



Annual Plan of Work and Budget (POWB) for 2018

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



WAGENINGEN UR
For quality of life



Lead Center:



FISH Annual Plan of Work and Budget (POWB) for 2018

Table of Contents

1. Expected Key Results	1
1.1 Adjustments/ Changes to Your Theories of Change:.....	1
1.2 Expected CRP Progress Towards Intermediate Outcomes and SLOs:.....	1
1.3 Obtaining Evidence on Relevant Outcomes and Impacts:	1
1.4 Plans by CRP Flagships:.....	2
1.5. Cross Cutting Dimensions	4
1.5.1 Gender, Youth and Capacity Development:.....	4
Flagship 1: Sustainable Aquaculture	5
Flagship 2: Sustaining small scale fisheries	5
1.5.2 Open Data and Intellectual Assets:.....	5
2. Planning for CRP Effectiveness and Efficiency.....	6
2.1 CRP Staffing in 2018:	6
2.2 Financial Plan for 2018, including use of W1/W2:	6
2.3 Collaboration and Integration.....	6
2.3.1 New Key External Partnerships:	6
2.3.2 New Contribution to and from Platforms:	9
2.3.3 New Cross-CRP Interactions:.....	9
2.3.4 Expected Efforts on Country Collaboration:.....	10
2.4 Monitoring, Evaluation, and Learning:	10
3. CRP Management	11
3.1 Management of Risks to Your CRP	11
3.2 CRP Management and Governance.....	11
TABLES	12
Table A: Planned Outcome and Milestones.....	12
Table B: Planned Studies for Relevant Outcomes and Impacts	15
Table C: Cross-cutting Aspect of Expected Outputs or Deliverables (OPTIONAL)	17
Table D: CRP Staffing (OPTIONAL).....	17
Table E: CRP Planned Budget.....	17
Table H: Planned Monitoring, Evaluation, and Learning Exercises	20
LIST OF ACRONYMS.....	21

1. Expected Key Results

1.1 Adjustments/ Changes to Your Theories of Change:

The Theories of Change (ToC) and associated milestones at Program and Flagship level have been refined from the proposal to align with the ToC in the newly approved Flagship 2 (Sustaining Small-Scale Fisheries), improve clarity for operational purposes and better link to nutritional outcomes within the FISH program structure. Planned 2018 work on elaborating "change mechanisms" for FP1 and FP2 and national consultations will likely lead to further refinements. In 2018, FISH will conduct consultations with research teams and partners on a Theory of Change for each FISH focal country, providing improved clarity on impact pathways for achieving progress towards IDOs and SLOs at country level. As in 2017, FISH will seek to deliver nutrition-related outcomes through links with the WorldFish Value Chains and Nutrition research program (and partners), and with an enhanced cooperation with A4NH, including through the FISH managing partner WUR which hosts A4NH Flagship 1.

1.2 Expected CRP Progress Towards Intermediate Outcomes and SLOs:

Highlights of the **Sustainable Aquaculture** flagship (FP1) that will enable progress towards Intermediate Outcomes and SLOs are; fish genetics platforms for selectively improved tilapia and carp operating across three countries; a new tilapia genetic improvement program initiated in Zambia; continued dissemination of improved strains to farmers in focal and scaling countries; advances in genomic selection technology for tilapia; second generation rohu carp produced via the Bangladesh carp breeding program; fish disease diagnostics, control and biosecurity improved in Egypt, Bangladesh and Malaysia; novel fish feed ingredients research in Bangladesh, Egypt and Zambia; and an accelerated dissemination of best management practices for improved strains of tilapia in Africa and Asia, supported by practical publications, capacity development and public and private sector partnerships.

Highlights of the **Sustaining Small-Scale Fisheries** flagship (FP2) are; small-scale fisheries sites established and partnerships convened in five focal countries, examining livelihood, technical and management innovations in different SSF contexts; co-management reviews from Bangladesh and four SE Asian countries published; a synthesis of fisheries interventions in constructed water bodies completed; preliminary models of gender-sensitive and gender transformative approaches to livelihood innovations developed in focal countries; a conceptual framework for small-scale fisheries in food systems completed and being used to convene policy engagement, align investment in fisheries and re-invigorate global dialogue and strategies on the role of small-scale fisheries in poverty reduction; and an evaluation of trade-offs between small-scale fisheries, infrastructure and land use completed and being used to inform governance adjustments from local to global scales.

Planned 2018 milestones towards the SLO targets of the CRP are provided in Table A.

1.3 Obtaining Evidence on Relevant Outcomes and Impacts:

Evidence of key links between research outputs, outcomes and impacts will be gathered through further work on the global MEL system framework which will be completed and progressively rolled out across the FISH focal and scaling countries¹ during 2018.

¹ 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, Kenya, Philippines, Uganda and Timor Leste.

In the **Sustainable Aquaculture** flagship, two impact assessments started in 2017 will be published in 2018: an assessment of GIFT tilapia dissemination in Bangladesh and Egypt; and a research publication of a SPIA research grant initiated under the CRP Phase 1 Livestock & Fish (L&F) to assess impacts of improved tilapia dissemination using genomics tools. Key new FP1 outcome/impact studies in 2018 include new performance assessments of improved tilapia; analyses of fish seed dissemination systems; and outcome studies related to local service providers, business and entrepreneurial models for women and gender-dissagregated and nutritional outcomes associated with improvements in Bangladesh carp-based polyculture systems.

In the **Sustaining Small-Scale Fisheries** flagship, key new outcome/impact studies in 2018 include outcome studies from rice-fish system interventions in Bangladesh, Cambodia and Myanmar; an impact assessment of new fisheries co-management interventions in Bangladesh large river systems; and a large multi-country analysis of development outcomes from co-management research and development in Asia, the latter with FAO and a wide range of national stakeholders.

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. The allocation of W1/W2 funds for both FP1 and FP2 will now allow investment in a program-wide MEL system. Four MC meetings during the year will monitor program progress and capture learning, within the framework of FISH's overall Theory of Change and Results Based Management system. Tables B and H provide planned studies for outcome and impacts, and relevant monitoring, evaluation and learning exercises.

1.4 Plans by CRP Flagships:

Flagship 1: Sustainable Aquaculture

Expected Annual Milestones towards Outcomes 2022

In 2018, **Sustainable Aquaculture** progress will be made across the three research clusters of fish breeds and genetics; fish health, nutrition and feeds; and aquaculture systems, contributing to FP1 2022 outcomes as detailed in Table A. Key 2018 milestones for *Fish breeds and genetics* research include the operation of the fish genetics research platforms, supporting implementation of the genomic selection strategy for improved tilapia breeding programs prepared with partners in 2017; new public/private sector partnerships established for extension of the tilapia genetic improvement and dissemination programs in Myanmar and Zambia, the latter providing a model for the SADC region. Dissemination of improved tilapia breeds in Bangladesh and Egypt will also continue under enhanced biosecurity, and the planning for new dissemination programs with partners in Cambodia and Myanmar accelerated. Key milestones under the *Fish feeds and health* research include the implementation of biosecurity measures for tilapia breeding and dissemination programs with national agencies in Bangladesh, Egypt and Malaysia and progress in disease detection, control and biosecurity goals and the feed ingredients and management practices research. Key milestones under *Aquaculture systems* research include integration of environmental improvement plans (for GHG emissions and water and nutrient use efficiency) into national programs in three countries; identification of new business and entrepreneurship models for scaling of tilapia and carp aquaculture; continued development of national R&D platforms and adoption of gender-integrated aquaculture performance assessment and user preference methods and tools in our improved tilapia research.

Outputs towards Outcomes 2022

Key outputs from the CoA 1.1 *Fish breeds and genetics* are: a publication on incorporating new traits through genomic selection into tilapia genetic improvement; assessment reports of tilapia on-farm performance in Bangladesh and Egypt; and a set of methods, tools and research capacity for analysis of gender sensitive end user preferences to guide ongoing fish breeding work. Base populations for new genetic improvement programs in Catla carp and Silver carp will be produced in Bangladesh and genomic databases developed for these two species. A new generation of improved Rohu will be produced during the year. SPIA-funded research on the use of single-nucleotide polymorphism (SNP) markers to assess farmer adoption of improved tilapia strains in the Philippines and Bangladesh will be published, guiding future dissemination and M&E strategies of improved fish strains to smallholder farmers. Dissemination of improved tilapia will be initiated with partners in Myanmar and a new genetic improvement program for the indigenous tilapia, *Oreochromis andersonii*, started with the Department of Fisheries in Zambia.

Key outputs from the CoA 1.2 *Feeds, fish nutrition and health* are: a number of journal articles and communication products on prevalence, risk factors, spread and impact of emerging tilapia diseases; practical biosecurity plans for tilapia hatcheries, nurseries and farmers on improved disease control measures; and an inventory of promising new fish feed ingredients for future research derived through screening across FISH focal countries in Africa and Asia. Improved management practice ("BMP") guidelines for tilapia developed during L&F will continue to be assessed, updated and packaged as user friendly tools and guidelines for wide dissemination in FISH focal and scaling countries through partners.

Key outputs from the CoA 1.3 *Aquaculture systems* are: an integrated systems framework for assessing the performance of aquaculture in fish food systems; results from baseline assessments of GHG emissions and water/nutrient use efficiency in tilapia and carp farming; and futures models for African aquaculture to understand emerging challenges and investment priorities for sustainable aquaculture growth. The integrated assessment framework for improved breeds, developed in 2017, will be progressively rolled out across FISH focal countries in 2018 using mobile technologies, providing new and insightful analysis into on-farm performance that can be used to assess yield gaps, identify potential interventions for improvement and eventual outcome achievement.

Flagship 2: Sustaining small scale fisheries

Expected Annual Milestones towards Outcomes 2022

The W1/2 financing of FP2 in 2018 now allows positive progress to be made in priority cross-country and cross-W3/bilateral project syntheses, towards FISH 2022 outcomes as indicated in Table A, albeit with some constraints due to the reduced level of W1/2 funding actually allocated. Key 2018 milestones for FP2 are; the completion of reviews of co-management and livelihood interventions in marine and inland fisheries systems in FISH focal and scaling countries; reviews of gender-equitable governance, livelihoods and value chain strategies in small-scale fisheries contexts; identification of small-scale fisheries management interventions in three FISH focal and scaling countries; development of new knowledge and partnerships with the RICE CRP in rice-fish systems; and convening partners and building methodologies for the regional analyses of fish in regional food systems. These milestones provide an empirically-evidenced research strategy and a foundation for development of impact pathways and achieving outcomes from SSF research at scale. Managing partners (JCU, IWMI) and a new global partner (FAO) will collaborate with national partners across the FISH focal and scaling countries to achieve these milestones. A key event for the year will be the 3rd World Small-Scale Fisheries Congress in Thailand on 22-26 October 2018 that will provide a platform for convening many key small-scale fisheries stakeholders, building new partnerships, and continuing to strengthen an increasingly active and influential coalition in small-scale fisheries research for development.

Outputs towards Outcomes 2022

In 2018, our research provides the foundations for FP2 outcomes. Research is focussed on understanding the governance and SSF systems and windows of opportunity and strategies that will facilitate outcomes at scale, building on learning available from small-scale fisheries field sites operating across FISH focal and scaling countries. Simultaneously, our assessments of SSF systems will determine the fit and design of management models and livelihood strategies that realize equitable outcomes – and the contexts and strategies that enable these outcomes at scale.

Key outputs for CoA 1 *Resilient coastal fisheries* are: methods and frameworks for improving adaptive capacity of coastal fishing communities; livelihood diagnostic tools; analyses of livelihood improvement; and assessments and syntheses of evidence of the development outcomes from management interventions by W3/bilateral projects in coastal regions of FISH focal countries in Asia and the Pacific.

Key outputs for CoA 2 *Fish in multifunctional landscapes* are: a review of fisheries in constructed water bodies (led by IWMI); a synthesis of knowledge of interventions in rice-fish systems and pathways for achieving impacts in such systems, based on bilateral projects in Cambodia and Myanmar; and further assessments and syntheses of the development outcomes from bilaterally-funded research and management interventions within inland multifunctional landscapes in Asia and Africa.

Key outputs for CoA 3 *Fish in regional food systems*, to be achieved in close cooperation with JCU, IWMI and FAO, are a series of research and communication products that will build on the proceedings of the WorldFish-hosted Small-Scale Fisheries Symposium and FAO's "Hidden Harvest" initiative to deliver key global and multi-case syntheses, identify impact pathways and communication strategies for achieving positive development outcomes for small-scale fisheries within food systems. Case studies will integrate gender and nutrition research, spanning scales of engagement from local to international levels in Africa, Asia and the Pacific. Other FP2 outputs planned for 2018 include the completion of the global database on the nutritional value of wild-capture fish, particularly those harvested by SSF, in collaboration with JCU, FAO and University of Lancaster (UoL). This will result in two high impact outputs and associated communications products, with connections to FP1 and contributing nutrition and value chain dimensions to a rigorous analysis of research and development investment of small-scale fisheries in food systems.

1.5. Cross Cutting Dimensions

1.5.1 Gender, Youth and Capacity Development:

In line with the FISH Gender Strategy, both Flagships involve both gender integration in technical research (“1”) as well as strategic gender research (“2”). Moreover, gender as a cross-cutting theme is designed to enable gender capacity development and to generate cross-flagship research insights. In 2018, the former is embodied in the development of gender integration guidelines for FISH combined with mentoring; in 2018 the latter focuses on a cross-Flagship review of lessons for gender-inclusive livelihoods and value chains. Key Flagship-specific and crosscutting outputs are presented within the Flagships below. Furthermore, ongoing close collaboration between the gender and M&E teams in 2018 will refine gender integration of the FISH M&E systems and contribute to setting up for ongoing empirical insights regarding gender within the FISH Theory of Change. Similarly, in 2018, FISH is developing a Youth Strategy that will crosscut both Flagships. Capacity development outputs are integrated within many projects within both FPs and a capacity development strategy being prepared in early 2018 will help ensure stronger alignment and support to the capacity development investments of the FISH ToC.

Flagship 1: Sustainable Aquaculture

In 2018, key gender-related activities underway in FP1 are: furthering knowledge of user preferences regarding improved fish species using a gender lens (CoA1); leading the associated cross-CRP Gender & Breeding PDF Capacity Development Initiative (CoA1); gender-integration in on-farm performance assessment frameworks (CoA3); and, scoping regarding gender and entrepreneurship (CoA3). Some of these are multi-year and will lead to outputs in 2019. Key gender science outputs for 2018 are: a review of risks and best practices in gender and socially-inclusive fish value chain and livelihoods development (FP1 & FP2); and a review of gender and small-scale fish aquaculture in FISH focal countries; and, a review of women-led entrepreneurship in fish value chains in one focal country (Bangladesh). A FISH youth strategy being drafted by IWMI during 2017 will be implemented in 2018. In addition to the Gender & Breeding PDF Capacity Development Initiative underway since 2017 (above), two new FP1 capacity development initiatives will be pursued during 2018; an aquaculture vocational training initiative, involving partners in Zambia and enhanced use of the Abbassa regional research and training center; and a cooperation with the new African Center of Excellence for Aquaculture and Fisheries at the Lilongwe University of Agriculture & Natural Resources (LUANAR) in Malawi for Masters and PhD training.

Flagship 2: Sustaining small scale fisheries

In 2018, key gender-related activities underway in FP2 in various focal countries are: continuing assessment of implications of gender norms and issues in key contexts (FP2 CoA1 and CoA2 and FP1); refining gender integration and transformative strategies; and, review of gender-inclusive approaches to SSF governance. Some of these are also multi-year and will lead to outputs in 2019. Key 2018 gender science outputs are two-fold: the first output is a journal article on gender norms and innovation in the Bangladeshi fisheries context (FP1 and FP2); and the second is a review of approaches to gender-sensitive and social inclusion in SSF management and governance, with a focus on identifying risks and gender and socially-inclusive, equitable and gender transformative "best practices". These activities and outputs contribute to achieving the FP2 2022 outcome of reduced poverty through improved management and governance (Outcome 2.1) and livelihood improvements (Outcome 2.2), in particular in ways that promote more equitable decision-making processes and outcomes, as well as providing critical assessment in the area of innovation in relation to access to and control over productive assets and resources in fisheries contexts. The youth research started in FP1 during 2017 will be extended to FP2. FP2 will also support a number of special capacity building initiatives aimed at young researchers, including provision of early career researcher grants and mentoring.

1.5.2 Open Data and Intellectual Assets:

In 2017, FISH conducted a study of research data management and open access and open data requirements against CGIAR policies, with partial funding from the Big Data Platform. The implementation plan arising from the study will be executed during 2018, in close cooperation with the Big Data Platform. A new Research Data Manager (RDM) starting in April 2018 will take overall responsibility for the necessary upgrading of research data management.

2. Planning for CRP Effectiveness and Efficiency

2.1 CRP Staffing in 2018:

No major changes in CRP staffing are anticipated in 2018, except (i) approval of W1/2 funds for the FP2 will allow the FISH CRP to add some additional capabilities for small-scale fisheries research, particularly to expand the FP2 research in Sub-Saharan Africa as well as expanding the partnership with IWMI; (ii) a new full-time M&E lead started on 1 February 2018 will provide leadership and implementation of the FISH M&E program; and (iii) a new full-time RDM hire (co-funded by the Big Data platform) will contribute to upgrading of research data management systems, including ensuring compliance with CGIAR Open Access requirements.

2.2 Financial Plan for 2018, including use of W1/W2:

The CRP Planned Budget (Table E) shows that an estimated 78% of funds are scheduled to come from bilateral/W3 sources in 2018, with 22% from W1/W2. A blend of bilateral/W3 and W1/W2 sources are planned for both FP1 and FP2 research. Bilateral/W3 funds are mostly used to address issues of importance to a specific donor or client, contributing to FISH outcomes. W1/W2 facilitates the integration across clusters and the program and covers strategic key areas not addressed by bilateral/W3 funds, including new priority research areas, global syntheses, cross-country collaboration and partnerships, as well as CRP management and support costs (with further details in Table F). The amount of secured bilateral/W3 funds as of 28th February 2018 was USD 19.945 M.

No major changes are being made to FP1, with planned work in line with the CRP proposal. In FP2 the contribution of W1/W2 funds will be used to fund key research and program management capabilities and activities, ensuring sufficient research capability is available to deliver the quality research outputs already identified in POWB 2018. Namely, to provide partial funding contribution to partners to enable better engagement in the FP2 research implementation; a capacity building programme to build research capability and development of a SSF 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, Theory of Change 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. Table F provides further details.

2.3 Collaboration and Integration

2.3.1 New Key External Partnerships:

Flagship 1: Sustainable Aquaculture

Global and national partners will contribute significantly to FP1. We expect 2018 to be a year of research progress with FISH advanced research partnerships, building on extended planning workshops and consultations with partners during 2017. Key advanced research partners include:

- In *genetics and genomics*, Scotland's Rural College (SRUC), the Roslin Institute, WUR, CIRAD and Swedish University of Agricultural Science (SLU), who will work together on experiments in Malaysia and Egypt on key traits associated with disease, resilience and feed efficiencies. New partnership agreements are expected to be signed with the Earlham Institute for work on tilapia genomics and genetic resources in Africa.

- In *fish feeds*, WUR and the Commonwealth Scientific and Industrial Research Organization (CSIRO). New partnership agreements are expected to be signed with the University of Stirling (UoS) for work on nutritional values of fish.
- In *fish health*, a new consortium formed by FISH involving the Norwegian Veterinary Institute (NVI), UoS, Exeter University and the Center for Environment, Fisheries and Aquaculture Science (CEFAS), CSIRO, Mahidol University and the Department of Fisheries Malaysia is being mobilized for tilapia health research, including the emerging challenge of TiLV;
- In *aquaculture systems*, Stockholm Resilience Center (SRC) will undertake new research around modeling of aquaculture growth within planetary boundaries. Foresight modeling collaboration will continue with IFPRI/PIM and the Australian National University (ANU) with a new focus on Egypt. New partnerships with Hohenheim University (Institute of Rural Development, Faculty of Agricultural Sciences) and the University of Tokyo (IR3S) will strengthen our impact assessment research in 2018.

NARES partnerships will strengthen in 2018, with the expectation of growth (>25%) of national partnerships in all FISH focal and scaling countries. Planned focal country Theory of Change workshops will be conducted with national research and development partners in focal countries, seeking to clearly define roles and responsibilities across the impact pathway at national levels.

- In *Asia*: Bangladesh (the Department of Fisheries (DOF), Bangladesh Fisheries Research Institute (BFRI) and a diverse range of public and private partners); Cambodia (the DOF and GIFT dissemination); and Myanmar (the DOF, Myanmar Fisheries Federation (MFF) and Fisheries Research and Development Network (FRDN)). FISH will strengthen cooperation for scaling with public and private sector partners in the scaling countries India, Indonesia & Timor Leste.
- In *Africa*: Egypt (the Central Laboratory for Aquaculture Research (CLAR) for joint research and Abbassa facilities as an Africa regional research and training center of excellence); Tanzania (support to national partners in an emerging national R&D platform for aquaculture); Zambia (with DOF and public/private partners in a new tilapia genetic improvement program with *Oreochromis andersonii*, fish feeds development and research on smallholder business models); and Nigeria (completion of aquaculture and small-scale fisheries scoping studies and program establishment). FISH will strengthen cooperation for scaling in the scaling countries Kenya, Malawi, Uganda & Sierra Leone, and deepen partnerships with sub-regional and regional organisations (including NEPAD, SADC and EAC) for policy development and capacity building for aquaculture within the region, including fish genetic improvement programs. A new African Development Bank project (TAAT) will also provide new avenues for scaling aquaculture technologies through national partners.

Private sector collaboration will also be strengthened, as one of the four change mechanisms in the FISH Theory of Change, including with Merck/MSD on fish disease treatments, Skretting for feeds development in Egypt and Zambia and Msingi in East Africa for scaling of tilapia genetic improvement programs. Research in several countries with private partners will enable FISH to develop an approach to private sector cooperation, including business models and partnerships to deliver FISH research at scale. A GIZ-funded CIM expert based in Zambia will support FISH scaling initiatives in the SADC and East Africa region.

The partnership with the SRC connects the FISH CRP with the *Keystone Dialogues* and newly formed *Seafood Business for Ocean Stewardship (SeaBOS)* coalition. In 2018, we will pursue with SRC an increased presence of FISH within the dialogues and SeaBOS coalition, seeking to enhance the influence of aquaculture and small-scale fisheries research on global industry policy.

Flagship 2: Sustaining small scale fisheries

Global, regional and national FP2 partnerships are designed to integrate critical aspects of research delivery: science quality, place relevance and development outcomes and impacts at scale. The approval of W1/2 funding for FP2 now allows a significant growth in partnerships during 2018. Key advanced research partners for FP2 and their key areas of focus during 2018 include:

- In *resilient coastal fisheries* research, James Cook University as a FISH managing partner will deliver research to guide improved adaptive capacity of fisheries-reliant coastal communities to climate change and identify mechanisms for impact through multi-scale governance. With a focus on capacity building, JCU partners will, in collaboration with WorldFish, deliver at least two research skills development weeks with FISH teams and country partners from Myanmar, Bangladesh, Solomon Islands and Cambodia (workshop 1), and Zambia, Tanzania and Kenya (workshop 2). JCU co-supervises and co-funds two post-doctoral fellows (Governance of SSF, Gender in SSF), will appoint a third (Climate change and SSF) and draws on three PhD students aligned to this Flagship.
- In *fish in multifunctional landscapes* research, IWMI as a FISH managing partner will co-host with WLE and FAO an expert meeting to jointly review and develop best practice guidance innovations for enhancing development outcomes from integration of fish within man-made water bodies. The cooperation will give special attention to irrigation systems in Tonle Sap, Cambodia and examine rice-field fisheries and water management innovation in Cambodia and Myanmar.
- In *fish in regional food systems* research, partners include James Cook University, University of Wollongong (Pacific fish food systems) and regional partners within the Pacific (SPC), Mekong (MRC) and Great lakes regions (SADC, EAC, LVFO and AU/IBAR) and the Zambezi Basin (SADC, AU-IBAR and ZAMCOM), who will develop situation analyses and theories of change that can guide regional planning with NARES partners in late 2018 or early 2019.

NARES partnerships will also be strengthened during 2018 across all FISH focal countries. Notably:

- In Cambodia an MOU reflecting the FISH CRP will be renewed with the Fisheries Administration and partnership with FAO continues for the implementation of SSF Guidelines and the upcoming EU-funded fisheries sector support program on Capture Fisheries.
- In Myanmar a rice-fish symposium will be co-hosted with the Department of Fisheries. Myanmar research is responsive to and designed and delivered with the International Institute for Environment and Development (IIED), Yangon University and the Networks Activity G (NAG) and with the Global Environment Facility and FAO on the FishAdapt project "*Strengthening the adaptive capacity and resilience of fisheries and aquaculture-dependent livelihoods in Myanmar*".
- In Solomon Islands cooperation with the Ministry of Fisheries and Marine Resources, including with the provision of a seconded staff member, will work with new legislation and build capacity to support a now national program of community-based, co-management.
- In Tanzania, a cooperation with the Ministry of Agriculture, Livestock & Fisheries and LVFO to co-host a forum to collate knowledge and identify pathways for impact within an emerging Great Lakes small-scale fisheries initiative.
- In Zambia, a cooperation with the Department of Fisheries to co-host a forum to collate current knowledge and identify pathways for impact within an emerging National Fisheries Programme focussed on small-scale fisheries.

Global and regional policy change and scaling for small-scale fisheries will be pursued in established partnerships with regional agencies such as SPC and new partnerships with FAO, TBTI and the Asia-Pacific Fisheries Commission. Gender partners within each focal country will be established during the year but for example, in Solomon Islands will continue with the Ministry of Women and Youth and Ministry of Fisheries and Marine Resources and with

FAO, JCU and SPC in the broader Pacific to develop and consolidate gender tools to address capacity and information gaps identified in collaborative “gender and fisheries stocktakes”.

2.3.2 New Contribution to and from Platforms:

FISH builds on some very positive collaboration in 2017 and will deepen the engagement with two CGIAR Platforms during 2018 as follows, and as noted in Table G:

- FISH will collaborate with the **Big Data Platform** in the Organize, Convene and Inspire "modules". FISH through the "Organize" module will continue to improve research data management and open access/open data processes to ensure compliance with Findable, Accessible, Interoperable and Reusable (FAIR) principles; under the "Convene" module, FISH will interact with communities of practice (CoP) and collaborate with big data practitioners; FISH in partnerships with Universities, private ICT companies and others will continue to explore new ideas to leverage open data, farmer observations, big data analytics, combined with novel surveillance and diagnostic technologies in developing aquaculture and small-scale fisheries solutions for farmers and fishers through an "Inspire" grant.
- FISH will continue to engage with the **Excellence in Breeding Platform** through participation in the Expert Advisory Groups for Modules 1 (Breeding program excellence) and 2 (Trait discovery and breeding tools and services), particularly in the development of an animal-oriented breeding assessment form. FISH will prepare for an expert assessment of its tilapia breeding programs to set new breeding directions beyond 2019 and contribute to documentation of best practices in each of the platform modules in relation to fish and to project proposals as appropriate.

FISH will continue to contribute actively to the **CGIAR Gender Platform**, in particular through: contributions to the Platform’s media push for 2018 International Women’s Day (including FISH Gender Leader interview by the Platform and linking of FISH outputs to the Platform media campaign); FISH leading the cross-CRP Gender & Breeding Postdoctoral Fellow (PDF) Cap Dev Initiative, which will feed into the Platform’s capacity development and interdisciplinary learning; contributing to the CGIAR momentum on gender science and knowledge sharing in agri-food systems CRPs, including through sharing science outputs via the Platform’s newsletters and other media; contributing to Platform strategic planning and collaboration via active participation in the Gender Research Coordinator virtual meetings and events; and, supporting the Platform's capacity development efforts through sending FISH staff to the CGIAR "GRIT" training at Penn State University.

2.3.3 New Cross-CRP Interactions:

The collaboration with other CRPs will continue to be strengthened in 2018, following the positive interactions with other CRP Directors, Flagship leaders and researchers during 2017, with several new interactions pursued:

- **Agriculture for Nutrition and Health (A4NH)**. Collaboration with A4NH Flagship 1 on Food Systems for joint research on fish in Bangladesh and Nigerian food systems (including joint proposal on small fish; Masters students in Bangladesh and Nigeria; national food systems reviews; and a potential co-funded PhD on modelling of fish in food systems); and with A4NH Flagship 5 on antimicrobial resistance, so that fish are included in animal uses of antibiotics and their potential influence on human antimicrobial resistance (along with the Livestock CRP).
- **Policies, Institutions and Markets (PIM)**. Collaboration with PIM Flagship 1 for integration of fish into foresight studies and animal source food supply-demand modelling in Africa (Egypt, Tanzania and SADC region); and with PIM Flagship 5 on processes for small-scale fisheries governance reform, with a focus on Myanmar.
- **Climate Change, Agriculture and Food Security (CAAFS)**. Collaboration with CCAFS Flagship 2 for integration of fish into Climate Smart Agriculture (CSA) projects and scaling in the Mekong region and Bangladesh, and an

assessment of gender and CSA in Bangladesh; and with CCAFS Flagship 3, on modelling of low emissions development pathways for aquaculture. FISH will also continue to work closely with CCAFS on raising the profile of fish within climate change agendas, including the 24th session of the Conference of the Parties (COP 24) to the UNFCCC, as well as a hosting of a MSc student from the CCAFS MSc at National University of Ireland.

- **Water Land and Ecosystems (WLE).** Collaboration will build on 2017 dialogue, with WLE/Rural Urban Landscapes/FP3 and FISH FP1 in preparation of business models and co-production of reports/advice on aquaculture within wastewater systems; and with WLE/VCR/FP4 and FISH FP1 around water efficiencies and integration of fish into water management and wastewater schemes and multifunctional landscapes; and with FISH FP2, overall seeking to better identify, understand and exploit significant global opportunities for integrated approaches involving fish and water management.
- **RICE** collaboration will be strengthened during the year, with RICE Flagship 3 in Bangladesh, Cambodia & Myanmar on fish within sustainable rice systems (with ACIAR co-funding) and co-organization of a regional symposium on rice-fish systems research in Myanmar to identify research priorities and policy shifts for sustainable rice-fish systems.
- **Livestock** collaboration will focus on Livestock Flagship 3 on Livestock Feeds and Forages for co-development of an animal feeds research agenda that supports productivity improvements in fish as well as livestock, building on earlier cooperation in the Livestock and Fish CRP.

FISH will continue to engage with significant gender-related **multi-CRP** collaborative initiatives: i) FISH team members leading the cross-CRP Gender & Breeding PDF Capacity Development Initiative to inform CGIAR breeding programs. The Gender & Breeding PDF "Cap Dev" Initiative will conduct research on end user preferences in key FISH focal countries, with findings feeding back into fish breeding and dissemination programs. The successful cooperation among the PDFs from FISH, LIVESTOCK, and RTB CRPs will be continued, to each other for peer support, as well as to a group of outside experts, including those with private sector expertise, for 1-1 mentoring.

2.3.4 Expected Efforts on Country Collaboration:

FISH will continue to actively support CGIAR country coordination during 2018, collaborating with CRPs/CGIAR centers in various countries through in-country meetings, and some sharing of experimental sites, staff and offices. More specifically, in Bangladesh, through continued active engagement in the Government-led CGIAR coordination committee; in Nigeria, through cooperation with IITA, RTB and A4NH during the early stages of FISH program establishment and a new African Development Bank project (TAAT); and in Myanmar, with WLE/IWMI and RICE/IRRI on rice-fish systems research.

In other FISH focal countries, where relevant, we will in 2018 seek opportunities to strengthen/clarify the CRP participation in the country coordination teams, confirming the FISH representative, and establish lines of communication with other non-target countries, as appropriate. The development of in-country Theories of Change and investments in FISH M&E in focal countries will also continue to explore opportunities for cooperation. In addition, the FISH representative in relevant country coordination teams will explore how CGIAR-internal communication and planning can be improved to identify opportunities for cross-CRP synergies, joint engagement with national stakeholders, such as Universities, Research institutes, government agencies, private business and overall alignment with national priorities.

2.4 Monitoring, Evaluation, and Learning:

FISH will have completed its global monitoring, evaluation and learning system framework during early 2018, with the MEL framework, methods, tools and approaches progressively rolled out across the FISH focal countries during

2018. The approval of W1/2 funds for both FP1 and FP2 will now allow investment in a program-wide MEL system. By the end of 2018, we expect each focal country to have a Theory of Change and consolidated impact pathways to guide future scaling. Specific areas of interest for 2018 are provided in Table H.

3. CRP Management

3.1 Management of Risks to Your CRP

Building on the Risk Management strategy within the CRP, the FISH Management Committee has identified key CRP risks and prepared a risk management framework. In close consultation with the FISH CRP partners, the FISH Management Committee keeps track of the key risks and any associated mitigation strategies. The risk management framework is rigorously reviewed every 6 months during Management Committee and Independent Steering Committee meetings. The key risks of concern in 2018 relate to (1) uncertainty in W1/2 and W3/bilateral funding and the associated impacts on research operations and development outcomes; and (2) ensuring that the M&E systems are sufficiently robust to monitor progress towards outputs and outcomes across the FISH portfolio of W1/2 and bilaterally funded projects.

The funding uncertainties are managed through regular dialogue with the SMO, regular review of expenditure and funding risks and pro-active fund-raising activities by the FISH CRP resource mobilisation group. These activities are done in close coordination with the CGIAR resource mobilisation group and are fully aligned with the CGIAR Risk Management Framework and Risk Management Guidelines. The M&E risks will be managed in 2018 through increased investment in cross-program M&E tools and methods. Particular emphasis will be placed on increased training of country M&E focal points and project teams and the formal adoption by the FISH CRP of the Managing Agricultural Research for Learning & Outcomes (MARLO) or Monitoring, Evaluation and Learning (MEL) as Program level results-based program planning and reporting tool.

3.2 CRP Management and Governance

No changes will be made to the FISH management and governance structures in 2018. FISH Managing Partners include two CGIAR Centers (WorldFish and IWMI) and Wageningen University (WUR), James Cook University (JCU) and the Natural Resources Institute (NRI) at the University of Greenwich. No separate FISH program management unit has been established, but administrative support is being provided to the CRP Director, the FISH Management Committee (MC) and Independent Steering Committee (ISC) through the research support, finance, MIS and administrative functions of WorldFish. The Independent Steering Committee (ISC) will meet four times in 2018 (3 virtually; one face-to-face) and the FISH Management Committee (MC) will meet four times in 2018 (two virtual, twice face-to-face), plus *ad hoc* meetings for both on an as needed basis. The planned MC meetings for 2018 will include one in March 2018 with a back-to-back special session on small-scale fisheries and one to be hosted by a Managing Partner in October as a back-to-back research symposium or similar event to bring a wider group of researchers and partners together to engage with FISH research.

TABLES

Table A: Planned Outcome and Milestones

Table A1: 2022 CRP outcomes mapped to sub-DOs with contributing budget

FP	Mapped and contributing to Sub-DO	2022 CRP outcomes (from proposal)	2018 Budget	
			W1/2*	W3/ bilateral
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	1,412,851	1,569,894
	1.4.2/2.1.2: Closed yield gaps through improved agronomic and animal husbandry practices 2.4.2: Reduced livestock and fish disease risks associated with intensification and climate change	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	1,314,946	1,176,023
	1.3.4: More efficient use of inputs 3.3.3: Reduced net greenhouse gas emissions from agriculture, forests and other forms of land use	Outcome 1.3: 4.8 million mt 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)	258,440	5,674,600
	1.3.1: Diversified enterprise opportunities 1.3.2: Increased livelihood opportunities 2.1.2: Increased access to nutrient rich foods 3.3.1: Increased resilience of agro-ecosystems and communities, especially those including smallholders	Outcome 1.4: 2.3 million poor men, women and youth access improved livelihood opportunities resulting from increased aquaculture production and associated value chains and enterprise development (of which 50% are women)	559,162	3,830,845
FP2	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	425,922	4,169,904
	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	682,123	3,429,562
	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	242,942	94,693

* excludes W1/2 Management and Support Costs

Table A2: Planned milestones by flagship and assessment of risk to achievement

FP	2022 CRP outcomes (from proposal)	Milestone*	Means of verification**	Assessment of risk to achievement*** (L/M/H)
FP1	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	Milestone 1.1.1: FISH genetics research platforms operating in 3 countries [Bangladesh for carps; Egypt (Abbassa) for tilapia; Malaysia (Jitra) for tilapia].	Publications Pedigree data bases Molecular data bases Meeting reports	Medium
		Milestone 1.1.2: New public/private sector partnerships established for tilapia genetic improvement and dissemination in 2 focal countries, one in Asia (Myanmar) and one in Africa (Zambia).	Reports Publications News stories	Low
		Milestone 1.1.3: IT based performance assessment methods and tools are adopted by national partners in three countries (Bangladesh, Egypt, and Myanmar).	Technical reports Farm performance database	Medium
	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	Milestone 1.2.1: The benefits of better management practices (disease, feed and husbandry) are assessed and yield limiting factors identified for further improvement in 4 focal countries.	Technical Reports Journal articles	Medium
	Outcome 1.3: 4.8 million mt 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)	Milestone 1.3.1: Environmental improvement plans prepared from FISH research to be adopted by public and/or private sector partners in 3 countries; 1 in Africa [Egypt] and 2 in Asia [Bangladesh, Indonesia].	Technical Reports Journal articles Policy brief	Low
	Outcome 1.4: 2.3 million poor men, women and youth access improved livelihood opportunities resulting from increased aquaculture production and associated value chains and enterprise development (of which 50% are women)	Milestone 1.4.1: Public-private sector partnerships or platforms for sustainable aquaculture R&D convened (and led by national partners) in one more focal country in Africa and 2 focal countries in Asia	Meeting reports Journal articles	Low
		Milestone 1.4.2: FISH research has identified business and entrepreneurship approaches and models with potential for scaling within focal countries.	Technical Report Journal articles	Medium

FP2	Outcome 2.1: 1 million fishery-dependent households have reduced poverty as a result of adopting improved fisheries management	Milestone 2.1.1: Adaptive management, technology and livelihood interventions identified in marine and inland small-scale fisheries systems in at least 3 FISH focal and/or scaling countries	Technical reports Journal articles Case studies	Medium
		Milestone 2.1.2: Evidence gathered, and policy recommendations prepared on (i) SSF functions for food security, poverty alleviation and threats; and (ii) impacts of intra-regional and global trade patterns and policies on the pro-poor functions of small-scale fisheries	Journal articles Policy brief Case studies	Low
		Milestone 2.1.3: Establishment of partnerships and networks that span communities, national agencies and government bodies.	Technical reports Case studies	Medium
	Outcome 2.2: 1.2 million people, of which 50% are women, assisted to exit poverty through livelihood improvements	Milestone 2.2.1. New knowledge on gender-sensitive models and gender transformative approaches to livelihood innovations for focal countries.	Reports Gender strategy Journal articles Case studies	Medium
		Milestone 2.2.2. Completed production of new knowledge on gender barriers and implications in fisheries-dependent communities, surfacing hidden micro-level barriers to equality in fisheries management and innovation.	Reports Journal articles Case studies	Low
		Milestones 2.2.3: Conceptual framework for small-scale fisheries in fish food systems completed and being used to convene policy engagement, align investment in fisheries and re-invigorate global dialogue and strategies concerning the role of small-scale fisheries in poverty reduction	Reports Journal articles Case studies	Low
	Outcome 2.3: 2.1 million hectares of inland aquatic and coastal marine habitat restored and under more productive and equitable management	Milestone 2.3.1. New knowledge and collaboration on cross-scale governance mechanism, accounting for impacts of external drivers and resource competition.	Reports Journal articles Case studies	Medium
		Milestone 2.3.2. New knowledge of trade-offs between SSF, infrastructure and land use.	Reports Journal articles Case studies	Low
		Milestone 2.3.3. Completion of foresight analysis (accounting for environmental, demand, production trends) of SSF performance.	Reports Journal articles Case studies	Low

* Milestones include both outputs, output use and outcomes along the impact pathways as appropriate to the scale and maturity of the work. The focus in this table is on significant milestones towards outcomes which can be justified for completion at reporting.

** The W1/W2 budgets allocated to 2022 outcomes do not include program management and support costs

*** The major risks focusing more on technical or geographic considerations that may hinder the expected delivery of results by the CRP.

Table B: Planned Studies for Relevant Outcomes and Impacts

The table provides FISH outcome case studies, impact assessment and adoption studies planned for 2018.

Planned topic of study	Geographic scope	Relevant to Sub-IDO, or SRF target if appropriate	Comments
FP1: Sustainable Aquaculture			
Studies on genetic gain in FISH tilapia and carp improvement program	Bangladesh Egypt Malaysia	Sub-IDO 1.4.3/2.1.3 Enhanced genetic gain	On-station studies in each of the genetic research platforms
Studies to assess on-farm performance of improved tilapia strains (input use, outputs, production & profitability)	Bangladesh	Sub-IDOs: 1.3.2 Increased livelihoods opportunities 1.3.3 Increased value capture by producers 1.3.4 More efficient use of inputs	
Epidemiological studies of tilapia diseases in Bangladesh and Egypt	Bangladesh Egypt	Sub-IDO: 2.3.2 Reduced livestock and fish disease risks associated with intensification and climate change	A new epidemiological tool will be tested in these two countries, for wider application in other focal/scaling countries from 2019
Baseline study for the assessment of current tilapia production and productivity in Myanmar	Myanmar	Sub-IDOs: 1.3.2 Increased livelihoods opportunities; 1.3.3 Increased value capture by producers; 1.3.4 More efficient use of inputs	Capacity development, gender and youth dimensions will be assessed during the baseline study.
Evaluating impacts of improved tilapia strains	India	SLO Targets: 1.1/1.2 adoption/reduced poverty; 2.3/2.4 improved food and nutrition security for health	Ex-ante Impact Evaluation will be implemented in India.
Evaluating performance of improved Local Service Provider (LSP) models	Bangladesh	Sub-IDOs: 1.2.1 Improved access to financial and other services; 1.2.2 Reduced market barriers	Gender and youth dimensions will be considered within the case studies.
Evaluating pro-poor, women target polyculture systems in Bangladesh	Bangladesh	Sub-IDOs: 1.3.2: Increased livelihood opportunities; 2.1.2: Increased access to nutrient rich foods; XC 2.1.1: Gender equitable control of productive assets and resources	
Assessments of dissemination systems for improved fish seed in Bangladesh, Myanmar and Malawi	Bangladesh, Myanmar and Malawi	SLO Target 1.1: Adoption Sub-IDOs: 1.2.1 Improved access to financial and other services; 1.2.2 Reduced market barriers; 1.4.4 Increased access to productive assets, including natural resources adoption of improved breeds.	Gender and youth will be integrated within the case studies

FP2: Sustaining Small-Scale Fisheries			
Outcome studies on rice-fish system improvement models	Myanmar and Cambodia	Sub-IDOs: 1.3.1 Increased livelihood opportunities 1.4.2/2.1.2 Closed yield gaps through improved agronomic and animal husbandry practices 2.2.1 Increased availability of diverse nutrient-rich foods 2.2.2 Increased access to diverse nutrient-rich foods 2.2.3 Optimized consumption of diverse nutrient-rich foods XC 2.1.1: Gender equitable control of productive assets and resources XC 2.1.3 Improved capacity of women and young people to participate in decision-making	In collaboration with RICE CRP.
Study of impacts of fisheries co-management, including (i) a systematic review of outcomes from co-management in SE Asia; and (ii) case studies in four countries.	SE Asia Case studies in Bangladesh, Cambodia, Philippines, Sri Lanka	SLO Targets: 1.1/1.2 reduced poverty 2.3/2.4 improved food and nutrition security for health 3.1/3.2 improved natural resources systems and ecosystem services	Cooperation with FAO and national stakeholders involved with the case studies
Assessment of ICTs technologies and their current and potential use in small-scale fisheries.	Asia-Pacific	Sub-IDOs: 1.2.1 Improved access to financial and other services; 1.2.2 Reduced market barriers; 1.3.1 Diversified enterprise opportunities; 1.4.1/2.1.1 Reduce pre- and post-harvest losses, including those caused by climate change; 3.1.2 Enhanced conservation of habits and resources; 3.3.1 Increased resilience of agro-ecosystems and communities, especially those including smallholders; 3.3.2 Enhance adaptive capacity to climate risks	Collaboration with FAO and Asia-Pacific Fisheries Commission
Impact assessment of coastal Fisheries Management systems in Bangladesh	Bangladesh	SLO Targets: 1.1/1.2 reduced poverty; 2.3/2.4 improved food and nutrition security for health; and 3.1/3.2 improved natural resources systems and ecosystem services Sub-IDOs of special attn: XC 1.1.4: enhanced capacity to deal with climatic risks and extremes 3.3.1: increased resilience of agro-ecosystems and communities, especially those including smallholders.	Impacts on gender and youth will be given special attention
Synthesis of cases of fisheries strategies in water management (including reservoirs and irrigation systems in multifunctional landscapes)	Cases from Africa and Asia, including at least 3 focal countries	To be determined	IWMI-led synthesis and write-shop with WLE, FAO, WorldFish, and the Ramsar network

Table C: Cross-cutting Aspect of Expected Outputs or Deliverables (OPTIONAL)

The table presents the expected total overall number of outputs, and % of outputs with principal (scored 2), significant (scored 1), and not targeted (scored 0), for gender, youth and capacity development.

Cross-cutting	Number (%) scored 2 (Principal)	Number (%) scored 1 (significant)	Number (%) scored 0	Total overall number of outputs
Gender	8%	49%	44%	78
Youth	5%	29%	65%	
CapDev	15%	56%	28%	

Table D: CRP Staffing (OPTIONAL)

The table provides FTE for 2018 CRP staffing, including both CGIAR and non-CGIAR main partners (those who are responsible for managing clusters - non-CGIAR partners do not manage any FISH flagships).

Category	Female (FTE*)	Male (FTE)	Total FTE	% female (FTE)
<i>Program director & flagship leaders</i>	1.0	1.8	2.8	36.4
<i>Principal Investigators</i>	3.0 (0.2) ^a	7.5 (0.3) ^b	10.5	28.9
<i>Other Senior Scientists (not PIs)</i>	0.8	12.1	13.0	6.6
<i>Post-docs / junior scientists</i>	1.8	4.7	6.5	27.8
<i>Research fellows</i>	1.4	1.8	3.2	43.6
<i>Other science support staff</i>	44.5	73.6	118.0	37.7
<i>FISH CRP Program Manager</i>	1.0	0.0	1.0	100.0
TOTAL CRP	53.6	101.4	155.0^c	34.6

*FTE= Full Time Equivalent (years); ^a Cluster leader from IMWI

^b Cluster leader from Wageningen University & Research (FISH CRP managing partner)

^c Vacant positions will be assigned to the FISH CRP during 2018 with the following categories and FTE allocations: 1 "Principal Investigator" (0.7 FTE); 1 "Other Senior Scientists"(1.0 FTE); 4 "Post-Docs" (total of 1.7 FTE); and 7 "Other science support staff" (total of 6.0 FTE).

Table E: CRP Planned Budget

The table provides the planned CRP budget for 2018.

	2017 Carry forward	Planned budget 2018 (US\$)				Comments on major changes
		W1/2	W3/bilateral*	Center Own fund	Total	
FP1	278,119	3,267,280	12,251,362		15,796,761	
FP2		1,350,987	7,694,159		9,045,146	
Strategic Competitive Research grant		0	0		0	No competitive grants included in the proposal and not considered in 2018
CRP Management & Support Cost		792,229	0		792,229	
CRP Total		5,688,616	19,945,521		25,634,136	

* as of 28 February 2018

Table F: Main Areas of W1/2 Expenditure (OPTIONAL)

This optional (for 2018) table provides the main areas of W1/2 expenditure

Expenditure area *	Estimated percentage of total W1/2 funding in 2018**	Space for your comments
Planned research: principal or sole funding source	10%	<ul style="list-style-type: none"> • Research on tilapia genomics: feed efficiencies and reproductive performance; tilapia disease & epidemiological tools; feed ingredients research; on-farm performance assessment tools (FP1, with partners) • Research on integration of fish within multi-functional landscapes and water management systems (FP2, with partners)
Planned research: Leveraging W3/bilateral funding	50%	<ul style="list-style-type: none"> • Synthesis and production of a range of international public goods and leveraging of outputs and cross-project syntheses for the sustainable aquaculture and small-scale fisheries flagships through W3/bilateral funded projects.
Catalyzing new research areas	15%	<ul style="list-style-type: none"> • Foresight research for aquaculture and fisheries in Africa (with PIM), seeking to catalyze new investment into African FISH research; and new fish genomics research with partners to identify novel traits for incorporation into tilapia breeding programs.
Gender	10%	<ul style="list-style-type: none"> • Strategic gender research across FP1&FP2 • Research inputs to priority outputs tagged as 'principal' for gender.
Youth	2.5%	<ul style="list-style-type: none"> • FISH CRP youth strategy publication, implementation planning and resource mobilization
Capacity development	2.5%	<ul style="list-style-type: none"> • Most capacity development investments are via W3/bilaterals, but W1/2 funds are planned for completion of a FISH capacity development strategy and 50% co-funding of a leader to coordinate capacity development within the CRP (including aquaculture training programs offered at the Abbassa research and training center) and development of the components of the Theory of Change that involve capacity development (all 4 FISH change mechanisms)
Start-up or maintenance of partnerships (internal or external)	5%	<ul style="list-style-type: none"> • Allocation for partnership engagement with sub-regional partner organisations in Africa, with a focus on the EAC and SADC during 2018 and higher policy level, academia, NGO and private sector within selected focal countries
Monitoring, learning and self-evaluation	8%	<ul style="list-style-type: none"> • Development of the cross-program M&E system, country-level Theories of Change
Evaluation studies and Impact Assessment studies	2%	<ul style="list-style-type: none"> • Co-funding with W3/bilateral projects for some of the studies identified within Table B.
Emergency/contingency	5%	<ul style="list-style-type: none"> • Tilapia lake virus (TiLV) in tilapia has become a more significant threat to tilapia breeding programs and farming. • W1/2 investment has therefore been increased for epidemiological assessments of health challenges in tilapia aquaculture in focal countries and tilapia breeding programs.
Other		
TOTAL FUNDING (AMOUNT)	5,688,616	

- * use these categories wherever possible, delete unneeded rows and add rows if none of these are suitable.
- ** we recognize that some funding may fit more than one category, but the table has been constructed by apportioning funding to its principal use and/or dividing it between the main categories.

Table G: New Internal (CGIAR) Collaborations among Programs and between the Program and Platforms

The table lists the most relevant new internal collaborations for 2018 among programs and platforms.

Name of CRP or Platform	Brief description of collaboration (give and take among CRPs) and value added*	Relevant FISH FP
Agriculture for Nutrition and Health (A4NH)	<p>With A4NH Flagship 1 on Food Systems for joint research on fish in Bangladesh and Nigerian food systems (including joint proposal on small fish; Masters students in Bangladesh and Nigeria; national food systems reviews; and a potential co-funded PhD on modelling of fish in food systems).</p> <p>With A4NH Flagship 5 on antimicrobial resistance, so that fish are included in animal uses of antibiotics and their potential influence on human antimicrobial resistance (along with WorldFish & Livestock CRP).</p>	FP1 & FP2
Policies, Institutions and Markets (PIM)	<p>With PIM Flagship 1 for integration of fish into foresight studies and animal source food supply-demand modeling in Africa (Egypt, Tanzania and SADC)</p> <p>With PIM Flagship 5 on processes for small-scale fisheries governance reform, with a focus on application in Myanmar.</p>	FP1 & FP2
Climate Change, Agriculture and Food Security (CCAFS)	<p>With CCAFS Flagship 2, for integration of fish into Climate Smart Agriculture (CSA) projects and scaling in the Mekong region and Bangladesh, and an assessment of gender and CSA in Bangladesh.</p> <p>With CCAFS Flagship 3, on modelling of low emissions development pathways for aquaculture.</p> <p>With CCAFS on raising the profile of fish within climate change agendas, including the 24th session of the Conference of the Parties (COP 24) to the UNFCCC and hosting of an MSc student from the CCAFS MSc at National university of Ireland Galway.</p>	FP1 & FP2
Water, Land and Ecosystems (WLE)	<p>With WLE/Rural Urban Landscapes/FP3 and FISH FP1 in preparation of business models and co-production of reports/advice on aquaculture within wastewater systems.</p> <p>With WLE/VCR/FP4 and FISH FP1 around water efficiencies and integration of fish into water management and wastewater schemes and multifunctional landscapes with FISH FP2, overall seeking to better identify, understand and exploit significant global opportunities for integrated approaches involving fish and water management.</p>	FP1 & FP2
RICE	<p>With RICE Flagship 3 in Bangladesh, Cambodia & Myanmar on fish within sustainable rice systems (with ACIAR co-funding) and co-organization of a regional symposium on rice-fish systems research in Myanmar to identify research priorities and policy shifts for sustainable rice-fish systems.</p>	FP1 & FP2
Livestock	<p>With Livestock Flagship 3 on Livestock Feeds and Forages for co-development of an animal feeds research agenda that supports productivity improvements in fish as well as livestock, building on earlier cooperation in the Livestock and Fish CRP.</p>	FP1
Excellence in Breeding	<p>With the Excellence in Breeding Platform for FISH to access advice, tools and methodologies for the development of tilapia and carp breeding and genetic improvement platforms in Bangladesh, Malaysia and Egypt.</p>	FP1

Big Data Platform	With the Big Data Platform in the upgrading of research data management systems within the FISH CRP and submission of a proposal for an Inspire grant in the application of big data in epidemiological analyses of fish disease monitoring and control systems for smallholders.	FP1 & FP2
-------------------	---	-----------

*e.g. scientific or efficiency benefits

Table H: Planned Monitoring, Evaluation, and Learning Exercises

The table complements Table B in showing further evaluations, impact assessments and other learning exercises for FISH in 2018.

Planned studies/learning exercises in 2018	Comments
Reflection and learning events with FISH researchers	One workshop per flagship, and one program level workshop of key research leaders to review progress, learning and plan for 2019
Develop, consolidate and systematize the MEL framework for FISH	With the recruitment of the full-time M&E senior scientist in February 2018 and the recruitment of the Research Data Manager in April 2018, the main activities for 2018 will be to develop, consolidate and systematize the MEL framework for FISH, which includes an efficient system for research data management.
online platform	In this framework, a decision will be made for the adoption of an online platform regarding FISH CRP strategic results-based program planning and reporting (MEL vs. MARLO).
Consolidation of Countries' Theory of Change (ToC)	Specific learning exercises will be conducted in each FISH focal country in order to consolidate the countries' ToC and thus aligning current programs in each country to SLOs and IDOs as defined in the FISH CRP proposal.
M&E focal points network	A structured network of M&E focal points, one per country, guided by the M&E leader, will be established in order to re-activate the M&E community of practice already existent in WorldFish. Thanks to the use of a specific chat-based workspace in Office 365 (TEAM) the M&E community of practice will share documents, data, ideas and learning experiences.
Impact studies	Specific impact studies will be performed as reported in Table B.
Workshops	A series of country level workshops will be organised in order to facilitate learning and knowledge sharing. The focus of these workshops will be given to defining the ToC at country level and identifying M&E best-practices.

LIST OF ACRONYMS

A4NH	Agriculture for Nutrition and Health CRP
AAS	Aquatic Agricultural Systems CRP
AMR	Antimicrobial resistance
ANU	Australian National University
ARC	Agricultural Research Center
ARIs	Advanced Research Institutes
AU/IBAR	African Union – Interafrican Bureau for Animal Resources
BoT	WorldFish' Board of Trustees
BFRI	Bangladesh Fisheries Research Institute
BMP	Better or best management practices
CCAFS	Climate Change, Agriculture and Food Security CRP
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CGIAR	Consultative Group for International Agricultural Research
CIM	Centre for International Migration and Development
CIRAD	French Agricultural Research Centre for International Development
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CLAR	Central Laboratory for Aquaculture Research
CoA	cluster of activities
CRP	CGIAR research program
DOF	Department of Fisheries
EAC	East African Community (Burundi, Kenya, Rwanda, South Sudan, Tanzania, Uganda)
FAO	Food and Agriculture Organization of the United Nations
FISH	CGIAR research program on fish agri-food systems
FP	flagship project
GHG	greenhouse gas
GIFT	Genetically Improved Farmed Tilapia
ha	hectare
IDO	intermediate development outcome
IDS	Institute of Development Studies
IFAD	International Fund for Agriculture Development
IFPRI	International Food Policy Research Institute
ILRI	International Livestock Research Institute
IPG	international public good
ISC	Independent Steering Committee
IWMI	International Water Management Institute
JCU	James Cook University
Kg	kilogram
KIT	Royal Tropical Institute (Netherlands)
L&F	Livestock and Fish CRP
LCA	lifecycle assessment
LVFO	Lake Victoria Fisheries Organization
MARLO	Managing Agricultural Research for Learning & Outcomes
MC	management committee (FISH CRP)

MEL	monitoring, evaluation and learning
MFF	Myanmar Fisheries Federation
MSD	Merck Sharp & Dohme (pharmaceutical company)
N	nitrogen
NARS	National Agricultural Research Systems
NARES	National Agricultural Research and Extension Systems
NDC	nationally determined contributions
NEPAD	New Partnership for Africa's Development
NGOs	non-governmental organizations
NRI	Natural Resources Institute
P	phosphorus
PDF	post-doc fellow
PIM	Policies, Institutions and Markets CRP
R&D	Research and development
RICE	Rice agri-food systems CRP
RTB	Roots, Tubers and Bananas CRP
SADC	Southern African Development Community
SDG	Sustainable Development Goal
SLO	system-level outcome
SMB	System Management Board
SLU	Swedish Agricultural University
SMO	System Management Office
SNP	single nucleotide polymorphism
SPIA	Standing Panel on Impact Assessment (of the CGIAR)
SRC	Stockholm Resilience Center
SRF	Strategy and Results Framework (of the CGIAR)
SSF	small-scale fisheries
SRUC	Scotland's Rural College
TAAT	Technologies for African Agricultural Transformation, African Development Bank
TiLV	Tilapia Lake Virus
ToC	Theory of change
UCC	University College Cork
UNFCCC	United Nations Framework Convention on Climate Change
UoL	University of Lancaster
UoS	University of Stirling
USD	United States dollars
W1/W2	CGIAR funding windows 1 and 2
W3	CGIAR funding window 3
WLE	Water, Land and Ecosystems CRP
WRI	World Resources Institute
WUR	Wageningen University Research
Yr	year
ZAMCOM	Zambezi Watercourse Commission



WAGENINGEN UR
For quality of life



Lead Center:

