Expression of Interest

Clean Hydrogen JU Calls we would like to develop proposal:

- **TC1 Hydrogen Production**
  - **TC1-01: Innovative electrolysis cells for low temperature hydrogen production**
  - **TC1-02-A: Innovative Solid Oxide electrolysis cells for intermediate temperature hydrogen production.**
  - **TC1-05: Advanced anionic exchange membrane system for low-cost hydrogen production**
  - **TC1-06: Photoelectrochemical (PEC) and Photocatalytic (PC) production of hydrogen**

Concept development for these calls

1. Sabanci University (SU) can contribute on development of materials that can be used in and/or adapted to LT water electrolysers in terms of creating novel membrane structures, create novel concepts of triple-phase boundary electrodes and high performance electrocatalysts.
2. Sabanci University (SU) can contribute on development of novel material design, cost competitive membranes, electrocatalysts, ex-situ characterization, fabrication of MEAs and electrochemical performance and durability tests for electrolysers and photoelectrochemical production of hydrogen.

Clean Hydrogen JU Calls we would like to contribute:

- **TC2 Hydrogen Distribution**
  - **TC2-04: Novel insulation concepts for LH2 storage tanks**
  - **TC2-05: Development of large scale LH2 storage tank (onshore)**
  - **TC2-06: Demonstration of high pressure (500-700 bar) supply chain**
- **TC4 Heat & Power**
  - **TC4-06: Clean hydrogen in the cement industry**
- **TC5 Cross Cutting**
  - **TC5-02: European Hydrogen Academy**
- **Hydrogen Valleys**
  - **TC7-02: Small-scale Hydrogen Valley**
- **Strategic Research Challenge**
  - **SRC-01: Advanced materials for hydrogen storage**
  - **SRC-02: Increasing the lifetime of fuel cell and electrolyser stacks**

1. SU can support consortia in **improving novel material design of electrolysis cells, efficiency cost, and durability of the hydrogen production processes, creating hydrogen value chain**, **while engaging all key stakeholders** including policy makers such as Ministries of Energy and key Industry players and energy market regulator, renewable/clean energy associations, investors, other market players, firms and energy consumers in Turkey.
2. SU can contribute in terms of **organizing roundtables, webinars, discussion and exchange platforms and outreach activities** to increase awareness on country and sector specific objectives and targets related to global aspects and relevant Green Deal objectives including larger utilization of Turkey's rich renewable resources in a growing and developing energy market.
3. SU can contribute in assessing policy and market aspects related to renewable energy growth towards achieving a more sustainable energy future and identifying best practices with wider gains.
4. SU has extensive experience in education of energy and feed the growing European fuel cell and hydrogen (FCH) industry :
    a. **Training of undergraduates:** SU's "**Energy Minor**" program can be used for pilot implementations of new courses, student-instructor exchange, and joint courses etc.
    b. **Training of white-collar professionals:** By its The Energy Technologies and Management (ETM) masters program for professionals, SU trains and reskills white-collar professionals from various subsectors of the energy industry. The program uses an interdisciplinary education approach, covering different dimensions of the energy domain including scientific, engineering, financial, policy, regulator and business aspects of energy, with a special emphasis on renewable transition. This 420-hour graduate-level program can be used for pilot implementation of the training framework that will be developed in the project.

Industry-Academia Programs: SU develops customized energy-related certificate programs with major Turkish energy companies. These programs, which take 60-100 hours, bring together academics and industry experts as instructors. SU's experience in this domain can help identify the shortcomings of current industry-academia trainingprograms and guide the development of better curricula.

5. SU researchers can contribute in terms of organizing & participating in courses, congress, thesis, workshops, practical training, winter and summer schools on renewable energy (including topics on batteries, supercapacitors, fuel cells, electrolysers, hydrogen, CO_2 capture & conversion, electric vehicles and other renewables).

6. SU can develop insights into the links between gender diversity in corporate boards/business leadership and climate change/ sustainability strategies of companies. It maintains a database of board ready women and advises companies in their selection of female candidates for the board of directors. It also hosts the 30% Club Turkey chapter which brings together CEOs who are committed to gender diversity in their companies management teams.
7. SU can support the project in terms of gender balance.
8. SU can introduce visual exploratory and analysis tools that facilitates the uncovering of hidden information and stories underlying documents, extracting the key findings, events, temporal expressions, locations, entities, and keywords within the documents, establishing a network between documents and allow participants of different level of exposure to the domain to form and test hypotheses and observe individual relationships, networks, and stories present in energy domain.

Expertise, Skills and Capabilities

Sabancı University, is engaged in highly effective multidisciplinary research programs, bringing together researchers with expertise spanning advanced materials, basic sciences, and engineering, to address applications in energy. An extensive research on energy conversion and storage technologies (hydrogen generation & storage, electrolysis, fuel cell, batteries, supercapacitors, CO2 capture & reduction) have been conducted. In this regard, metals, metal oxides, and carbon-based materials as catalysts, membranes, electrolytes, electrodes, nanoparticles have been developed.

In the Sabancı University infrastructure, various resources like Micro/Nano Fabrication (Clean Room), Electron Microscopy & Spectroscopy, Materials Characterization, Polymer Processing, Energy & Surface Chemistry laboratories, which are in close relation to our energy storage and conversion research are available in faculty and research centers;

- Faculty of Engineering and Natural Sciences
- Sabanci University Nanotechnology Research and Application Center - SUNUM
- Sabanci University Integrated Manufacturing Research and Application Center -SU IMC

Sabancı University Corporate Governance Forum

Sabanci University Corporate Governance Forum is the partner of CDP in Turkey since 2010. Within Turkey operation, the number of companies responding to CDP's Climate Change Program has reached 60 in 2020 that represents a significant increase from 2019, even amidst the Covid-19 crisis.

Companies responding to CDP Turkey find a chance to share their climate change policies with international institutional investors, thanks to CDP's global reporting platform. CDP Turkey has missions such as enabling dialogue between companies, helping consulting firms in terms of their visibility, supporting policies to reduce the effects of climate change, move environmental risk management to corporate governance level, educate and inform responding companies about possible benefits and share good examples. Launched in London in 2000, CDP is the world's most extensive environmental reporting system and holds the world's largest institutional climate change, water, urban sustainability and forest-risk data. Through CDP's global system companies, investors and cities are better able to mitigaterisk, capitalize on opportunities and make investment decisions that drive action towards a more sustainable world.

In Turkey, out of 60 companies that report through CDP Turkey, 11% of companies have an energy consumption or efficiency target. Targets for replacing existing energy sources with renewable energy should be a part of the company strategy, but now, few companies in Turkey have set these types of targets. 19% of companies have set a renewable energy consumption target, while 9% have set a renewable energy production target.Almost all companies (94%) provide energy consumption totals (158 million MWh excluding feedstock) including energy consumption totals from renewable sources (46%) - 3.3 million MWh in total.

CDP has a partnership with and RE100:
https://www.cdp.net/en/campaigns/commit-to-action/energy

And has a renewable energy cities database
https://www.cdp.net/en/cities/world-renewable-energy-cities

This connections provide access to a the leading companies in Turkey to
• Involving them in training programs
• Bringing them together in workshops
• Identifying the companies that SU can connect with their R&D departments.

The CDP partnership would also help
• Connecting with CDP reporters in other countries based on a common reporting standard and terminology for mutual learning opportunities.

Sabancı University Istanbul International Center for Energy and Climate

SU IICEC is an independent center at Sabancı University that produces energy policy research and has a convening power gathering energy and climate stakeholders towards a more secure and clean energy future. IICEC fosters the exchange and development of ideas by providing a distinguished platform gathering key stakeholders involved in energy and climate fields. https://www.youtube.com/watch?v=Qx7JCXcPmtM

Relevant capabilities include

- Demonstrated knowhow and expertise in energy policy, regulatory and market frameworks and energy policy and technology interactions.
  IICEC's flagship publication "Turkey Energy Outlook" (TEO) provides a holistic and detailed long-term perspective for the complete Turkish energy economy emphasizing an increasing role for renewable energy and broader clean energy supply. TEO is a first-of-its-kind study in Turkey and based on an analytical modeling framework and analyses towards a more secure, efficient, competitive, technology-driven and sustainable energy future including solid policy recommendations. Wider use of renewables backed by technological developments and supportive policies for electricity generation and across end-user sectors is among major themes of the TEO.
  https://iicec.sabanciuniv.edu/teo
  https://www.youtube.com/watch?v=0QMcAXEvsSc
  https://www.youtube.com/watch?v=5NxoSBBINk0

- Broad stakeholder engagement capabilities within the "success triangle" of policy makers, industry and academia.
  - IICEC BoD involves many leading energy industry players across the Turkish energy sector. It reflects the business acumen in a growing and developing energy economy.
  - Strong outreach to energy and climate stakeholders since 2011 including energy consumers through a diverse set of high impact events and other activities (High level Fora and Conferences, Roundtables, Seminars, Webinars, Business Luncheons etc.). Recently, IICEC's High Level Webinar "Renewable Energy in the World and Turkey: Today and Tomorrow'' hosted Turkey's Energy and Natural Resources Minister and the IEA Executive Director. https://iicec.sabanciuniv.edu/event/iicec-webinar-renewable-energy-world-and-turkey-today-and-tomorrow (in Turkish)
  - IICEC's Energy Market Newsletter Series is a unique product providing up-to-date insights and accurate information to business executives, academia. The series includes a roundup of industry news, policy and business changes that impact energy users, and a variety of energy and climate related statistics and data. These include legislative and policy updates, monthly business recaps, news articles on relevant energy issues and recent reports. Therefore it distinguishes itself from an ordinary news blog and disseminates information across a diverse range of stakeholders. A dynamic coverage of global, regional and country specific developments also reflect a growing interest and momentum in renewable energy and clean energy related policy, market and technology developments. https://iicec.sabanciuniv.edu/newsletter

Istanbul Policy Center

Istanbul Policy Center (IPC) is a global policy research institution that specializes in key social and political issues ranging from democratization to climate change, transatlantic relations to conflict resolution and mediation. Climate change, energy transition (renewable energy and energy efficiency), international climate politics, Turkey's climate policies, and various mitigation and adaptation issues regarding climate change are among the main topics of research at IPC.

IPC is an experienced research center for policy deliberation, deliberative policy building, network building and stakeholder engagement. Engagement of various actors such as public

institutions, private sector, international organizations, civil society, and academia for policy debates is ensured by participatory methods. Actor networks of policy circles are created and secured for long term collaboration. Bilateral dialogues and interviews are also used for stakeholder engagement and network buildings. Experience of organizing stakeholder workshops, doing qualitative research on policy processes, and large stakeholder and expert network related to climate change and energy transition are the strongest sides of IPC.

IPC is a long term participant of international climate conferences (COPs) of UNFCCC as a part of RINGO constituency. Latest research and reports of IPC are focused mainly on carbon lock-in, low carbon development and net-zero emissions roadmap of Turkey. Social and economic issues related to energy transition are IPC's main focuses.

Behavioral Analytics and Visualisation Lab (BAVLAB)

The main goal of BAVLAB is to conduct research on Big Data Analytics for understanding human behavior and data analytics as well as visualizing Big Data in many diverse settings. Since 2015 the lab has got funded by research grants, corporate funding and sponsorship. The researchers of the lab pursue collaborations or partnerships with companies in different sectors, such as Telecom, Finance, Retailing, Energy and Healthcare, where large datasets or Big Data are involved. The lab currently hosts 2 Faculty Members, 2 Visiting Researchers, 2 PhD students, 6 Master's students at Sabancı University. In 2020 BAVLAB presented research results at more than 15 international conferences and journals. BAVLAB recently is taking part in the H2020 project Teamaware which will start in May 2021.

TÜSİAD - Sabancı University Competitiveness Forum

Competitive Forum is a joint initiative by Sabancı University and Turkish Industry and Business Association(TÜSİAD) . TÜSİAD is an association of Turkey's leading entrepreneurs and executives. The forum's aim is to evaluate Turkish industries competitiveness in the global trade network. Forum's research output provides quantitative feedback on existing or potential policies. REF is also the partner institute of the World Economic Forum. We are responsible for the execution of Executive Opinion Survey.

Sabancı University

Established in 1996, Sabancı University (SU) is a modern and successful university founded in 1996 and since then, has continued to progress and raise their standards in academic excellence. According to the Entrepreneurial and Innovative University Index of the Scientific and Technological Research Council of Turkey (TUBITAK), SU has been internationally recognized as one of the most innovative and research-oriented universities in Turkey.

In Horizon 2020, Sabancı University has received **7,9 Million Euro EU contribution** with its **40 funded projects**. In terms of Collaborative projects SU has **29 projects with a total budget of 4,5 Million euro**.