

**Yildiz Technical University**

**Scientific Research Projects (SRP) Coordination Unit**

**Call for Projects**

1. **Call Code**

**IRP-ENERGY\_AND\_CLIMATE-2022-1**

1. **Call Title**

**Energy and Climate Change**

**3. Subject of the Call and General Framework**

The main reason for global warming is the technology brought by industrialization and environmental pollution as a result of human activities. One of them is air pollution, which has a very negative effect on environmental health. The main cause influencing global warming is the concentration of greenhouse gases in the atmosphere, which is a by-product of increased human activities. In particular, the use of fossil fuels is seen as the most important main source of greenhouse gas production, and greenhouse gas emissions arise from activities both from nature and human beings.

In the fight against the environmental, social and economic challenges that the world is facing today, it is necessary to develop sustainable energy solutions and take measures in line with the roadmaps declared in the "2030 Sustainable Development Agenda" and the "European Green Deal". Within the scope of the United Nations Framework Convention on Climate Change (UNFCCC), with the Paris Agreement signed in 2015 on climate change mitigation, adaptation and financing, it is aimed to reduce emissions as soon as possible and to balance greenhouse gases released and captured until the second half of the 21st century. The parties to the treaty also aim to increase the ability to adapt to the adverse effects of climate change and ensure "a consistent flow of finance towards low greenhouse gas emissions and climate resilient development". In this process, in which Turkey also involves, the development of research, policies and strategies has gained momentum in order to meet the green transformation goals for clean and sustainable energy needs, as well as to combat climate change on a global scale. In addition, since our country is one of the countries that will be most affected by climate change due to its geographical location, as stated in the 11th Development Plan, concrete steps must be taken to transition to a carbon-free economy in order to combat climate change.

Compared to existing energy technologies, it is aimed to develop energy and environment-focused innovative solutions integrated with water and waste method and the design of functional materials, systems, processes and modules, which are efficient, sustainable, green and have the capacity for storing, transporting and producing new generation energy with minimum carbon foot print, and the impacts of these on climate change.

**Aims and Goals**

The main objective of the Energy and Climate Change Call Program is the generation, storage and applications of clean energy that can be integrated into industrial processes with a technological readiness level 3-5 and meet the United Nations' 2030 Sustainable Development Goals; water and waste management; production of new generation materials for energy-heat efficiency and optimization; process, system and module design; manufacture and testing of modules; production of control systems and algorithm tests, realization of smart energy systems supported by artificial intelligence. In addition to creating added value in commercialization areas, it is expected that the program call to be evaluated from ecological, social and economic perspectives and examined regarding its effects on climate change.

Within the scope of the call, it is expected to be focused on the development of product, system, module, process design and application-oriented technologies:

* Energy storage
* Hydrogen production from alternative sources,
* Clean hydrogen applications
* Economical catalyst development for clean fuel technologies
* Energy and heat efficiency and optimization
* Production of sustainable and economical biofuels
* Development of non-biological renewable fuels
* Carbon dioxide capture and storage
* Water and waste management
* Solar based fuels
* Wind power
* Renewable energy management and integration into chemical processes
* Applications of electric and hybrid vehicle technologies
* Examining the impact of clean energy practices on climate change/carbon footprint

**5.**  **Call Calendar**

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| **Call Opening Date:** | **07/03/2022** |
| **Call Closing Date:** | **15/04/2022** |