

## Appendix-I

### 1. Objective

The participating organizations shall submit the proposals aligned with the following objectives:

- (i) **Address Cost and Technological Challenges:** Focus on overcoming the financial and technological barriers to the production of New and Renewable Energy.
- (ii) **Encourage Innovation:** Promote innovation to reduce costs and enhance efficiencies across renewable energy sectors.
- (iii) **Improve Efficiency:** Aim to improve efficiencies in various aspects of renewable energy, including solar, wind, bioenergy, and energy storage technologies.
- (iv) **Support Widespread Adoption:** Facilitate the broader adoption of renewable energy solutions by addressing the key obstacles and driving technological advancements.

### 2. Eligible Entities

The initiative aims to involve a broad spectrum of participants, including government academic and research institutions, individual researchers, and innovators, alongside start-ups and established companies. Additionally, it seeks the engagement of government bodies and public sector undertakings. By integrating these diverse stakeholders, the goal is to foster collaborative efforts that address technological and cost-related challenges in New and Renewable Energy, driving forward innovation and efficiency in the sector.

### 3. Evaluation Criteria

The proposals will be evaluated based on the following criteria:

- (i) Relevance and quality of the proposal.
- (ii) Availability of clear statement of quantified objectives and deliverables
- (iii) Technical feasibility of the proposal
- (iv) Technology Readiness Level of the proposed technology.

## Problem Statements for R&D Programme

### 1. Problem Statements: Production

	Problem Statement
<b>1</b>	<ul style="list-style-type: none"> <li>• Development of high-efficiency solar cells</li> <li>• Enhanced light absorption and reduced reflection technologies.</li> <li>• Innovations in flexible and lightweight solar panel technologies for diverse applications.</li> <li>• Cost reduction and scalability of solar panel production.</li> <li>• Improvements in recycling processes for end-of-life solar panels</li> </ul>
<b>2</b>	<ul style="list-style-type: none"> <li>• Innovations in waste-to-energy technologies and processes.</li> <li>• Integration of carbon capture technologies with bioenergy systems etc.</li> </ul>
<b>3</b>	<ul style="list-style-type: none"> <li>• Technologies for enhanced grid reliability and integration of renewable energy sources.</li> <li>• Research into reducing the lifecycle environmental impact of renewable energy technologies etc.</li> </ul>

### 2. Problem Statements: Storage

	Problem Statement
<b>1</b>	<ul style="list-style-type: none"> <li>• Advances in lithium-ion batteries (e.g., higher energy density, faster charging) etc.</li> <li>• Development of next-generation batteries (e.g., solid-state, flow batteries)etc.</li> </ul>
<b>2</b>	<ul style="list-style-type: none"> <li>• Enhancements in the energy density of supercapacitors while maintaining high power density and fast charge/discharge ratesetc.</li> <li>• Development of new electrode materials and electrolytes to improve performance and reduce costsetc.</li> <li>• Research into combining different storage to optimize performance for specific applicationsetc.</li> </ul>
<b>3</b>	<ul style="list-style-type: none"> <li>• Research into recycling processes for storage materials (e.g., batteries, supercapacitors) to reduce environmental impact and improve resource efficiencyetc.</li> <li>• Evaluation of the environmental impact of energy storage technologies throughout their lifecycle, from production to disposaletc.</li> </ul>
<b>4</b>	<ul style="list-style-type: none"> <li>• Research into optimal designs for various gravity storage systems, including mechanical towers, vertical shafts, and crane systems. This includes maximizing energy storage and retrieval efficiencyetc.</li> <li>• Improving the efficiency of converting gravitational potential energy into electrical energy and vice versa. This involves optimizing generators, converters, and mechanical linkagesetc.</li> <li>• Research into materials and construction methods to enhance the longevity and safety of storage structures, including resistance to environmental factors etc.</li> </ul>

**Note:** Other relevant R&D aspects apart from the above, related to ‘New and Renewable Energy’ project development will also be considered.

## Appendix-III

### Proforma for Submission of Proposals for R&D Projects

S.No.	Item	Details
1.	Project Title:	
2.	Project type	
3.	Objectives	
4.	Summary (About a paragraph)	
5.	Total cost	
6.	Duration	
7.	Principal Implementing Organization(s)	
8.	Category of the Implementing Institution(s)	A. Government academic and research institutions, individual researchers, and innovators B. Start-ups and established companies C. Government bodies and public sector undertakings
9.	Collaborating Institution(s), if any	
10.	Principal Investigator (Name and Contact details including telephones, fax and email)	
11.	Co-Principal Investigator(s) (Name, address and contact details including telephones, fax and email)	
12.	Share of implementing / Participating Institutions in the total cost	
13.	Details of Research Methodology	Detailed methodology including schematics, diagrams, all relevant technical details and rationale etc. to be provided.
14.	Proposed cost: (Details of equipment along with justification to be provided separately in the Format)	as per Annexure I

15.	Project Deliverables (products/process/papers etc.)	
16.	Timelines (in terms of Work Plan)	
17.	Other information	<p>The following information is to be provided as per Annexures:</p> <ul style="list-style-type: none"> <li>• Certificate from the Principal Investigator and Grantee organization. [Annexure-II(A)]</li> <li>• Infrastructural facilities available at the host institution (e.g. telecommunication, Internet, Electrical/ Mechanical Workshop, Laboratory space, power supply including back up arrangement, etc.) [Annexure-II(B)]</li> <li>• Availability of equipment which are relevant for the project. [Annexure-II (C)]</li> <li>• CVs of PI and all co PIs, which would include details of other R&amp;D projects implemented, their cost, status (completed/ under implementation) and sponsors. [Annexure-II(D)]</li> </ul>

**Annexure-I**Details of Costs of Various Components and Justification

S. No.	Name of the Equipment along with make & model	Imported/ Indigenous	Estimated Costs (in INR)*	Justification
1.				
2.				
3.				

\*Including transport, insurance, installation charges etc.

**Annexure-II (A)**

Certificate from the Principal Investigator (On the letter head of the Organization)

Project Title:

- 1) I am submitting the above titled project proposal to UPNEDA for financial support.
- 2) I have not submitted the project proposal elsewhere for financial support.
- 3) I have requested for funds for the items, which are not available with the institution for the proposed work and are absolutely essential.
- 4) I have enclosed the following documents/ materials:
  - I. Similar certificate from Investigator(s) from other participating institutions (if any):

Date

Place

Name and signature of Principal Investigator

Endorsement by the Head of the Institution

It is Certified that Project Proposal entitled " \_\_\_\_\_ " is prepared by Dr/Shri/Smt/kum..... and has not been submitted to any other institution for funding. The institute will provide necessary regular staff and infrastructure facilities for the project work and institute will ensure compliance of the terms and conditions of the financial grant by UPNEDA and other conditions of the project.

Date

Place

Name and signature

**Annexure-II (B)**

Infrastructural Facilities Available at The Host Institution

<b>S. No.</b>	<b>Item</b>	<b>Yes</b>	<b>No</b>	<b>Not Required</b>
<b>1</b>	Workshop			
<b>2</b>	Water & Electricity			
<b>3</b>	Standby power supply			
<b>4</b>	Laboratory Space & furniture			
<b>5</b>	Air-Conditioned room for equipment			
<b>6</b>	Telecommunication			
<b>7</b>	Transportation			
<b>8</b>	Administrative & Secretarial support			
<b>9</b>	Library facilities			
<b>10</b>	Computational facilities			
<b>11</b>	Any other (Please mention)			

**Annexure-II (C)**

<b>S. No.</b>	<b>Name of the equipment and accessories</b>	<b>Model and make</b>	<b>Remarks</b>
1.			
2.			
3.			
4.			
5.			

**Note:** Please make sure that the aforementioned facilities and equipment will be available for the project.



**Annexure-II (D)**

**BIODATA OF PI/ Co-PIs**

- a)** Name
- b)** Date of Birth
- c)** Academic qualifications
- d)** Areas of expertise
- e)** Experience
- f)** Awards received, if any
- g)** Publications (Nos.)
  - Books
  - Research papers
  - Patents
- h)** List of publications (Papers published during last 10 years)
- i)** List of project completed indicating briefly title, sponsoring agency, duration and outcome of project
- j)** Details of materials/prototype/device etc. already developed in past

<b>S.No.</b>	<b>Position Held (Designation)</b>	<b>Place of work</b>	<b>Duration</b>	<b>Areas of work</b>
<b>1.</b>				
<b>2.</b>				
<b>3.</b>				
<b>4.</b>				