

BHEARD Malawi Program Summary

Reporting Period: 10/2021-09/2022

The BHEARD Malawi Project Report was prepared by the BHEARD – Malawi Higher Education Legume System Innovation Challenge (MHEIC)

Project Overview

Over the last two years, Borlaug Higher Education for Agricultural Research and Development (BHEARD) focus has moved towards strengthening the abilities of institutions to set and achieve social and economic goals, as well as institutional capacity development. Previously, BHEARD funded 221 scholars to receive advanced degrees relating to critical challenges in their respective countries. However, it is not enough to equip the brightest minds with the tools and knowledge to affect change. On completion, they still face and encounter the same challenges and lack the policies, networks, institutional systems, institutional resources, etc. to address them. Supporting the needs of institutions is a core part of the BHEARD Programs' mission that acknowledges that change is complex.

BHEARD Malawi proposes to address this gap by building on successes of previous interventions to build capacity of two higher education institutions (HEIs) in Malawi to facilitate development, and commercialization of innovations that can support the transformation of the Agricultural sector for Malawi. This report focuses on activities, outputs and timelines that were implemented by Lilongwe University of Agriculture and Natural Resources (LUANAR), through AgriBiz HUB.

Long-Term Partnerships and Demonstrated Success in Malawi

The LUANAR and the Malawi University of Science and Technology (MUST) share a link to Michigan State University (MSU) via their participation in the Innovation Scholars Program (ISP) supported by the United States Agency for International Development (USAID). The ISP strengthened the ability of individual faculty members and partners to use research to produce innovations that addresses local economic challenges and needs. Simultaneously, the ISP facilitated a conversation within each institution on how to improve their culture of innovation. As a result of the ISP, both institutions have created innovation HUBs (AgriBiz HUB¹ at LUANAR and Innovation Garage at MUST).

The innovation HUBs were immediately overwhelmed with interest from their student body, faculty and other external stakeholders to access help from the HUBs to advance their innovative ideas. Both innovation HUBs want to be the heart on their campus where students, faculty and the private sector can access resources and services that support innovation. However, the HUBs have no experience and received little training in what types and forms of services and resources they need to supply their student, faculty, and private sector clients. For example, the HUBs are lacking institutional capacity on how to turn innovative ideas into viable businesses. Specifically, there is no proper processes and

¹ An Agribusiness Innovation and incubation HUB aimed at providing cocreation space to nurture innovative ideas that can create worth for communities and the economy. This aim is achieved through delivery of three programmes 1) agribusiness incubation 2) commercialisation of research and 3) building capacity on innovativeness.

procedures to direct a student or researcher who has an innovative idea that can solve an identified challenge, to a point where the idea turns into a product that can be commercialized, hence generating revenues. Business incubators are so-called “third mission” because it is the platform where university–industry cooperation inventions and innovations are systematically channeled from universities into industry applications to develop an entrepreneurial economy. Main purpose of innovation HUBs like AgriBiz HUB and Innovation Garage is to provide an entrepreneurial climate, commercialize technologies, enhance employment, and innovation².

Building on lessons from ISP, the process of supporting innovations requires a combination of trainings, coaching and mentorship. The institutional HUBs need to have processes in place on how to build capacity and also how to conduct trainings, coaching and mentorship to support innovations facilitated by High Education Institutions (HEIs). There is a need to support these HUBs such that they are building a sustainable innovation ecosystem that will spur and contribute to national and regional development goals. The HUBs need to be equipped such that they are able to support their stakeholders (students, faculty, serial entrepreneurs, corporate incubators or anyone) defining the feasibility, desirability and viability of early-stage ideas. There is need for capacity building programs that will strengthen the HUBs programs that will allow pitch desks, financial models, tech feasibility and customer discovery processes to be refined and institutionalized.

The Malawi Higher Education Innovation Challenge (MHEIC) outlined in this report contributed to building the capacity of both HUBs to develop and launch of an innovation competition. The innovation challenge was modeled after grand challenges, much like the structure [IDEO](#) provides for innovators to make social impact. The IDEO is a globally recognized design company that has successfully attracted multi-disciplinary teams to solve complex, global challenges using human centered design. Building capacity of the two HUBs in the proposed manner employs Human Centered Design (HCD), responding to a question of “How Might We build capacity and support commercialization of agricultural innovations developed by students and faculty to solve societal and private sector challenges?” Using the innovation challenge, capacity is built at both institutional and individual levels, where they would eventually be able to hold regular annual innovation challenges.



Figure 1: Participating innovators from the MHEIC discuss lessons learned and plans forward for their project with BHEARD staff in Lilongwe

Description of Objectives, Outcomes, and Outputs

The goal for this project was to build institutional capacity of HEIs (MUST and LUANAR) to support development and commercialization of innovative ideas to transform Malawi’s agricultural sector to a commercially oriented productive sector. Specifically, project aimed to co-develop and implement an innovation challenge with the private sector, students, and

² Al-Mubarak, H. and Busler, M. (2012), “Beyond incubators: youth entrepreneurship generation”, European Journal of Business and Management, Vol. 4 No. 14, pp. 71-74.

faculty to develop demand driven solutions to real world challenges. Under these two objectives, their outputs and intermediate results are detailed below

1.1 OBJECTIVE 1: DESIGN AND IMPLEMENT AN INNOVATION CHALLENGE

Output 1.1: Agricultural problems in the Legume Value Chain identified

INTERMEDIATE RESULTS

- (IR) 1.1.1 Conduct awareness/consultation meetings with faculty and students to identify support needs to be considered in designing the innovation challenge
- IR 1.1.2. Conduct consultations (virtual and physical) with the private sector to define problem that the innovation challenge process will be design around
- IR 1.1.3. Consultations (virtual and physical meetings) with stakeholders to learn lessons from past and existing innovation challenges implemented
- IR 1.1.4 Co-develop assessment guidelines/selection criteria for the proposed innovative solutions (Host a joint meeting between MUST and LUANAR to document innovation challenge implementation guidelines)

Output 1.2 Private Sector partners identified

- IR 1.2.1 Conduct meetings to identify stakeholders with interest and influence to partner in the challenge
- IR 1.2.2 Conduct meetings to sign letters of agreement/ MoU specifying roles and tasks of the identified partners
- IR 1.2.3 Organize a kickoff Workshop to validate implementation guidelines for the challenge

Output 1.3 Innovation Challenge Launched

- IR 1.3.1 Organize a Pitch Event and select Innovators (Identify Challenge Judges, orient and finalize the assessment guidelines)
- IR 1.3.2 Design a call for applications internally; consult stakeholders to identify innovative ideas to attend pitch session
- IR 1.3.3 Select innovative ideas and provide support to develop the innovations
- IR 1.3.4 Develop promotion materials and update website to create awareness of the Innovation Challenge among students, staff, partners and the public

1.2 OBJECTIVE 2: IMPROVE INSTITUTIONAL CAPACITY TO SUPPORT CAPACITY BUILDING OF THE SELECTED INNOVATORS

Output 2.1: Engage with the LUANAR internal stakeholders to define an Innovation support ecosystem

- IR 2.1.1 Conduct consultative meetings internally and externally to design a support process for commercializing innovations for stakeholders, researchers and students (LUANAR)
- IR 2.1.2 Conduct workshops with university leadership to examine/define how innovation at their institutions are supported/can be supported

Output 2.2: Provide support to selected innovators

- IR 2.2.1 Provide matching grant in collaboration with private sector for co-developing the identified innovations
- IR 2.2.2 Conduct at least 2 periodic training workshops based on innovators needs
- IR 2.2.3 Conduct an open day to showcase/ create awareness of a prototype innovation support process for feedback

Performance Data Table

The table below outlines the established targets of the program, whether those targets were met and artifacts providing evidence of partners meeting targets.

OBJECTIVE 1				
Output	Intermediate Result	Target	Actual	Artifact
1.1	1.1.1	1 or more awareness/consultation meetings to design innovation challenge	>10 questionnaires >4 consultation sessions	Questionnaire was sent out via email and for some stakeholder administered in person Consultation insights summarized in report
	1.1.2	1 consolidated document	1 focus group and 1 consolidated document review	A document consolidating questionnaire responses; focus group notes based on document discussion
	1.1.3	2-3 consultations with stakeholders to learn from past innovation challenges	2-day event held where attendees reviewed and validated themes in the call based on literature review	A call for innovations document outlining themes for the Innovation Challenge
	1.1.4	1 co-developed assessment (between CAT, LUANAR and MUST) guidelines/selection criteria for the proposed innovative solutions (i.e., the call for innovations)	1 call for innovations and 1 process for shortlisting participants (i.e., evaluation criteria for applicants)	1 drafted document representing the Call for Innovations, 1 drafted document outlining evaluation criteria
1.2	1.2.1	Identify 2-5 stakeholders to partner in the innovation challenge that are outside of both HEIs	Partnered with Standard Bank, Synergy, MyBucks, and MHUB (i.e., 4 partners); Assessed what resources they could utilize from the private sector (e.g., funding, innovation judges to score scholars at the pitching event)	Email exchanges between partners, notes from partner meetings and the presence of judges at the pitching event (who were affiliated with partner organizations)
	1.2.2	1-3 signed letters of agreement or Memorandums of Understanding (MOUs) specifying roles and tasks for the identified partners in the innovation challenge	An MoU between Synergy and LUANAR is in the process of being established. Both parties have defined common interests and determined common interests. They are still in the process of determining whether this partnership should be finalized	Document outlining common interests and offers feedback from Synergy about the Pitching Event as well as approaches used to facilitate training for awardees.
	1.2.3	1 Kickoff Workshop to validate implementation guidelines for the innovation challenge	1 Workshop held where they oriented judges, finalized evaluation criteria	Attendance roster of workshop

1.3	1.3.1	1 Pitch Event	Held an online event if awardees had issues attending the pitching event; 15 attended Synergy for training on pitching; on 4 th day of training, awardees pitched their idea	6 innovators (that were for the final round of training and funding); photos and scores (from judges) at the pitching event
	1.3.2	1 call for applications for the Innovation Challenge)	Sent a post out across MUST/LUANAR as well as their connected communities. In addition, made a call for mentors across 2 HEIs	Material advertising the call for applicants
	1.3.3	Select proposals for innovation challenge	Received 30 applications and shortlisted 15. Applications came in video and document form; submitted via google form; selection was conducted via workshop which included Innovation Coordination Team (which include representatives of all public universities), CAT, and UNDP	15 applications; list of judges from the National Coordination Unit
	1.3.4	1-3 promotion materials as well as an updated website to create awareness about the Innovation Challenge among students, staff, partners and the public	Opened the call for innovation for 2 ½ weeks; Designed digital promotion material (1) and shared on social media; other promotion material share on digital platforms (2) managed by the universities	Promotion material on HEI websites

OBJECTIVE 2

2.1	2.1.1	1-3 consultative meetings internally and externally to design a support process for commercializing innovations for the awardees	Consulted 15 staff, 30 students, and 5 external stakeholders. Adapted LUANAR's HUB (AgriBiz) modules with other material based on the needs of awardees	Training Modules on pitching and identified commercialization process support needs from users
	2.1.2	1-3 workshops with university leadership to examine/define how innovations at their institutions are (or can be) supported	Reviewed faculty at both HEIs managing innovations who could support the training of the awardees as coaches; outlined new systems to log innovations and teach research with HCD components; identified entry points of HCD to postgrad curriculum (particularly research courses)	List of courses identified; list of potential coaches
2.2	2.2.1	Establish matching grants in collaboration with private sector for co-developing identified innovations from original innovation challenge	On-going action (i.e., 0 matching grants). CAT will support capacity building activities for the innovators; 1 HEI (LUANAR) engaged private sector to financially support another Innovation Challenge; discussions on MoU between HEI and private sector underway	No artifacts until CAT sees physical innovations to determine if matching grants are warranted Call for applications to staff and students

2.2.2	2 or more training workshops based on innovators needs	1 pitching event hosted by Synergy; 1 business management training hosted by Synergy; 1 HCD workshop in collaboration with international trainer	Photos from Synergy during training; testimonies from 6 awardees regarding the business management training; photos from HCD training report
2.2.3	1 Innovation Showcase to create awareness of the prototypes developed and to support innovation processes at HEIs	Has yet to occur, but is currently being planned	N/A

Data Collection and Analysis

Data collection occurred from September 12-16, 2022. During this time a semi-structured instrument (see Annex) was developed to conduct in individual interview formats as well as focus group discussions (FGDs). One FGD was conducted with 3 awardees of the program (residing in Lilongwe) while an individual interview was conducted with a single awardee in Blantyre. Four other individual interviews were conducted with four facilitators that managed the BHEARD – Malawi program. Both FGDs and individual interviews were recorded with permission and lasted between 40 and 80 minutes.

Data was synthesized via narrative analysis, but more specifically, thematic emergence. As responses were given, they were synthesized under each intended outcome of the project. Some individuals had no information to offer on every outcome, and therefore, the prior Performance Table was based on aggregate responses. The impact summary was based on two themes that emerged from the analysis, which included increased HEI capacity to manage Innovation Challenges, and post-innovation challenge, increased organizational capacity to advise the innovation processes of the awardees.

Impact Summary

increased HEI capacity to manage an innovation challenge

There are several processes and/or actions which must be carried out to manage an Innovation Challenge. These can be broken down into the period prior and immediately after the call. The manner in which these processes were developed and executed are described below, demonstrating a capacity to manage the Innovation Challenge in this report as well as future ones should they be awarded funds to do so.

Prior to the call, MUST and LUANAR demonstrated a capacity to compose a call for an Innovation Challenge and validating the “challenges” stated in the call with various stakeholders that resulted in selection of five legume chain related categories (i.e., production, value addition, marketing and financing). From an initial workshop, stakeholders associated with public and private institutions identified 22 challenges across four themes (i.e., production [9], post-harvest [7], marketing [4], financing [2]). The challenges were synthesized into five (listed below in Table 2). Once the call was composed, an application template was developed as well as process for submitting and reviewing applications. Prior to the call, however, various digital promotion material was composed and shared across

social media platforms (see Annex 1) in and outside of the HEIs managing the Innovation Challenge (i.e., MUST and LUANAR). The promotion material was successful in terms of the number of applications (see Table 1 above for more details) composed across the five challenges by both academics and non-academics.

List of identified Grand Challenges

Grand Challenge	Theme	Description
1	Low Production	Low productivity in legumes (soybean, pigeon peas, cowpeas, and groundnuts) to optimize yield through improved agronomic practices, increased adoption of technologies or introduction of innovative technologies.
2	Value Addition	Limited new and/or improved, affordable, and nutritious value-added food products from mentioned legumes while minimizing the presence of aflatoxins, anti-nutritional factors and other inhibitors present in raw legumes.
3	Marketing	Ineffective existing structured markets for legumes and/or warehouse receipt system, to address smallholder farmer challenges of accessing competitive markets in Malawi.
4a	Financial Constraints	Unavailability of reliable historical performance data (yield, prices, productions costs and profitability) that can help financial institutions assess credit worthiness of agricultural small medium enterprises (SMES)
4b	Financial Constraints	Limited utilization of non-traditional collateral for agricultural loans (movable collaterals such as bicycles, unregistered houses, livestock, and any other personal properties)

The application template developed for the call included several questions about the applicant's proposed innovation as well as instructions for developing a video introducing themselves to the reviewers. Applications were submitted and uploaded by applicants to secure online folder where a select group of reviewers evaluated them. These reviewers were recruited, and a co-creation session was conducted to develop a selection criterion. The team of reviewers included various expertise areas to have holistic view. The template developed by the HEIs managing the Innovation Challenge scored applications based on several components, including adaptability, feasibility, the innovation's relevance to the challenge indicated in the application, the interdisciplinarity nature of the team that would develop the innovation, the applicant's experience related to the innovation they proposed to develop, the novelty of their innovation and its potential impacts on Malawi's wider legume supply chain.

After the call, 15 applicants were pre-selected that included a balanced pool of innovators across disciplines (business, agronomy, food processing, information technology etc), regions (north, central, south) and HEI (see Table 1 for further details). Then, they were distributed funds to travel to Lilongwe for a training on design thinking and pitching workshop. Facilitators were invited to deliver training, but also faculty from both HEIs familiar with the material supported the training. In addition, the HEIs managing the Innovation Challenge also developed evaluation rubrics for pitches and recruited judges to use these rubrics. Judges were strategically selected to be future partners and/or coaches of the Innovation Challenge. That is, they had an opportunity to select innovators they were interested investing their finances (if associated with a bank or business) or expertise (if associated with an HEI) in. The managing HEIs promoted the pitching event to individuals in and outside of academia, to attract interest in the innovations from the program, including those who did not advance past the pitching event. During the pitching event, awardees were given specific instructions on what needed to be presented (according to what they learned during pitching), how they

would be evaluated and what time limit they had to present within. After which, six pitches were selected to receive additional funding for business incubation services and field activities to develop prototypes with end-users. Three innovators were selected from the central region and three from the southern region across all five challenges (details in the following Table).

List of Innovations

Scholar # / Region	Theme	Innovation
1.) Central 2.) Central	Low Production	1.) Soya bean planter 2.) Organic fertilizer
3.) South 4.) South	Value Addition	3.) Instant Porridge flour from Soyblend 4.) Pigeon peas and Orange fleshed sweet potato flour
2.) Central 5.) Central	Marketing	5.) Tipindule insurance product (Information system)
5.) Central	Financial Constraints (data)	5.) Tipindule insurance product (Information system)
6.) South	Financial Constraints (loans)	6.) Legume Financial cooperative linked to a financial institution

Increased organizational capacity to facilitate training on innovation

There are several actions which must be carried out to facilitate innovation among awardees of an Innovation Challenge. These actions can be broken down into two periods- prior and during facilitations. The manner in which these actions were executed by the two HEIs are described below, demonstrating a capacity to facilitate innovation processes for the awardees in this Innovation Challenge and future ones should the HEIs apply for capacity development grants related to innovation.

Prior to selected the innovators from the Pitching event, the HEIs managing the Innovation Challenge created a call for coaches to mentor awardees. The call attracted professors across both HEIs despite not having offering financial compensation. Rather, coaches were offered an opportunity to collaborate with students and upcoming entrepreneurs / innovators that were willing to integrate academic knowledge and methods within their innovation process. The selection of mentors was based on their expertise in relation to the innovations being developed as well as their familiarity with design thinking, technology development, business management, marketing and commercialization. Coaches were matched with innovations that required certain support in specific topic areas (e.g., “technology development” support for innovation #5 in Table 3 as opposed to marketing support). Coaches were also matched based on the topic area awardees had limited knowledge and/or training in. Finally, they were briefly trained in design thinking subjects (if they already were not already familiar with the subject material) to better support the process scholars were taking in developing their innovation. Throughout the process, facilitators of the Innovation Challenge met with coaches to discuss their challenges and successes as a coach as well as the progress of the awardees.

Facilitators adapted training material for awardees from previous innovation and incubation process curricula they developed in their innovation garages (i.e., AgriBiz HUB connected to LUANAR and Innovation Garage connected to MUST). These materials were particularly focused on design thinking modules to reinforce the subject material awardees were trained in during the pitching event. In addition, both garages adapted materials and sought out

coaches which taught business courses at their respected HEIs to deliver financial management training to each of the awardees. Training modules on business management were viewed by awardees as some of the most valuable training they received (refer to Table 4 below)

Awardee Remarks about training received and innovation process

Scholar # (pertaining to innovation table above)	Training Delivered by HEIs	Quote
6	Financial Management	<i>"I feel like I have more meaningful app for farmers. It will be financially sustainable because I know the bank will probably invest it. One of professors had me talk with the bank throughout my whole [innovation] process and this app is the only one on the market right now, so there's consumer demand. So, I started organizing a proposal to show the profit needed to payback their investment on product development and business activities."</i>
2	Pitching	<i>"One of the professors had us meet at the AgriBiz HUB to organize our pitches. She told this will be good to present at the showcase, but also, it's good that we have an idea how to talk to industry potential consumers."</i>
1	Branding	<i>"I appreciated the training on branding. As a lifelong student, I know now what types of branding will increase adoption of my seed planter. This will speed up the time I need to payback my investment on product development."</i>

**Note – Quotes were taken 40-minute focus group discussion held in Lilongwe September 14th between three awardees*

Scholars mentioned that funds were distributed in an efficient and timely manner to attend the pitching event and conduct field activities critical to their innovation process. These actions demonstrate that the finance office of each HEI had a capacity to deliver and rectify funds for innovation related activities on an ad hoc basis, which is critical to supporting the innovation process as new findings arise and scholars demand funds to finalize their prototypes. Much like the innovation curriculum, both organize a distribution system much like what is already in place at their HEI; therefore, the delivery of funds and design thinking material paralleled current systems, which will be critical to facilitate future Innovation Challenges.

The final stage of the Innovation Challenge will be to organize an Innovation Showcase for awardees to present their prototypes to stakeholders associated with the legume value chain in and outside of academia. At this time, however, both HEIs have established a shared language of innovation (see Table 5 below) among the coaches and facilitators, which will be critical to manage future innovation-related projects. Furthermore, they have created partnerships with industries that participated as judges at the pitching event to fund future innovations. Given the success of the Innovation Challenge, both HEIs have also segregated funds to continue design thinking training for future projects related to innovation. This is an indication of allocating resources (apart from the current HUBs both HEI manage) for innovation as well as having a group of mentors that communicate a common language of innovation. In having both structures and human resources that cultivate and celebrate innovation, both HEIs demonstrate a clear organizational capacity to train and mentor future entrepreneurs and innovators.

Innovation Challenge Management Personnel	Topic	Quote
LUANAR Facilitator	Innovation Curriculum	"We went through a lot of steps to engage our upper management. This was an institutional step for us. We agreed that our curriculum for this program could not be static. We would have to keep changing it according to the innovators coming through the program.
LUANAR Facilitator	Coaching	"I remember we first discuss which faculty already had innovations being developed. Then, we began making a log so we could see what expertise was available at our university to coach innovators. After that, we saw how we could make sure there was a mutual benefit. It's not a one way street."
MUST Facilitator	Innovator-Focused	We kept asking ourselves, "How do we identify what the learner desires and what institution the best resources to support them."

Additional Materials

Sample of Promotion Material for the Innovation Challenge

CALL FOR APPLICATIONS
LEGUME SYSTEM INNOVATORS COMPETITION

Do you have an innovative solution to solve one of the following grand challenges along the legume (soybean, pigeon peas, cowpeas, and groundnuts) value chains?

GRAND CHALLENGES THAT NEED YOUR SOLUTIONS

<p>1 PRODUCTION  Low productivity in legumes to optimize yield through improved agronomic practices and increased adoption of technologies or introduction of innovative.</p>	<p>4 FINANCIAL CONSTRAINTS  A. Unavailability of reliable historical performance data (yield, prices, production costs and profitability), that can help financial institutions to easily assess credit worthiness of agricultural small and medium enterprises (SMEs).</p>
<p>2 VALUE ADDITION  Limited new and/or improved, affordable, and nutritious value-added food products from mentioned legumes while minimizing the presence of aflatoxins, anti-nutritional factors and other inhibitors present in raw legumes.</p>	<p>B. Limited utilization of non-traditional collateral for agricultural loans (movable collaterals such as bicycles, unregistered houses, livestock, and any other personal properties).</p>
<p>3 MARKETING  Ineffective existing legume structured markets and/or warehouse receipt system, to address smallholder farmer challenges of accessing competitive markets in Malawi.</p>	

Opening Page of Application for the Innovation Challenge

11/29/22, 2:00 PM

MALAWI HIGHER EDUCATION LEGUME SYSTEM INNOVATION CHALLENGE (MHEIC) CALL FOR APPLICATIONS



MALAWI HIGHER EDUCATION LEGUME SYSTEM INNOVATION CHALLENGE (MHEIC) CALL FOR APPLICATIONS

The Lilongwe University of Agriculture and Natural Resources (LUANAR) and the Malawi University of Science and Technology (MUST) in collaboration with the Innovation Coordination Team (IC-Team) that comprises of all public Universities, National Planning Commission and UNDP Innovation Accelerator Lab are running a Legume System Innovation Challenge in a bid to enhance role of universities in the innovation ecosystem.

The Challenge is sponsored by the USAID through the Borlaug Higher Education for Agricultural Research and Development (BHEARD) and Foundation for Smoke Free World through Centre for Agriculture Transformation (CAT)

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