

**AMENDMENT AGREEMENT  
ADDENDUM NO.5 DATED 25<sup>th</sup> July 2016**

**To the  
PROGRAM PARTICIPANT AGREEMENT (PPA) DATED 12<sup>th</sup> JULY 2013  
FOR THE CRP "More meat, milk and fish by and for the poor - CRP 3.7".**

**Between** International Livestock Research Institute, an international research institute with headquarters in Nairobi, Kenya P.O Box 30709-00100 Uthiru, Old Naivasha Road and co-hosted by the Government of Ethiopia in Addis Ababa P.O Box 5689, Addis Ababa (LEAD CENTER)

**And** WorldFish Jalan Batu Maung, Batu Maung, 11960 Banyan Lepas, Penang, Malaysia (PROGRAM PARTICIPANT)

**Previous Amendments**

**Amendment 1:** Dated 11 November 2013 - Amended the PPA to make budgetary provisions for the 2013 Annual Work Plan and revised **Annex 4a (Annual Activity Plan)**

**Amendment 2:** Dated 9 June 2014 - Amended the PPA to make budgetary provisions for the 2014 Annual Work Plan and revised **Annex 4a (Annual Activity Plan)** and **Annex 4c (Theme Leader Indicative Budget 2012-2014 and Theme Leader Annual Budget [to be developed as needed])** and included an additional financial reporting requirement for the Program Participant to list details of its bilateral projects.

**Amendment 3:** Dated 22 June 2015 - Extended the PPA from 1 January 2015 to 31 December 2016 and amended the 2014 Annual Work Plan and revised **Annex 4a (Annual Work Plan 2014 for WorldFish - Additional Activities)** and included an additional **Annex 4d (Annual Work Plan 2014 for Multi -Year for WorldFish 2014-2016)**. In addition, the amendment included revision to the Management of Intellectual Assets and Donor Acknowledgment.

**Amendment 4:** Dated 5 August 2015- The Lead Centre disbursed USD 265, 493 to the Program Participant to undertake work detailed in the revised **Annex 4a (Annual Work Plan 2016 for WorldFish)** and included a budget for the services of a WorldFish Flagship Leader for Flagship 2- Animal Genetics and Breeding as detailed in the revised **Annex 4C: Flagship Leader Annual Budget 2015-WorldFish**.

**5<sup>TH</sup> AMENDMENT**

**Amendment 5:** **Purpose of the amendment:** Following Amendment No. 2 dated 9th 14<sup>th</sup> April 2015 of the PIA (Program Implementation Agreement) between the International Plant Genetic Resources Institute (IPGRI) and ILRI, ILRI shall receive funding allocation for 2016 to be disbursed to the Program Participant; therefore, the Parties have agreed to **FURTHER AMEND** the PPA as follows:

A. **Clause 2.3 (Grant) NOW includes the following additional clause**

**2.3 (g)** Subject to receipt of funds from the Consortium, The Lead Center obligates USD 977,500 (US Dollars Nine hundred and seventy-seven thousand five hundred) as detailed below:

<b>CRP Budget</b>	<i>(Figures in USD)</i>
Window 1 /Window 2 funds for base 2016 allocation	977,500
Total Budget	977,500

The budget will be used to undertake the work detailed in the revised **Annex 4a: Annual Work Plan 2016 - WorldFish** showing additional outputs for WorldFish based on **Revised Annex 4b: Program Participant Indicative Budget 2015 and 2016 for WorldFish**. The Grant may be modified upon a written notification from the Lead Centre to the Program Participant, after discussion with the Program Participant.

B. **Clause 2.4 (Disbursements) NOW includes the following additional clause)**

**2.4 (f)** Upon signature of this Amendment No. 5, funds to execute the Annual Work Plan 2016 shall be disbursed to the Program Participant on a pro-rata basis as funds are received from the Fund Office/System Management Office


**List of Annexes:**

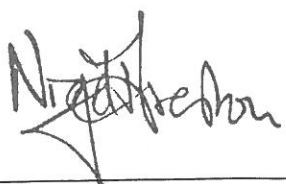
- o **Revised Annex 4a: Annual Work Plan 2016 - WorldFish and attached hereto.**
- o **Revised Annex 4b: Program Participant Indicative Budget 2015 and 2016 - WorldFish attached hereto**

2. All other terms of the PPA and subsequent amendments to the PPA shall remain unchanged.

3. This Amendment No.5 to the PPA is retrospective from 1<sup>st</sup> January 2016 and shall become effective on the last date of signature.

SIGNED by the Parties authorized Representatives:

  
\_\_\_\_\_  
Jimmy Smith  
Director General,  
International Livestock Research Institute

  
\_\_\_\_\_  
Nigel Preston  
Director General  
WorldFish

Date: 4 August 2016

Date: 16 August 2016



**Revised Annex 4a – Annual Work Plan 2016 – WORLD FISH**

Description	Deliverables
<p><b>Flagship 1: Animal Health</b></p>	<p>Budget (\$000's) CG Fund: \$99,209 W3/Bilateral: \$914,221 Others: N/A Total: \$1,013,430</p>
<p><b>Objective: Generate data and materials to improve the pro-poor management of animal health and food safety in targeted value chains</b></p>	
<p><b>Cluster of Activities 1.1:</b> Animal population health and food safety</p>	<p>Budget (\$000's) CG Fund: \$0 W3/Bilateral: \$361,644 Others: N/A Total: \$361,644</p>
<p><b>WF Act.1:</b> Improve fish health and food safety</p>	<p>1.2.h: One peer reviewed paper on fish safety issues 1.2.i: Report/Journal Paper on access and delivery issues of PCR-tested seed 1.2.j: Draft Policy paper on fish health for Bangladesh</p>
<p><b>Cluster of Activities 1.2:</b> Generate, through laboratory work and field trials, evidence and materials for use by vaccine and diagnostic assay researchers and manufacturers to design, make or ascertain the prospects for, new or improved vaccines and diagnostics of benefit to the target value chains.</p>	<p>Budget (\$000's) CG Fund: \$0 W3/Bilateral: \$361,644 Others: N/A Total: \$361,644</p>



Description	Deliverables
WF. Act.2: Develop fish vaccines	<p>1.3.1.w: Report on field evaluation of fish vaccines, Bangladesh</p> <p>1.3.1x: One research proposal for work on rapid diagnostics and vaccine development (Egypt; Bangladesh)</p> <p>1.3.1y: Technical report on use of eDNA tools for characterizing microbiomes in culture environment and host</p> <p><i>Budget (\$000's)</i>  CG Fund: \$99,209  W3/Bilateral: \$190,933  Others: N/A  Total: \$290,142</p>
<p><b>Cluster of Activities:</b> Ensure equitable and adequate access for farmers in target value chains to animal health products and services through product development, socio-economic modeling, evidence-based assessments of institutional arrangements and partner landscaping.</p> <p>WF. Act.3: Support equitable animal health service delivery</p>	<p>1.4.g: Lessons learned paper for wider dissemination within Bangladesh and in the South Asia region.</p> <p>1.4.h: Communication products to enhance the updates of PCR and SPF seed</p> <p>1.4.i: Progress report on capacity building and diagnostic activity for Bangladesh</p> <p>1.4.j: Technical report on evaluation of health products used in small-scale aquaculture</p> <p>1.4.k: Technical report/publication on emerging disease of importance including economic impact, and suggested management interventions for Bangladesh</p>
WF 1.4.1 Equitable animal health services delivery	<p>Technical report/publication on emerging disease of importance including economic impact, and suggested management interventions</p> <p><i>Budget (\$000's)</i>  CG Fund: \$351,975  W3/Bilateral: \$1,480,205  Others: N/A  Total: \$1,832,180</p>
<p><b>Flagship 2: Genetics and Breeding</b></p>	
<p><b>Objective:</b> Choices of improved and appropriate livestock and fish breeds and strains are widely available, used sustainably and are equitably providing nutritious, affordable food and income for the poor.</p>	



Description	Deliverables
<p><b>Cluster of Activities 2.1: System, Strategy and Genome Assessment</b></p>	<p>CG Fund: \$20,207 W3/Bilateral: \$0 Others: N/A Total: \$20,207k</p>
<p>WF Act.1: Assess potential target fish species and traits for genetic improvement</p>	<p>2.1.a: Report on the strategy for the introduction of genetic improvement programs for targeted fish species in Egypt, Bangladesh and Ghana 2.1.e: Publication on genes controlling sex determination in tilapia</p>
<p><b>Cluster of Activities 2.2: Improved Breeds, strains and Breed-Types</b></p>	<p>CG Fund: \$240,327 W3/Bilateral: \$1,389,326 Others: N/A Total: \$1,629,653</p>
<p>WF Act.2: Develop genetically improved tilapia, carp and target aquaculture species in Africa and Asia</p>	<p>2.2.a: Report and publication on the genetics improvement program for major Indian carp species (Rohu, Labeo rohita), Bangladesh 2.2.b: Report and publication on the establishment of a base population of catla genetic improvement program in Bangladesh 2.2.c: Report and publication on the consolidation of founder populations for the creation of base populations of silver carp in Bangladesh 2.2.d: Report on the production of generation 14 of Abbassa line in Egypt 2.2.e: Report on production efficiency and yield gap in improved tilapia in Egypt.</p>
<p><b>Cluster of Activities 2.3: Delivery and use systems</b></p>	<p>CG Fund: \$0 W3/Bilateral: \$90,879 Others: N/A Total: \$90,879</p>
<p>WF Act.3: Assess dissemination systems prior to release of new strains, and the amount and extent of dissemination</p>	<p>2.3.a: Report on adoption of GIFT and GIFT-derived tilapia in the Philippines and Bangladesh 2.3.b: One or two reports on dissemination systems for tilapia, small fish and carp in Bangladesh 2.3.c: Report on breeding and dissemination activities related to two nucleus hatcheries with</p>



Description	Deliverables
<p><b>Cluster of Activities 2.4:</b> Breakthrough technologies and information systems</p>	<p>8 operational cohorts and 10 satellite hatcheries producing quality seed for tilapia, Egypt</p> <p><i>CG Fund: \$91,441</i>  <i>W3/Bilateral: \$0</i>  <i>Others: N/A</i>  <i>Total: \$91,441</i></p>
<p>WF Act.4: Develop genomic tools to assist genetics improvement in aquaculture species</p>	<p>2.4.b: Publication on molecular tools for Mola.  2.4.c: Publication on molecular tools for carp (Rohu, Catla and Silver Carp).</p>
<p><b>Flagship 3: Feeds and Forages</b></p>	<p><i>Budget (\$000's)</i>  <i>CG Fund: \$88,175k</i>  <i>W3/Bilateral: \$113,083k</i>  <i>Others: N/A</i>  <i>Total: \$201,258k</i></p>
<p><b>Objective: Superior feed and forage strategies responding to actual and evolving demands for meat, milk and fish production and design and implementation of equitable feed value chains with reduced ecological footprints</b></p>	
<p><b>Cluster of Activities 3.1:</b> Create and maintain a feed technology platform and a network that develops and provides a set of tools for ruminant, monogastric and fish feed quality analysis, estimates of feed demand-supply scenarios, prioritization of feed interventions and ration balancing and socio-economic analysis of feed constraints to researchers, development practitioners, producers and private sector processors within, and beyond, Livestock and Fish and provide comprehensive information about ruminant, monogastric and fish feeding in form of repositories.</p>	<p><i>CG Fund: \$4,899</i>  <i>W3/Bilateral: \$30,050</i>  <i>Others: N/A</i>  <i>Total: \$34,949</i></p>



Description	Deliverables
<p>WF Act.1: Feed technology modeling and tools</p>	<p>3.1.d: Study report on future fish-supply demand scenarios in Bangladesh and implications for future fish feed supplies and ingredients            3.1.e: Draft publication on NIRS equations for fish feed ingredients and their use for screening of ingredients using hand-held devices, Bangladesh</p>
<p><b>Cluster of Activities 3.2:</b> Research on, and implementation of, options making better use of available feed resources through feed supply-demand scenarios, smart supplementation and ration balancing, targeted allocation of costly and most limiting nutrients, feed and fodder preservation, feed processing and improvement and encouragement of fodder markets to support feed surplus to deficit transactions.</p>	<p><i>CG Fund: \$13,980</i>  <i>W3/Bilateral: \$83,033</i>  <i>Others: N/A</i>  <i>Total: \$97,013</i></p>
<p>WF Act.2: Improve the processing and formulation of aquaculture diets</p>	<p>3.2.e: A popular article on types of low cost and higher quality fish feed that contribute to increased fish production in Bangladesh</p>
<p>WF Act.3: Improve efficiency of on-farm use of feeds and fertilizers</p>	<p>3.2.h: Farmer guidelines on feeds and fertilizer use in aquaculture, Egypt            3.2.i: WorldFish technical report on feeds and fertilizers in aquaculture, Egypt            3.2.j: Evaluation report analyzing the impact of implementation of the Bangladesh Feed Act            3.2.k: One research paper and one blog story on the on-farm use of fish feeds and fertilizers in Bangladesh (PhD student)</p>
<p>WF Act.4: Improve quality of commercial fish feed through building technical capacity of feed mill personnel</p>	<p>3.2.n: Manual on fish feed quality, Bangladesh            3.2.o: WorldFish article on fish feed quality in Bangladesh</p>
<p><b>Cluster of Activities 3.3:</b> Develop and provide more feed and fodder biomass through selection, breeding and dissemination of multipurpose and resource use efficient forages, food-feed-fodder crops with superior grain and</p>	<p><i>CG Fund: \$69,296</i>  <i>W3/Bilateral: \$0</i>  <i>Others: N/A</i>  <i>Total: \$69,296</i></p>



Description	Deliverables
<p>fodder traits, novel feed resources from agro business and biofuels and from unconventional feed resources such as algae, insects and de novo synthesized cells and microorganism</p>	
<p>WF Act.5: Improve fish feed ingredient traits</p>	<p>3.3.1.a: Funding proposal for fish feeds research in Egypt            3.3.1.b: Popular article report on rice husks and bran processing technology for fish feed, Bangladesh            3.3.1.c: Technical report on fish feed ingredients for Bangladesh</p>
<p><b>Flagship 4: Systems Analysis for Sustainability</b></p>	<p><i>Budget (\$000's)</i>  <i>CG Fund: \$294,520</i>  <i>W3/Bilateral: \$666,460</i>  <i>Others: N/A</i>  <i>Total: \$960,980</i></p>
<p><b>Objective 4: To design and guide pro-poor value chain transformation and learn from the process in an iterative way</b></p>	
<p>Cluster of Activities 4.1: Conduct system component research and identify promising innovations</p>	<p><i>CG Fund: \$234,652</i>  <i>W3/Bilateral: \$596,002</i>  <i>Others: N/A</i>  <i>Total: \$830,654</i></p>
<p>WF. Act.1: Conduct gender and value chain research in fish value chain</p>	<p>4.1.e: Adapted toolkit for targeted downstream fish value chain assessment, Bangladesh            4.1.f: Report on downstream fish value chain assessment, Bangladesh            4.1.g: Journal article on gender integrated fish Value Chain Analysis            4.1.h: Brief on emerging gender issues in the fish value chains in Bangladesh            4.1.i: Brief on emerging gender issues in the fish value chain in Egypt            4.1.a.g: Brief on synthesis of gender issues in livestock and fish value chains (contribution to global output)            4.1.a.h: Brief on definition of gendered ownership of fish ponds</p>



Description	Deliverables
WF Act.2: Assess pro-poor consumer fish consumption in Bangladesh	<p>4.1.g: Journal paper on urban fish consumption in Dhaka, Bangladesh</p> <p>4.1.g.i: Pro-poor consumers' aquaculture investment plan for Bangladesh</p> <p>4.1.h: Paper on aquaculture production systems and value chains that respond to poor consumers requirements</p> <p>4.1.a.m: Journal article on synthesis of lessons learned on fish value chain gender-integrated interventions (with CRP AAS)</p>
WF Act.3: Develop methodology and indicators for fish consumption by individuals.	<p>4.1.a.n Working paper on methodology with set of indicators for fish consumption by individuals in the household (with validation in Bangladesh)</p>
WF Act 4: Conduct life cycle assessment (LCA) and life cycle sustainability assessment in fish value chains	<p>4.1.i: Working paper on LCA framework for aquaculture globally</p> <p>4.1.j: Paper on LCA framework application in Bangladesh</p> <p>4.1.k: Journal article on life cycle assessment of Indonesian aquaculture systems</p>
WF. Act. 5: Conduct comparative case studies on women's economic empowerment in aquaculture production systems in Asia	<p>4.1.a.m: Synthesis report on women's economic empowerment in the aquaculture sector in Indonesia and Bangladesh</p>
<b>Cluster of Activities 4.2:</b> Conduct systems analysis guiding the design and development of integrated intervention packages for the Value Chains	<p>CG Fund: \$59,867</p> <p>W3/Bilateral: \$70,458</p> <p>Others: N/A</p> <p>Total: \$130,325</p>
WF Act 6: Value chain analyses of several strands and segments of aquaculture and capture fisheries value chains in Egypt and identifying and testing opportunities for value chain development	<p>4.2.h: Technical report on results of male fish retailer value chain analysis</p> <p>4.2.i: Technical report on live fish value chain in Egypt</p> <p>4.2.j: Paper on the live fish value chain in Egypt</p> <p>4.2.k: Technical report on the role of wholesalers in the fish trade in Egypt</p> <p>4.2.l: Technical report on the Value Chain Assessment of the upper Nile fisheries, Egypt</p> <p>4.2.m: Publication on the Value Chain assessment of upper Nile fisheries</p> <p>4.2.n: Assessment report on aquaculture potential in Aswan</p> <p>4.2.o: Technical report on pro-poor producers' aquaculture (test and comparative study)</p> <p>4.2.p: Toolkit for pro-poor producers' aquaculture systems</p> <p>4.2.q: Pro-poor aquaculture investment plan</p> <p>4.2.r: Working paper on the results of the testing of integrated aquaculture systems</p>



Description	Deliverables
<p>WF Act.7: Fish supply-demand scenario modeling</p>	<p>4.2.s: A joint working paper: Fish to 2050 report (supporting CRP PIM work)            4.2.t: Working paper on future fish supply-demand scenarios and technology investment options and strategies in Bangladesh (with CRP PIM)            4.2.u: Combined policy brief for Bangladesh and Zambia on fish supply-demand scenarios (with CRP PIM)</p>
<p><b>Flagship 5: Enabling Innovations for Value Chain Transformation and Scaling</b></p>	<p>CG Fund: \$143,621k            W3/Bilateral: \$933,422k            Others: N/A            Total: \$1,077,043k</p>
<p><b>Objective: To ensure that research outputs and results of the CRP Livestock &amp; Fish respond to the demands of country value chains and are being integrated, tested, adapted and refined to facilitate value chain transformation; to ensure scaling up through partnerships, capacities are developed, and learning from processes.</b></p>	
<p>Cluster of Activities 5.1 Piloting and validating best-bet interventions</p>	<p>CG Fund: \$85,921            W3/Bilateral: \$542,063.41            Others: N/A            Total: \$627,984</p>
<p>WF Act.1: Piloting of best bet interventions in the Bangladesh fish value chain</p>	<p>1. Report documenting implementation and initial outcomes of pilots of at least 1 gender-integrated and 1 gender-transformative best bet identified from the fish value chain assessment in Bangladesh (including pilot and validation of Local Service Provider model and other extension models for improved access to inputs and services)</p>
<p>WF Act.2: Best-bet piloting and validation</p>	<p>1. Best Management Practices manuals &amp; training modules for fish retailers in Egypt            2. Donor report containing description of implementation and initial outcomes of best-bet pilots with informal fish retail groups in Egypt            3. Funding proposal for scaling up fish retailer interventions in Egypt</p>



Description	Deliverables
<p>WF Act.3: Best-bet piloting: pro-poor producers aquaculture and fish processing in Aswan</p>	<p>1. Donor report with documentation on piloting of pro-poor producers' aquaculture and piloting of fish processing in Aswan, Egypt</p>
<p><b>Cluster of Activities 5.2:</b> Implementation of innovations at scale</p>	<p>CG Fund: \$40,991 W3/Bilateral: \$277,621 Others: N/A Total: \$318,612</p>
<p>WF Act.3.b: Piloting of best bet interventions for aquaculture models for poor consumers in Egypt and Bangladesh</p>	<p>1. Report on purchasing and preparation and consumption behavior of fish consumers, Egypt and Bangladesh 2. Literature review on potential retailer models to better reach the poor fish consumer in Egypt and Bangladesh</p>
<p>WF Act.5: Implementation of value chain innovations at scale in Egypt</p>	<p>1. Certification standards for tilapia aquaculture in Egypt 2. Donor report on uptake by private sector of tilapia aquaculture certification standards in Egypt 3. Donor report on implementation of continued Best Management Practice training of fish farmers in Egypt and continued dissemination of Abbassa Strain (G9) in Egypt 4. Journal article on aquaculture innovation platforms in Egypt 5. Working paper on capacity building strategies for Fish Producer Organizations in Egypt</p>
<p><b>Cluster of Activities 5.3:</b> Value chain transformation learning</p>	<p>CG Fund: \$16,709 W3/Bilateral: \$113,737 Others: N/A Total: \$130,446</p>
<p>WF Act.6: Continue impact assessment of IEIDEAS/STREAMS activities (updated impacts) for aquaculture VC improvement in Egypt.</p>	<p>1. Dataset pertaining to the Impact Assessment of the IEIDEAS/STREAMS activities 2. Report on the scaling capacity assessment and partner landscaping for Bangladesh fish value chain</p>



Revised Annex 4B: Program Participant Indicative Budget 2015 and 2016 – World Fish

Year	ILRI	CIAT	WorldFish	ICARDA	Mgmt. and Strategic Investment Fund	TOTAL
2015	7,031,449	1,253,000	1,205,000	478,000	2,932,551	12,900,000
2016	5,727,106	1,016,300	977,500	387,600	2,211,494	10,320,000
<b>TOTAL</b>	12,758,555	2,269,300	2,182,500	865,600	5,144,045	23,220,000