RESEARCH PROGRAM ON Livestock

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More meat, milk and eggs by and for the poor

Progress Narrative: African Chicken Genetic Gains Program

Tadelle Dessie, International Livestock Research Institute (ILRI)

Note: This research report is an extract from the ACGG BMGF report covering the period February 2017 – December 2017

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Use this form to provide updates to your foundation program officer regarding progress made toward achieving your project's stated outputs and outcomes.
The Progress Narrative must be submitted in Word, as PDFs will not be accepted.

General Information

Investment Title	African Chicken Genetic Gains Program: A program for accessing, testing, adapting, and catalyzing public-private partnerships for multiplying and making available well-adapted low-input chickens for productivity growth in sub-Saharan Africa		
Grantee/Vendor	The International Livestock Research Institute (ILRI)		
Primary Contact	Tadelle Dessie	Investment Start Date	November 5, 2014
Feedback Contact[1]	Tadelle Dessie	Investment End Date	October 31, 2019
Feedback Email[1]	t.dessie@cgiar.org	Reporting Period Start Date	February, 2017
Program Officer	Donald Nkrumah	Reporting Period End Date	December, 2017
Program Coordinator	Elizabeth Weaver	Reporting Due Date	March 31, 2018
Investment Total	$10,999,996.00	Opportunity/Contract ID	OPP1112198
Scheduled Payment Amount (If applicable)	$2,106,469		

[1] Feedback Contact/Email: The full name and email of the contact whom foundation staff queries for various surveys.

Submission Information

By submitting this report, I declare that I am authorized to certify, on behalf of the grantee or vendor identified on page 1, that I have examined the following statements and related attachments, and that to the best of my knowledge, they are true, correct and complete. I hereby also confirm that the grantee or vendor identified on page 1 has complied with all of the terms and conditions of the Grant Agreement or Contract for Services, as applicable, including but not limited to the clauses contained therein regarding Use of Funds, Anti-Terrorism, Subgrants and Subcontracts, and Regulated Activities.

Date Submitted	May 20, 2018	Submitted by Contact Name	Lucy Gacheru
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Progress and Results

1. Progress Details

Provide information regarding the current period's progress toward achieving the investment outputs and outcomes as well as the work planned or anticipated for the next period. In addition, submit the Results Tracker with actual results as requested.

1.1. Executive Summary

The African Chicken Genetic Gains (ACGG) project began in November 2014 and reflects a 14,385,902 USD investment (10,999,996 USD from BMGF and 3,385,906 USD of co-funding from partner institutions) over 5 years to be implemented in Ethiopia, Tanzania, and Nigeria. The ACGG program's vision is to increase smallholder chicken production and productivity growth as a pathway out of poverty in sub-Saharan Africa in general and Ethiopia, Tanzania and Nigeria in particular. The program lead institution is the International Livestock Research Institute (ILRI) with the program being implemented in collaboration with project partners in each geography: the Ethiopian Institute of Agricultural Research (EIAR); the Tanzanian Livestock Research Institute (TALIRI) and Sokoine University of Agriculture (SUA); the Federal University of Agriculture Abeokuta and the Obafemi Awolowo University (OAU) – both in Nigeria; Institutions for People, Innovation and Change in Organizations –Eastern Africa (PICO-EA); and Wageningen University and Research (WUR).

The project's theory of change elaborates that production and productivity gains can be realized through access of poor smallholder farmers to high-producing but agro-ecologically appropriate and farmer-preferred chicken strains. The project aspiration is to engage 7,500 farmers directly into on-farm research to test the productivity and performance of select chicken strains in each geography. To date, the program has a total of 3,665 baselined farmers, 6, 017 households engaged in the testing of approximately 154, 899 birds on-farm (80% of the initial target of 7500 household), 5, 714 birds tested on-station, and functioning Innovation Platforms (IPs) were developed and nurtured at national and community levels in three of the project countries.

In the current reporting period, significant progresses towards achieving impacts have been made: (i) Comprehensive baseline survey, on-farm and on-station testing data have been analysed (Nigeria, Ethiopia, and Tanzania) and a data management and visualization tool has been deployed in the project countries; (ii) six IP meetings have been held in the program countries; (iii) ACGG is developing and nurturing approximately 112 partnerships across the private and public sectors in the project countries and beyond. These undertakings have enabled ACGG to achieve an early identification of appropriate, high-potential chicken strains in specific geographies based on their productivity, survavibility levels and farmer preference. Data collection on the on-farm testing (on few breeds and geographies) and farmers preference through Community Innovation Platforms (CIP) and Farmer Group Discussions (FGD) convenings will be on-going in period four and this is expected to help ACGG finalizing the identification of appropriate, high-potential and farmer preferred chicken strains in Ethiopia, Nigeria, Tanzania and within countries in different agro-ecologies. In period four and five ACGG will partner with SAPPSA project in the areas of field testing, sampling and genotyping (in collaboration with CTLGH) and in setting up and running of the Long Term Genetic gains program in partnership with Hendrix Genetics.

ACGG technical reports based on ACGG baseline, on-station and on-farm data analysis are now available (individual country reports) (first quarter of 2018). To insure consistency across countries and to help in-depth analysis of data, in each country a consultant was recruited, while the global ACGG data analysis and technical report was led by Professor Sammy Aggrey University of Georgia.

Some highlights of the technical reports:

(i) **The baseline survey** was conducted to define and characterize current smallholder chicken production systems, chicken ecotypes, current realized productivity, husbandry practices, and the socio-economic status of poor smallholder farmers in Nigeria, Tanzania, and Ethiopia (Objective 1). It involved a total of 3,714 rural households across the three countries. Poultry keeping was, on average, the third main source of income for Ethiopia and Tanzania but did not appear in the top three sources in Nigeria. In terms of food security more than 70% of households had adequate food in the last 12 months (MAHFP). The primary reasons for keeping chicken were for live bird sales and meat and egg consumption although household consumption of these was quite low (1.8 - 4 birds and 14 - 22 eggs per 3 months, respectively). These reasons align to farmer preference for cocks that grow bigger and faster, hens that lay more eggs and chickens that have higher survival rates.

(ii) **On-farm testing data analysis report** is based on the external and country consultants analyses that were synthesized to extract key performance comparisons for the on-farm testing strains in each country. In Ethiopia, the Kuroiler is generally the most suitable strain across AEZ and production traits; although given the high variability observed, improvement in household management and husbandry practices could substantially increase productivity. In Nigeria, the Noiler is the most suitable strain for most AEZ although the humid forest is hard for all strains. If the main interest is in egg production then FUNAAB Alpha, in humid forest or Shika Brown would be the best strains to use.
In Ethiopia, Under on-farm conditions Kuroiler (1204 g) and Sasso-R (1108 g) showed an increase of 195 and 171%, respectively, in live body weight from indigenous chicken (408.5g). Similarly in Nigeria, Noiler (1461 g), Sasso (1398 g) and Kuroiler (1391 g) outweighed indigenous chicken by 144, 133 and 132%, respectively, at week 18. While in Tanzania Sasso and Kuroiler were heavier than ingineous chicken by 93 and 73% at week 17. Also regarding egg production, in Ethiopia, Sasso (160), Kuroiler (154) produced more egg than indigenous chicken by 255 and 242% per year when egg production in 23 weeks after the start of egg laying was extrapolated to 52 weeks of laying. In Nigeria, under on-farm conditions, Noiler (166.2) and Funnab alpha (117.6) were best performers with 269.3 and 161.3% productions above the indigenous chicken in similar conditions. In Tanzania, however, Sasso (178) and Kuroiler (122) performed higher than indigenous chicken when the 12 weeks of eggs production was extrapolated to 52 weeks.

(iii) **On-station testing data analysis report:** The external and country consultant analyses were synthesized to extract key performance comparisons for the on-station testing strains in each country. In Ethiopia under on-station condition, like that of the on-farm result, Kuoiler (1915.46 g) and Sasso-R (1691.56 g) were best performers in their average live body weight than the indigenous chicken by 205 and 170%, respectively, at week 17. Egg production under on-station conditions in Ethiopia; Sasso-R (208 eggs) and Kuroiler (170 eggs/year) performed 160 and 113% higher in egg production, respectively, compaired to indigenous chicken.In Ethiopia, the Kuroiler are the fastest

growing while the Sasso_RIR and Kuroiler followed by Koekoek are the best egg producers. Koekoek also had good survival while Horro was generally the lowest performing strain across traits. For Nigeria, under on-station conditions, Sass0 (2377 g), Kuroiler (2355) and Noiler performed better than reported indigenous chicken at week 16 by 200, 197 and 196%, respectively. However, In Nigeria in egg production Shika brown (204 eggs/year) and Funnab Alpha (196 eggs/year) produced higher than indigenous chicken by 155 and 146 %. For Nigeria, the best growers (Noiler, Kuroiler and Sasso) were about 200% heavier at specific ages than reported local chicken but were also the worst egg producers while the only trait that Fulani showed good potential for was survival. In Tanzaina, too, Sasso (3340.8 g) and Kuroiler (3014.4 g) performed better than indigenous chicken by 169 and 143%, respectively when compared at week 17. In the mean time, in Tanzania, higher egg production than the indigenous chicken was observed from Sasso (89 eggs/year) and Kuroiler (102.5 eggs/year), which is 89 and 102.5 % increase in egg production compared to the indigenous chicken tested under similar condition. In Tanzania, the Kuroiler and Sasso strains performed similarly with Sasso birds generally heavier but with lower survival; both strains were identified as being faster growing than reported local chicken and producing more eggs.

The ACGG model has evolved slightly over the course of the program. The main manifestation forms of this include the following: 1) a greater focus on gender; 2) the shift in the focus of innovation platform model from the sub-national meetings to community meetings; 3) partnering with the Agriculture to Nutrition (ATONU) project, the program has developed a human nutrition component in Tanzania and Ethiopia; and 4) establishment of closer collaboration with the Center for Tropical Livestock Genetics and Health (CTLGH) via the poultry genomics program.

Innovation Platform (IP): In the reporting period, seven additional national innovation Platform convenings were held: three in Nigeria, two in Ethiopia, and two in Tanzania, bringing the overall total since the inception of the project to 17. Over 270 Community IP convenings (140 for Nigeria; 70 for Ethiopia and 60 for Tanzania) have been held during the reporting period. IP convenings have identified a range of challenge areas, which if addressed, have the potential to generate significant changes in the chicken value chains. Task Forces were formed to interrogate the challenges, identify possible solutions and take necessary actions to realize them. The Task Forces have evolved over time – as the analyses identified new challenges and opportunities and need for additional or different actions became apparent. Few highlights of Innovation Platform outputs and outcomes to date are listed below for each of the three project countries:

Nigeria

a) Establishment and registration of the Smallholder Poultry Forum in Nigeria. The Forum is considered as a self-sustaining decision making platform for on-going monitoring of the continuous demand and supply (required quantity and quality) of standardized and competitively priced input and output of the poultry VC in Nigeria.

b) Development and approval of the curriculum and training module for Community Animal Health Workers (CAHW). This greatly alleviates the huge gaps in access to qualified technicians, especially with regard to administration of poultry vaccines
c) Development of FeedMix app that provides the estimated nutritional content

Ethiopia

a) Small pack vaccine formats were developed - this increases access to health options for smallholder farmers (vis-à-vis the previous large packs)
b) Farmer training manuals for poultry management (including animal healthcare) have been published in Amharic and Oromo languages and made available to end users
c) Feed formulations for chicks, growers and layers were done using local ingredients targeting commercial, semi-intensive and scavenging systems

Tanzania

a) Local feed ingredients were identified in five ACGG zones
b) A poultry vaccination and management calendar was developed based on prevalence of diseases in Tanzania
c) Group monitoring and evaluation tool was developed and published in two languages - English and Swahili

New partnership with ATONU: With its principal objective of refocusing the agricultural business in the project countries from 'eating for hunger' to 'eating for health', ATONU strives to enable agriculture deliver positive nutrition outcomes for smallholder families through the implementation of robust, evidence based nutrition-sensitive interventions. ACGG, working closely with ATONU project and its implementing partners in Ethiopia and Tanzania, had the objective of improving the nutritional outcome of 1,600 women and young children in their first 1,000 days of life in 20 villages per country and 40 households per village. The main emphasis of this partnership is that the high nutritional demands of pregnancy, development and early childhood must largely be met through home grown food or/and income earned on family farms. To this end, Nutrition Sensitive Interventions (NSIs) have been implemented during the last 18 months to effectively address the following NSIs: Nutrition education and hygiene to increase consumption of eggs and chicken meat, Influencing expenditure of income from sale of chickens and eggs to purchase other nutrient dense foods, Women empowerment to influence changes in women's time use and status (decision-making), and Promotion of home gardens for improved dietary diversity.

Preliminary data analysis gathered by Field Assistants, who visit the homes of smallholder farmers on a regular basis, has indicated a range of positive changes in smallholder farmers' consumption pattern, hygiene and sanitation conditions and women empowerment through the increase consumption of chicken products and home grown vegetables. Most

important the result showed that stunting, wasting and underweight were relatively decreased. The report will be out by the end of June, 2018 by Harvard University.

ACGG-CTLGH collaboration: Linking cutting-edge genetics – genomics of poultry into the ongoing work of ACGG may provide new perspectives for ACGG (e.g. on-station and on-farm data analysis). During the reporting period, ACGG has strengthened its links with CTLGH within the scope of its poultry genomics program, contributing to the sampling of indigenous chicken and achieved significant results, including the establishment/availability of full genome resequencing data for 263 Ethiopian, 122 Nigerian, 63 Tanzanian indigenous chicken collected largely at ACGG sites. The CTLGH poultry genomics is currently analyzing these data for the presence of candidate signatures of selection for environmental challenges following a landscape genomics approach. Once available, these may inform survivability data of the ACGG strains. Also, CTLGH will be engaged shortly in the genome sequencing of the ACGG strains allowing a comparison of the genetic-make up of ACGG strains with local indigenous chicken. Once complete, the analysis from this work (indigenous and ACGG strains) will feedback into ACGG to inform conservation strategies which is directly linked to one of the program's objective of developing indigenous chicken genetic resources conservation strategies; choice of the best improved strains in relation to environmental challenges, and the development of an "AfriAsiaSNPs" chip for large scale breed improvement screening. The sequencing of the ACGG strain and caecum samples will take place during the forthcoming reporting period, the later being sponsored by ILRI – China joint laboratory. Last but not least, a new recently established ILRI poultry research facility, financed by BBSRC and the University of Edinburgh with the support of CTLGH, will allow ACGG strains comparison experiments at the interface of genetics - nutrition and/or health and feed to possible second phase of the program, the Long Term Genetic Gains program.

Capacity building: Given the design and nature of ACGG, capacity development is critical to achieving the project outcomes of a sustainable long-term genetic gains program in the three project countries. ACGG has a 3-pronged capacity development strategy: (i) training aimed at on-station and on-farm testing with the view to supporting implementation of ACGG (more than five tracings per country); (ii) a 5-year training series for core NARS staff for the development of capacities so as to run a long-term breeding program (three trainings were provided by WUR on data management, analysis and reporting); and (iii) longer term training of MSc and PhD student in each of the three project countries so as to enable project countries continue providing the needed scientific and programmatic leadership (a total of 20 MSc and 15 PhD students are fully or partially supported by the project countries).

ACGG Communications have been central to the program, and established to encourage learning, sharing, development, dissemination and harvesting of relevant information; and crucially seeing it used by key audiences (private sector, farming communities, research centers etc.). Since its inception, ACGG communications have been successful with some activities (final publications, pictures, website, event support) and less so with others (Yammer, media engagement, wiki). Project communications will keep playing a pivotal role in 2018 and 2019 as deeper research publications are released. Communications should thus be set up guarantee more visibility and success for the program in its final years – and to link up with actors and initiatives that can take its results, outputs and lessons forward.

Gender: With the support of the ILRI Livestock CRP, ACGG has commissioned the Royal Tropical Institute (KIT) to develop a gender strategy to provide strategic and practical direction to ACGG's gender integration which has been made publicly available during the reporting period. ACGG has worked with Transition International (TI) to assess the gender capacities of African Chicken Genetic Gains (ACGG) project partners and SNCs, in Ethiopia, Nigeria and Tanzania, and to use the assessment results to design tailor-made capacity development interventions for each country. During period four and early period five the programs' gender strategy will be implemented with support from ILRI's gender expert who, will lead and coordinate gender-related scientific research, backstop the country specific gender focal points and develop gender capacities of the SNCs and other partners.

During this phase, the gender team will focus on conducting research to generate an in-depth understanding of the local meaning of empowerment to aid development of gender indicators to monitor changes in women's economic empowerment. Additionally, the team will examine the gendered chicken breed and trait preferences. Effort will be made to establish effective feedback loops between the national innovation platforms and community innovation platforms to address emerging issues.

1.2. Success Highlights

1.2.1 ACGG Baseline and Monitoring

1.2.1.1 Baseline Results

The ACGG baseline data collection from 3,665 households across Nigeria, Ethiopia, and Tanzania was conducted in 2015/2016, and the bulk of the analysis, application, monitoring and assessment was performed in 2016/2017. The initial analysis of the baseline was used to confirm and adjust the implementation plans across the three countries. The more detailed analyses for Tanzania, Ethiopia, and Nigeria baseline surveys (higlights of the analysis results are presented in Table 1) were used as an information base with which to design and implement the project and the ACGG M&E indicators (Table 2). The baseline information provides a knowledge base that enables us to measure the degree and quality of change across the project activities.

Table 1. Sub-national zones/country, majour Agro-ecologies covered in the ACGG testing, number of households involved in the baseline survey per country, highlight of analysis results of producers level baseline survey in Ethiopia, Nigeria and Tanzania: 2015/2016

	Tanzania	Ethiopia	Nigeria
sub-national zones/country	Central, Eastern, Southern highlands, Lake Zone, and Southern zones	Oromia, Amhara, SNNPR, Tigray regions and Addis Ababa city administration	Imo, Kebi, Kwara, Nasarawa and River states
Majour Agro-ecologies represented in	Hot & Humid Cool & wet Semi arid	Cool sub humid Warm semi-arid cool and humid	Southern Guinea Savana Derived Savana Humid Forest

AGG project per coutry	Sub humid Sub humid & Dry		Sudan Savana
Number of HHs the baseline survey covers	1, 160	1,257	1, 168
% of female headed HHs involved in the survey	17.7	20.05	26.4
Mean chicken flock size/ household	26.93	9	27.91
% og HHs that provide supplementary feeding	94.05	94.06	87.93
Primary purpose of keeping chicken	Meat consumption at home and live adult chicken for sale	Egg consumption at home, egg sale, and live adult chicken for sale	Egg consumption at home and live adult chicken for sale
Traits preferred in “Good cock”	Large body size, weight for meat production, less illness, good physical appearance (look), and better meat taste	Large body size, weight for meat production, less illness, good physical appearance (look), and better meat taste	Good physical appearance (look), large body size, weight for meat production and less illness
Traits preferred in “Good hen”	Production of more eggs, large body size/weight, and chicks with a high survival rate	Production of more eggs and production of chicks with high survival rate	Production of more eggs, produce chicks with high survival rate, and less illness

The information generated from the baseline survey informed the design and implementation of the longitudinal (on-farm) study. The procedures followed and the baseline tools developed can be adapted for similar purposes outside African Chicken Genetic Gains. Finally, as per the ACGG Global Access Strategy, the anonymized ACGG Baseline data in Ethiopia, Nigeria, and Tanzania are publically available on the ILRI Data Portal below http://data.ilri.org/portal/dataset/acggngbaselinepublic(Nigeria)http://data.ilri.org/portal/dataset

/acggtzbaselinepublic (Tanzania) http://data.ilri.org/portal/dataset/acggethbaselinepublic (Ethiopia).

1.2.1.2 Monitoring

The ACGG monitoring protocol is designed as a "before and after" study to measure change over time in the activity areas. The project has set six (6) high level composite indicators to reflect the primary outcomes to be achieved (Table 2). Setting targets and monitoring progress towards these indicators involves a combination of strategies and tools. The project aims to identify changes that are directly attributable to the program activities, however monitoring will also consider externalities which may be contributing to the changes observed.

The composite indicators have been disaggregated into specific indicators to be measured using one or more of the following monitoring tools (Table 2):

1. Baseline survey; On-station experiment continuous monitoring (72 weeks);
2. On-farm monitoring (72 weeks + Mid-line Survey at last monitoring visit);
3. Site level focus group discussions (FGDs);
4. Multiplication monitoring (of multipliers and brooders); and
5. End-line survey (in the last 6 months of the program).

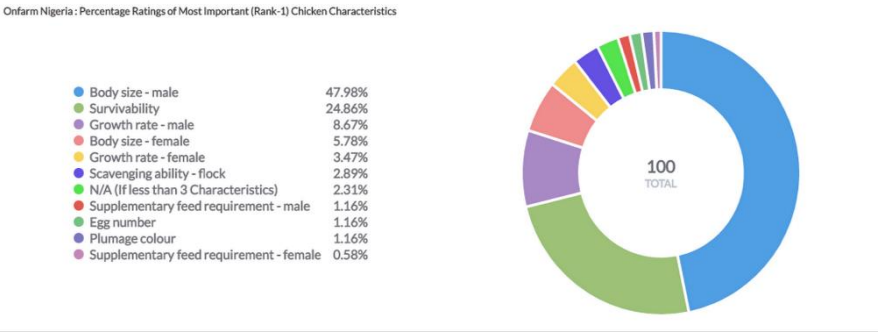
Table 2. Detailed indicators mapped to each Main (composite) indicators and tool(s) for monitoring and corsponding references in parentessis.

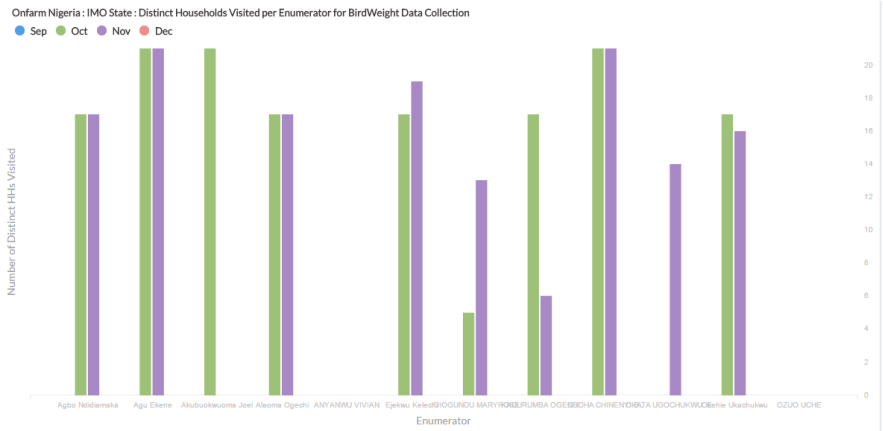
Composite Indicators	Disaggregated Indicators	Monitoring Tool
Data driven understanding of the breeds and specific traits that poor smallholder farmers, especially women, prefer across the various countries	100% increase in smallholder farmer access to extension and training	Baseline; On-farm Baseline (pages 7 baseline report and 15 baseline and on-farm report);
	Performance of birds (ranking of traits such as laying traits, brooding, growing, surviving, and selection of hens and/or cocks, chick mortality)	Baseline; On-farm; Baseline (pages 7 baseline report and 15 baseline and on-farm report);
Farmer preferred lines, that produce at least 200% more than existing local breeds, are made accessible to smallholders through public and private organizations	Number of farmers owning improved breeds of poultry outside of ACGG project sites (district level)	Access targets (2018, 2019)
	Number of farmers owning improved breeds of poultry in project sites (village level)	Baseline; On-farm; Access targets (pages 7 baseline report and 15 on-farm report)
	100% increase in total poultry (adult birds) holding (gender disaggregated)	Baseline (pages 7 baseline report and 15 baseline and on-farm report); Endline
	Performance of birds	Baseline; On-farm; FGD Baseline (pages 7 baseline report and 15 baseline and on-farm report);
	30% increase of project farmers using supplemental feed practices	Baseline; On-farm; Link to PPP on feed Baseline (pages 7 baseline report and 15 baseline and on-farm report; various IP reports);
	100% more productive birds in project countries (meat)	On-farm; On-station; Baseline; Endline (pages 7 baseline report and 15 on-station and on-farm reports);
	200% more productive birds in project countries (eggs)	On-farm; On-station; Baseline; Endline (pages 7 baseline report and 15 on-station and on-farm reports);

Increased realized productivity for smallholders with access to the tested, farmer preferred lines	% of smallholder farmers using animal health products	On-farm; Baseline; Endline (pages 7 baseline report and 15 on-farm report)
	Adult mortality rate due to disease	On-farm; On-station; Baseline; Endline (pages 7 baseline report and 15 on-station and on-farm reports);
	Rate of incidence of symptoms	On-farm; On-station; Baseline; Endline (pages 7 baseline report and 15 on-station and on-farm reports);
	% of smallholder farmers using housing for poultry	Baseline; On-Farm; Endline; ATONU (pages 7 baseline report and 15 on-station and on-farm reports; and page 22 ATONU report);
	50% productivity increase (meat per birds, by breed)	On-farm; On-station; Baseline; Endline (pages 7 baseline report and 15 on-station and on-farm reports);
	100% Productivity increase (eggs per animal, by breed)	On-farm; On-station; Baseline (pages 7 baseline report and 15 on-station and on-farm reports);; Endline
	100% increase in offtake rate/Household production (eggs per household/year)	On-farm; Baseline; Endline Endline (pages 7 baseline report and 15 on-farm reports);
	50% increase in offtake rate/Household production (poultry meat per household)	On-farm; Baseline; Endline (pages 7 baseline report and 15 on-farm reports);
	100% Per capita annual HH income – poultry ($US), disaggregated by sex of earner	Baseline; On-Farm; Endline; ATONU (pages 7 baseline report and 15 on-farm reports; and page 22 ATONU report);
	5% increase in Mean household asset score (gender disaggregated)	Baseline; On-Farm; Endline; ATONU (pages 7 baseline report and 15 on-farm reports; and page 22 ATONU report);
	50% increase in Net household income from poultry	Baseline; On-Farm; Endline; ATONU (pages 7 baseline report and 15 on-farm reports; and page 22 ATONU report);
Empowered smallholder women engaged as chicken producers with access to the tested, farmer preferred lines	Intra-household labor allocations	Baseline; On-farm; FGD; ATONU; Endline (pages 7 baseline report and 15 on-farm reports; and page 22 ATONU report);
	Intra-household decision mechanisms	Baseline; On-farm; FGD; ATONU; Endline (pages 7 baseline report and 15 on-farm reports; and page 22 ATONU report);
Functioning IP in TZ, NG, and ET supporting the development of the smallholder chicken value chain	Inclusion of other value chain actors in project activities	IP documentation; FGD (Page 22 IP report and othe links)
	3 innovations that support the development of the smallholder poultry sector per country per year developed through the national IPs	IP documentation; FGD (Page 22 IP report and othe links)
	Functioning farmer feedback loop between the community IP and national Innovation Platform	IP documentation; FGD (Page 22 IP report and othe links)
	Farmers informed of project and IP results and deliverables	IP documentation; FGD (Page 22 IP report and othe links)

Long-term chicken genetic gains programs with clear plans for breeding are established in each country with the capacity to drive accelerated genetic gains	Private sector brooders functional in all project countries	IP documentation; FGD
	Private sector multiplier multiplying and maintaining a select ACGG strain in each project country	IP documentation; FGD
	PPP established between private multiplier and national research partner	IP documentation; FGD
	Public sector supporting PPP with technical breeding capacity	IP documentation; FGD
ATONU Indicators Mapped to ACGG	FANTA	ATONU; Baseline; Endline (pages 7 baseline report and 15 on-farm reports; and page 22 ATONU report);
	(IDDS) 0.15 Increase in IDDS(Dietary diversity and food security)	ATONU; Baseline; Endline (pages 7 baseline report and 15 on-farm reports; and page 22 ATONU report);
	10% increase in Consumption of poultry products	ATONU; Baseline; Endline (pages 7 baseline report and 15 on-farm reports; and page 22 ATONU report);

In order to provide the data required for the monitoring and evaluation described above, the program will utilize linked databases and a reporting platform (Metabase – Indicator Dashboard) (Figure 1), together with qualitative assessments from focus group discussions and country reports. The dashboard on the reporting platform will provide values for detailed indicators at appropriate time points. The linked databases are also connected directly to a data portal (data.ilri.org/portal) in order to ensure open-access of non-confidential data as per the program's Global Access strategy. The BMGF Senior Program Officer, Donald Nkrumah, can access the ACGG Metabase dashboards at acgg-nigeria.org:3000/ using his email address (Donald.Nkrumah@gatesfoundation.org) and the password vssZWKKQuyqhLM to allow for real-time project monitoring and updates.

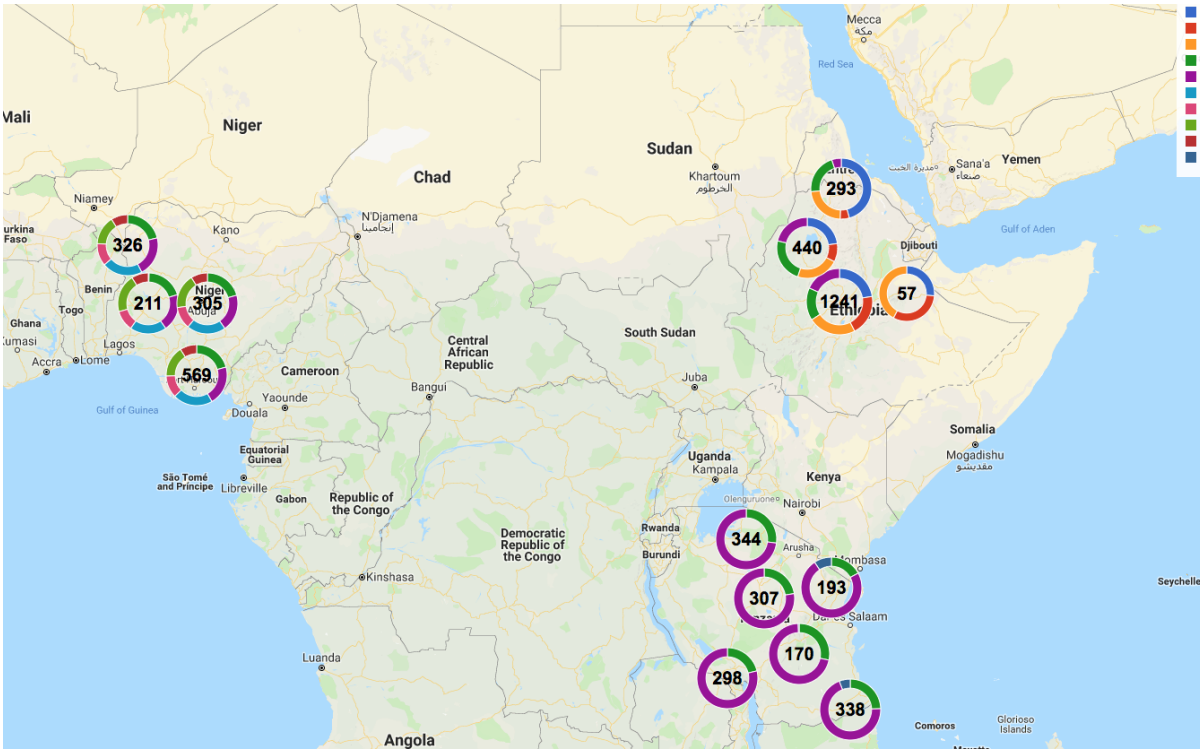




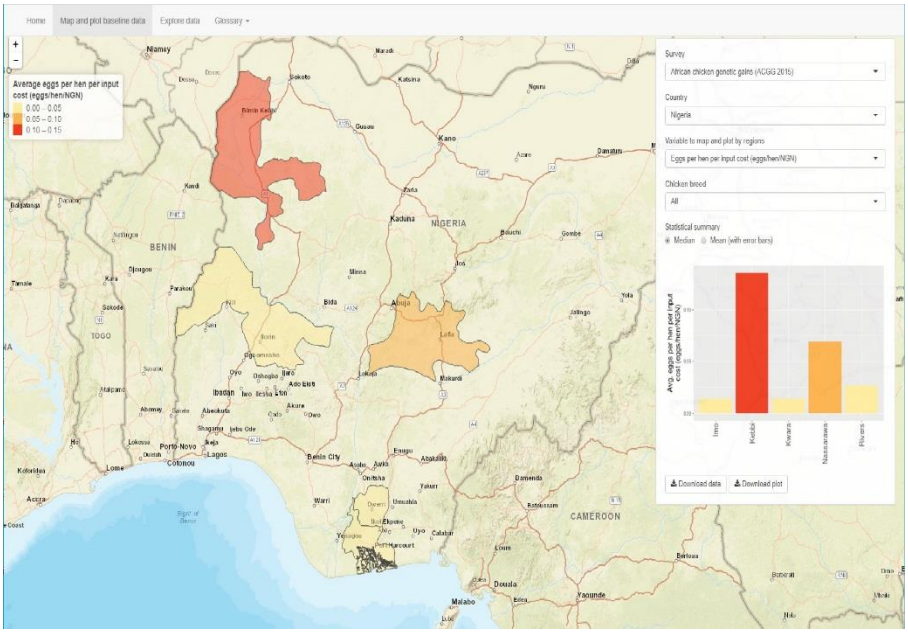
While Metabase and data collection are both operational in ACGG, the data visualization work has lacked the necessary leadership and capacity to design and link a stakeholder-driven data visualization platform to the ILRI data portal (see section 4.0 Risks/Challenges). To mitigate this risk LiveGene will supplement the BMGF Year 3 funds to ensure that the appropriate skills are available to provide real time data visualization.

Figure 1. Display of ACGG Metabase dashboard images.

Descriptive real time summaries of ACGG on farm activities are available on a LiveGene dashboard here (http://azizi.ilri.org/cgi-bin/ACGG_dash.py username livegene, password LiveGene). This dashboard will be further populated with additional analytics and summaries over the course of the program. As an example, a screen grab showing a 'zoomable' map of the location and allocated breed of all ACGG households is shown here:



A series of apps summarizing ACGG baseline data and performing analyses have also been created in collaboration with CSIRO, they can be accessed here https://livegaps2.shinyapps.io/YieldApp/ and here https://livegaps2.shinyapps.io/Baseline/ These apps represent the start of an important collaboration with the CSIRO team led by Mario Herrero and will allow ACGG data to be widely used as inputs for modeling and analyses such as Livegaps2. An example grab of the output is shown below

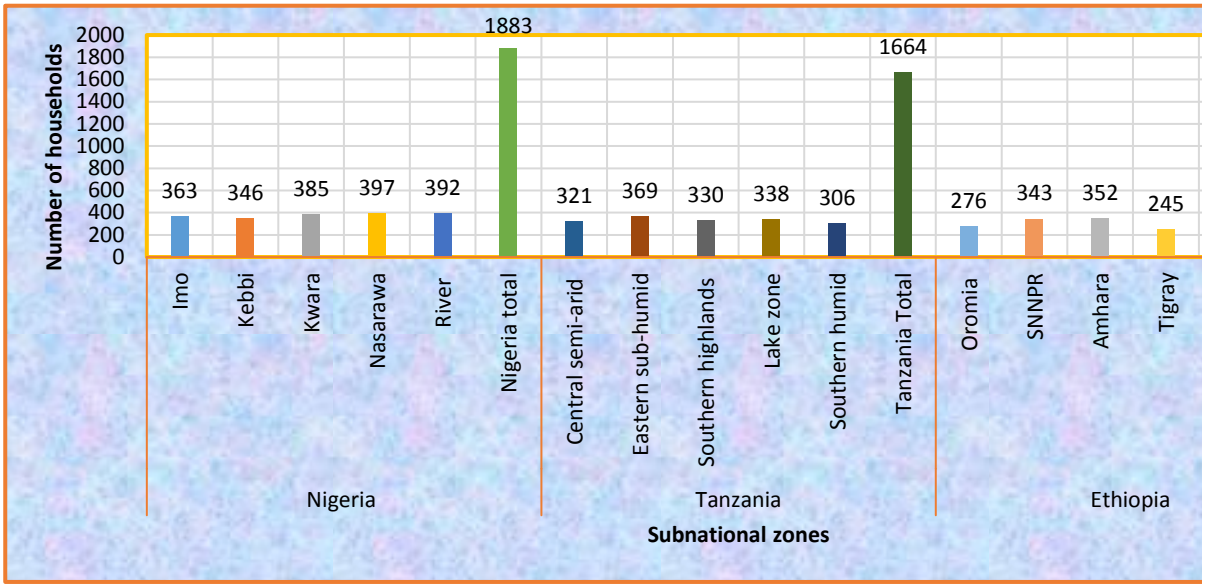


1.2.2. Strain Importation

Strain importation into Tanzania, Nigeria, and Ethiopia was a Period 1 risk to ACGG (see section 4. Risks/challenges), but in 2016, ACGG importation has been completed. While there have been delays to strain importation due to avian influenza, regime changes, and biosecurity/zoosanitary requirements, the process has progressed. First, ILRI finalized all required ethical approval for importation, and the documentation for ethical approval can be found here. After finalizing ethical approval, ILRI ACGG worked with each national team to obtain the appropriate import and export documents. Regarding import and export permits, links to the permits and updates for the status on each strain are provided below.

Figure 2 presents the number of ACGG on-farm households who have received the different strains of chicks in Nigeria, Tanzania and Ethiopia project subnational zones until the end of June 2017. The preliminary output from the data indicated that, in Nigeria a total of one thousand eight hundred eighty three (1,883) farm households have received different strains of chicks. Of which 363, 346, 385, 397 and 392 households belongs to Imo, Kebbi, Kwara, Nasarawa and River subnational zones, respectively. In Tanzania, a total of one thousands six hundred sixty four on-farm households (1,664) have received the different strains of chicks. When we look at the number of on-farm households across the subnational zones, as it is presented in Figure 1, the preliminary results show that 321, 369, 330, 338 and 306 of on- farm households are from Central semi-arid, Eastern sub-humid, Southern highlands, Lake zone and Southern humid sub-national zones, respectively. With regard to Ethiopia the initial result of the analysis indicated that a total of one thousands three hundred ninety three (1,393) farm households received chicks. Of which 276, 343, 352, 245 and 177 households

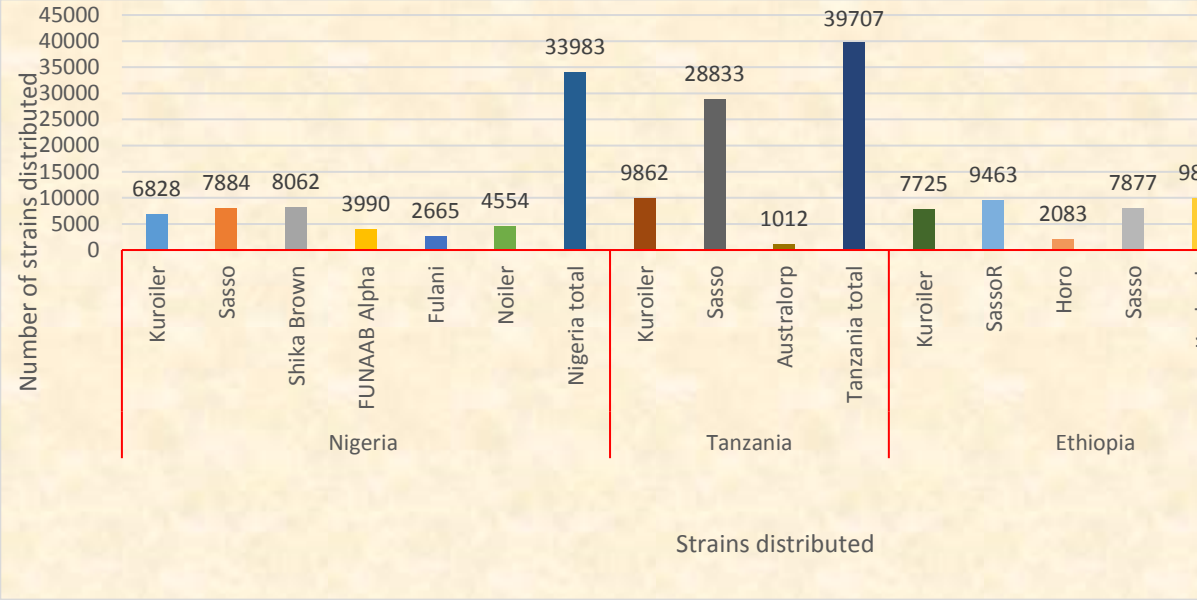
belongs to Oromia, SNNPR, Amhara, Tigray and Addis Ababa subnational zones, respectively (Figure 2).



Source: On-farm testing data (2016.17)

Figure 2. Number of on-farm households who have received chicks of different strains in Nigeria, Tanzania and Ethiopia.

The number of different strains of chicks dispensed to on-farm households in Nigeria, Tanzania, and Ethiopia until Augest 2017 are presented in Figure 3 and Table 2. The initial analysis result based on the numbers of birds from the on-farm data portal indicated that a total of 33,983 chicks were distributed to the on farm households in Nigeria. Of which 6,828, 7,884, 8,062, 3,990, 2,665 and 4,554 belongs to Kuroiler, Sasso, Shika Brown, FUNAAB Alpha, Fulani and Noiler respectively. In the Tanzania, a total of 39,707 chicks are distributed. Of which 9862, 28,833 and 1,012 belongs to Kuroiler, Sasso and Australorp, respectively. In Ethiopia a total of 36,960 chicks are distributed. Of which 7,725, 9,463, 2,083, 7,877, and 9,812 belongs to Kuroiler, Sasso-R, Horro, Sasso, and Koekoek, respectively.



Source: On-farm testing data (2016.17)

Figure 3. Number of chicks dispensed per strain in Nigeria, Tanzania and Ethiopia.

1.2.3. ACGG baseline survey report; and on-station and on-farm chicken performance test result reports

The ACGG baseline survey was designed and implemented to answer Objective 1 of the program as well as inform the design of the on-station and on-farm performance tests (Objectives 2 – 4). Technical reports based on ACGG baseline, on-station and on-farm covering the implementation and initial analyses have been produced in the first quarter of 2018 at three levels: by country ACGG project teams (mid-term report), by a consultant hired at each country, and by a high-level geneticist working on the data derived from all the three project countries. This is directly linked to two of the program's outcomes 1) data driven understanding of the breeds and specific traits that poor smallholder farmers, especially women, prefer across the various countries and 2) farmer preferred lines, that produce at least 200% more than existing local breeds, are made accessible to smallholders through public and private organizations. Highlights of the Detail report is hyperlinked under each catagories of reports and highlightes of the ACGG baseline survey report; and on-station and on-farm chicken performance test result reports is presented in section 1.2.3.4.

In addition to the three levels of technical reports the ACGG program team collaborated with country teams to produce a detailed summary baseline report for each country which focused on key indicators relating to livelihood (livestock ownership – TLU, asset index – BMGF), food security (HDDS, Food Consumption Scores), the economic importance of chicken and gender aspects to chicken production (detail report linked in page 4 and summary results in Table 1). These summaries are complimentary to the three levels of technical reports which focus on specific aspects which contribute to the evaluation of the chicken strains (i.e. productivity parameters and trait preferences).

1.2.3.1. ACGG global level consultant report:

In line with recommendations from SIAC (Scientific and Industrial Advisory Committee) during the 4th Project Management Team meeting, a global level consultant, Prof. Samuel E. Aggery, was appointed with the responsibility to analyze ACGG baseline information, on-station and on-farm chicken performance test results and produce a comprehensive report in a duration of 90 days (19th December 2017-15th April 2018). The report synthesized by the global consultant was independent to country reports and is hyperlinked here. It focuses on key productivity traits (e.g. body weight, egg production) and reports summary data (means and standard deviations) and formal statistical model results.

1.2.3.2. ACGG country level consultants' reports

Another recommendation from the SIAC was for ACGG program was to recruit one quantitative geneticist in each country with expertise in handling baseline information and phenotypic data (from on-farm and on-station chicken performance tests). The data were collected on different chicken breeds at six on-station test centers (two per country), and 15 different agro-ecologies (five per country). Some of the data collected on-station include growth performance, egg production, feed intake, health & vaccination.

Country level geneticists had responsibilities to apply appropriate statistical models, develop analytical pipelines, and evaluate performance of each of the chicken breeds under optimal and farmer management conditions. Reports synthesized by country level consultants in Ethiopia, Tanzania and Nigeria have been presented with this report.

1.2.3.3. ACGG country level mid-term reports

ACGG project country teams, on their part, have taken their time to analyse the data from the baseline survey, the on-station test sites in their respective countries and performance records gathered from on-farm beneficiary households and synthesise report. In addition to comparison of productivity, survival, and preference of traits by chicken keepers, the reports also covered cross cutting issues: capacity development; gender; national and community level innovation platforms; and farmer trait preferences for introduced strains.

These reports are produced by ACGG project team in three of the countries independent to the reports done by consultants. Reports for Ethiopia, Tanzania, and Nigeria have been finalized by March 2018.

1.2.3.4. Highlights of the ACGG baseline survey report; and on-station and on-farm chicken performance test result reports

1.2.3.4.1. ACGG baseline survey report

The African Chicken Genetic Gains programme was initiated by a detailed baseline survey involving a total of 3,714 respondent household in 220 villages across 5 agro-ecological zones in each of the three countries (Ethiopia (ET) – 1257 rural and peri-urban households, 80 villages; Nigeria (NG) - 1,200 rural households, 60 villages; and Tanzania (TZ) – 1257 rural households, 80 villages). The objective was to know the rural households composition, educational level, livelihoods strategy and poultry experience, poultry meat and eggs utilization and consumption as well as preferences for traits in cocks and hens in smallholder poultry producing households in the villages.

The study which lasted for 39 days, between September and November 2015 was conducted in three phases namely: Pre-sensitization, Sensitization and Actual Survey. Extensive protocols were developed and applied to ensure accurate information was gathered. The baseline data collected were analysed for frequencies based on the gender and age of the household head, gender of actual respondent, household average age and educational status (average number of years of schooling), social status (primary source of income, and asset ownership), and agroecological location.

The results show that across countries, 23.3% (20% ET, 26% NI and 20.6% TZ) of the households had female heads and the trend was the same across all agro-ecological zones. This result is not an indicator of the gender that is more involved in actual poultry production as the majority (above 60%) of the respondents in this survey were women. Female headed households were generally poorer than male headed households. Crop farming, livestock keeping and poultry keeping, in that order, were the main sources of income for ET and TZ households. In Nigeria, crop farming, trading and services were the top three sources of household income. The contribution of livestock to household income in Ethiopia and Tanzania was estimated by households at 27% (38.5% ET, 15.6% TZ) with most animals being jointly owned by adult male and female in Ethiopia and Tanzania, while in Nigeria ownership varied according to the agro-ecological zone. Rural households in Nigeria did not estimate livestock contribution to household income. More than 70 per cent of households had adequate food in the last 12 months (85% ET, 70% NI and 89% TZ). The food supplies did not regularly include chicken meat and eggs in sufficient quantity. Chicken meat consumption per household was 2.9 birds in 3 months (1.8 ET, 4 NI and 3 TZ) while egg consumption was 17 eggs in 3 months (22 ET, 14 NI and 14.6 TZ). Average flock size was 22 (9 ET, 30 NI. 27 TZ). The top three reasons for raising chicken were for egg consumption and sales and sale of adult chicken in Ethiopia, meat consumption and sale of adult chickens in Nigeria and Tanzania. These generally agree with the household preference for good physical appearance, large body size and fast growth rate in cocks and high egg production and hatchability in hens. With an average of 10 eggs per clutch, there is very little eggs or chicken available to the households for sale but the money realised from sale was used for household basic needs.

The results of the survey clearly show that the respondent households prefer cocks that grow bigger and faster, hens that lay more eggs and chicks that have higher survival rates. In all the three countries, the bird type kept were mostly the local indigenous strains. Introduction of foreign adapted strains will therefore require some education and possible resource support to the households.

1.2.3.4.2. ACGG on-station chicken performance test result reports

The external and country consultants evaluated growth traits in both males and females (weight at specific timepoints and average daily growth 0 – 12 weeks, ADG), female egg production (Age at first egg, AFE; hen day egg production, HDEP and hen house egg production, HHEP), survival (brooding, growing and laying stages) and feeding (feed intake and conversion ratio).

In Ethiopia the Kuroiler was the fastest growing males and females, performing 205% better than nationally reported indigenous chicken followed by Sasso_R and Koekoek, while the Horro was the slowest. In Nigeria, the Noiler, Kuroiler and Sasso were faster and similar growing than the Fulani and Shika Brown. Compared to reported body weights of local chicken in Nigeria these three strains performed 196%, 200% and 197%, respectively, better while Shika Brown was still 85% better despite being slower growing in the study. While in Tanzania, for Naliendele station Kuroiler and Sasso performed similarly but at the SUA station Sasso males were significantly higher in body weight than the Kuroiler at 12 weeks of age. Comparing to nationally available data indicates that Sasso birds were on average 169% heavier than local birds while Kuroiler were 143% heavier.

For egg production in Ethiopia results varied between the two stations with Kuroiler performing the best at DZARC followed by Sasso_R and both the Sasso_RIR and Koekoek performing well at Haramaya. These (Kuroiler, Sasso_R and Koekoek strains were producing on average 205%, 169 and 166%, respectively, more eggs than nationally reported indigenous chicken; the Horro had the lowest HDEP. In Nigeria, Shika Brown and Funaab Alpha were better egg producers than the Noiler, Kuroiler, Sasso and Fulani; performing 155% and 145%, respectively, better than literature reported production by local chicken. In Tanzania the two strains, Kuroiler and Sasso performed 102% and 89% higher than literature reported indigenous chicken of Tanzania. Bird survival in Ethiopia varied across the two stations and in the presentations by the different consultants. However, generally Koekoek showed the highest survival and Horro (Haramaya) or Sasso_RIR (DZARC) the lowest. In Nigeria, the Fulani had the lowest mortality in all growth phases while Kuroiler had the lowest survival in the brooding and growing phases. In Tanzania mortality reported by the external consultant was higher for Sasso than Kuroiler for the growing and laying stages at Naliendele station but no different at SUA.

Table 3. Performance of the ACGG test strains as compared to the indigenus chicken under statons conditions of Ethioia, Nigeria and Tanzania.

Ethiopia					
Parameters	Indigenous		ACGG strains		Superiority in percent
Body weight at 17 weeks in grams	Local	627 g	Sasso-R	1691.56	169.5
			Kuroiler	1915.46	205.2
			Koekoek	1673.39	166.6
			Imp.Horro	1272.81	103.0
			-	-	-
Annual egg number	Local	80	Sasso-R	208	160
			Kuroiler	170	113
			Koekoek	156	95
			Imp.Horro	155	93
			-	-	-
Nigeria					
Parameters	Indigenous		ACGG strains		Superiority in percent
Body weight at 16 weeks in grams	Local	793	Noiler	2345.63	196
			Sasso	2377.0	200
			Kuroiler	2355.0	197
			Funnab Alpha	1949.6	146
			Fulani	1075.6	36
			Shika Brown	1466.5	85
Annual egg number	Local	80	Noiler	102	27.5
			Sasso	76	-5
			Kuroiler	117	74
			Funnab Alpha	196	145
			Fulani	93	16.3
			Shika Brown	204	155
Tanzania					
Parameters	Indigenous		ACGG strains		Superiority in percent
Body weight at 17 weeks in grams	Local	1240	Sasso	3340.82	169
			Kuroiler	3014.37	143
Annual egg number	Local	80	Sasso	151	89
			Kuroiler	162	102.5

1.2.3.4.3. ACGG on-farm chicken performance test result reports

The external and country consultants evaluated growth traits in both males and females (weight at specific timepoints and average daily growth, ADG), female egg production (Age at first egg, AFE; hen day egg production, HDEP and number of eggs 90 days after AFE, EP90), survival (brooding, growing and laying stages) and farmer preferences. The external consultant report uses AEZ to identify environmental differences while country consultant reports use the program defined zones.

1.2.3.4.3.1 Ethiopia

Due to data cleaning to improve data quality the external consultant analyses only included the cool and humid and cool sub-humid agro-ecological zones (AEZ) with warm semi-arid only available for Horro and Koekoek. The country consultant report from Ethiopia uses data prior to cleaning and does not probe in detail at the differences between AEZs. Results are generally consistent between reports although some parameters are not easily comparable, particularly those for egg production.

Across the AEZs imported strains, Kuroiler, Koekoek, Sasso and Sasso-RIR tended to have higher and faster growing males than the indigenous improved Horro strain performing 94%, 75%, 70% and 55%, respectively, better than nationally reported figures for indigenous chicken. The exception to this was observed in average daily weight gain (ADG) where Sasso showed the slowest rate of growth in cool sub-humid (CSH) and the second slowest in cool and humid (CAH). The pattern was similar for female body weight where Horro chicken were always the lightest, on average, and slowest growing birds; Sasso were generally the heaviest of the imported strains although their average daily growth was the lowest of the imported strains.

Sasso chicken started laying eggs (AFE) earlier than other strains and their egg production 90 days after AFE was also the highest of all strains. Conversely, Kuroiler birds started laying later but had also the highest laying rate in cool sub-humid (CSH) AEZ and the second highest egg production 90 days after AFE in both cool sub-humid and humid AEZ. Across AEZs the Sasso and Kuroiler, on average, was 255% and 242% more productive than nationally reported local chicken (Table 4). Horro chicken matured later than other strains (AFE) but also showed the lowest laying rate in cool and humid AEZ and were still 160% more productive than reported local chicken. Koekoek showed the lowest mortality rate and Sasso-RIR the highest.

Farmers in the study indicated they preferred fast growing male and female with large body size and good egg layers. They also preferred bigger egg size and all chickens should have coloured plumage, good scavenging ability and high survivability.

Table 4.Performance of the five ACGG test strains against indigenous chicken under on-farm conditions in Ethiopia

Parameters	Strain		ACGG test strains		Superiority in percent
Body weight at 16 weeks in grams	Local	408.5	Sasso-R	1108	171
			Kuroiler	1204	195
			Koekoek	959	135
			Sasso	1150	182
			Imp.Horro	714	75
Annual egg number (extrapolated from 23 weeks production)	Local	45	Sasso-R	126	180
			Kuroiler	154	242
			Koekoek	106	136
			Sasso	160	255
			Imp.Horro	117	160

1.2.3.4.3.2 Nigeria

Due to data cleaning to improve data quality the external consultant analyses did not include Kuroiler and Noiler strain in Southern Guinea savanna (SGS). The analysis by the country consultant in Nigeria was very detailed although the effect of strain and AEZ were presented in different tables making it difficult to identify the interactions from the tables.

For male body weight 90 – 180 days Noiler were the heaviest birds in all AEZ analysed; where Noiler was absent (i.e. SGS) Funaab Alpha and Sasso were the heaviest. The lightest male birds across the AEZ were generally Fulani and Shika Brown although Fulani showed the highest average daily weight gain (ADG) in the Sudan savanna (SS). The imported Sasso strain showed the fastest growth rate in Humid forest (HF) and SGS and although Kuroiler was fastest in Derived savanna (DS) it was the slowest growing in Humid forest (HF) and Sudan savanna (SS). Noiler, Sasso and Kuroiler outweighed indigenous chicken by 144, 133 and 132%, respectively. Female body weight 90 – 180 days showed a similar pattern to their male counterparts with Noiler being the heaviest birds except where it was not present where Sasso were the heaviest. The rate of weight gain was also similar, except for Funaab Alpha which showed the fastest rate of gain in Sudan savanna (SS) but the slowest in Southern Guinea savanna (SGS).

The Noiler strain has the best egg production (AFE, HDEP and EP90) in Derived savanna (DS) while Fulani had the worst. For the humid forest AEZ Sasso birds matured the earliest (AFE) but Funaab Alpha had the highest laying rate (HDEP) and number of eggs 90 days AFE; Shika Brown were the slowest to mature but the Kuroiler had the lowest laying rate (HDEP) and number of eggs 90 days AFE. Total egg production was highest for Noiler and lowest for Sasso and Shika Brown (Table 5). Mortality rates in Nigeria were reasonably high (> 50% for all) with the highest mortality rates observed for Fulani and the indigenous improved strains (Noiler, Funaab Alpha, Shika Brown).

Farmers in the study indicated they preferred large chickens which grow faster, have good scavenging abilities and survival. Hens should be good layers and produce large eggs.

Table 5.Performance of the five ACGG test strains against indigenous chicken under on-farm conditions in Nigeria

Parameters	Strain		ACGG test strains		Superiority in percent
Body weight at 18 weeks in grams	Local	600	Noiler	1461	144
			Sasso	1398	133
			Kuroiler	1391	132
			Funnab Alpha	1203	101
			Fulani	814	36
			Shika Brown	979	63
Annual egg Number (extrapolated from 90 days production)	Local	45	Noiler	166.2	269.3
			Sasso	56	24.4
			Kuroiler	101.4	125.3
			Funnab Alpha	117.6	161.3
			Fulani	98.7	119.3
			Shika Brown	73	62.2

1.2.3.4.3.3 Tanzania

Only two imported strains were analysed in Tanzania, Kuroiler and Sasso. The country consultant had some challenges with data extraction and manipulation and reported that they were only able to analyse 24% of the growth data and 15% of the egg production data. This will be investigated before final analysis as the methodologies proposed and used by the consultant are good and could be improved upon with more data. The country report for body weight combines male and female birds together.

Differences between strains were generally not significantly different except in semi-arid (SA) areas for male body weight, sub-humid (SH) areas for female body weight and cool wet (CW) for egg production traits.

For male body weight Kuroiler were generally heavier and faster growing than Sasso in cool wet (CW) and sub-humid and dry (SHD) AEZ while in Hot and humid (HAH), sub-humid (SH) and Semi-arid (SAH) Sasso performed better. Both Kuroiler and Sasso showed at least 79% and 93% faster growth rate than literature reported local strains (Table 6). Female bird weight was similar for both strains across all AEZ except for average daily weigh gain day 90 – 180 (ADG) where Sasso grew quicker than Kuroiler in sub-humid (SH) areas.

Days to first egg production (AFE) was also similar across all AEZ although egg laying rate (HDEP) and eggs produced after AFE were higher for Kuroiler in cool wet areas; generally Sasso produced 295% higher egg compared to local chicken. Bird mortality was, on average, higher in Sasso (30 – 60%) than Kuroiler (10 – 25%) with highest mortality rates in Lake zone (LZ) and the lowest in Central zone (CZ).

Farmers in the study preferred large sized and fast growing male and female chickens. Additional preferences for plumage colour and scavenging ability varied across AEZ and over time.

Table 6. Performance of the five ACGG test strains against indigenous chicken under on-farm conditions in Tanzania.

Parameters	Indigenous		ACGG test strains		Superiority in percent
Body weight at 17 weeks in grams	Local	904	Sasso	1747	93.2
			Kuroiler	1620	79.2
Annual egg Number extrapolated from 90 days egg production)	Local	45	Sasso	178	295.5
			Kuroiler	122	171

1.2.4. Facilitating partnerships and institutional engagements for effective implementation

National Innovation Platforms

PICO-EA is responsible (as a sub-grantee) for the overall design and implementation support of the component on partnerships and institutional engagements in the ACGG Program. This is directly linked to one of the program's objective of developing and nurturing IP at different levels. This is expected to facilitate private sector engagement and business model development, focused on empowering poor smallholder farmers, especially women, in the chicken value chain to improve their livelihoods (Progress details of PICO-EA are presented in this report).

Whereas PICO-EA's main remit is on institutional transformation through engagement of VC actors, we are also keen on contributing towards the emerging conversation on how to safeguard the future of indigenous genetics as part of the long-term genetics program. We are also seeking to contribute to farmer-led review of findings (and data) from the testing of farmer preferred germplasm (to ensure that the conclusions that are eventually made truly use the lens of the farmers) and in actor analysis for service provision to the ACGG country teams to ensure that the selected entities can effectively deliver on critical functions which have direct implications for smallholders.

1.2.5. ACGG Partnerships

Partnerships are key to the work of ACGG and ILRI. ILRI is the lead implementation partner in ACGG, but given the nature of the three country design of ACGG, it is key that ACGG implement through our core, country-level implementation partners, EIAR in Ethiopia, TALIRI in Tanzania, and OAU in Nigeria. These core partners truly understand the needs of our target beneficiaries and work with ILRI to design context-appropriate national programs. Furthermore, these core partners have worked with ACGG to partner externally to enhance capacity development and private sector engagement. Currently, ACGG has facilitated the development of 121 partnerships across the private and public sector.

1.2.5.1 ATONU-ACGG Collaboration

The African Chicken Genetic Gains (ACGG) Project was identified as a project to integrate and assess the impact of selected nutrition-sensitive interventions (NSIs) to provide evidence for agriculture's potential to deliver positive nutrition outcomes by Agriculture to Nutrition (ATONU) project of the Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN). In designing and implementing the NSIs, FANRPAN partnered with ILRI and two country implementing partners (CIPs): the Ethiopian Institute of Agricultural Research (EIAR) and the Tanzania Livestock Research Institute (TALIRI). The implementation of the ACGG-ATONU joint project on integration and assessment of the impact of selected nutrition-sensitive interventions (NSIs) launched in October, 2016.

The African Chicken Genetic Gains and Agriculture to Nutrition (ACGG- ATONU) projects are funded by BMGF and implemented in Ethiopia and Tanzania. ATONU has been built onto the ACGG project to work with partners and beneficiaries to design and evaluate effective agriculture-tailored nutrition interventions, and advocate for them. Its primary beneficiaries are smallholder farm families in four regional states; Amhara, Tigray, Oromia and Southern Nations Nationalities and peoples' Region in Ethiopia and in three agricultural Zones; Central zone, Southern Highlands and Eastern zones in Tanzania. The project targets are women of child-bearing age and young children in the first 1000 days of life in rural households, where high nutritional demands of pregnancy, development and early childhood must largely be met through food grown, or income earned on-farm. The project targets are 1,600 households per country.

A total of 20 villages from four regions and three zones in Ethiopia and Tanzania, respectively, are randomly allocated to each of the two intervention arms. These villages will receive either ACGG's intervention (chickens) alone, or both chickens and ATONU's nutrition-sensitive intervention (NSI) package. The ATONU NSI package comprises three components that will be delivered to participating households:

1. Behavior change communication (BCC) on nutrition education and hygiene to increase consumption of eggs and chicken meat;
2. BCC for women empowerment and to influence income expenditure on other nutrient dense foods; and
3. Promotion of home gardens for improved dietary diversity.

To date the ATONU-ACGG collaboration has facilitated the linkage between agriculture and nutrition, and in 2018, the impact evaluation and process monitoring and evaluation will further shed light on the benefits of aligning agriculture and nutrition interventions (See for more details on the ACGG-ATONU collaboration).

1.2.5.2 CTLGH-ACGG Collaboration

Collaboration between ACGG with the Center for Tropical Livestock Genetics and Health (CTLGH) *via* the poultry genomics program which is co-led by Olivier Hanotte (ILRI) and Nick Sparks (Roslin Institute) is ongoing. The poultry program is aimed at applying cutting edge genetics and breeding tools to improve the productivity and flock dynamics of poultry in the tropics. In particular, it is aimed at 1) identifying genomic variants with potential to enhance performance under tropical production systems 2) identifying adaptive traits in relation to the bio-physical environment, and 3) the host – microbiome interactions and 4) germline development for conservation and genome editing.

During the reporting period, ACGG has strengthened its links with CTLGH within the scope of its poultry genomics program. Hihlights of the progress to date are presented below:

1. **Sample collection:**

   Through ACGG in Nigeria and Ethiopia, the collection of indigenous poultry genotypes has now been finalized. For Tanzania, a partnership with Feed of The Future Innovation Lab for Genomics to Improve Poultry (Professor Huaijun Zhou) has provided access to Tanzanian indigenous chicken population. During the reporting period samples from ACGG strains in Ethiopia and Nigeria have also been collected.

   In particular, aside the collection of 263 Ethiopian and 122 indigenous Nigerian birds, a total of 63 Tanzanian chicken samples have been provided by Professor Huaijun Zhou (Feed of The Future Innovation Lab for Genomics to Improve Poultry). The following ACGG strains birds have also been collected:

   - Nigeria (FUNAAB Station, Fol-Hope Station): Fulani (N = 14), FUUNAB Alpha (N = 20), Shika Brown (N = 10), Sasso (N = 20), Kuroiler (N = 10), Noiuler (N = 20).
   - Ethiopia (Debre Zeit): Koekoek (N = 20), Sasso R (N = 20), Kuroiler (N = 20), Horro (N = 20, 9th generation)

   These represent all the ACGG strains currently on the ground in the three ACGG countries.

2. **DNA extraction:** DNA extraction have been extracted for all Ethiopian, Nigerian and Tanzanian samples collected so far, including 245 caecum samples for Ethiopian indigenous chicken. The DNA has also been extracted for all the ACGG strains

3. **Genome sequencing:** Full genome resequencing data are now available for 263 Ethiopian, 122 Nigerian, 63 Tanzanian indigenous chicken. The sequencing of the ACGG strain and caecum samples will take place during the forthcoming reporting, with the sponsored by ILRI – China joint laboratory.

4. **Data analysis:** All Ethiopian indigenous chicken samples are currently being analysed. A total of about 21 million SNPs have been identified across the Ethiopian populations. The CTLGH poultry genomics team is following a landscape genomics approach to identify key genomics regions linked environmental adaptation of local poultry

Once complete, the analysis from this work (indigenous and ACGG strains will feedback into ACGG to inform conservation strategies, choice of the best improved strains in relation to environmental challenges, and the development of an "AfriAsiaSNPs chip for large scale screening.

In particular (i) CTLGH will be engaged shortly in the genome sequencing of the ACGG strains, (ii) the new ILRI poultry research facilities, financed by BBSRC and the University of Edinburgh with the support of CTLGH, will allow ACGG strains comparison experiments at the interphase of genetics - nutrition and/or health, with the outcomes of ACGG on-farm and on station experiments informing the design of the latter, as well as large scale genome-markers association experiments to be conducted within the CTLGH poultry genomics program in partnership with ACGG (See for more detail on the ACGG-CTLGH collaboration).

1.2.6 Gender

Gender considerations are central to understanding the smallholder poultry value chain, and therefore, it was assumed inherent in ACGG program but gender aspects of the program were underfunded. With the support of the Livestock CRP, ACGG has commissioned the Royal Tropical Institute (KIT) to develop a gender strategy to provide strategic and practical direction to ACGG's gender integration. The strategy will:

- Guide ACGG on how to integrate gender in a meaningful, effective and feasible manner. It will be based on careful priority-setting of activities and level of efforts, balancing ambition with realism and with a view to achieve 'deeper' impact in priority areas as opposed to more 'shallow' results across the board;
- Provide the basis for a common understanding in ACGG of what gender integration means in the context of the program and what is expected from the different team members;
- Clarify what change is expected to occur and the mechanisms through which this is expected to happen with a focus on links between activities; and
- Have a strong focus on learning/reflection and knowledge creation/documentation.

Through this strategy development process, ACGG program members and ACGG partners have recognized a number of 'critical moments' in the poultry farming cycle to track social dynamics. The below 'critical moments' have served as the key components of the ACGG gender strategy development:

- When poultry at household becomes more productive and profitable: desire to understand the changes in decision making at household level on how birds are used, and proceeds of birds invested back in the household
- Once the roosters reach 20 weeks, and decisions are made about use for profit or own consumption.
- Community innovation platforms and follow up actions emerging from each meeting (e.g. aggregation to buy feed, vaccines, and microfinance) and the implications of this to women's position in the poultry value chain.

KIT's work with ACGG to date has provided direction for selecting key building blocks for the conceptual framework for the gender strategy process (Box 1). This will be further refined and developed into an explanatory model regarding gender dynamics in women's adoption of new technologies in the poultry sector.

Box 1: Evolving conceptual framework for ACGG's Gender Strategy
The framework is based on a relational understanding of gender and considers four dimensions of gender relations at household level as well as vis-à-vis different levels of the chicken value chain:

1) Gender division of labour in chicken production
2) Access to resources Women and men's constraints in chicken production
3) Control over benefits with a focus on (intra house-hold) decision-making
4) Gender norms and values

A detailed description of the four elements can be found in the GS for ACGG Inception Report.

As an input into the ACGG gender strategy, ACGG has worked with Transition International (TI) to assess the gender capacities of African Chicken Genetic Gains (ACGG) project partners and SNCs, in Ethiopia and Tanzania, and to use the assessment results to design tailor-made capacity development interventions in the two countries. The information from the assessment is also to be used in the design of the gender strategy. In the past 12 months, ACGG has made significant strides in developing a gender strategy and understanding gender capacities. In 2018, the ILRI team will continue to resource mobilization to scale-up the gender activities as we would like to continue the ongoing efforts to ensure that all individuals are able to realize their potential in the smallholder poultry value chain in Ethiopia, Tanzania, and Nigeria.

The programs' gender strategy will be implemented with support from ILRI's gender expert who, will lead and coordinate gender-related scientific research, backstop the country specific gender focal points and develop gender capacities of the SNCs and other partners and. During this phase, the gender team will focus on conducting research to generate an in-depth understanding of the local meaning of empowerment to aid development of gender indicators to monitor changes in women's economic empowerment. Additionally, the team will examine the gendered chicken trait preferences and map the chicken value chain. This information is very key in informing future interventions that target women poultry farmers both strategically but also in a manner that transforms constraining gender relations. Effort will be made to establish effective feedback loops

between the national innovation platforms and community innovation platforms to address emerging issues.

1.2.6. Capacity Development

Given the design and nature of ACGG, capacity development is critical to achieving the project outcome of a sustainable long-term genetic gains program in the three project countries. In the five years of ACGG, it is important that ACGG support the development of required capacity to support the continuation of in-country ACGG. The capacity development strategy of ACGG is 3-pronged. The first prong of ACGG focuses on development for the direct implementation of ACGG including the on-station and on-farm testing trainings. The second prong is focused on a 5-year training series for core NARS staff for the development of capacities to run a long-term breeding program. The third prong is focused on the longer term training of MSc and PhD student in each of the three project countries. Below are the details on the nature of ACGG's 2016-2018 short and long term trainings.

Table 7. Capacity development trainings by ACGG in 2016-2018.

Training	Dates		Location	# Trained	Why it wa importar
On-Station Testing Training	NG	30th-31st March, 2016	Ile-Ife, Nigeria	6	Introduce and acquaint superv enumerators on how to unde chicken performance evaluati enumerators on the use of tal Kit (ODK); provide technical su teams in designing the performance testing set up.
	ET	20th-23rd March, 2016	DebreZeit, Ethiopia	8	
	TZ	14th-16th March, 2016	Morogoro, Tanzania,	15	
On-Farm Testing Training	NG	April 24-28, 2016	Ile-Ife, Nigeria	23	Introduce and acquaint supe enumerators on how to unc chicken performance evalua enumerators on the use of tal Kit (ODK); provide technical ba team in setting up the performance testing.
	ET	18-21, March, 2016	DebreZeit, Ethiopia	13	
	TZ	4-8 April, 2016	Morogoro, Tanzania,	87	
ACGG PhD Students	NG	-	-	5	Contribute to the in-county ca the long-term chicken genetic future (Ethiopia, Nigeria, Tanz
	ET	-	-	6	
	TZ	-	-	4	
	Global	-	-	3 (not by ACGG)	

ACGG MSc Students	NG	-	-	5	Contribute to the in-county capa the long-term chicken genetic ga future
	ET	-	-	9	
	TZ	-	-	6	
Fundamentals of Data Analysis and Mixed Linear Models in Animal Breeding	NG	29 February-4 March, 2016	Addis Ababa, Ethiopia	9	Give trainees from partner ins understanding of R software datasets obtained from breedin them to apply the hands-on genetic evaluations from the co poultry research projects.
	ET			5	
	TZ			7	
Transition International (TI) Gender Capacity Assessment	ET	12-15 Dec, 2016	Addis Ababa, Ethiopia	27	To assess gender capacities of Afr Genetic Gains (ACGG) project par in Ethiopia, Nigeria and Tanzania, assessment results to design tailo development interventions for ea
	TZ	21-26 Jan, 2016	Dar es Salaam, TZ	22	
	NG	16-17 Jan, 2016	Abuja, NG	17	
KIT Gender Strategy Development	TZ	11-17 Feb, 2016	Dar es Salaam, TZ	28	The mainstream of ACGG's techn that there is data to analyze a) th term impact of the project on ge women's empowerment and b) t dimensions of technical research the day-to-day development ope so that the project improves the participating chicken farmers.
	ET	March 21-22, 2016	Addis Ababa, Ethiopia	18	
Statistical Analysis of ACGG data	NG	12 to 16, June, 2017	Addis Ababa, Ethiopia	8	Give trainees from partner institu understanding Statistical Analysis Baseline data. The focus of this c entirely on statistical analysis of t collected from smallholder chicke the ACGG project. The course co on training in data analysis, using statistical packages. Topics follow data analysis: data cleaning, data statistical testing of hypotheses. .
	ET			9	
	TZ			6	

The MOOC: during the course of 2017, WUR in collaboration with ACGG has been working in converting its bachelor course animal breeding and genetics into an open online course. This course is offered for free on the EdX platform (www.edx.org). Wageningen university has technically supported the project by providing a production support team that was responsible for the actual building of the course in the online format of edX, and by providing support for making video clips and animated exercises. The content was provided by a team of teachers from the Animal Breeding and Genomics group, most notably mrs Dieuwertje Lont, dr Piter Bijma, dr Han Mulder, dr John Bastiaansen, dr Mario Calus and prof. Hans Komen. While the course is on animal breeding in general, a special track is provided for ACGG students and other students with a specific interest in

chicken. This track consists of dedicated video clips, and exercises focussing on chicken breeding in developing countries. To this end, ILRI-Ethiopia has provided content from its image databases. Dr Tadelle Dessie has visited Wageningen end of June to record a video clip on the Horro breeding program as an example of a successful breeding program design, and to make a promotion video for the MOOC.
The MOOC went live on September 19, 2017. By that time some 3000 students from all over the world had registered for participation. Few hundered students have applied for a certificate, meaning that they intend to follow the course to the end and do the qualifying tests. The first run of this course was for 7 weeks, paced. During this period, two students from WU- ABGC actd as moderators, giving feedback to students and building a frequently asked questions database. The cource will be open periodically in the future.

1.2.7. Communications and knowledge management

ACGG program communications have been an important component of the ACGG program since its inception. Led by a team from the Comunication and Knowldage Management unit of the International Livestock Research Institute (ILRI) in Addis Ababa. ACGG communications have also been supported with regular involvement of consultant, as well as country teams from 2015 to date.

Communication in ACGG – encapsulated in the communication strategy – relies on the following platforms:

- A website - https://africacgg.net/.
- A collaborative workspace (wiki) for the teams - http://acgg.wikispaces.com/.
- A Yammer social network – https://www.yammer.com/acgg#/Threads/index?type=my_all (closed, requiring credentials).
- A collection of all final project outputs - https://cgspace.cgiar.org/handle/10568/65219.
- A collection of posters and presentations, mapped onto the general account of the International Livestock Research Institute - https://www.slideshare.net/ilri (searchable via the hashtag #acgg).
- A collection of pictures on FlickR mapped onto the general account of the International Livestock Research Institute - https://www.flickr.com/photos/ilri/.
- Twitter has been used occasionally though mostly via the private accounts of project director Tadelle Dessie and other staff members (such as Ewen Le Borgne), or via the ACGG Nigeria account.
- More recently an ACGG Nigeria Facebook page was launched but only for national communications.
- A variety of WhatsApp groups have emerged but these are not part of the formal family of ACGG Comms platforms.
- A series of supported face-to-face events.

See for detailed report on ACGG's communication activities, results, outputs and planed activites

1.3 ACGG Outcomes: Progress

The ACGG program is focused on five primary outcomes, and the success of the program is oriented around these outcomes focused on the identification of farmer preferred breeds, the engagement of women in the smallholder chicken value chain, the infrastructure developed around innovation platforms, and finally, the development of a long-term genetic gains program. More detailed progress on the ACGG outcomes, including links to deliverables, can be found below:

1.3.1 Outcome 1: Data driven understanding of the breeds and specific traits that poor smallholder farmers, especially women, prefer across the various countries

Outcomes and Outputs (from Results Framework)	Milestones	Original target date	S
1.1 Functioning, networked data capture, analysis, feedback system and experiment design			
1.1.1 Data management system	Year 1: Data management system is in place by April, 2015	Year 1: Data Management system is in Place by April, 2015 • ACGG Data	Done
1.1.2 Experimental design, standardized on-farm testing procedures, surveys, and biosecurity protocols are established	Year 1:SOP for on-farm and on-station testing is complete by October, 2015	Year 1: SOPs completed by October, 2015 • Site Selection Framework • On-station SOP • On-farm SOP	Done
1.1.3 Analysis on the impact of household chicken productivity increase on individual consumption	No Milestone in Reporting Period 1, 2& 3 but in period 4 (ACGG-ATONU outcomes and Outputs)		
1.1.4 Analysis on the impact of the introduction of exotic chickens on the genetic diversity of the indigenous chicken population	No Milestone in Reporting Period 1, 2& 3 but in period 5 (ACGG-CTLGH outcomes and Outputs)		
1.1.5 Comprehensive chicken VC data set from baseline, line testing, and field surveys	Year 1:Baseline data publically available by the end of year 1	Year 1:Baseline data publically accessible • Nigeria Baseline • Tanzania Baseline • Ethiopia Baseline	Done (previously delay
	Year 2:On-station testing data becomes publically available by the end of year 2	Year 2: The launch of on-station testing was delayed. Therefore, data access was delayed.but in period 3 data publically accessible	Done (previously delay
1.2.1 Private sector players have identified investment opportunities and are working with program teams to develop investment plans	Year 2: Stakeholder mapping by October, 2016	Year 2: The gender team is accessing if stakeholder mapping is necessary. They advise the ACGG project team.	complete (http://acgg.wiki

1.3.1 A synthesis of experiences from the testing to inform the future design (including IP framework, legal, and operation dimensions) of the development of independent chicken testing and evaluation centers	No Milestone in Reporting Period 1, 2 & 3

1.3.2 Outcome 2: Farmer preferred lines, that produce at least 200% more than existing local breeds, are made accessible to smallholders through public and private organizations

Outcomes and Outputs (from Results Framework)	Milestones	Original target date	Status
2.1 Developed through the innovation platforms, an existing network of public and private organizations are multiplying and selling at least two tested, farmer preferred breeds per country			
2.1.1. Preferred birds that produce at least 200% more than existing local breeds are proven and registered in each country	No Milestone in reporting during Period 1, 2 & 3 but we have the reports that provide prelemenary identification on more productive breeds		
2.1.2 Chicken VC stakeholder mapping in each country that identifies strategic roles for stakeholders	No Milestone Established		
2.1.3 Organizations procured infrastructure and accessed lines for the multiplication and delivery of farmer-preferred DOCs	Year 1: Sufficient infrastructure is procured in each project country by October, 2015	Year 1: Infrastructure in all 3 project countries was established by October, 2015	Done
2.1.4 Private and public organization are maintaining stable multiplication flocks and are multiplying farmer preferred lines	No Milestone in Reporting Period 1,2&3		
2.1.5 Network of 20-30 brooder/distributers is established in each project country	No Milestone in Reporting Period 1,2&3		
2.2.1 smallholder access to tested, farmer-preferred 21 day old chicks in Tanzania, Ethiopia, and Nigeria	No Milestone in Reporting Period 1,2&3		
2.3.1 Standardized policy and regulatory frameworks for how stakeholders can support the smallholder poultry sector	No Milestone in Reporting Period 1,2&3		
2.3.2 Farmer preferred, exotic lines are accessible to researcher and if selected, multipliers in Tanzania, Nigeria, and Ethiopia	No Milestone in Reporting Period 1,2&3		

2.3.3 Increased capacity-human and physical-in the chicken VC	Year 1: Infrastructure for multiplication procured in each project country by October, 2015		Done

1.3.3 Outcome 3: Increased realized productivity for smallholders with access to the tested, farmer preferred lines

Outcomes and Outputs (from Results Framework)	Milestones	Original target date	Status
3.1 Empowered smallholder women have access to chicken value-chain services to increase their productivity			
3.1.2 Decreased mortality and increased production in smallholder chicken systems	No Milestone in Reporting Period 1,2&3		

1.3.4 Outcome 4: Empowered smallholder women engaged as chicken producers

Outcomes and Outputs (from Results Framework)	Milestones	Original target date	Status
4.1 Feedback loop established through the sub-national platforms for women engagement is informing the breeding program and chicken value chain development			
4.1.1 Community-level meetings focusing on women VC actors	Year 1: A minimum of 3 facilitators per country are women	Year 2&3 : • 3 female facilitators in Nigeria • 3 female facilitators n Ethiopia • 3 female facilitators in Tanzania	Complete
4.1.2 Sub-national platform meetings focusing on women VC actors	Year 1: 70% of national innovation platform participants are women and community facilitators are women	Year 1: • Ethiopia =27% of IP participants are women • Nigeria =39% of IP participants are women • Tanzania =30% of IP participants are women	Partially Complete
	Year 2: 50% of sub-national innovation platform participants are women	Year 2: Second National IP • Nigeria =27.6% female participants • Tanzania =26.6% female participants • Ethiopia =18.1% female participants Third National IP • Nigeria =19.4% female participants • Tanzania= 15% female participants • Ethiopia =29.6% female participants Fourth National IP • Nigeria =27.8% female participants	Partially Complete

		• Tanzania=26.3% female participants • Ethiopia= 20.5% female participants	
	Year 2: 50% of sub-national innovation platform participants are women	Year 3: Fifth National IP • Nigeria =18.6% female participants • Tanzania=35.0% female participants • Ethiopia=34.2% female participants	
4.1.3 National and community platform meeting documented (reports, minutes, due diligence)	Year 1: Minutes and due diligence reports after each innovation platform meeting	Year 1: • 1 National IP Report/Project Country • Community IP reports	Done
	Year 2: Minutes and due diligence reports after each innovation platform meeting	Year 2: • 3 National IPs completed in Ethiopia, 3 documented (2nd ET IP, 3rd ET IP) • 3 National IPs completed in Nigeria, 3 documented (2nd NG IP, 3rd NG IP) • 3 National IPs completed in Tanzania, 3 documented (2nd TZ IP, 3rd TZ IP)	Done
	Year 3: Minutes and due diligence reports after each innovation platform meeting	2 National IPs completed in Ethiopia, 2 documents (4&5 IP https://acgg.wikispaces.com/PICO-EA%20and%20the%20Innovation%20Platform 2 National IPs completed in Nigeria, 2 documents (4&5 IP https://acgg.wikispaces.com/PICO-EA%20and%20the%20Innovation%20Platform 2 National IPs completed in Ethiopia, 2 documents (4&5 IP https://acgg.wikispaces.com/PICO-EA%20and%20the%20Innovation%20Platform	
4.2.1 At least 5 trained facilitators, with a minimum of 3 female facilitators, in each project country by end of year 1	Year 1: A minimum of 3 facilitators per country are women	Year 1: • 24 project members facilitation trained • 3 female facilitators in Nigeria • 2 female facilitators in Ethiopia • 2 female facilitators in Tanzania	Partially Complete
4.2.2 The facilitators link the smallholder women to the innovation	Year 1: Innovation platform discussion at the community and sub-	Year 1: • Limited documentation of gender disaggregated constraints and opportunities • Continued low participation of women 4.1.2	Partially Done

platforms and other stakeholders in the chicken Value chains	regional level are informed by the requests and needs of women		
	Year 2: Innovation platform discussion at the community are informed by the requests and needs of women	Year 2: Incomplete but adjusting community IP design and facilitation (See Project Adjustments) To date: Over 270 Community IP convenings (140 for Nigeria; 70 for Ethiopia and 60 for Tanzania) have been held during the reporting period (https://acgg.wikispaces.com/PICO-EA%20and%20the%20Innovation%20Platform)	Incomplete (See Project Adjustments)
	Year 3: Innovation platform discussion at the community are informed by the requests and needs of women	Year 3: Based on the adjustment in year 2 ACGG geneder stategy developed in year 3 and start implementation (gender strategy) and see page 23	on-going in period 4

1.3.5 Outcome 5: Long-term chicken genetic gains programs with clear plans for breeding are established in each country with the capacity to drive accelerated genetic gains

Outcomes and Outputs (from Results Framework)	Milestones	Original target date
5.1	Established programs for crossbreeding that will eventually result in the development of synthetic breeds	

1.4 Risk/Challenges

Given ACGG's geographic size and complexity, it is important to identify and assess external and internal factors that may limit the timely delivery of the project. Furthermore, defining challenges and risks enable the project management staff to develop decision preventative plans to reduce the probability or impact of the risks. Risks and the associated mitigation plans for period 2 and 3 of ACGG have been outlined below. Additionally, the ACGG management staff has outlined updates of the Period 1 risks/challenges as part of period 2.

Period 1 Risks/Challenge	Period 1 Mitigation Plans (3/17 as period 2 Updates)
The areas of expertise and level of engagement of the Scientific and Industry Advisory Committee (SIAC)	3/16 Update: While the SIAC is comprised of high quality individuals, there is concern that the SIAC members may not have the needed expertise to support the program. Therefore, the project team is exploring adding an additional SIAC member and replacing at least one of the existing committee members. These adjustments will be done in close collaboration and under the advice of the BMGF program officer. *3/17 Update: The composition of the SIAC remains an area of risk/concern, but in 2017, the SIAC was reorganized to include a well-informed and*

	qualified individual from each project country. This redesign, done in alignment with the BMGF Senior Program Officer, resulted in a positive change to the quality of the SIAC output. The composition of the SIAC will continue to be monitored and evaluated annually.
Major disease outbreaks that prevent exchange and distribution of germplasm in the project countries	3/16 Update: From the start ILRI and partners develop and implement strict bio-security measures that prevent major disease outbreaks; the program proactively promotes best practices through capacity strengthening in target countries. This is an ongoing concern that is consistently monitored and tracked by the project team. Unfortunately, this issue was a challenge when exporting the Fayoumi from France. The ACGG program team worked closely with the CVO in Ethiopia to make the informed decision to not import considering the avian influenza outbreak in France. It is critical that ACGG "do no harm," and therefore, the program team takes great care to not take any zoosanitary or biosecurity risks. *3/17 Update: As planned, all ACGG birds were vaccinated for the locally economically-relevant poultry diseases. Despite these measures and practices, there were a number of events of high mortality during brooding. In these instances, teams of veterinarians and poultry experts were dispatched to the brooders to determine the cause and to mitigate the impact. In some cases, the use of brooders were discontinued, and in other cases, the brooders were trained on better brooding and sanitation practices.* *For the upcoming project year, the issue of disease will remain a critical issue. Therefore, the team will focus on monitoring the disease events on-station and on-farm. The Metabase monitoring dashboard will be used by ILRI and the national partners to identify outbreaks in real-time. Additionally, ILRI will access if there is a need for training to community health workers and/or national veterinarians.*
Concerns over delays and challenges due to national ownership of and rights over the country based improved lines as well as over the lines to be imported from outside Africa	The program leadership has actively engaged the key players at country level especially policy makers and implementers as well as relevant sector players/actors in order to agree on the breeding material transfer agreements and benefit sharing arrangements. ILRI legal has supported the program in obtaining the necessary permits and agreements, and ILRI legal will continue to support the ACGG program team regarding IPR concerns. *3/17 Update: While this risk remains a concern, it currently remains mitigated by the signing of CRAs and contracts. Both the CRAs and contracts have been previously shared with Foundation staff, but ACGG is able to provide all documentation upon request. As strain preferences become more clear, ACGG and ILRI legal will proceed with Material Transfer Agreements as outlined in the below Global Access Strategy https://acgg.wikispaces.com/Global+Access+Strategy.*

Managing the tensions between scaling up fast and learning	The tension between scaling up fast and learning is a critical concern in research for development programs. The ACGG theory of change elaborates on how we believe we need the right information before going to scale. Therefore, we are first prioritizing learning, but we also are aware of the need to be prepared to scale when farmers identify preferred strains. Monitoring on-farm and farmer preference data during testing will be critical to managing this risk. *3/17 Update: The balance between scaling and research remains both a risk and an opportunity to ACGG, but currently risk is being managed by close on-farm and on-station monitoring. Furthermore, ILRI believes that a key to scaling is partnership with the private sector. Therefore, ILRI is actively pursuing private sector partnerships to facilitate scaling up..*
Progress and learning are hindered by trust and financial concerns	The program management team works to promote learning, commitment to the program and beneficiaries, and most importantly, a sense of collective trust. The ILRI CKM team has supported the management team considerably in promoting a sense of collective learning and trust through facilitated discussions and online platforms to promote discussions. Regarding financial concerns, the ACGG program management team has quickly learned that financial training to all program partners is key to higher quality and more reliable financial management. *3/17: All national project teams have received financial management training. In Ethiopia and Tanzania, this capacity development has significantly mitigated risk and fostered trust.* *In Nigeria, the TSA regulation has forced ILRI to manage the project finances through ILRI Nigeria. This adjustment in the management of project funds was challenging for both financial management and partnership, but the start of 2017 has brought significant progress with the quality of financial management in Nigeria.*
Capacity of Partners to Maintain High Quality Financial Management	As outlined in Projects Adjustments, the ACGG program has experienced delays due to limited partner capacity regarding financial management. Therefore, the ACGG program team has worked with all partners to identify a designated program accountant, and this identified individual is receiving training on financial management and reporting from ILRI finance. *3/17: As stated above, all partners have received financial training.*
Potencial risk of failure in cases of conflict between national and ACGG (ILRI) plans of project implementation	The ACGG management team is committed to using joint planning and regular dialogue to ensure common vision and effective conflict resolution frameworks are in place to ensure timely interventions should conflict arise. *3/17: Productive partnerships are key to ACGG. Therefore, significant financial and human resources have been invested in the development of strong partnerships with the NARS. Overall, 2016 was a successful year for partnership development with the single significant concern being the development of the relationship with ILRI Nigeria and our project partners. As this is a new partnership coming into the project late in implementation, it is important that the terms and roles of the partners are clearly outlined*

	and managed. This partnership will continue to be a priority in ACGG Period 3.
Being able to get full buy-in of a shared program vision by the country level project team to build strong national program components.	The ILRI ACGG management team works to engage partners in joint planning involving all partners at country level to ensure a shared vision and commitment to realize success. This model of joint planning and engagement has translated to the national team who are planning at the national level through write shops, program management meetings, and innovation platforms. *3/17: This risk remains, but throughout 2016 ACGG has worked together to work plan and monitor. This deep engagement has ensured that the national project teams have deep buy-in and ownership of the ACGG Theory of Change and implementation plans.*
Lack of engagement of private sector actors-Private businesses operate on very different terms to research and development actors. Failure to engage them at the right pitch could severely hinder progress	The ILRI ACGG management team is working to mitigate concerns around private sector engagement through early consultations with relevant actors to find out how they prefer to engage and what motivates them to participate in ACGG. For example, ILRI is hosting private sector cocktails for deeper engagement. Furthermore, ILRI CKM is producing private sector facing communications materials to support engagement and a business consultant will be hired by the program. A number of agreements and contracts have already been finalized with the private sector. *3/17: As discussed above, ACGG's ability to partner has been significant, and in many cases, ACGG partners are private sector players that are heavily engaged in the opportunities of the smallholder poultry value chain.*

Period 2/3 Risks/Challenge	Period 2 Mitigation Plans
Period 2/3 Risk: ACGG was designed with inherent product risk that the farmer preferred product cannot be created.	ACGG has a unique objective to identify and multiply farmer-preferred chicken strains at scale. There is a risk that farmer preferences cannot be created, but ACGG is focusing in Period 4 on identifying what farmers prefer based on the production and productivity levels of chicken strains tested (report available) and farmer preference trough community IP convenings inperiod 4. From this information, ACGG will be able to design a selection index which will support the feasibility of simultaneously selecting the preferred traits. It is important that ACGG creates a feedback loop to farmers to manage expectations.
Period 2/3 Risk: Competitive risk is both a strength and an opportunity in ACGG. As ACGG works to identify farmer preferred strains, there is the risk of the ACGG strains be outcompeted by other services/products.	ACGG views competitive risk as a potential opportunity. Therefore, competitors are invited to national Innovation Platforms and project meeting. ACGG is working to collaborate and co-create with potential competitors to support the smallholder poultry sector.

Period 2/3 Risk: Data collection and data management have been a significant challenge in ACGG, and such challenges has resulted in delays and poor information flow.	ACGG ILRI is recruiting an international staff position for Web Development-Data Visualization. This position will manage the ACGG data team and use their senior expertise to adjust and update the ACGG data collection, management, and visualization system in Period 4.
Period 2/3 Risk: On-farm data collection in Oromia (Ethiopia) has been limited due to language constraints and staff commitment. Therefore, on-farm data collection is delayed and limited.	ACGG ILRI and ACGG Ethiopia were involved in discussions regarding retraining staff in Oromia and monitoring data collection more closely. The impact of the training and monitoring was evaluated, dta quality significantly improved during this reporting period.
Period 2/3 Risk: The lack of engagement and implementation of the community innovation platforms. Limited or poor implementation of the community innovation platform could result in limited feedback loops to and from farmers.	PICO-EA is retraining project staff on how to facilitate and run community innovation platforms. These trainings will include in-country follow-up to ensure that the CIP meetings are being run accordingly, to provide strategic direction, and as opportunities to confirm or adjust the strategic direction of the CIPs.

APPENDIX D:

Publications produced by ACGG

1. Gender strategy: African Chicken Genetic Gains program https://cgspace.cgiar.org/handle/10568/91218
2. Gender capacity assessment of the African chicken genetic gains project partners in Ethiopia https://cgspace.cgiar.org/handle/10568/88239
3. Gender capacity assessment of the African chicken genetic gains project partners in Tanzania https://cgspace.cgiar.org/handle/10568/88240

Manuals under review

4. Poultry feed preparation and utilization manual for smallholder farmers;
5. Poultry health inspection and monitoring manual for smallholder farmers keeping chicken in semi-scavenging systems;
6. Past attempts of chicken genetic improvement in low-input tropical production systems: *setting a roadmap for the African Chicken Genetic Gains (ACGG) Programme*