5th Call for Application for Applied R&D Project Funding Support from EnergizeNepal Program

CALL FOR APPLICATION : 15 September 2022
APPLICATION SUBMISSION DEADLINE : 23 October 2022

EnergizeNepal Program (ENEP)

Managed by:

Kathmandu University (KU), Nepal

In partnership with

Hydro Lab Pvt. Ltd., Nepal

NTNU, Norway

SINTEF, Norway

Funded by:

The Norwegian Ministry of Foreign Affairs

A. The Call Statement

Applications for Applied Research and Development (R&D) Project Funding Support from ***EnergizeNepal Program*** are invited from ***Nepalese Research Institution****(University, College, and other organization qualifying as a research institution)*in partnership with ***Nepalese Energy Industry*** *and preferably also in partnership with* ***Foreign Research Institution and Foreign Energy Industry,*** to conduct Applied R&D for industrial development in Nepal in the area of Renewable Energy or Energy Sector valuable to Nepal**.**

The details of this application call are provided in the remaining sections of this call.

B. Eligibility and General Requirements for the Applicant Institution

All Nepalese Research Institutions (Universities, Colleges, R&D Laboratories, Test and Certification Laboratories, others registered/qualifying as a research organization/institution) related to Renewable Energy Technology (RET) or Energy Sector may apply for the project funding support as the ***Principal Applicant***. The Principal Applicant shall have a degree of independence/autonomy in project implementation and budget handling. The Principal Applicant shall have relevant experience and resources to be able to implement the project effectively under the funding and contributions from self and/or partners and/or other sources, which shall be reflected in the ***Organization Profile*** of the organization in the prescribed format.

The Principal Applicant shall at least assign a key person of the Principal Applicant institution as the ***Project Leader (or Principal Investigator),*** with at least a master's degree in relevant discipline and with some research and research management experience, which shall be reflected in the ***Curriculum Vitae of the proposed Project Leader*** in the prescribed format. The institution must also designate a key person of the institution as the ***Project Administrator*** who shall at least have administrative authority to implement R&D project at a division of the Principal Applicant at which the Project Leader is employed.

The Application must be signed on the ***Application Summary Page*** by the ***Head of the Institution*** or the Head of the Division of the Institution or ***Project Administrator*** (authorized to make such application on behalf of the institution by the Head of the Institution) of Principal Applicant.

The Principal Applicant institution shall be a not-for-profit or non-profit organization with research and development as an integral part of its activity or purpose and shall generally qualify for the tax exemption while receiving R&D project funding.

Note: Latest tax clearance certificate and other legal documents of principal and industrial partners should be submitted.

C. Eligibility and Requirements for Partners

The Application submitted by the Principal Applicant shall be a joint application **with at least one Nepalese Energy Industry** as the ***Main Nepalese Energy Industry Partner***. The project shall preferably have other Nepalese or Foreign partners as ***Expert/Resource Partners***.

All Nepalese industry or company that is related to renewable energy technology or energy sector can be the Nepalese Energy Industry Partner. Preferably, the industrial partner should pose the capacity of commercialization of project output.

Also, public and private utilities, government and non-government agencies related to renewable energy technology or energy sector can be the Local/Nepalese Partners equivalent to Industrial Partner or Institutional Partner, depending upon the nature of the organization.

Foreign institutions (also individuals with research expertise such as professors) and industries can be the expert/resource partners.

There can be multiple partners of same kind (institution or industry). If there are multiple similar kinds of partners, the application must differentiate between the Main Partner and Duplicate Partner.

The partner designation shall follow the following convention in defining type of partner.

1. Main Nepalese Energy Industry Partner (M-NPEI) [**Partner 1**]
2. Main Foreign Research Institution Partner (M-FORI) [**Partner 2**]
3. Main Foreign Energy Industry Partner (M-FOEI) [**Partner 3**]

All other partners have designation of ***Duplicate Partner***.

All the partners shall at least assign one key person in the partner organization as the ***Activity Leader*** with relevant qualifications, which shall be reflected in the ***Curriculum Vitae of the proposed Activity Leader*** in the prescribed format. All partners shall issue a ***Letter of Intent*** of cooperation with the main applicant regarding the cooperation in the implementation of the project according to the agreed Project Work-Plan, Schedule, and Budget, and subsequent updates to them, reflected in the ***Application for Project Funding Support***. Further, all partners shall also submit the ***Organization Profile*** in the prescribed format with relevant information.

Different units/divisions of same organization are not regarded as separate partners. For example, if there are two colleges of one university participating in the project activities of same project, only the university is regarded as the applicant/partner.

D. Basic Criteria for Eligibility of Consideration for Project Funding Support

The basic criteria for funding R&D projects by EnergizeNepal Program are as follows.

1. Project application by an R&D institution in Nepal
2. Participation in the project by at least one industrial enterprise of Nepal as main industrial

partner

3. Project ***aimed at developing product, services, and tools for renewable energy and energy/power systems*** that may be hardware or software or other tools
4. Project with ***well-defined assessable research and development objectives with commercial aims*** in the area of renewable energy valuable to Nepal.
5. Project with ***anticipated positive socio-economic and environmental effects***
6. Project that ***preferably involves other local or foreign experts as partners*** (Foreign enterprise and institutions may participate as partners), only if they contribute with vital competence and resources to the projects
7. Project with ***minimum 50% of the budgeted activities in Nepal***, if there are international partners
8. ***Contribution of minimum 30%*** of the total project cost in cash or in kind
9. Project that encourages participation of ***women in research***

E. Amount of Funding Support

The amount of funding support to be sought from EnergizeNepal Program for any project depends on the type of project, duration of project and partnership composition.

In general, the funding amount **per project per year is 2,400,000 NPR** (two million four hundred thousand Nepalese Rupees).

The projects shall be planned to ***start from any date, on or before 01 January 2023***.

F. Cost Plan for the Project

EnergizeNepal supports project costs under the budget or expenditure headings prescribed in the provided budget sheet.

EnergizeNepal puts the following mandatory conditions for providing funding support to the projects.

1. The overall coverage of total project cost from EnergizeNepal funding shall be at most 70% and at least 30% shall be contribution from the participating organizations in cash or kind.
2. Assets (such as equipment, tools, computers, and other durables) **can only be purchased with at least 30% cash contribution** from the participating organization. For instance, if any equipment cost NPR 100,000/-, then for the purchase of the equipment maximum NPR 70,000/- may only be used from EnergizeNepal funding.

G. Number and Type of Project

FOUR (4) projects will be awarded with funding support in this call in the **OPEN CALL** CATEGORY, provided that the quality of project applications is absolutely GOOD. In OPEN CALL CATEGORY, the

project applicant may choose any thematic area of importance in energy and hydro power sector. The project **MUST HAVE BEEN** planned for **TWO YEARS** duration.

TWO (2) projects will be awarded with funding support in this call in the STRATEGIC RESEARCH CATEGORY, provided that the quality of project applications is absolutely GOOD. In the STRATEGIC RESEARCH CATEGORY, the thematic area could only be either one of the followings.

1. **Electrification of IC Engine Vehicle**

Topic Description:

Electric mobility (EVs) is considered as emerging technology to reduce carbon emissions in the transportation sector globally. Similarly, the electric transportation industry is one opportunity to increase the hydroelectricity consumption in Nepal. Meanwhile, The Government is also working for the adoption of electric vehicles (EV) through a variety of techniques and legislation since it recognizes the advantages for sustainability and carbon neutrality as well as current fiscal year budget has also emphasized for its adaptation. The policy to permit the conversion of combustion vehicles to EV has also been advanced for a three-year trial period and environment friendly vehicle policy is in phase of legalization. Additionally, technology and research has brought up innovation in battery technologies which has been uplifting the ev industry. So far, there are total of the 9860 bike/scooters. 3108 cars, 22 buses, 250 mini/micro bus, 7453 rickshaw registered e-mobility vehicle till fiscal year 2078/79 according to Department of Transport Management (DOTM). Moreover, Nepal Government have already committed to cover sales of electric vehicle (EV) in 2030 by 90 % including both four and two-wheelers in private passenger vehicle industry and 60% of all four-wheelers public passenger vehicle.

With the current state of technology and the condition of the country, electrification to replace conventional vehicles with new EVs and conversion of IC engine vehicle is more apparent. However, without taking important technological factors and regional variables into account, EV conversion and electrification will nevertheless have several disadvantages and life-threatening scenarios. The Government's decision to permit EV conversion is under discussion, and concerns have been voiced about the lack of clear rules, implementation plans and technical knowledge. The current situation calls for appropriate laws and regulations to support and oversee EV conversion, which necessitates through research in the area. The research/study will consider the development of EVs on a global scale and adjust its findings to fit local requirements. The findings of the study can be used to create laws and policies that will make EV conversion easier and to create e-mobility movement in the country. Therefore, this strategic project application expects the applicants to design and implement a research project that with E-mobility which are scholarly and independently but not limited to: 1. Development of electric vehicle standardization and certification laboratory. 2. Fuel cell Technology 3. Regenerative braking, thermal control, and the electrical control system optimization. 3. Comparative analysis for the drive cycle and performance evaluation for battery powered car in different terrains of Nepal. 4. Life cycle assessment for lifecycle and performance evaluation for battery powered vehicle in different terrains of Nepal.

2. Distribution Grid Automation Using AI and Smart-Metering

Topic Description:

The power distribution systems in the world are evolving faster than ever before, opening a range of challenges and opportunities in the enhancement of grid efficiency and performance. Modern distribution systems would use network of smart monitoring devices and meters, data science-based grid management using artificial intelligence, seamless integration & management of distributed storage-type energy resources, etc. for the efficient operation and maintenance of the grid. Therefore, intelligent source and load monitoring and control are vital. Smart, innovative, sustainable, and resilient grid development is also a necessary requirement for the achievement of Sustainable Development Goals in the Energy (Goal 7) and Infrastructure (Goal 9) sectors. The Distribution Grid Automation (DGA) and grid modernization can only be possible with a holistic DGA strategy involving key stakeholders such as power utility, government regulatory agencies, academic institutions, planners, hardware, and software provides, etc., who carefully study the challenges & opportunities, plan and be ready for the transformation. Competence building through multi-stakeholder collaborative research and development is necessary, along with proactive policy interventions from the government.

The power distribution system in Nepal is problematic, under-equipped and traditional. It has low reliability and is less resilient to faults and damages. It suffers with high system loss and under-voltage problems. Nepal Electrical Authority (NEA) is trying to address these problems by modernizing the distribution system and by adopting smart-metering. The modernization of distribution system therefore could be accelerated with a DGA or Smart-Grid centric strategic research and development that also promote local multi-stakeholder contributions. Therefore, this strategic project call from EnergizeNepal Program aims for such R&D project with the following expected outputs and outcomes.

Expected Outputs:

- Establishment of a research center or specialized laboratory or industry on Smart-Grid dedicated to DGA
- Development of appropriate software tool for grid visualization, monitoring, and control for application in context of Nepal.
- A pilot project in the local context demonstrating the capabilities of DGA
- Higher level training of Nepalese engineers in DGA.
- Visibility of competence built through the project to public and the key stakeholders

Expected Outcomes:

- Enhanced competence of Nepalese institutions and industries in the DGA
- Enhanced collaboration among the key-stakeholders in DGA in Nepal
- Technology transfer and collaboration with international partners such as donors/ development agencies, academic institutions, internationally recognized labs, and industries in the smart grid sector

- Enhanced technical know-how and local awareness on use of smart-metering, monitoring, and artificial intelligence.
- Contribution to transformation of Nepalese distribution grid to smarter, futuristic, reliable, and efficient grid.

The project in strategic research category must be planned for TWO YEAR duration.

Note:

For both of the mentioned project types, following points are applicable.

1. One "Project Leader/Team Leader/Principal Investigator" may be awarded with **ONLY ONE** project; however, s/he may submit multiple proposals.
2. "Project Leader/Team Leader/Principal Investigator" already conducting research funded by EnergizeNepal is not eligible as "Project Leader" before completion of ongoing project.
3. Except "Project Leader/Team Leader/Principal Investigator", engagement of a human resource in a research project funded by EnergizeNepal is eligible to participate in another project funded by EnergizeNepal. For the eligibility, permission from the Executive head of Administrator of the representing organization is necessary.

H. Application Procedure in Brief

The complete application must contain the following documents:

1. The completed Main Application Form in MS Word or PDF format
2. The Curriculum Vitae of all key persons in the prescribed MS Word or PDF format (with information that is relevant to the project application)
3. The Letter of Intent of cooperation from all partners, signed and scanned, in PDF
4. The Organization Profile of applicant institution and partners in the prescribed MS Word or PDF format (only with the information relevant to the project application)
5. The Signed Application Summary Page (signed by Head of Institution or Designated Project Administrator of the Principal Applicant Institution), scanned, in PDF format
6. The Detail Budget or Project Activity Funding Plan in prescribed MS EXCEL format.

The electronic copy of completed application should be submitted by e-mail to **energizenepal@ku.edu.np.** Application missing any of the mentioned documents may be considered as non-responsive and will not be considered for further evaluation process.

Application received after deadline will not be considered for further processing for any circumstances whatsoever.

Note: Printed copy of the application will not be entertained in any condition.

I. Date of Result and Date of Project Start

The result are published or notified after the project application evaluation and final award decision of the project selection committee. After the result, ***TWO WEEKS*** time will be given to awarded project for adjustments and finalization of the ***Project Contract*** with EnergizeNepal Program Office. The Projects receiving funding support are expected to begin activities from ***any date, on or before 01 January 2023***. The participants of the project must sign a ***Project Consortium Agreement*** approved by EnergizeNepal before the date of start of project.

If any project with funding support offer fails to start by ONE MONTH of offer, the funding support offer will be made to relevant waiting application. If the waiting application also fails to start within ONE MONTH of offer, no further offer will be made by EnergizeNepal to any other applicant.

J. Confidentiality of the Submitted Application

The application is regarded as "Confidential", with access to only those who evaluate the application.

K. Application Evaluation Procedure in Brief

The applications are generally evaluated in three stages: 1st by the Independent Experts, 2nd by a panel comprising of Independent Experts and Project Selection Committee, and finally by the Project Selection Committee. The evaluation criteria for different evaluation stages are different. Selection or rejection decision of any application is limited only to the PSC.

L. Application Preparation Support

The Program Office will generally assist the applicant and the partners in project design (non-technical aspect). Assistance may be obtained via e-mail communications or with in-person meeting with the Program office. For in-person meeting, please ***send e-mail and confirm*** the date and time of meeting.

M. Evaluation Flow Chart and Indicators

Refer a separate document (Assessment Criteria and Process) for the details of evaluation flow chart and the guidelines.

N. The Authority to Award Project Funding Support

The Project Selection Committee (PSC) of EnergizeNepal has absolute authority to award funding support to the selected projects and may override any procedure or requirements if necessary.

O. Contacts

The preferred method to contact the EnergizeNepal Office is by e-mail (energizenepal@ku.edu.np). It is preferred that personal visits are informed in advance.