Revision of the Theory of Change underpinning the implementation of the CGIAR Research Program on Grain Legumes and Dryland Cereals (CRP-GLDC)

Internal Working Note
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Summary

The CGIAR Research Program on Grain Legumes and Dryland Cereals (CRP-GLDC) was originally designed to transform agri-food systems in the drylands of Sub-Saharan Africa (SSA) and South Asia (SA) through five flagship programs (FP1-FP5) constituting two distinct impact pathways (‘integrative solutions’ and ‘scaling and sustaining’). However, since FP2 was not funded, and consequently, the CRP-GLDC introduced a cross-cutting theme on Markets and Partnerships in Agri-Business (MPAB) while FP6 on Common bean for markets and nutrition was incorporated into the program after two years of implementation of this CRP. This altered the implicit logic of the program’s Theory of Change (ToC), the degree of cross-FP linkages and the coordination with initially intended partners. This, coupled with the shortening of the program’s implementation period by one year to end in 2021 instead of 2022, besides some institutional changes in the CGIAR research centers due to their impending transition to the one CGIAR, has affected the impact pathways, thereby intended outputs, outcomes and impact necessitating a revision of the original ToC of the CRP-GLDC. The purpose of this revision is to integrate the newly inducted FP6 and the cross-cutting activity that replaced FP2 and assess what has been achieved so far or is projected to be achieved in the remaining year and re-align the ToC and impact pathways to be more realistic and reflective of the current logic and operational mechanism of the program. Following revision of the ToC, it is recommended that a post-CRP research and development program be implemented to achieve the intended agri-food systems’ transformation through a scaling and sustaining phase for the solutions generated by the first impact pathway.

Background

The original version of the Theory of Change (ToC) was developed in 2017 prior to the launch of the CRP-GLDC. It was meant to guide the implementation of five flagship programs along two impact pathways (for details see below and annexure). Flagship program 2, however, was not approved by funders and the introduction of FP6 during 2019 further added a new set of crops and implementation procedures to the research program. In this light of these changes at the program level, the Independent Reviews of Quality of Science and Effectiveness of the CRP-GLDC conducted by the CGIAR Advisory Services (CAS) in 2020 recommended the program management to revise the ToC given the structural changes at the program level.

This CRP was approved by the CGIAR System Council based on its promise to transform agri-food systems in the drylands of SSA and SA. The original ToC sought to address both the demand and supply challenges of the food market system. It aimed to address the issue of food and nutrition insecurity, interventions needed to increase the consumption of nutritious foods (demand-side/FP1) produced via (FP4, FP5) increased incomes or increased household production and nutrition value-addition in the respective GLDC value chains (supply-side). Where effective demand is constrained, demand-driven production informed by market research (FP2) would support a market-pull transformation while the supply side limitation would be overcome by organizing and improving production practices and post-harvest activities (FP3). The seamless interaction between FPs at successive steps geared towards achieving solutions to structural problems of poverty, food insecurity and climate change would generate outputs, outcomes and impacts over time.
However, in the absence of FP2, CRP-GLDC introduced a cross-cutting theme ‘Markets and Partnerships in Agri-business (MPAB)’ while FP6 was added after two years of implementation. The implicit logic of the program’s ToC, the degree of cross-FP linkages and the coordination with initially intended partners in the implementation were altered. This, coupled with the shortening of the CRP implementation period by one year to end in 2021 instead of 2022, and due to institutional changes of the CGIAR research centers in-transition to the one CGIAR, has affected the impact pathways, intended outputs, outcomes and impacts necessitating a revision of the ToC.

**Original Impact Pathway and Theory of Change**

The future demand for dryland cereals and grain legumes suggests tangible production, market and diversified diet opportunities for women, men and young farmers, value chain actors and consumers. Barriers to capturing these opportunities encompass the non-adoption of improved germplasm, poor agricultural practices, restrictive diet options for consumers, underdeveloped value chains, market failures, regulatory constraints and contradicting agricultural and trade policies. Although these barriers vary in intensity and scale, they impede grain legumes and dryland cereals (GLDC) in fulfilling their full ecological and economic potential across the semi-arid and sub-humid dryland agro-ecologies. Capturing the opportunities or tackling the barriers in isolation of each other, however, greatly underestimates their interconnectedness and the grave nature of the societal grand challenges prominent in the drylands of SSA and SA.

The theoretical underpinning of GLDC is institutional theory, conceptualized in the form of sociotechnical ‘regimes’ – i.e., agri-food system regimes that have resulted from the co-evolution of institutions and technologies over time. Consequently, the GLDC ToC argues that household-level outcomes of food security, resilience and poverty reduction depend on the ability of smallholder farmers and other actors to tackle system-level change in agri-food system regimes. The institutional setting (social values, rules, norms, traditions and practices) within such regimes and prevailing organizations and processes (technologies, markets, policymaking and governance) often act as a “hidden hand” that locks farming and market systems into practices impeding the creation, development and use of improved crop improvement and agronomic technologies. For GLDC to contribute to smallholders’ ability to overcome challenges and capture opportunities, crop improvement and farming systems research are necessary but need sufficient investments. Socioeconomics, contemporary development practice and scaling partners must be well integrated within GLDC to support different types of agency of actors to unlock opportunities in the context of their differing innovation capacities and agri-food system regimes.

The CRP-GLDC was originally designed to contribute to the Strategy and Results Framework (SRF) through two distinct impact pathways. In the first pathway on ‘integrative solutions’ (Annexure 1), it was conceived that research would lead to household-level outcomes by developing integrated technological, institutional and policy solutions with key partners. Inter- and transdisciplinary research would connect component solutions; notably improved varieties and hybrids (FP4, FP5), seed delivery systems (FP4), inclusive agribusiness models (FP2), modern agronomic practices (FP3) and policy platforms (FP1). Research evidence would help unlock opportunities through crop, livestock, tree, household, farm, value chain and institutional contributions and their interdependency (Annexure 1).

The CRP-GLDC consortium was designed to work towards increased protein availability from legumes and reduced risk of hunger through diversifying crop and duration of varieties. Improved feed and fodder for livestock-based protein would be an immediate benefit. Specific emphasis was given to
shifting the consumption of pulses from an export to a value addition opportunity for local consumption through mechanization of processing to reduce drudgery, increased consumption through convenience and increased unit price for processed, cleaned and graded products. FP1 had to identify the right leverage points (desired breeding traits, market preferences and resolvable value chain bottlenecks) developed in FP2-FP5 (Annexure 1). The underlying rationale was that if trait discovery and variety development (FP4, FP5) responded to current and future needs of farmers and consumers (FP1, FP3), and if business and value chain innovations (FP2) created market incentives, farmers would adopt GLDC technologies. Feedback loops between the different FPs would accelerate solution development, and the participation of targeted stakeholders would guarantee solutions based on end-user demands. The assumption was that across FP1, FP2 and FP4, experiments would achieve robust ‘proof of concept’ strategies.

Along the second impact pathway on ‘scaling and sustaining’ (Annexure 1), the CRP-GLDC intended to use insights from strategic niche management theories to implement five mechanisms to work with ‘change agents’ in order to address agri-food system barriers and secure sustainable outcomes. Firstly, CRP-GLDC would inform the work of policymakers, development NGOs and private sector actors by documenting realized and high probability impacts from intervention scenarios. Secondly, linkages, partnerships, platforms and relationships across stakeholder groupings would contribute to improved governance arrangements and system capacities. This includes collaboration with multilateral organizations such as the African Union and the Committee of World Food Security (CFS), lobbying and advocacy and engaging in institutional reforms. Thirdly, capacity development would lead to outcomes that can be repeated and strengthened, contributing to more responsive agri-food systems. Fourthly, researchers would develop general principles on how to strengthen the capacity of agri-food systems, e.g., through the development of inclusive investment mechanisms that can be applied to other contexts. Finally, agri-food system change would then happen through replication of successful initiatives developed under the different FPs (e.g., through market signal crowding in further business and farmer investments). Transformation would take place through incubated initiatives that would gradually start changing institutions and discovering new markets.

Consideration of gender and youth as catalysts of change throughout all FP activities would contribute to impact acceleration due to the prominent role of women in GLDC cultivation, besides through the engagement of future pioneers paving the way toward more sustainable GLDC farming and agri-food systems.

The need for revision of the Theory of Change

The purpose of the revision of the ToC was to integrate the new flagship, FP6 and the new cross-cutting theme on Markets and Partnerships in Agri-Business (MPAB), assess what has been achieved so far or is projected to be achieved in the remaining time frame of the CRP-GLDC, and re-align the ToC and impact pathways to be more realistic and reflective of the current logic and operational mechanism of the program. The revision also offers an opportunity to evaluate the actual implementation of ToC against the original ToC. Lessons will be generated on the effect of changes in the ToC and/or impact pathways and recommendations made for a post-CRP phase by addressing the following questions:

- Where does GLDC stand with regard to the anticipated outcomes and impact stipulated in the ToC?
- In view of changes in the program structure changes and likely delays due to COVID-19, where do sequences and linkages between outputs and outcomes require realignment?
• What operational measures would support flagship program leaders and scientists to better support program implementation along with the ToC?
• What management structures and processes could be adapted to better guide the implementation of the ToC?

Updated Impact Pathway and Theory of Change

Impact statement
In view of climate change, dynamic markets and new consumer demands, GLDC crops with superior traits and genetic diversity contribute to the alleviation of poverty and the improvement of food and nutrition security and health of the population in the dryland tropics of Sub-Saharan Africa (SSA) and South Asia (SA).

Stipulated changes in impact pathways and the ToC
Unlike in its original version, GLDC will now contribute to the SRF through one distinct impact pathway (integrative solutions) focusing on genetic resources enhancement through breeding for pre-determined priority traits informed by both the production and consumption domains; seed system and value chain innovations and development and agronomic management. As of 2020, outputs from this pathway are being achieved with varying degrees of success and progress across FPs. For FP1, two flagship outcomes are on course with the exception of the one on inclusive technologies and innovations developed within the agri-food system and evidence disseminated to enable spill over deployment. This outcome is in the domain of technology and innovation development; FP1 which focuses on priority setting and impact acceleration will not be able to achieve it. FP3, FP4 and FP5 reported normal progress on planned flagship outcomes. FP6 will be thoroughly integrated along the impact pathways of FP1, FP4 and FP5 (Annexure 2). These changes are explained in more detail as follows:

1. GLDC drops second impact pathway and partially replaces FP2 with a cross-cutting theme on Markets and Partnerships in Agri-Business (MPAB)

Along the original second impact pathway on ‘scaling and sustaining’ (Annexure 1), the newly introduced cross-cutting theme on MPAB conceptually prepares to support scaling up, scaling out and sustainability of the technologies. Within its limitations, the new theme will scope emerging markets and or policy opportunities in order to identify the integrated set of research, technology options, development and policy interventions and actors needed to respond to transitions in agri-food systems in ways that address the needs of smallholder farmers and leverage GLDC technologies. In the absence of FP2, however, GLDC researchers will not achieve the originally intended research outputs from action research on incubating emerging markets and policy opportunities. Instead, insights gained from the cross-cutting theme on MPAB, coupled with capacity development and gender, will feed into a new ToC supporting scaling and sustaining of GLDC outcomes in a post-CRP arrangement. Against this background, a post-CRP research and development program will be vital for GLDC to achieve the intended agri-food systems’ transformation through a scaling and sustaining phase for the solutions generated by the first pathway.
2. Cross-cutting theme on markets and partnerships prepares for scaling and sustaining GLDC outcomes in a post-CRP arrangement

Preparatory work for the second impact pathway (partially by the cross-cutting theme on MPAB) will continue to use insights from strategic niche management theories to frame institutional and policy mechanisms with ‘change agents’ to address agri-food system barriers and secure sustainable outcomes. Ideally, this cross-cutting theme, along with FP4, FP5 and FP6 establish linkages with public and private sectors to build their capacity as crucial partners as well as improve the enabling environment by influencing relevant policy direction and marketing systems. Growth in mutual confidence among partners and sharing of knowledge of available technologies and innovations along with feedback loops via FP1 and FP3 will inform the nature and magnitude of demand for GLDC technologies, to which FP4, FP5 and FP6 will respond through improved crops, and later through market and agribusiness innovation (through the cross-cutting theme on MPAB). This process prepares the GLDC consortium for the post-CRP phase from 2022 onwards.

In a post-CRP phase, the CRP-GLDC has the opportunity to consolidate solutions to abiotic and biotic research challenges of the target crops generated in the first pathway by solving market, business and distributional challenges in the second pathway and consequently scaling up and out the impacts of improved food and nutrition security for health and reduced poverty.

The scaling up and out of impacts will see improvements in the enabling environment and capacity development of national partners and beneficiaries with possible spill overs. This will promote private sector involvement in the GLDC value chains through means such as seed businesses that disseminate productive and nutritious varieties to increase household food and nutrition security and by providing raw materials for processed foods, thereby increasing the availability of nutrient-rich food to the population. A post-CRP scenario could provide a platform for the coordination of researchers, farmers’ cooperatives, extension agents, traders, processors and exporters with farmers to give them confidence about market availability, and inform them of improved agronomic practices and market requirements. This would encourage them to invest in and adopt productivity inducing technologies and work with financiers in the confidence of guaranteed returns on investment.

However, this requires a seamless implementation of the markets and partnership cross-cutting theme, FP3 and some COAs of FP6, particularly those that relate to going to scale with production technology.

3. GLDC adapts selected IDOs related to FP2

In the absence of FP2, intermediate development outcome (IDO) C1 on improving an enabling environment and D1 on enabling national partners and beneficiaries and system level outcome (SLO) D on capacity development can only be achieved through a post-CRP arrangement and funding. Presently, FP1, FP5 and FP6 only partially contribute to Sub-IDO C1.3 on conducive agricultural policy environment and D1.4 on increased capacity for innovation in partner development organizations and in poor and vulnerable communities, thus limiting scaling and sustaining of outcomes.

4. GLDC integrates FP6 along impact pathways of FPs 1, 4 and 5

Regarding FP linkages and outward CRP partnerships, FP4 and FP5 have strong linkages with national breeding programs in India, Ethiopia and Tanzania and partner research organizations. There is
considerable coordination across the FPs. FP1, FP3, FP4 and FP5 are working very closely but more work is needed to fully integrate FP6 into the GLDC and initiate formal collaboration with the initial FPs. There is a great potential for FP6 to coordinate with other FPs, especially FP4 and FP5, largely because the discovery tools and breeding technologies are not crop specific. Therefore, protocols on lentil and cowpea can be used to develop protocols for common bean or vice versa. These genetic enhancing FPs can also share knowledge and experiences on bio-fortification. Probably, durable FP6 integration into GLDC will be one of the achievements of the recently established task force to handle cross-FP collaboration throughout GLDC.

Gender and inclusion enter the pathways in terms of equitable participation of women, men and youth in the GLDC value chains and the consumption of the value chain products. Consideration of gender and youth as catalysts of change throughout all the FP activities contributes to impact acceleration. This is due to the prominent role of women in GLDC cultivation and through engagement of future pioneers paving the way towards more sustainable GLDC farming and agri-food systems.

Several preliminary observations resulting from revision of the current ToC include:

- Each flagship program ToC tends to follow its own internal logic.
- FP2 was partially substituted by a new cross-cutting activity, changing the implicit logic which must be taken into consideration when revising the overall ToC.
- The degree of collaboration between the flagship programs and hence the coordination of the implementation of the ToC across the program requires a review.
- FP6 was added to the program structure without being reflected in the overall ToC.
- Outputs and intended outcomes as defined in the current two impact pathways most likely require realignment.
- In the absence of FP2, impact pathway 2 (scaling and sustaining) could not be implemented as originally anticipated.

**Way forward**

To arrive at an adapted ToC and respective impact pathways for the final year of the CRP-GLDC as well as for a post-CRP arrangement, implementing the following steps will be helpful:

1. Based on the external evaluation, align the research program outputs and outcomes achieved so far with the ToC and impact pathways.
2. Elicit the necessary adaptations of the ToC and impact pathways through individual conversations with FP leaders, senior program management and strategic partners.
3. Draft a revised ToC and adapt corresponding impact pathways in the form of a draft briefing note, adjusting some of the ambitious targets and pathways originating from FP2, but also beefing up with new elements/strengths from FP6, especially those that serve to fill gaps in FP2.
4. Arrive at a consolidated ToC and impact pathways through a review workshop with management and strategic partners, and publish the revision as a briefing note.
5. Publish a review and reflection paper on the revised TOC in a peer-reviewed journal.
Annexure 1: Original GLDC impact pathway¹

Annexure 2: Revised GLDC impact pathway

Source: Adapted from the original GLDC impact pathway
This work was undertaken as part of, and funded by the CGIAR Research Program on Grain Legumes and Dryland Cereals (GLDC) and supported by CGIAR Fund Donors.

https://www.cgiar.org/funders/

About CRP-GLDC

The CGIAR Research Program on Grain Legumes and Dryland Cereals (CRP-GLDC) brings together research on seven legumes (chickpea, cowpea, pigeonpea, groundnut, lentil, soybean and common bean) and three cereals (pearl millet, finger millet and sorghum) to deliver improved livelihoods and nutrition by prioritizing demand-driven innovations to increase production and market opportunities along value chains.

http://gldc.cgiar.org

About the CGIAR

CGIAR is a global research partnership for a food-secure future. CGIAR science is dedicated to reducing poverty, enhancing food and nutrition security, and improving natural resources and ecosystem services. Fifteen CGIAR Centers in close collaboration with hundreds of partners, including national and regional research institutes, civil society organizations, academia, development organizations, and the private sector carry out its research.

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