorous analysis of on-farm performance to assess yield gaps, identify interventions and optimize performance and impacts. Publications will focus on African aquaculture futures, youth employment and entrepreneurship in aquaculture.

### **Sustaining Small-Scale Fisheries**

The **Sustaining Small-Scale Fisheries** flagship will also continue to make progress towards IDOs and SLOs, through the following highlighted initiatives:

- Uptake and implementation of small-scale fisheries governance and management models will be enhanced at national, regional and global scales. A key pathway for reaching scale will be through collaboration with a new knowledge-sharing platform of the Food and Agriculture Organization of the United Nations (FAO) for small-scale fisheries.
- Building new partnerships and continuing to strengthen increasingly active and influential coalitions in small-scale fisheries research for development. The initial focus will be on convening a strategic meeting of civil society networks working across Africa to build capacity for coordination and policy influence for small-scale fisheries, followed by integrating a global assemblage of NGOs, civil society, government and inter-governmental agencies for knowledge sharing and accelerating impacts.
- Evaluation of cross-scale governance mechanisms. Rigorous analysis of the impacts of cross-scale governance as a contribution to scaling in small-scale fisheries research, covering coastal marine systems and inland fisheries within rice dominated landscapes.
- Assessment and evaluation of small-scale fisheries (social, environmental, economic and governance contributions) and key drivers of change in the sector from four focal countries and two scaling countries in Africa and Asia, as part of the Illuminating Hidden Harvest initiative.
- Design and implementation of a multistakeholder communication strategy for small-scale fisheries to complement and support policy influence in the areas of water, food, climate and ocean governance (in part, laying a foundation for the 2022 United Nations Year of Artisanal Fisheries and Aquaculture).
- Increased understanding and refined research on scaling mechanisms, including spread of social-ecological innovations for more resilient and equitable small-scale fisheries.
- Application of models of ICT for improving small-scale fisheries will be examined and shared more widely, with research and scaling agendas designed with partners.

Key outputs from the **CoA 2.1. Resilient coastal fisheries** are: (i) new methods and analyses of fish-based livelihood improvements, based on research in the Pacific region; (ii) insights into nutrition-sensitive management of coastal and oceanic fisheries, fisheries outcomes and impact evaluation from co-management of fisheries in coastal systems; and (iii) early outcomes of scaling strategies for innovations to improve resilience and equity in coastal small-scale fisheries systems. In collaboration with James Cook University (JCU) research on climate change impacts on small-scale fisheries, gendered aspects of coastal fisheries, and building adaptive capacity and increasing equity, are anticipated with new early career researchers established.

Key outputs from the **CoA 2.2. Fish in multifunctional landscapes** are: (i) a review of inland fisheries in constructed water bodies (led by the International Water Management Institute - IWMI) will be published and a guidance note/policy brief and/or practice brief will be strategically communicated for uptake by water governors, in partnership with the CGIAR Research Program on Water, Land and Ecosystems (WLE); and (ii) publications on rice-field fisheries will be used as proof of concept and early shifts in water- and land-use policy and investment to demonstrate a readiness for impact at scale, building on changes emerging in Myanmar and Cambodia of small-scale fisheries innovations in rice-field landscapes.

Key outputs from the **CoA 2.3 Fish in regional food systems** are: (i) a series of research and communication products from the collaboration between Duke University, FAO and WorldFish from up to 50 country case studies for the 'Illuminating the Hidden Harvests of small-scale fisheries' initiative. These will form the basis for a global synthesis report to the FAO convened Committee on Fisheries (COFI) in 2020 and the use of country case studies will be used to influence water, climate change, fisheries and food policy nationally. From these cases, two national level synthesis papers of the value of small-scale fisheries within broad fish food systems (i.e. alongside aquaculture and large-scale commercial capture fisheries production) will be produced in 2019 and will in 2020 lead to high resolution foresight analysis and/or fisheries production scenario development. (ii) a research framing and ToCs on fish in food systems in three focus countries and two regions, in cooperation with the CGIAR Research Program on Agriculture for Nutrition and Health (A4NH) will be published, including inland fisheries in the African Great Lakes food system, Pacific and Mekong region. Research papers and policy briefs from fish trade analyses in the Great Lakes region will be used to raise the profile of the value of small-scale fisheries in the food system nationally and regionally, and will provide the foundations for foresight analysis of global environmental change on small-scale fisheries performance in 2020.

#### **Cross-cutting themes: Gender, youth, capacity development and climate change**

In line with the **FISH Gender Strategy**, both flagships involve both gender integration in technical research, as well as strategic gender research. Strategic gender research in 2019 will focus on the gender transformative approach (GTA) and development of the Women's Empowerment in Fisheries Index (WEFI) for wider application and scale. Moreover, gender investments will be made to support FISH in assessing and supporting compliance to relevant gender-related performance standards. Ongoing close collaboration between the gender and M&E teams in 2019 will refine gender integration of the FISH M&E systems and contribute to setting up research on ongoing empirical insights regarding gender within the FISH ToC.

In line with the **FISH Youth Strategy**, both flagships will incorporate research related to youth as well as integration of age-disaggregated data into relevant FISH data collections systems. Youth investments will enable sharing of knowledge on the role of youth in aquaculture and small-scale fisheries in all FISH focal countries, with more focused research on improving youth opportunities within aquaculture and fisheries within Myanmar and Nigeria. A working paper on youth employment opportunities in the expanding aquaculture sector in Africa, including consideration of decent work concepts, will be published.

**Capacity development** outputs are integrated within the flagships and cross-cutting themes. Two assessment studies (in Zambia and Myanmar) will draw the baseline for assessing the impact that is and will be generated by capacity development activities. The FISH Capacity Development Strategy will be completed with a stakeholder workshop in early 2019. Key areas for capacity development include the expansion of investment into young scientists (master's and doctoral), research quality and a coordinated initiative for vocational training both in aquaculture and small-scale Fisheries (among aquaculture practitioners in Africa, building on FISH research on better management practices (BMPs), based initially in Zambia). Attention will be given to enabling cooperation for capacity development with partners at country level (e.g. national universities and institutes). Moreover, specific indicators to monitor the impact generated by the FISH capacity development activities will be developed. At least six PhD students will be aligned to, supported by and contributing to FP2 in 2019, including from Bangladesh, Malawi, Solomon Islands and Australia.

The new cross-cutting focus on **climate change** will involve strengthening of cooperation with the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) in the areas of climate smart aquaculture technologies, evaluation of aquaculture systems using life cycle assessment (LCA), climate information services for fish farmers and adaptation to climate change in small-scale fisheries communities, including both coastal and inland systems. JCU has co-invested (at 50 percent) in an early career researcher who will commence in early 2019 to pursue research on adaptive capacity and small-scale fisheries resilience in climate sensitive ecosystems. Research on climate information services will focus particularly on Bangladesh and India. The FISH CRP will also contribute to the development of the CGIAR special initiative on climate change. There is a paucity of information on inland fisheries that are poorly modelled and under different stressors; FISH will seek to expand research on climate change and inland fisheries systems during the year.

### **Evaluations, impact assessments and learning exercises**

The FISH MEL system framework will be fully operational during 2019, allowing evidence of links between research outputs, outcomes and impacts to be gathered through the year for key innovations and across the FISH focal and scaling countries<sup>2</sup>. Impact and outcome assessments will be conducted across the two flagships, *Sustainable Aquaculture* and *Sustaining Small-Scale Fisheries*, as detailed in [Table 2B](#). Particularly relevant, due to the increasing level of maturity of the FISH CRP and the approach in achieving final targets, will be the studies carried out to evaluate the effectiveness of policy-related interventions in Myanmar and Africa and their related implications for food and nutrition security, poverty reduction and the environment.

Evidence gathered from specific studies will be complemented by the output and outcome monitoring of all W1/W2 and W3/bilateral projects, including progress towards several sub-IDOs.

Four Management Committee (MC) meetings during the year will monitor program progress and capture learning, within the framework of FISH's overall ToC and results-based-management system. [Table 2B](#) provides planned studies for outcome and impacts, and relevant monitoring, evaluation and learning exercises. Indicators to be examined by each impact/outcome study will reflect the CGIAR SRF, depending on the focus of the studies.

### **Collaborations**

Global and national partnerships will continue to receive significant attention during 2019. A review of partnerships with focal country and research leads during October 2018 and ToC workshops during the year

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<sup>2</sup> Key FISH countries remain as per the proposal: *Focal countries*: Bangladesh, Cambodia, Myanmar, Nigeria, Tanzania and Zambia. *Aquaculture research and training hub*: Egypt. *Small-scale fisheries research hub*: Solomon Islands. *Scaling countries*: Ghana, India, Indonesia, Kenya, Malawi, Philippines, Sierra Leone, Timor Leste, Uganda and Vietnam.

have helped identify new collaborations as well as needs and opportunities to strengthen existing collaborations. New collaborations are highlighted in [Table 2C](#).

### **3\_ Financial plan for the coming year, including use of W1/2**

The FISH CRP planned budget ([Table 3](#)) estimates that 81 percent of funds are scheduled to come from W3/bilateral sources in 2019, with 19 percent from W1/W2. A blend of W3/bilateral and W1/W2 sources are planned for both FP1 and FP2 research. W3/bilateral funds are mostly used to address issues of importance to a specific donor or client, and are mapped to the FISH CRP flagships where they contribute to FISH outputs and outcomes, aligned to the overall program ToC.

W1/W2 facilitates the integration across clusters and the program and covers strategic key areas not addressed by W3/bilateral funds, including new priority research areas, global syntheses, cross-country collaboration and partnerships, as well as FISH management and support costs. The amount of secured W3/bilateral funds for 2019 as of 31<sup>st</sup> December 2018 was USD 24.6 million. The amount of W1 and W2 funds allocated to FISH in the 2019 financial plan is USD 2.2 million and USD 3.6 million respectively.

No major changes are being made to FP1, with planned work in line with the approved FISH proposal, covering all research clusters. In FP2 the contribution of W1/W2 funds will be used to cover key research and program management capabilities and activities, ensuring sufficient research capability is available to deliver the quality research outputs already identified in this POWB 2019. Namely, this will provide partial funding contributions to partners to enable better engagement in the FP2 research implementation; a capacity building program to build research capability and development of a small-scale fisheries research agenda in Africa, particularly inland areas and the Great lakes region; strengthening the FP2 and cross-flagship MEL investments, at global and country levels, particularly with baselines, ToCs and change mechanisms; and a small investment in staff time to allow time and resources for bilateral fund raising to better manage potential risks associated with partial W1/W2 funding.

## TABLES

**Table 2A: Planned milestones**

The table includes the planned milestone mapped to 2022 FISH outcomes with the means of verification. For each milestone, the table indicates the level of change from the original proposal, means of verification, CGIAR cross-cutting markers for gender, youth, capacity development (CapDev), climate change (CC), and likely risk to achievement (low risk = very likely to be achieved). A short narrative in section 2 above, comments on major adjustments and new/changed milestones in addition to the proposals, and if these were linked to the insights/ innovations from the reporting period.]

FP	Mapped to Sub-IDO	2022 FP outcomes	Milestone	Milestone: Identical to proposal Reworded/ rephrased from proposal; or New/ changed*)	Means of verification	CGIAR Cross-Cutting Markers for the milestone 0=not targeted; 1=significant; 2=principal N/A = not applicable				Assessment of risk to achieve that milestone (L/M/H)	For medium/high please select the main risk from the list
						for gender	for youth	for CapDev	for climate change		
FP1	1.4.3/2.1.3: Enhanced genetic gain	Outcome 1.1: 1.5 million households have access to and are using our selectively improved, faster growing and more resilient strains of tilapia and carp seed	(1) Production of the first selected generation of catla and silver carp (in Bangladesh), and the production of genomic data on specific traits designed to increase resilience in tilapia (global)	New milestone, to better reflect progress in the genetics research cluster 1.1	Publications Pedigree data bases Molecular data bases Meeting reports	0	0	1	1	Medium	Weather and research-related risks
			(2) Assessment of adoption and performance of previous introductions of GIFT into focal countries in Asia and Abbassa strain in Egypt completed	Identical to proposal	Publications	1	1	1	1	Medium	Mobilization of teams in both countries

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	<p>1.4.2/2.1.2: Closed yield gaps through improved agronomic and animal husbandry practices</p> <p>2.4.2: Reduced livestock and fish disease risks associated with intensification and climate change</p>	<p>Outcome 1.2: 2.5 million households have adopted disease detection and control strategies, cost-effective and sustainable aqua-feeds and/or improved aquaculture management practices</p>	<p>(1) At least one private company and or one public organization investing in scaling of new fish feed ingredients and/or fish disease diagnostic tools within focal countries for improving yields</p>	<p>Identical to proposal</p>	<p>Technical Reports Journal articles</p>	<p>0</p>	<p>0</p>	<p>1</p>	<p>1</p>	<p>Medium</p>	<p>Risk that partners will not be able to deliver on time</p>
	<p>1.3.4: More efficient use of inputs</p> <p>3.3.3: Reduced net greenhouse gas (GHG) emissions from agriculture, forests and other forms of land use</p>	<p>Outcome 1.3: 4.8 million metric tons of annual farmed fish production with reduced environmental impact and increased resource-use efficiency (measured by 20% reduction in GHG emissions and 10% increase in water and nutrient-use efficiency)</p>	<p>(1) Aquaculture improvement programs being implemented in Bangladesh and Egypt and defined in Myanmar and Zambia;  (2) Public-private sector partnerships or platforms established and R&amp;D agenda adopted for improving environmental performance in remaining focal countries, in Africa [Tanzania, Zambia] and in Asia [Cambodia]</p>	<p>Identical to proposal</p>	<p>Technical Reports Journal articles Policy brief</p>	<p>1</p>	<p>1</p>	<p>1</p>	<p>1</p>	<p>Medium</p>	<p>Risk that partners will not be able to deliver on time</p>
	<p>1.3.1: Diversified enterprise opportunities</p>	<p>Outcome 1.4: 2.3 million poor people (of which 50% are women) access</p>	<p>(1) Public-private sector partnerships or platforms established for scaling up and out FISH business</p>	<p>Identical to proposal</p>	<p>Meeting reports</p>	<p>1</p>	<p>1</p>	<p>1</p>	<p>1</p>	<p>Medium</p>	<p>Risk that partners will not be able to deliver on time</p>

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	1.3.2: Increased livelihoods opportunities 2.1.2: Increased access to nutrient rich foods 3.3.1: Increased resilience of agro-ecosystems and communities, especially those including smallholders	improved livelihood opportunities resulting from increased aquaculture production and associated value chains and enterprise development.	and entrepreneurship models in remaining focal countries, in Africa (Tanzania, Zambia) and in Asia (Cambodia).								
			(2) Integrated aquaculture technologies and business models validated by public and/or private partners and receiving public and/or private sector investments for scaling in four focal countries	Identical to proposal	Technical Reports Journal articles Policy brief	1	1	1	1	Medium	Funding not fully confirmed
<b>FP2</b>	1.3.1: Diversified enterprise opportunities 1.3.2.: Increased livelihood opportunities 2.1.2: Increased access to nutrient-rich foods	Outcome 2.1: 1 million fishery-dependent households have reduced poverty as a result of adopting improved fisheries management	Completed production of a series of key regional and global multi-case syntheses and methods on small-scale fisheries within fish food systems	Identical to proposal	Learning products and related publications, documentation of learning events and dialogues organized	1	1	1	1	Low	

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	1.3.1: Diversified enterprise opportunities 1.3.2.: Increased livelihood opportunities 2.1.2: Increased access to nutrient-rich foods	Outcome 2.2: 1.2 million people, of which 50% are women, assisted to exit poverty through livelihood improvements	Completion of dissemination of learning on alternative livelihoods through continuous engagement with learning and governance networks	Identical to proposal	Learning products and related publications, documentation of learning events and dialogues organized	1	1	1	1	Medium	Assumes partners remain committed with funding
	3.2.1: More productive and equitable management of natural resources 3.3.1: Increased resilience of agro-ecosystems and communities, especially those including smallholders	Outcome 2.3: 2.1 million hectares of inland aquatic and coastal marine habitat restored and under more productive and equitable management	(1) Identification of cross-scale governance mechanisms to support the viability of interventions	Identical to proposal	Documentation of processes and outcomes of dialogues on institutional development and on viability of interventions	1	1	1	1	Low	
			(2) Wider adoption and application of governance and production models for freshwater systems	Identical to proposal	Flagship-level field monitoring data and reports, partner program monitoring reports, secondary data and reports on this aspect. External evaluation reports	1	1	1	1	Medium	Risk that partners will not have sufficient resources

**Table 2B: Planned evaluations/reviews, impact assessments and learning exercises**

The following table shares impact assessments, adoption studies, evaluations, reviews or other learning exercises that are planned for the coming year, for example to provide evidence for reporting on outcome-impact case studies.

CRP	FP (if not overall CRP)	Status	Planned studies/learning exercises in the coming year	Geographic scope (specify country or region if relevant)	Who is commissioning this study
FISH	FP1	ongoing	Studies to assess on-farm performance of improved tilapia strains (input use, outputs, production and profitability) in different contexts such as Bangladesh, Egypt and Myanmar. Interrelations and effects on gender, environment and human nutrition will be explored.	Bangladesh, Myanmar and Egypt	IFAD, USAID, BMZ/GIZ
FISH	FP1	ongoing	Identification of dissemination systems for improved tilapia seeds in different contexts such as Bangladesh, Myanmar and Egypt.	Bangladesh, Myanmar and Egypt	IFAD, EC, USAID, BMZ/GIZ
FISH	FP2	new	Evaluation of large project Enhanced Coastal Fisheries in Bangladesh (ECOFISH-BD) by USAID	Bangladesh	USAID
FISH	FP2	new	Evaluation of the project Enhancing Livelihoods while Governing Marine Resources in Pacific Island Countries: Effects of the improved fish-based livelihoods on poverty, vulnerability and inequality for women and men in Solomon Islands and Timor-Leste.	Solomon Islands, Timor-Leste	SwedBio
FISH	CRP	new	Evaluation of the FishTrade project: Effectiveness of policy changes on intra-regional fish trade for reducing poverty and improving food and nutrition security in Africa.	South, East, Central and West Africa encompassing 21 countries	W1/W2
FISH	CRP	new	Fish foresight modelling study in Nigeria	Nigeria	BMGF
FISH	CRP	new	Policy effectiveness study (SSA and SSF): Land use policy reform (2018-2022) in multifunctional landscapes as a driver to increase income and well-being.	Myanmar	W1/W2

**Table 2C: Planned major new collaborations (CGIAR internal, or with non-CGIAR collaborators)**

The following table lists major new internal (among programs, and programs and platforms) and collaborations with non-CGIAR partners for the coming year.

Name of CRP or non-CGIAR collaborator	Brief description of collaboration (give and take among CRPs/PTFs/non-CGIAR collaborator) and value added (e.g. scientific or efficiency benefits)
<b>CGIAR collaborator</b>	
Agriculture for Nutrition and Health (A4NH)	<p>A4NH and FISH will cooperate in three A4NH flagships in 2019 for research on the fish and human nutrition and health in food systems. In A4NH Flagship 1 (Food Systems for Healthier Diets), for joint research on fish in Bangladesh and Nigerian food systems (one joint proposal; national food systems reviews; a co-funded PhD on modelling of fish in food systems at Wageningen University. In A4NH Flagship 3 (Food Safety), for exploration of potential joint research on food safety and fish in Bangladesh and Nigeria In A4NH Flagship 5 (Improving Human Health), the development of a joint research agenda on antimicrobial resistance for fish within the CGIAR special initiative (along with Livestock CRP and the emerging CGIAR Antimicrobial Resistance hub in ILRI, Nairobi).</p>
Climate Change, Agriculture and Food Security (CCAFS)	<p>During 2019, we plan to deepen cooperation with CCAFS on raising the profile of fish within climate change agendas, including participation in the CCAFS Conference in Bali and preparation of the CGIAR special initiative on climate change. More specifically: with CCAFS Flagship 2 (Climate Smart Technologies and Practice), for integration of fish into Climate Smart Agriculture (CSA) projects and scaling in the Mekong region and Bangladesh, and publication of an assessment of gender and CSA in Bangladesh. With CCAFS Flagship 3 (Low Emissions Development), on publication of a paper on modelling of low-emissions development pathways for aquaculture. With CCAFS Flagship 4 (Climate Services and Safety Nets), on improving access of climate information services to aquaculture farmers and fishers in Bangladesh and India.</p>
Policies, Institutions and Markets (PIM)	<p>With PIM Flagship 1 (Technological Innovation and Sustainable Intensification) for contribution of fish foresight research to the CGIAR Foresight Report, and fish futures research in Nigeria. With PIM Flagship 3 (Inclusive and Efficient Value Chains) and the CGIAR Value Chains community of practice on fish value chain studies in Bangladesh, Nigeria and Ghana, the latter on dissemination systems for improved tilapia with public and private sector partners in Ghana.</p>
Water, Land and Ecosystems (WLE)	<p>During 2019, we plan to deepen cooperation with WLE in the integration of fish within water management initiatives. Specifically, with WLE Flagship 4 (Variability, Risks and Competing Uses) the collaboration will link our fisheries-focused analyses under the fish in multifunctional landscapes cluster in FISH FP2, with broader research on multiple uses of water and land at landscape and river basin scales. During 2019, we will co-produce and publish guidelines titled: 'Increasing the benefits and sustainability of water control infrastructure through integration of fisheries: a guide for water planners, managers and engineers' as well as a journal article on 'Enhancing Biodiversity in Irrigation Systems' together with a joint, targeted awareness campaign, including co-organizing a session together with FAO titled 'Modernizing irrigated agriculture to protect and restore aquatic biodiversity and inland fisheries in Asia' at the International Commission on Irrigation and Drainage, Third Irrigation Forum. Additionally, we plan to develop a proof of concept (together with Cambodian partners) on the potential for incorporating fish production into existing community-managed small-scale irrigation infrastructure and publish a joint policy brief with a view to developing scalable lessons and management models that can feed into larger water infrastructure and management investments and policy.</p>

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Rice	With RICE Flagship 3 (Sustainable Farming Systems), building on collaborative activities in 2018 (Myanmar research and Singapore rice conference), consultations to identify research priorities and policy shifts for sustainable rice-fish systems at global scales.
Roots, Tubers and Bananas	During 2019, we plan to complete and publish a working paper on synergies between fish and roots, tubers and bananas in food systems, focusing on Nigeria and Bangladesh and identifying potential future research for development opportunities to increase our collective impact across the two CRPs.
Big Data Platform	In 2019, we will continue to collaborate with the platform in enabling the FAIRness (Findable, Accessible, Interoperable and Reusable) of our research outputs, specifically focusing in 2019 on ontologies applicable to fish and aquatic systems, the development of a digital strategy to enable effective use of our digital resources and ensuring FISH resources are available through our open repositories and on the Big Data Platform's data harvesting platform GARDIAN. FISH will also implement an Inspire grant with partners for the application of big data in analyses and integration of data pipelines emerging from small-scale fisheries (FISH FP2), also with a new private partner (Pelagic Data Systems).
Excellence in Breeding	The Excellence in Breeding Platform will aid FISH in the development of stage gate processes relating to bring new fish genetic innovations to market. FISH researchers will also participate in the negotiations to alter the data entry forms for breeding program assessments (BAPs) to be effective for fish genetic improvement programs.
Emerging gender platform	FISH will contribute knowledge and experience to the development of the new CGIAR Gender Platform
<b>Non-CGIAR collaborator</b>	
African Development Bank (ADB) and the Technologies for African Agricultural Transformation (TAAT) investment	Collaboration in the framework of TAAT for dissemination of aquaculture technologies at scale, and the application of new feed ingredient analyses and data analysis tools from FISH FP 1 (cluster 2) for sustainable aquafeeds in Nigeria and selected other African countries
Australian Centre for Ocean Resources and Security (ANCORS), University of Wollongong, Australia.	Pacific Islands coastal fisheries research, including community-based fisheries management, innovations that enhance fish-based livelihoods, and nutrition and food systems research. The Centre hosts a FISH scientist focused on the Pacific region.
Commonwealth Scientific and Industrial Research Organization – CSIRO (AU)	Value chain studies in Nigeria under a new initiative funded by the Bill and Melinda Gates Foundation (BMGF) to explore aquaculture value chains and future potentials within the country.
Earlham Institute (UK)	Extending FISH research on tilapia genomes.
FAO	Extending cooperation to connect research to global FAO policy initiatives across FP1 and FP2, including participation in a major global conference titled Fisheries sustainability: strengthening the science-policy nexus in November 2019. Also, collaboration in the FAO small-scale fisheries knowledge platform, and methodological development and implementation of the "Illuminating Hidden Harvests" research, including 50 case studies and thematic outputs on nutrition and gender. Collaborative implementation of a small-scale fisheries communication strategy to influence food, water, climate and ocean governance with policies and practices arising from FISH FP2 research. Early implementation of joint efforts in monitoring and evaluation of information communication technology for small-scale fisheries and global investments in small-scale fisheries towards the sustainable development goals.

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	Scaling of models of best practice to increase fisheries production in constructed water bodies in cooperation with WLE.
Global Action Network: Sustainable Foods from the Oceans and Inland Waters for Food Security and Nutrition	A new partnership for FISH in this network, that seeks ways that mobilize actions to increase the role of sustainable food from the oceans and inland waters to ensure food security and nutrition in the Decade of Action on Nutrition (2016-2025), in line with the UN Sustainable Development Goals (SDGs).
Hohenheim University: Institute of Rural Development, Faculty of Agricultural Sciences	Collaboration on integrated performance and dissemination assessment of improved tilapia strains in Bangladesh, Myanmar and Malawi, supported by the Federal Ministry for Economic Cooperation and Development (BMZ) and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
Indian Council of Agricultural Research (ICAR)	New MOU signed in 2018 provides the basis of a new research that will start in 2019 with FISH FP1 and FP2 in 2019-2021 in India.
Lancaster University (UK)	Collaboration on nutrition-sensitive fisheries including high impact research outputs and development and implementation of case study methodologies.
Locally Managed Marine Area Network	Collaboration on civil society influence in policy arenas for coastal small-scale fisheries and emergent joint investment on networks, cross-scale governance and scaling of community-based approaches to fisheries management in the Pacific
Mississippi State University (MSU) and USAID Feed the Future Innovation Lab on Fish	Value chain studies of aquaculture in Nigeria; carp genetics in Bangladesh (possible extending to Myanmar); gender and youth in Zambia; and novel feed ingredients and feed development in Zambia and Sub-Saharan Africa.
Norwegian Veterinary Institute (NVI) (Norway), the Centre for Environment, Fisheries and Aquaculture Science (Cefas) (UK), Exeter University (UK), Mahidol University (Thailand)	Cooperation in tilapia health with key external partners on tilapia health will be extended to new areas in 2019, particularly on tilapia lake virus (TiLV) and making an epidemiology and health economics online tool developed with NVI (an OIE collaborating center for aquatic epidemiology) available.
The Roslin Institute, University of Edinburgh, UK	Joint appointment of a post-doctoral bioinformatics scientist to strengthen the analysis of tilapia genomics.
Southern African Development Community (SADC)	Strengthening of cooperation in policies and practices for fish genetic improvement within the SADC region, including development of appropriate policies for Access and Benefit Sharing.
Skretting, and other digital partners	Building on cooperation with the Big Data platform and bilateral funded research in Bangladesh and Nigeria, 2019 will focus on strengthening partnerships on the application of digital innovation in on-farm performance assessments and extension.
Stockholm Resilience Centre (SRC)	Small-scale fisheries sustainability and livelihood innovations (FISH FP2) and climate smart aquaculture systems and technologies using Life Cycle Assessment (LCA) (FP1). Cooperation with the Beijer Institute on fish in food systems within a newly emerging EAT initiative.
Wageningen University (WUR), Institute of Marine Research (IMR) (Norway), Skretting and other industrial feed partners	Dutch government funded research scientist from 2019-2021 will strengthen cooperation in fish nutrition in FISH FP1. A new cooperation with the Institute of Marine Research (IMR) will support development of new in-vitro digestibility tools for ingredient testing. New private sector cooperation with Skretting will build greater capacity for fish feeds research in Egypt and Zambia and

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	strengthen dissemination opportunities for improved fish feeds, particularly around sustainable local ingredients, production of experimental feeds and on-farm validation.
WUR: Knowledge Technology and Innovation group	New research on innovation systems and the adoption of aquaculture technologies.

**Table 3: Planned budget**

The table shows the planned FISH budget (in USD) for 2019.

	Planned budget			Comments on major changes
	W1/W2 <sup>3</sup>	W3/bilateral <sup>4</sup>	Total	
Sustainable Aquaculture (FP1)	2,290,000	18,679,739	20,969,739	
Sustaining Small-Scale Fisheries (FP2)	960,000	5,961,673	6,921,673	
Cross-program investments	1,645,000	0	1,645,000	The budget line includes: Impact assessment & MEL, Investments in Scaling & Change Mechanisms and cross-program Gender, Youth, Capacity Development, Partnerships, and Communication investments
Contingency	80,000	0	80,000	
CRP Management & Support Cost	825,000	0	825,000	
CRP Total	5,800,000	24,641,412	30,441,412	

<sup>3</sup> The 2019 W1/W2 budgets do not yet include any carry over budget (estimated on 7<sup>th</sup> January 2019 as ~ USD 100,000, subject to further verification after official closure by WorldFish of the 2018 Financial Year.)

<sup>4</sup> Indicative budgets from W3/bilateral sources associated with signed contracts



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