Office of the Vice-president for Research and Community Engagement

Office of the Director for Research Affairs

2025/26 Call for Proposals: HU Research Grants Competition

Guide for Applicants

July, 2025

Haramaya University

Overview of thematic research project

The goal of thematic research project is fostering multi/transdisciplinary research collaboration across all colleges and institute at the University. It 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 3-4 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, patents, copyrights, etc) 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 projects that integrate expertise from diverse fields, involving at least three disciplines—preferably more
- ✓ large project that can recruit at least two postgraduate student (preferably two PhD students if not 1 PhD and 1 MSc/MA students.

Eligibility and Restrictions

- The principal investigator of the research project should be a senior researcher with a minimum qualification of a PhD.
- 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. *NB: PI is recommended to obtain a signed*

confirmation letter from each team member to verify compliance with these participation limits.

- The research project should directly address the priority research area identified for 2025/26 Call for Proposal.
- 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 except as student.
- Use of generative AI: submission in which AI-generated content/text is a substantial portion of the content (exceeding 25% of the total text) without significant researcher intervention is discouraged and may lead to rejection.
- Inclusion of individuals without specific contribution and/or the 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 2021/22** are considered overdue projects and hence, not eligible to apply unless they submit their overdue project before the proposal submission deadline, except grand challenge research grants.

Grant Amount

The funding runs up to four years (3 to 4 years) with costs, as required by the research project, up to a maximum of 4,000,000 ETB per project with maximum of 1,000, 000 ETB per year. *Value for money is one of the evaluation criteria; therefore, researchers are encouraged to propose a reasonable budget. An inflated budget without proper justification may negatively affect the outcome of the concept note or proposal.*

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 evaluated by panel of experts with relevant background established at theme level, 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 relevant category.

The deadline for submission of Concept Note is **August 15, 2025**. The online Research Grant Management System closes **August 15, 2025 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 selection of the Concept Note. Full proposal should be prepared using the guideline which can be downloaded from the following link to be provided on the website. The deadline for the submission of the Full Proposal will be published on the university website https://www.haramaya.edu.et/research/ at date of results announcement of the concept note evaluation.

The full proposal evaluation consists of a three-stage formal assessment: primary administrative 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.

NB: Strictly follow the concept note or proposal writing format. ***A concept note or proposal which doesn't follow the format will be automatically rejected and will not be considered for evaluation.***

Annex 01: Priority Research Focus Areas

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

NB: The following priority areas are not organized according to the order of six university thematic areas. Instead, they are presented in a way that encourages multidisciplinary approaches. Therefore, researchers are advised to review all identified priority areas and then apply under the theme most relevant to their proposed research and the principal investigator.

1. **Poultry and Livestock Productivity, Quality Enhancement and Innovation**
   - Improved feed resources & treatment technologies: utilization of novel and feed additives (eg. indigenous probiotics)
   - Forage development for climate resilience (e.g. multi-nutrient block, drought resistant varieties)
   - Breed improvement for enhanced productivity (milk, meat, etc.) and resilience
   - Technologies for livestock reproduction (e.g. estrus synchronization, reproductive hormones, liquid nitrogen, etc.)
   - Disease management, prevention and control strategies
   - Livestock products and by-product (eg. hide, skin, etc.) management, processing, and development
   - Large scale and automated mobile poultry house to fit into different agro-ecologies
   - Quality control technologies that can be applied to livestock products and byproducts
   - Product development (e.g. innovate incubator, brooding technology, disease detection methods/tools, etc.)
   - Socio-economics of the existing livestock production systems
   - Traditional practices and cultural perceptions related to the utilization, farming and adoption of poultry and livestock products.
   - Greenhouse gas emissions reduction technologies
2. **Sustainable Crop-production and Agricultural Innovations**
   - Productive, nutritionally enhanced and climate-resilient crop varieties
   - Biotechnology applications: tissue culture protocols, genome editing, molecular tools for crop improvement, biofertilizer, plant growth promotors, improved crop varieties, etc

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- Innovative methods of disease and insect management (eg. organic pesticides, biological control agents) as well as forecasting models and early warning systems
- Integrated weed management strategies
- Agricultural machineries (small implements) to support crop production
- Hararghe coffee improvement (mapping, diversified and climate smart production, quality and genomic characterization, carbon stock potential, climate change impact modeling, market value chain analysis, post-harvest processing, etc)
- Product development and innovations for diversified crop products

3. **Integrated Intervention for Mental Health, Malnutrition and Disease Control**
   - Burden of non-communicable diseases (NCDs), mental health and their interplay with stress, and chronic disease onset or progression
   - Evidence-based, equitable, and sustainable solutions to expand access and improve the quality of mental health care
   - Mitigation strategies for NCD multimorbidity
   - Addressing double and triple burden of malnutrition (under-nutrition, micronutrient deficiencies, and over-nutrition)
   - Food and nutrition practices in evolving contexts, including the impact of urbanization, environmental changes, cultural beliefs, food choices, gendered experiences on NCD risk- e.g., tobacco use, unhealthy diet, etc).
   - Challenges in the implementation of nutritional intervention services
   - The interplay between malnutrition and infectious diseases and/or NCDs
   - Maternal mental health, malnutrition, and NCD risk in children health / neonatal outcomes
   - Impact of nutritional deficiencies on cognitive and emotional health in people with chronic diseases
   - Integrated management of childhood illness effectiveness
   - Vaccine coverage, hesitancy, and cold chain management
   - Nutrition education interventions programs
   - Zoonotic disease surveillance and control
   - Antimicrobial resistance (AMR) at the human–animal–environment interface, including antibiotic use in animals and humans.
   - Antimicrobial stewardship, surveillance, and sustainable practices

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- Water, Sanitation, and Hygiene (WASH) in shared animal-human and their role in infection transmission.
- Infection prevention and control strategies across human, animal, and environmental interfaces

4. **Drug Design and Development- Traditional Ethnopharmacology to Modern Drug Discovery**
   - Extraction, identification and structural elucidation of bioactive compounds from traditional medicinal plants and other natural products
   - Pharmacological studies -investigating mechanisms and modes of action
   - Computational drug design and molecular modeling (prediction and optimization of drug candidates)
   - Design and develop drug from medicinally important organic molecules
   - Rapid screening methods for identifying potential drug candidates
   - Synthesis of new compounds and modification to enhance properties and efficacy
   - Preclinical and clinical trials- efficacy and safety tests
   - Integration of traditional healing methods with modern psychiatry for mental health conditions
   - Therapeutic and cosmetic products from natural compounds, including safety, efficacy, and formulation
   - Development of drugs from medicinal plants for livestock treatment.
   - Efficacy and safety of the developed drugs on model organisms and livestock.
   - Epidemiological studies to understand the benefits and risks of the drugs
   - Development of standard vaccination protocols that considers risk of diseases occurrence at different ages, and production systems
5. **Natural resource Management, Climate Change Adaptation, & Disaster Risk Reduction**
   - Hydrological and ecological performance of green infrastructure (GI) at watershed scale.
   - Ecological restoration and rehabilitation of degraded uplands, wetlands, and riparian buffers.
   - Sustainable development strategies for aquifer protection (e,g lakeside towns)
   - Sustainable land use, forest and ecosystem management
   - Spatial analysis and modelling of basin-scale hydrologic & hydrodynamic impacts of land

use/land cover & climate changes

- Vegetation and forest dynamics
- Landscape development practices for climate adaptation, resilience, and mitigation
- Economics of land degradation, soil fertility and sustainable land management practices
- Socio-economic aspects of natural resource management-community participation and governance
- Advanced climate-hydrologic modeling and scenario analysis
- Measurement, monitoring and cost analysis of greenhouse gas emissions
- Urban resilience strategies for adapting and mitigating extreme weathers (e.g. floods, drought, etc)
- Indigenous knowledge in environmental conservation, disaster risk management and climate adaption
- Valuation and sustainable management of environmental services (e.g. carbon sequestration)
- Ground and surface water resources mapping and development
- Climate-smart water resources management practices and their effectiveness
- Efficient and cost-effective water desalination and treatment technologies for agricultural water
- Salt-affected soils management and remediation strategies
- Agricultural water resources utilization and equipment in agricultural mechanization
- Water-saving irrigation systems and/or equipment in agricultural mechanization
- Mineral resources mapping, exploration, sustainable processing and value addition
- Impact of climate change on the water security of transboundary river basins

6. **Nanotechnology and Advanced Materials in Agriculture, Environment and Health**
   - Nanomaterials for enhanced diagnosis, imaging, and treatment for priority human and animal diseases.
   - Nanomaterials based point-of-care devices (e.g. biosensors)
   - Nanomaterials for renewable energy, precision agriculture, nutrient delivery, enhanced crop yield, pest/disease management, water treatment, etc.
   - Bulk materials sustainable manufacturing and high-performance bulk composite materials for agriculture and industry sector

- Novel materials for food packaging, preservation, and safety
- Eco-friendly chemical processes, biodegradable and bio-based materials (e.g, textile), and cleaner production technologies.
- Novel materials for sustainable energy production (e.g solar cells, energy storage systems, catalysts for biofuels)
- Advance materials and nanomaterials for efficient pollution remediation
- Nanomaterials for cosmetic product development

7. **Sustainable Infrastructure and Energy Resources Development**
   - Bioenergy and circular bioeconomy from renewable resources, including utilization of agricultural and municipal biomass for renewable energy
   - Renewable energy integration into grids, off-grid electrification solutions, and resource mapping (solar, wind, hydro, geothermal)
   - Innovative and sustainable energy production technologies and systems
   - Energy-efficient building technologies and sustainable urban design principles
   - Low-carbon and locally sources building materials for sustainable construction
   - Circular construction: reuse of demolition waste, bio-based insulation, and alternative cements.
   - Climate-resilient road and drainage design in flood-prone and highland areas.
   - Resilient rural infrastructure: all-weather roads, off-grid water and energy systems.
   - Community-based infrastructure planning (participatory engineering and low-cost building technologies).
   - Effective policy and innovative financing frameworks for pro-poor housing and infrastructure delivery.
8. **Food System and Nutrition**
   - Innovative postharvest technologies for handling, storage, and processing of high-value crops
   - Climate-smart technologies and low-cost postharvest solutions (solar drying for vegetables, spices, and fruits crops)
   - Small-scale agro-processing equipment
   - Indigenous & eco-friendly food processing and preservation
   - Nutritious food formulation and bioavailability studies (local ingredients and addressing

micronutrient deficiencies)

- Strategies for dietary diversity promotion and food fortification
- Protein rich and fermented food production using microorganisms (using traditional knowledge and modern microbiology)
- Foodborne pathogens prevalence, transmission dynamics and characterization across food value chains
- Detection and management of food toxins (microbial toxins, aflatoxin, pesticide residue, etc) and allergens
- Innovations in food packaging and bio preservation technologies (e.g. natural preservatives, and smart monitoring tools) to enhance shelf-life
- Food system resilience, its linkages with climate change impacts, and agricultural productivity and market dynamics.
- Social, economic and nutritional roles of urpan and peri-urban agriculture in strengthening local food systems
- Climate risk analysis within food systems: impacts, adaptation, and mitigation strategies.
- Inclusive food systems: addressing gender, youth, and equity in access to nutritious food, resources, and transformation processes

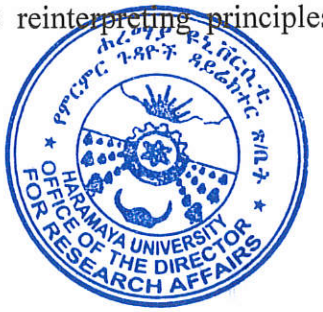
9. **Education and Sustainable Human Capital Development**
    - STEAM education models and transformative pedagogy
    - Effective teacher training programs development and assessment
    - Strategies for improving teacher motivation, professional growth and retention
    - Functional adult literacy programs to reduce poverty and gender disparities.
    - Learning, employability and entrepreneurship
    - Labor market dynamics, and skill forecasting for educational and vocational training programs
    - Second language and multilingual education for enhancing cultural understanding and communication
    - Occupational labor safety and health practices
    - Ergonomics and work environment

10. Legal, Judicial Matters and Peacebuilding

- Barriers to access to justice for marginalized and vulnerable populations (e. women, rural communities, IDPs)
- Formal, customary and informal judicial systems
- Legal aid services, community based paralegal programs and technology driven solutions to expand justice access
- legal and policy reforms to support climate-smart resource management and address environmental justice issues
- Public services, institutional integrity, and corruption measures
- Legal foundations for resource ownership, utilization and management
- Strategies for multiculturalism in peacebuilding and conflict resolution.
- Post-conflict reconciliation and restorative justice mechanisms
- Drivers and dynamics of contemporary conflicts, including resource-based conflicts and identity-based tensions
- Gender inclusiveness and barriers in economic and entrepreneurs' settings.
- Gender-based violence prevention and legal protections.

11. Regional Integration, Geo-hydropolitics and Cross-border Security

- Economic corridors in enhancing trade and investment, focusing on infrastructure development and connectivity.
- Trade policies and regional integration
- Impact of trade policies on regional integration and economic growth
- Investment climate and regulatory frameworks to attract foreign direct investment (FDI) and promote sustainable development.
- Transnational crime and strategies for regional security cooperation.
- Innovative technologies for effective border management and surveillance.
- Impact of migration on regional security and policies to protect human rights and ensure security
- Hydropolitical dynamics and power asymmetry among riparian states.
- Hydro-diplomacy, anticipatory diplomacy, conflict resolution mechanisms, and policies to manage water resources and mitigate conflicts between nations
- International water law under stress: reinterpreting principles under climate-induced



variability.

- Introducing climate clauses, flexible allocation mechanisms, and joint fact-finding protocols representing legal innovation
- Institutional design for adaptive water resource governance
- Geopolitical implications of shared water resources and strategies for cooperation and conflict resolution

12. Culture, History, Tourism and Sustainable Development

- Economic and socio-cultural studies
- Traditional performance and poems to maintain cultural heritage
- Tourism resources and destination development
- Hospitality and tourism infrastructure
- Rural and Agricultural Sociology and tourism
- Tourism niches and networks development
- Heritage, memory and identity
- Heritage Conservation and Management
- Society, culture and religion
- Community based Ecotourism
- Oral traditions and folklores
- Archaeological sites and remains

13. Innovation, Mobility and Entrepreneurship for Inclusive Economic Transformation

- Role and performance of agricultural institutions (eg, cooperatives).
- Impact evaluation of agricultural technologies (crop/livestock innovations)
- Entrepreneurship, migration, and rural-urban development linkages.
- Youth and women-focused entrepreneurship models, technology dissemination and innovation adoption.
- Innovation hubs, incubators, and barriers to startup success in rural settings.
- Assessment of local investment and entrepreneurship ecosystems.
- Public-Private Partnerships (PPPs) for university autonomy, peace, and sustainable development.
- Internal displacement (conflict, climate) and policy responses.
- Gender dimensions of migration and human trafficking.

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- Informal/illegal migration
- Social protection programs, aid, and safety nets: impacts on welfare and resilience.
- Livelihood diversification, income dynamics, and employment.
- Social capital and networks in resilience and poverty alleviation.
- Macroeconomic challenges: inflation, unemployment, exchange rate volatility.
- Liberalization and reform impacts on agricultural productivity and livelihoods.
- Rural finance, insurance, and inclusion strategies.
- Institutional innovations supporting rural development and resilience.

14. Computational Sciences & Digital Transformation

- AI/ML algorithms and deep learning techniques for real-life problem solving (e.g., resource optimization, predictive maintenance).
- Computational methods for analyzing and interpreting large datasets (Big Data) to generate actionable insights in agriculture, healthcare, and other sectors
- Machine learning algorisms to identify varieties and diseases of major crops, livestock, etc
- AI/ML for predicting irrigation water requirements, forecasting climate and hydrological extremes.
- AI based solutions for soil fertility/nutrient status assessment, rainfall pattern prediction and pest forecasting in agriculture
- Models for early warning of plant and animal pest/disease and formed intervention options at the field level
- Numerical methods for modeling and simulating complex real-life phenomena (like flooding, earthquakes) for risk assessment and mitigation
- Computaional epidemiology for prediction of prevalence of infectious and non-infectious diseases
- Algorithms and simulations based on computational and quantum information physics (computational speed, image processing, machine learning, disease prediction and severity determination, parallel computing, etc)
- Modelling, prediction or mitigation of natural hazards (volcanoes, earthquakes, floods, droughts, landslides, etc.) using advanced computational techniques
- Geophysics and machine learning techniques in modelling and mapping the impact of

climate change on current and future water demand.

- Deep learning techniques and AI in predicting earthquakes, air pollution, and advancing geospatial analysis, etc.
- Digital tools and platforms for enhancing value chain coordination, market access, and financial inclusion (e.g. e-commerce)
- Big Data for practical applications in agriculture (e.g., precision farming advisory) and healthcare (e.g., health informatics, patient management)
- Virtual and Augmented Reality (AR/VR) for education and tourism
- AI-assisted software development tools and cybersecurity solutions
- Digital literacy, business process automation, and e-governance solutions for public service delivery and efficiency
- Internet of Things (IoT) solutions for precision farming (e.g smart irrigation, remote crop monitoring) and remote healthcare monitoring
- AI in genomics and telemedicine for advancing health informatics and personalized medicine
- AI for the preservation, digitalization and dissemination of cultural heritage
- Innovative educational technologies and gamification for enhanced learning outcomes, including digital tools in class room integration
- Statistical modelling and its applications to derive solutions across various fields
- Language applications development and machine learning models in local Ethiopian languages
- Semiconductor detectors and dosimeters for clinical applications (radiation protection, radiation oncology and nuclear medicine as well as high energy physics applications).
- Algorithms and deep learning techniques for AI and machine learning
- Quantum information technology for developing quantum-based AI

15. Environmental Monitoring and Remediation

- Advanced sensing techniques and real time monitoring systems for detection wide range of environmental contaminants
- Environmental transformations, tracking, bioaccumulation, and toxicity assessment of emerging contaminants and pollutants

- Synthesis of green and eco-friendly solvents and adsorbents for environmental application.
- Novel materials and integrated technologies for efficient wastewater treatment
- Dynamics, impacts, and innovative degradation and recycling methods for e-waste and plastic pollution
- Sustainable liquid and solid waste management strategies, including waste-to-resource approaches, composting, etc
- Effective microorganisms product development and other biotechnological approaches for bioremediations and waste decomposition
- Degradation pathways and ecological impacts of persistent pollutants (e.g micro/nano-plastics) and encourage nature-based solutions
- Environmental policy and regulatory frameworks