



February 9, 2024
Japan Science and Technology Agency (JST)
5-3, Yonbancho, Chiyoda-ku, Tokyo

JST to fund five research projects for the 3rd call of AJ-CORE (Africa-Japan Collaborative Research) in the field of “Environmental Science”

The Japan Science and Technology Agency (JST) has made the decision to fund new international projects through AJ-CORE * (Attachment 1).

The third joint call for proposals in “Environmental Science” was held by JST, the National Research Foundation (NRF) of South Africa, and organizations from member countries of the Science Granting Councils Initiative (SGCI) (Attachment 2).

A total of 10 proposals were submitted to the joint call. JST and the other participating funding agencies jointly made the decision to adopt five projects based on joint panel reviews and evaluations by experts from the participating countries (Attachment 3).

The research period is scheduled to be three years.

*) AJ-CORE (Africa-Japan Collaborative Research)

AJ-CORE aims to resolve issues important to both Africa and the world, including SDGs. It is designed to support international collaborative research conducted by researchers from Japan, South Africa, and at least one African country participating in Africa’s Science Granting Councils Initiative (SGCI).

URL : https://www.jst.go.jp/inter/english/program_e/multilateral_e/aj-core.html

Attachment 1: Abstracts of the new projects

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Annex: Abstract of the joint call for proposals

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Abstracts of the new projects

	Project Title	Principal Investigators	Position and Institution	Research Project Abstract
1	Geo-spatial Risk Index Tool (GSRIT) to Monitor Human-Nature Conflicts in South Africa, Kenya and Botswana (GSRIT)	Ram AVTAR (Japan)	Associate Professor, Faculty of Environmental Science, Hokkaido University	<p>The project aims to develop a Geo-spatial Risk Index Tool (GSRIT) for Africa, which supports the monitoring of the human-nature conflicts by consolidating and analyzing various data. GSRIT is intended to alert governments and citizens on the emerging threats caused by climate change, human wildlife conflict, and illegal wildlife trade.</p> <p>The Japan team will acquire data about the impacts of climate change, population growth, and land-use change on various human-nature conflicts in Africa through field surveys and develop a GSRIT. The South Africa team will use comprehensive qualitative and quantitative data to facilitate communication between various stakeholders. The Kenya team will share the results with the Ministry of Wildlife, Tourism and Cultural Heritage for the development of policy measures to specifically address factors related to poaching incidents and retaliatory killing of wildlife by local communities. The Botswana team will assess human-wildlife conflict, poaching and illegal wildlife trade, and the impact of various factors on poaching.</p> <p>This joint research by the team aims to help the governments of South Africa, Kenya and Botswana to address issues related to human-nature conflicts.</p>
	Michael GEBRESLASIE (South Africa)	Associate Professor, School of Agriculture, Earth and Environmental Sciences, University of Kwazulu-Natal		
	Kabo DIRADITSILE (Botswana)	Senior Lecturer, School of Social Sciences, Botswana Open University		
	Joseph MUKEKA (Kenya)	Principle Research Scientist, Wildlife Research and Training Institute		

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2	Advancing Sustainable Soybean Protection and Resilience to Drought Stress in Africa through Holistic Engineering of Host-Microbe Interactions (MICRO-DRI)	David ARMITAGE (Japan)	Assistant Professor, Integrative Community Ecology Unit, Okinawa Institute of Science and Technology Graduate University	<p>The purpose of this research is to analyze the effects of plant signaling molecules on the formation of beneficial microbial communities (microbiota) that coexist with plants, and to reduce the effects of drought stress on soybeans. The South African team will study how plant signaling molecules affect the microbiome. The Japan team will use the data results to evaluate the trade-off between the ability of beneficial microorganisms to impart environmental adaptability to plants and the impact on plant growth. The Kenya team will conduct field research on beneficial microbiota and the application of phytohormones in soybean farmers in different climatic regions of East Africa.</p> <p>The aim of this research is to design sustainable strategies for applying microbiota in agriculture and to clarify the role of plant signaling molecules in plant-microbe interactions. The project will help Africa address population growth and climate change by supporting crop improvement industries and reducing crop losses due to drought.</p>
		Itumeleng MOROENYANE (South Africa)	Senior Lecturer, Department of Botany and Zoology, Stellenbosch University	
		Stephen Kamau WANJIRU (Kenya)	Lecturer, Department of Natural Sciences, Catholic University of East Africa	

	Project Title	Principal Investigators	Position and Institution	Research Project Abstract
3	Fire Safe African Homes on the Wildland Urban Interface (AfriWUIFire)	SUZUKI Sayaka (Japan)	Associate Professor, School of Engineering, Tokyo Institute of Technology	<p>This research aims to improve fire safety in Africa through the investigating Wildland Urban Interface (WUI) fire risk by firebrand ignition in South Africa. The Japan team has data on firebrand generation and ignition in Japan and USA and will investigate firebrand generation from African vegetation and the vulnerability of local construction. The South Africa team will also conduct surveys on the local vegetation and local construction and will perform experiments like the Japan team. The Botswana team will investigate a wide range and area of African vegetation using Geographic Information System (GIS).</p> <p>Through this collaborative work, the project aims to gain knowledge on the ignition vulnerability of firebrand showers in South Africa, which will lead to the fire safety of the entire African continent.</p>
		Richard WALLS (South Africa)	Professor, Fire Engineering Research Unit, Stellenbosch University	
		Rejoice TSHEKO (Botswana)	Associate Professor, Faculty of Agriculture, Botswana University of Agriculture and Natural Resources	

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4	Sustainable Climate Change Mitigation in African Smallholder Cropping Systems: Greenhouse Gas Reduction together with Soil Carbon Sequestration (SMART)	HOMMA Koki (Japan)	Professor, Crop Science, Graduate School of Agricultural Science Tohoku University	<p>This study aims to identify and promote climate-smart agriculture (CSA) systems for small-scale farmers in sub-Saharan Africa, particularly southern Africa, by mitigating greenhouse gas (GHG) emissions and promoting soil carbon sequestration. This project quantifies GHG emissions and carbon sequestration derived from small-scale farming systems, which were previously unknown, and to introduce and expand CSA suitable for local farmers.</p> <p>The Japan team will evaluate effects of different CSAs on agricultural production using a crop model simulation. The South African team will analyze climate data to extract and organize data regarding GHG emissions and carbon sequestration. The South African and Botswanan teams will conduct farmer-participatory on-farm trials and expansion of CSA to local farmers linking with multiple stakeholders.</p> <p>The results obtained from this multidisciplinary study will be provided as CSA practices with GHG emissions mitigation and carbon sequestration in order to improve crop yields through enhanced soil fertility and contribute to mitigation and adaptation to climate change.</p>
		Lindumusa MYENI (South Africa)	Researcher, Natural Resources and Engineering, Agricultural Research Council	
		Piet Kebuang KENABATHO (Botswana)	Associate Professor, Department of Environmental Science, Faculty of Science, University of Botswana	

	Project Title	Principal Investigators	Position and Institution	Research Project Abstract
5	IoT Based Intelligent Intermixed Biogas and Photovoltaic System (3IPs)	Lin MENG (Japan)	Associate Professor, Department of Electronic and Computer Engineering, College of Science and Engineering, Ritsumeikan University	<p>This project aims to enhance Africa's capacity in developing renewable energy infrastructure by leveraging Japan's cutting-edge technologies in IoT, AI, smart grids, and energy management systems. The South Africa team will utilize their extensive experience in biogas production and utilization to construct an integrated system facility, supplying power to control and monitor biogas digesters through solar powered devices. Validation experiments will be conducted. The Zimbabwe team, utilizing South Africa's technology, will similarly build an integrated system and conduct large-scale validation experiments. The Japan team will develop technology using IoT and AI to effectively manage and operate this integrated system, install it in validation facilities in South Africa and Zimbabwe, and collaborate with African teams to enhance the system.</p> <p>The integrated system developed by this research aims to establish technology where even users without specialized knowledge can safely operate the devices in areas without established electricity supply networks.</p>
		Zenghui WANG (South Africa)	Professor, Department of Electrical Engineering, College of Science, Engineering and Technology, University of South Africa	
		Liston MATINDIFE (Zimbabwe)	Lecturer, Electronics Department, National University of Science and Technology	

The countries and organizations participating in the joint call

Participating countries are Japan, South Africa and Science Granting Councils Initiative (SGCI) African countries (Botswana, Burkina Faso, Côte d'Ivoire, Ethiopia, Ghana, Kenya, Malawi, Mozambique, Namibia, Nigeria, Rwanda, Senegal, Sierra Leone, Tanzania, Uganda, Zambia and Zimbabwe).

Organizations from Japan, South Africa, Botswana, Kenya, Mozambique, and Sierra Leone have declared their funding for the call.

Country	Funding Agency
Japan	Japan Science and Technology Agency (JST)
South Africa	National Research Foundation (NRF)
Botswana	Department of Research, Science and Technology (DRST)
Kenya	National Research Fund (NRF)
Mozambique	Fundo Nacional de Investigação (FNI)
Sierra Leone	Ministry of Technical and Higher Education (MTHE)

Experts for evaluation (JST)

Member Name	Position and Institution	Note
UMETSU Chieko	Professor Emeritus, Kyoto University	Program Officer
ASANUMA Shuichi	Professor Emeritus, Nagoya University	Advisor
ASANO Hiroshi	Professor, Gifu Renewable Energy System Research Center, Institute for Advanced Study, Gifu University	Advisor
ARAKI Shigeru	Professor Emeritus, Kyoto University	Advisor
ITO Kasumi	Associate Professor, International Center for Research and Education in Agriculture, Nagoya University	Advisor
KOHARA Satoshi	CEO, Ecotribute, Inc.	Advisor
SUGIHARA Soh	Associate Professor, Institute of Agriculture, Division of Science of Biological Production, Tokyo University of Agriculture and Technology	Advisor
TSUBAKI Susumu	CEO / Representative Partner, AAIC Holdings, Pte. Ltd.	Advisor
HIROSE Fumihiko	Professor, Graduate School of Science and Engineering, Yamagata University	Advisor
FUNAMIZU Naoyuki	Executive Director / Vice President, Muroran Institute of Technology	Advisor

Abstract of the joint call for proposals

(1) Application requirements:

A multilateral research project composed by three (or more) countries: Japan, South Africa, and at least one African country.

(2) Applicant eligibility (Japan side):

Any independent researcher personally affiliated with (and actively conducting research at) a domestic Japanese research institution, regardless of nationality, is eligible to apply.

(3) Research period:

The scheduled research period is 3 years from February 2024.

(4) Amount of funding (JST):

Up to 18 million yen from JST to the researchers (Japan-based team) per project, inclusive of overhead costs (30 percent of direct costs).

(5) Evaluation methods:

Based on evaluation outcomes by experts from each country which declared their funding for the call, including Japan, and discussion by JST and other participating funding agencies.

(6) Evaluation criteria (JST):

The following were among the general criteria considered in the evaluation process:

- 1) Requirements for this call satisfied
- 2) Clear alignment with the thematic focus of this call
- 3) Scientific and Technical perspective:
 - a. Quality and originality of the project proposal
 - b. Scientific and technical expertise of the team members
 - c. Expected scientific outcomes and the potential to produce results
- 4) International collaboration perspective:
 - a. Experience of primary investigators in the international collaboration
 - b. New or the enhancement of the existing collaborative relationships
 - c. Quality and the synergy effect of the collaboration by the participating organizations
- 5) Adequacy and feasibility of the research plan (budget, objectives, activity schedule)