**Flagship Annual Report - 2019**

**FP1 – Priority Setting & Impact Acceleration**

Progress towards outcomes

A major goal of Flagship 1 is to enhance the relevance and impacts of GLDC research through improved targeting and priority-setting, learning from adoption and impact studies, strategic gender research, and supporting scaling efforts. Achieving greater impacts of GLDC research in Sub-Saharan Africa and South Asia requires research that responds to the challenges facing smallholder farmers and their families and also addresses the national and regional priorities.

An ex-ante nutritional impact assessment of GLDC research and technology options was carried out as part of the multidimensional ex-ante evaluation of GLDC research and technology options for identifying research priorities based on potential economic, poverty, and nutrition security impacts. This body of work aims at sharpening the focus of GLDC research on lines of research that have the greatest potential for adoption and impacts on smallholder farmers in the dryland areas of Sub-Saharan Africa and South Asia. The ex-ante evaluation led to a ranking of GLDC technologies based on their potential impact on nutrition security. Key findings suggest that in West and Central Africa, the technologies with the largest positive impacts on nutrition security are early-maturing sorghum varieties and hybrids with tolerance to drought; early-maturing and drought-tolerant pearl millet hybrids with high and stable yields; and insect-resistant and drought tolerant cowpea varieties including integrated crop and pest management. In Eastern and Southern Africa, the most promising GLDC technologies are Intercropping-compatible pigeon pea varieties including integrated crop management options; early-maturing sorghum varieties and hybrids with tolerance to drought; and striga-resistant sorghum varieties and hybrids. In South Asia, the most promising technologies are chickpea varieties resistant to Fusarium wilt and root rots; Botrytis gray mold-resistant chickpea varieties; and herbicide-tolerant chickpea varieties to control weeds. A synthesis of the three separate evaluations will allow a multi-criteria prioritization of GLDC research and technology option based on expected economic impacts as well as poverty reduction and nutrition security. The final prioritization based on their multi-dimensional impacts is expected to guide breeding priorities for GLDC crops.

Priority setting is also informed by the work on prioritization of varietal attributes and product profiles that define the most important end-user preferred traits for GLDC crops to be targeted by the breeders. Understanding the drivers of adoption and identifying producer and end-user preferences is crucial for ensuring alignment between end-user demand and breeding targets and facilitate scaling of GLDC innovations. In India, a stakeholder consultation was conducted to identify the key market traits for sorghum to be part of the product profile. Preliminary results for rainy season sorghum showed that the market-preferred or must-have traits are varieties with white, larger globular, lustrous grains to attract good market price. Similarly, for kharif season sorghum, the market or industrial preferred traits include higher starch (>68%), medium protein content (8-10%), and higher protein digestibility. The results were used to develop the updated sorghum product profile for India. A choice experiment was conducted with consumers in Tanzania and data analysis is underway to identify priority traits for groundnut and sorghum and to develop product profile for these crops as well as customer profiles using latent class analysis. In Nigeria, an interview with cowpea traders was conducted as part of a larger study designed to assess end-user preferences of cowpea traits and to provide the evidence base to guide product profile development efforts. Preliminary results showed that consumers in northern Nigeria prefer white cowpea, whereas consumers in the south-south and south-east regions mainly prefer white speckled cowpea followed by white cowpea and those in the south-west region largely prefer brown cowpea followed by white cowpea.

Flagship 1 conducts research aimed at enhancing and deepening our understanding of all aspects of end-user demand including consumer demand for GLDC food crops, technology demand by rural farming households, and an analysis of wider potential to change consumer behavior. This work has focused on the drivers of technology adoption and change within smallholder farmer context and specific consumer segments and has delivered several outputs (Simtowe and Mausch, 2019; Gassner et al., 2019; Harris et al., 2019; Homann-Kee Tui, 2019; LaRue, 2019; Verkaart et al, 2019; Watson and Mausch, 2019). Lack of market access was found to be a major barrier to adoption of climate smart sorghum varieties in Tanzania where farmers with poor market access even abandoned sorghum production (Simtowe and Mausch, 2019). For chickpea in Ethiopia, on the other hand, good access to market and extension services led to a faster and higher adoption of improved varieties, with adoption rates increasing from 30 to 80% in just seven years (Verkaart et al., 2019). In the area of drivers of change, it is argued that while technologies already exist that can achieve a three-fold or four-fold increase in smallholder farmers’ yields, even under rainfed conditions, Gassner et al. (2019) showed that the small size of land available to them limits how much can be grown and the per capita income from agriculture would be insufficient to enable people to move out of poverty. In view of the large differences between individual farming households themselves in terms of their investment incentives and capability to benefit from productivity-enhancing technologies, the findings point to the need for more differentiated policies for agricultural development in Africa and suggest that policymakers should be much more aware of the heterogeneity of farms and target interventions accordingly.

The strategic research on gender and youth focused on integrating gender and youth activities in four main thematic areas: gender and breeding; gender dynamics in seed value chains; strategies for youth Integration; and gendered impacts on asset ownership. A framework was developed and tested for assessing gender integration in traits, preferences and breeding decisions in the sorghum breeding program in West and Central Africa. Social scientists and breeders attended a joint training on ‘Gender Responsive Breeding’ and together analyzed the social structures in varietal demands to generate insights that contribute to the product profile development for GLDC priority crops in the region. Youth realities, aspirations, transitions and opportunities structures were studied in Uganda, Ethiopia, Tanzania (through qualitative interviews) and youth engagements in seeds systems in Mali and northern Nigeria (through quantitative data collection among 600 young women and 600 young men in Mali and Nigeria). Gendered transition pathways that are unique for boys and girls have implications of access to productive resources and influence who can and can’t engage in farming in the drylands (<https://gender.cgiar.org/webinar-youth-dryland/>). While there is a blanket narrative that the ‘*youth are not interested in agriculture’* evidence generated so far shows there is a category of youth who remain in agriculture; some because they chose to and some because it’s the only option. Models of engagement with the youth in the value chains will be tested in 2020 with projects aligned to the CRP-GLDC.

Identifying the enabling conditions for successful scaling and assessing impacts of GLDC technologies is one of the major areas of research in Flagship 1. Regarding scaling, an idealized scaling framework was developed that encapsulates key elements considered important in promoting the large-scale adoption and, in turn, impacts of GLDC technologies. This framework was reviewed against four GLDC case study projects: HOPE, TL III, AVCD, and MISST. While the original objective was to provide recommendations to strengthen the scaling approaches employed by these projects as well as future scaling efforts, the framework will be expanded to make it more conducive for supporting and enhancing GLDC’s scaling approaches and impact. Regarding impact assessment, a stakeholder workshop was convened on 28-30 August 2019 in Nairobi to provide the GLDC program with a starting point for developing an impact evidencing strategy. The workshop developed an evidence framework based on seven critical nodes in GLDC’s implicit Theory of Change: (1) market and farmer demand; (2) delivery; (3) enabling environment; (4) adoption; (5) diets; (6) productivity and profits; and (7) natural resource management and resilience. These nodes constitute the evidence needs of the program. Using this framework, the workshop mapped the evidence available (completed, ongoing, and planned) for each of the nodes. The same evidence framework of seven nodes was used to identify 25 evidence gaps.

A study conducted in Nigeria using a nationally representative sample survey of over 1,500 cowpea producing households to assess the extent, determinants, and impacts of adoption of improved cowpea varieties showed that over 40% of the cowpea growers adopted improved varieties on over 1 million hectares of land and adoption of these varieties was associated on average with a 26% increase in yields, 14% increase in production costs, and 61% increase in net returns per hectare (Manda et al., 2019a). Adoption of improved cowpea varieties also led to a 17 percentage-point increase in household income, a 24 percentage-point increase in asset ownership, and a 5 percentage-point reduction in the incidence of poverty, which is equivalent to 929,450 people lifted out of poverty due to adoption of improved varieties (Manda et al. 2019b). A study conducted in Malawi using a nationally representative sample of over 1200 soybean growing households showed that 34% the total soybean area was planted to improved varieties following the recommended agronomic practices (Tufa et al. 2019). The results from an endogenous switching regression model demonstrated that adoption of improved soybean varieties and agronomic practices led to an average of 61% yield gain and 53% net income gain for adopters. In Myanmar, an impact study showed that the cropped area under improved chickpea varieties has increased from 67% in 2001 to 98% in 2017 and the productivity gain due to adoption of improved chickpea varieties was estimated at 51% (Charyulu et al. 2019). The estimated welfare benefits accrued due to adoption of improved varieties was $153 million, with the chickpea producer gaining greater share of the welfare benefits relative to the chickpea consumers.

Variance from Planned Program for this year

There were no research areas that have been significantly expanded or that have been dropped or significantly cut back.

PARTNESHIPS: ACHIEVEMENT AND CHALLENGES

Highlights of External Partnerships

A partnership has been established with University of Cologne and Future Rural Africa Research Group at the University of Bonn for a planned special issue publication on aspirations. The team working on gender and youth established partnerships with the social science departments at Makerere University in Uganda, Haramaya University in Ethiopia, Sokoine University of Agriculture in Tanzania. A PhD student studying youth and employment was drafted to join the team designing the youth strategy study for the GLDC. Each department identified male and female enumerators that would support data collection in each country. The project implementation team met in Nairobi in early 2019 to design the project methodology - a training facilitated by [www.greatagriculture.org](http://www.greatagriculture.org). The concept of ' youth transitions' and the associated 'opportunity structures' were identified as key areas of research. The study sites in each country were aligned with sites where ICRISAT/NARS partners had other on-going activities for example in Tanzania, the youth study sites are aligned with 'commodity corridors' for groundnuts and sorghums, based on the notion that 'opportunity structures' for the youth are most likely aligned to the commodity value chain sectors. The main challenge has been in sorting the logistics of administering the partnership agreements and funds transfer in a synchronized manner. The process is easier in some countries than others, leading to the inability to synchronize the implementation of activities. GLDC has been supportive of availing extra funding to cover all the countries in the study. The work on adoption and impacts of improved cowpea varieties in Nigeria was conducted in partnership with cowpea breeders and agronomists at the Nigeria’s Institute of Agricultural Research. Through constant interactions and consultations, the study benefited from technical inputs from breeders and agronomists who were involved in the development and dissemination of improved varieties and agronomic practices. Challenges were largely related to the fact that many national and regional partner organizations have either very few or no social scientists.

Cross-CGIAR Partnerships

Beyond the strong collaborative work involving the core implementing partners (i.e. ICRISAT, IITA, ICRAF, and ICARDA), there were a few cross-CRP and cross-center collaborations in 2019. A collaborative work with PIM has enabled researchers in Flagship 1 to update the GLDC database of IFPRI’s International Model for the Policy Analysis of Agricultural Commodities and Trade (IMPACT) for foresight modeling and ex-ante analysis for priority setting. Researchers in Flagship 1 work closely with the CGIAR Collaborative Platform for Gender Research. Activities in the area of urban food system understanding were carried out in collaboration with CIAT through increased linkages to the farming population and integration of activities to create synergies. Collaborative work with PIM to enhance our understanding of household situations and outlook and the implications for adoption as well as dietary and entrepreneurship entry points. There was also CGIAR-wider partnership for delivery of gender research involving gender scientists from all CGIAR centers. The Gender and Breeding Initiative/Excellence in Breeding was yet another platform involving gender scientists and breeders from CGIAR centres that have commodity breeding programs.

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# Table 1: MILESTONEs TABLE 2019

Summary of status of Planned Outcomes and Milestones (Sphere of Influence-Control)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **FP** | **FP outcomes 2022** | **Summary narrative on progress against each FP outcome this year.** | **Milestone** | **2019 milestones status (drop down: complete, extended, cancelled or changed)** | **Provide evidence for completed milestones (refer back to means of verification, and link to evidence wherever possible) or explanation for extended, cancelled or changed.**  **Max 50 words/milestone** |
| 1 | Outcome 1. Improved targeting and responsiveness of research to market and household demands in the face of climate change for greater technology adoption, food and nutrition security, resilience, and poverty reduction | With the priority GLDC crops, countries, and lines of research identified based largely on the initial foresight and ex-ante impact evaluation work, the subsequent multi-criteria ex-ante impact evaluations are providing a sound decision support to enhance the targeting, responsiveness, and impacts of GLDC research | Ex-ante evaluation of GLDC research and technology options completed and working papers published on the potential poverty and nutrition security impacts to guide priority setting | Extended | Ex-ante evaluations completed <https://hdl.handle.net/20.500.11766/9469>;  (<https://hdl.handle.net/20.500.11766/10874>), but the preparation of papers is still underway before submission to journals |
| 1 | Outcome 2. Market and household demand identified and trade-offs assessed for more inclusive value chains that improve income and nutrition status in target regions | The work on household aspirations is helping to better identify end-user demands and profiles and build on what has been documented in several market and value chain studies in terms of market and household demands and preferences. | Shared learning across GLDC stakeholders and FPs on implications of diverse targets, aspirations, and future scenarios leading to strategic adjustments | Complete | <https://hdl.handle.net/20.500.11766/10592>  <https://hdl.handle.net/20.500.11766/10058>  <https://doi.org/10.1177%2F0030727019888513>  <https://theconversation.com/can-african-smallholders-farm-themselves-out-of-poverty-126692>  <https://hdl.handle.net/20.500.11766/9408>  <https://hdl.handle.net/20.500.11766/9411> |
| 1 | Outcome 3. Inclusive and equitable technologies and innovation systems established for accelerated and broadened impact across the agrifood system | The ongoing strategic gender research is generating insights that lead to inclusive and equitable technologies and innovation systems and enhances our understanding of the participation of women and youth in GLDC value chains as well as in technology and support service delivery. | Inclusive and equitable innovation system tested and adjusted to different biophysical and socioeconomic contexts including policy interactions | Extended | Ongoing work involving cross-country surveys in Tanzania, Ethiopia, and Uganda |
| 1 | Outcome 4. Strong project design, execution, monitoring and evaluation systems and tools consistently applied in GLDC scaling projects, with demonstrable progress on enhanced adoption and impact | The ongoing review of scaling approaches and impact evaluations is generating useful lessons for increased technology adoption and impact through identification of successful approaches to technology scaling and the underlying institutional and policy contexts. | Evaluation documenting the strengths, shortcomings, and key lessons learned on GLDC scaling approaches and impacts | Extended | A scaling framework was developed that encapsulates key elements considered important in promoting the large-scale adoption and impacts of GLDC technologies. Following an internal review, it was decided to expand the framework to make it more comprehensive for supporting and enhancing GLDC’s scaling approaches and impact. |
| 1 | Outcome 4. Strong project design, execution, monitoring and evaluation systems and tools consistently applied in GLDC scaling projects, with demonstrable progress on enhanced adoption and impact | The impact evidencing strategy that has been developed is expected to facilitate monitoring and evaluation and impact assessment systems for greater accountability and enhanced adoption and impacts of GLDC innovations. | Working strategy for evidencing the outcomes and impacts of GLDC | Complete | <https://hdl.handle.net/20.500.11766/10867> |

# Table 2: Evidence on Progress towards SRF targets (Sphere of interest)

Instructions:

Please complete this table with any available high-quality evidence on progress that was published or made available in 2019. Do not hesitate to state, “no new evidence available this year”, in column 2 if necessary, since we are trying to demonstrate evidence gaps and the need for additional funding for this area.

For examples of how this information can be phrased and referenced, please see Annex Table A [here](https://www.cgiar.org/wp/wp-content/uploads/2018/10/CGIAR-2017-Performance-Report-ANNEXES.pdf) in the previous CGIAR Annual Performance Report. Please provide information on all relevant SRF targets for a single study or innovation, to the extent possible. Example: please see in the 2017 report Annex Table A how findings from a single rice review have been allocated between targets for adoption, poverty and yield increases. Insofar as possible, please also disaggregate the effect of different innovations (e.g. in the above example NERICA rice could potentially be separated from another group of CGIAR rice varieties).

If the adoption or impact data comes from a relevant innovation or contribution of the CGIAR prior to the CRP start-up (e.g. varieties released before the CRP start-up, which for most CRPs would be approximately 2012), then please support statements with published references, as shown in the 2017 Annual Report Annex Table A above. Nearly all adoption or impact studies fall into the above category. There are (as yet) a few cases (two in 2017) in which the estimated figures for at-scale adoption or impact result from an innovation released within the CRP period, for example some biofortification numbers in 2017. If this is the case, then the statement must be supported by a link to an Outcome/ Impact Case Report **Maturity Level 3** (or if not, with unique identifier from any appropriate repository or publisher website).

|  |  |  |
| --- | --- | --- |
| **SLO Target (2022)** | **Brief summary of new evidence of CGIAR contribution**  [Put N/A if the specific SRF target is not applicable to your FP. Put “No new evidence in 2019” if the target is potentially relevant, but there is no new evidence available**.** *Spell out all acronyms.]*  *Maximum 150 words per entry.* | **Expected additional contribution before end of 2022** (if not already fully covered).  ***Optional narrative. Evidence not required.***  *Max. 100 words* |
| **1.1.** 100 million more farm households have adopted improved varieties, breeds, trees, and/or management practices | 1. A study conducted in Nigeria using a nationally representative sample survey of over 1,500 cowpea producing households showed that over 40% of the cowpea producers (equivalent approximately to 900,000 households) adopted improved varieties on over 1 million hectares of land. <https://doi.org/10.1111/1477-9552.12331>  2. A study conducted in Malawi using a nationally representative sample of over 1200 soybean growing households showed that over 33% of the households adopted improved varieties following the recommended agronomic practices.  (<https://doi.org/10.1016/j.worlddev.2019.104631>) | No |
| **1.2.** 30 million people, of which 50% are women, assisted to exit poverty | A study conducted in Nigeria showed that adoption of improved cowpea varieties led to a 17 percentage-point increase in household income, a 24 percentage-point increase in asset ownership, and a 5 percentage-point reduction in the incidence of poverty, which is equivalent to 929,450 people lifted out of poverty due to adoption of improved varieties.  (https://doi.org/10.1016/j.worlddev.2019.05.027) | No |
| **2.1.** Improve the rate of yield increase for major food staples from current <1% to 1.2-1.5% per year | 1. A study conducted in Nigeria using a nationally representative sample survey of over 1,500 cowpea producing households showed that adoption of improved varieties was associated on average with a 26% increase in yields, 14% increase in production costs, and 61% increase in net returns per hectare (<https://doi.org/10.1111/1477-9552.12331>).  2. A study conducted in Malawi using a nationally representative sample of over 1200 soybean growing households showed that 34% the total soybean area was planted to improved varieties following the recommended agronomic practices and adoption of improved soybean varieties and agronomic practices led to an average of 61% yield gain and 53% net income gain for adopters.  (<https://doi.org/10.1016/j.worlddev.2019.104631>)  3. In Myanmar, adoption of early maturing improved chickpea varieties led to 50% productivity gains. (<https://hdl.handle.net/20.500.11766/9784>) | No |
| **2.2.** 30 million more people, of which 50% are women, meeting minimum dietary energy requirements | No new evidence in 2019 |  |
| **2.3.** 150 million more people, of which 50% are women, without deficiencies in one or more essential micronutrients | No new evidence in 2019 |  |
| **3.1.** 5% increase in water and nutrient efficiency in agroecosystems | No new evidence in 2019 |  |
| **3.2.** Reduction in ‘agriculturally’-related greenhouse gas emissions by 5% | No new evidence in 2019 |  |
| **3.3.** 55 M ha degraded land area restored | No new evidence in 2019 |  |
| **3.4.** 2.5 M ha forest saved from deforestation | No new evidence in 2019 |  |

# Table 3: Condensed list of policy contributions in this reporting year (Sphere of Influence)

[Please list policy contributions here. (Please see the [indicator guidance](https://drive.google.com/file/d/1GYLsseeZOOXF9zXNtpUtE1xeh2gx3Vw2/view) for indicator #I1 number of policies which also includes an explanation of what is covered under the term ‘policy’.)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Column 1** | Column 2A | Column 2 | Column 3 | Column 4a | Column 4b | Column 4c | Column 4d | Column 4e |
| Title of policy, legal instrument, investment or curriculum to which CGIAR contributed (max 30 words)  *Spell out acronyms in every row* | Description of policy, legal instrument, investment or curriculum to which CGIAR contributed (30 words). See guidance for what to cover. | Level of Maturity | Link to sub-IDOs (max. 2) | CGIAR cross-cutting marker score | | | | Link to OICR (obligatory if Level of Maturity is 2 or 3) or link to evidence (e.g. PDF generated from MIS) |
| gender | youth | capdev | Climate Change |  |
| No policy or legal instrument | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

# Table 4: Condensed list of innovations by stage for this reporting year

Please complete the table below and report the supporting document in MEL unless you have already an external link to be provided.

|  |  |  |  |
| --- | --- | --- | --- |
| **Title of innovation with link** (e.g. to CLARISA dashboard, MARLO). | **Innovation Type** | **Stage of innovation** | **Geographic scope (with location)** |
| Methods for measuring the number of poor people lifted out of poverty due to adoption of improved varieties (https://doi.org/10.1016/j.worlddev.2019.05.027) | Methods and tools | 2 | Nigeria |

Table 5: List of Outcome Cases submitted by CoA Leaders

|  |  |  |  |
| --- | --- | --- | --- |
| **Title of Outcome/ Impact Case Report (OICR)** | **Link** to full OICR. | **Maturity level** drop down for:  1, 2, or 3 | **Indicate if this is:** (drop down)   * new outcome * updated Case- same level of maturity * updated Case- new level of maturity |
| Adoption and impacts of improved cowpea varieties in Nigeria |  |  | New outcome |

# Table 11: Examples of W1/2 Use in this reporting period (2019)

|  |  |
| --- | --- |
| **Please give specific examples, one per row (including through set aside strategic research funds or partner funds)**  Max 50 words-100 (maximum two entries per categories) | **Select broad area of use of W1/2 from the categories below - (drop down) Select only one category.** |
| Strategic ex-ante nutrition impact evaluation was undertaken to identify the GLDC research options with the greatest potential for enhancing nutrition security | Research |
| Developing future climate scenarios data for GLDC mega environments for Asia and SSA | Research |
| Making aspirations work for targeting and scaling agricultural innovations | Research |
| Assessment of the potential impact of GLDC crops on urban food and nutrition security | Research |
| Characterization of the youth in the drylands of Tanzania, Uganda and Ethiopia | Research |
| Integrated and multi-faceted impact assessment and learning strategy for GLDC. | Research |