2021/22 Call for Proposals: HU Grand Challenge Research Grants Competition

Grant Rationale

The Federal Government of Ethiopia has made research funds available to public Higher Education Institutions to enable University Staff to do problem-solving research and produce scientific knowledge in various disciplines and enhance their careers and contribute to the socio-economic development of the country. The government has made the funds available with the intention of increasing the involvement of staff and postgraduate students in research and technology exchange with communities, which is aimed at supporting the Growth and Transformation Plan of the country.

In line with this, Haramaya University (HU) has been offering research fund for its staff members to engage in problem-solving and innovative research in a thematic research approach. Over the last several years, Office of Research Affairs has been funding research projects under five research categories: HU Regular Research Grant (HURG), HU Innovation Fund (HUIF), HU Knowledge Transfer (HUKT), HU Women Grant (HUWG), and HU Special Support (HUSS). However, the existing grant-awarding system is not producing impactful outcomes up to the expectations as most of the awarded projects are small-scale with small funding within the short term and a high risk of incompleteness. It is also believed that this reduced the participation of experienced researchers in the HU research grant competition. In addition, the research projects are not crossing traditional boundaries between fields and disciplines that do not guarantee interconnectedness. Although the University set forth its research priorities under six thematic areas to integrate research endeavours for synergized impacts on societal development and to enhance the quality of education, the approach of conducting research and extension has still remained piecemeal.

As a result, a need has arisen to initiate a new large-scale research grants scheme known as hereafter HU Grand Challenge Research Grant (HUGG). HUGG is aimed to fund multi-year (2-4

years) and multi-/trans-disciplinary research with relatively large budgets and more impactful results.

HU Grand Challenge Research Grant

The goal of Haramaya University Grand Challenge Research Grant (HUGG) is fostering multi/transdisciplinary research collaboration across all colleges and institute at the University. The HUGG aims to support a multi-/trans-disciplinary, rigorous, and technically sound research projects that are relevant to the most pressing societal problem and generate new and ground-breaking research results. The grant is offered up to a maximum of four years period offering researchers the advantage to study the problems in-depth for knowledge and technology generation and transfer as well as effective communication and application of reliable and relevant research outputs to produce impact in the society.

Eligible project proposal

We support research projects that:

- ✓ have potential to address most pressing local and/or national problems leading to solutions with substantial impact
- ✓ have greatest possibility of generating high research outputs (high quality publications) that contribute to the university's visibility worldwide
- ✓ are innovative in nature, and generate new scientific knowledge, technologies and other discoveries.
- ✓ are large scale, multi-year and multi/trans-disciplinary combining competencies from different disciplines
- ✓ have Research Group composed of senior staff and early career researchers with clearly identified roles and responsibilities. Alternatively, multi/trans-disciplinary large project that can recruit PhD and/or MSc/MA students.

Eligibility and Restrictions

- ✓ The research project principal investigator should be a senior researchers with a minimum academic rank of assistant professor.

- ✓ Any academic, research and technical staff members of Haramaya University can be members of the Research Groups.
- ✓ A staff member can only apply as a Principal Investigator for one research topic and two research topics as a Co-investigator per year. OR a staff member can only apply for three research topics as a Co-investigator per year.
- ✓ The research project should directly address the priority research area identified for 2021/22 call for HU Grand Challenge Research Grant.
- ✓ Geographical area of implementation of the proposed project should be in the eastern part of Ethiopia except for compelling reasons.
- ✓ A staff member who is currently on a study leave cannot be a member of the Research Group.
- ✓ Inclusion of individuals of same background without specific roles and responsibilities in the project implementation is not encouraged.
- ✓ A staff member who has not yet submitted overdue previous research reports shall not be eligible. ***Single staff member with overdue project in the Research Group may result in rejection of the applications***. *Therefore, the principal investigator should make sure that all members of the Research Group have no overdue project.* All HU grant holders with a research grant awarded **BEFORE 2018/2019** are considered overdue projects and hence, not eligible to apply unless they submit their overdue project before the concept note submission deadline.

Priority Research Focus Areas

Applications are expected ONLY from the following identified priority research focus areas.

1. Development of designated (meat/dual/layer) chicken strains in Ethiopia

- Conservation and maintenance of pure breeds along with recurrent selection, cross breeding
- Synthetic breed development and integration of genotype
- Development of technologies for improvement of chicken productivity

2. Enhancement of camel health and productivity in eastern Ethiopia

- Identification of the major cause of calf mortality

- Impact of invasive alien species on camel health
- Land cover and feed resources
- Colostrum and whole milk quality
- Camel heard structure and mobility pattern and
- Environmental impact assessment

3. Enhancement of small ruminants' productivity and health

- Develop genetic improvement programs
- Community breeding and/or crossing
- Cross breeding by artificial insemination
- Integration of genotype
- Increase and sustain the production (meat and milk) and productivity of small ruminants
- Improve management, development of improved technologies for economically important diseases that are vital for enhancing sheep/goat productivity and health

4. Development of nutritious crop technologies for maize, common bean, and potato for smallholder farmers of eastern Ethiopia

- Develop biofortified maize, common bean, and potato varieties that are rich in vitamins and micro-nutrients such as vitamin A, folic acid, iron, and zinc
- Integrated crop and pest management practices
- Post-harvest handling practices along the products value chain
- Enhance capacity of farmers, researchers, and research facilities that contribute to improvement and delivery of biofortified crop varieties

5. Development of climate smart crop production systems

- Conservation agriculture
- Integrated nutrient and soil management using different blended fertilizers and organic sources
- Mulch cropping, cover cropping
- Shifting sowing dates, alterations in cropping patterns and crop rotations, intercropping, crop diversification
- Use of appropriate varieties of strategic crops
- Integrated pest management

- Water and irrigation management, and other pertinent agronomic practices

6. **Development of weather based pest prediction models for enhanced food production and productivity**
   - Develop pest monitoring/forecasting models to predict the seasonal migration and outbreak of persistent, transboundary and invasive pests (Late blight, desert locust, fall armyworm/stem borers,) for early warning system
   - Generate information on the biology of those pests, epidemiology of diseases and ecology of insect pests

7. **Maternal and child health, and nutrition**
   - Maternal, fetal & child health;
   - WASH in maternal and child health;
   - Micronutrients (vitamins, minerals);
   - Nutrition, growth and development; and
   - Reproductive health problems;

8. **Health system and quality health care**
   - Health service readiness and availability;
   - Health service delivery efficiency and quality of care;
   - Curative and palliative care improvement

9. **Emerging and re-emerging infectious diseases problems**
   - Characterization of microbes causing infectious disease
   - Improving diagnosing tool of emerging and re-emerging infectious diseases
   - Epidemiology of emerging and re-emerging infectious diseases and the microbes that cause the disease

10. **Digital technologies for sustainable, and transformative agriculture and health services**
    - Software/tool developments for application in agriculture and health,
    - Indigenous knowledge modelling and geographic information processing, and
    - Applications of Artificial Intelligence in Agriculture and Health.

11. **Renewable energy technologies and green energy**
    - Designing, developing and implementing green energy,
    - Designing, developing and implementing alternative energy,

- Renewable energy tool development and upgrade, and

- Development of energy storage technologies.

12. Agro-food processing technologies for food safety and nutrition

- Value addition (product developments) and shelf-life extension,

- Proper utilisation and handling of food materials,

- Food product nutritional characterizations, and

- Postharvest technology development and applications.

13. Agricultural mechanization for transformative agriculture

- Design and performance evaluations of agricultural machinery (farm-harvesters-, threshers-, sowing-, tillage-, planting-, processing-machineries),

- Applications of new technologies in agricultural mechanization,

- Electrical equipment and information technology in agricultural mechanization,

- Agricultural water resources utilization and water-saving irrigation equipment in agricultural mechanization, and

- Sensor developments and automation technologies in agricultural mechanization.

14. Water resources development and irrigation engineering for sustainable and transformative agricultural production and productivity, particularly in lowland areas

- Irrigation development and engineering,

- Development of water harvesting technologies and structures,

- Applications of technologies/tools for water resources development, monitoring and management, saltwater desalination for agriculture use, etc., and

- Agricultural water use efficiency improvement, productivity and utilization particularly in lowland irrigated agriculture.

15. Development of tourism and heritage resources of eastern Ethiopia

- Major sites of Tourist attraction (Historical cum-cultural, archaeological); heritages (Manmade, natural; tangible, intangible)

- Major challenges of tourism industry in Eastern Ethiopia,

- Tourism policy and their roles/challenges in the tourism industry

- Linkage between the tourism industry and the private sector

- Cultural Products, products management, marketing linkages and employment opportunities
- The role of ICT in tourism industry
- Development of intervention strategies

16. **Enhancement of intra/inter-regional networking for crisis management and peace building in eastern Ethiopia**
- Cooperation among the five regions in Eastern Ethiopia and the common grounds to work together
- Challenges of peace for the regions and innovative solutions
- Migration and internal displacement in the region
- Societal resilience and peacebuilding

17. **Understanding Afran Qallo *Gadaa* System and its contribution to sustainable development**
- *Gadaa* and *Gadaa* laws among Afran Qallo (Raba Dori), Anniyya, and Itu
- Gadaa and its role in traditional education
- Gadaa laws and the implication in environment
- Comparative analysis of Gadaa and modern system of governance
- Revitalizing *Gadaa*: Working towards documenting Gadaa system, having cultural showroom, etc
- Gender issues in *Gadaa* system

18. **Engagement and empowerment of rural youth in Eastern Ethiopia.**
- Status of youth unemployment, migration, their aspirations, educational competencies, and livelihood activities
- Rural youth, women's and other vulnerable groups' entrepreneurial orientations/mindsets to improve income, employment and empowerment
- Networks and social capital in fostering youth's peaceful engagement in local administration, economy, small and medium enterprises, and other matters affecting their lives

19. **Enhance rural farming households livelihood and living standard**

- Value chain analysis of selected high-value horticultural crops grown in eastern Ethiopia: Identifying options for improving market linkages and reducing postharvest loss of perishable crops

- Inclusive and climate resilient (agribusiness) value chains for better livelihoods

- Development of inclusive and sustainable value chain for horticultural crops

- Development and promotion of actionable strategies for impact

20. **Climate change and resilience to shocks and stressors in eastern Ethiopia**

- Governance challenges and opportunities for communally-used natural resources (irrigation water, forests, grazing lands, fishing grounds) for climate adaptation and mitigations

- Traditional and modern insurance and risk management for resilience to shocks and stressors

- Building climate resilient rural livelihood through climate smart soil and water management practices

- Integrated watershed management for climate change adaptation

21. **Policy and institutional analysis with particular focus on trans-boundary resources (such as international rivers, wildlife resources) and cross border trade (food safety, human health, tax/government revenue)**

- Power, trust and negotiations in resource-based conflict management: dynamics and linkages

22. **Nanotechnology for sustainable agricultural productivity and healthcare**

- Novel and environmentally benign nanotechnologies in agricultural production: technology: Soil quality improvement; Crop production and protection (Nanoagrochemicals, etc); Animal production/reproduction and animal nanofeed applications

- Nanotechnology in medicine and Healthcare: Nanoscale therapeutics, biosensors, nanodevices for drug delivery systems, Health monitoring and imaging technologies biosensors; biomaterials

- Green technologies for environmental and agricultural application

23. **Biotechnology applications for improved agricultural productivity and healthcare**

- Biotechnology in medicine and healthcare: biotechnology in diagnosis, biotechnology in production of antibiotics, therapeutics, etc
- Application of Agricultural biotechnology for strategic and/or high value crops

24. Integrating traditional medicines into national healthcare system

- Ethnobotany, Ethnopharmacology, Phytochemistry, and Pharmacology of traditional medicines
- Standardization and establishing quality standard for commonly used traditional medicines
- Clinical trial on traditional plants formulation and drug discovery process
- Pharmacokinetic, pharmacodynamic and pharmacovigillance study on traditional medicines

Grant Amount

The HUGG provide funding for up to four years (2 to 4 years) with costs, as required by the research project, up to a maximum of 4,000,000 ETB per project (2,000,000 to 4,000,000 ETB per project) with maximum of 1,000, 000 ETB per year (500,000 - 1,000,000 ETB per year).

Application process and evaluation criteria

Initially, applicants must submit a concept note for pre-screening. Thereafter, applicants whose concept notes have been pre-selected will be invited to submit a full proposal. The concept note will be reviewed independently by three reviewers and scored against the evaluation criteria. Then, panel of experts established will evaluate the concept notes based on score and comments provided by the reviewers, before recommending which applicants should be invited to submit a full proposal.

Use the template provided to prepare the concept note. Applications must be submitted via online using Research Grant Management System (**http://grant.haramaya.edu/).** Researchers need to create an account or log in to their existing account and apply under HU Grand Challenge Research Grant (HUGG) category.

The deadline for submission of Concept Note is July 10, 2021. The online Research Grant Management System closes July 10, 2021 at 10:00 pm. Applicants are strongly advised not to wait until the last day to submit their concept notes in order to avoid submission difficulties which might occur on last day for various reasons.

Full-proposal application

Applicants are invited to submit a Full Proposal following the pre-selection of the Concept Note. Full proposal should be prepared using the guideline which can be download from the following link full proposal preparation guideline. The deadline for the submission of the Full Proposal will be published on the Research Affairs website http://researchaffairs.haramaya.edu.et at date of results announcement of the concept note evaluation.

The full proposal evaluation consists of a three-stage formal assessment: primary screening, secondary evaluation (expert review) and final Research Steering Committee decision. The primary screening is an administrative process to verify whether the eligibility criteria and required formatting are met. Secondary evaluation is conducted by experts from subject area of the submitted proposal and scored against the evaluation criteria. The shortlisted proposals will be reviewed at the RSC level and a list of proposals that may be funded will be drawn up from the list based on the available budget.