

Annual Activity Report



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ABOUT CESD

The Center for Energy and Sustainable Development (CESD) is one of the most active research centers of the Kadir Has University. It was established in 2015 to contribute to interdisciplinary research and development in the field of energy. CESD conducts multidisciplinary research in sciences, engineering, social sciences, and humanities to find new solutions to the energy problems facing Turkey and the world.

The center aims at creating awareness on the relationship between energy and sustainable development and thus, influencing both national and international public opinion as well as policy-makers and legislators through the dissemination of its research activities.

Several projects of CESD are supported by the European Union (H2020 and Erasmus Plus), the KHAS Scientific Research Projects (BAP), and the Scientific and Technological Research Council of Turkey (TÜBİTAK), the leading governmental R&D support institution in Turkey. CESD is also very active in graduate education. The center's master's program on Energy and Sustainable Development seeks to educate a new cadre of young professionals who can tackle the various energy challenges in the twenty-first century.

CESD considers that the dissemination of the results of the research is just as important as the research itself. The center seeks to share the information. commentary, and analyses that come out of these activities with both national and international communities to help sustainable contribute to economic development. It also aims to strengthen the reputation of Kadir Has University in the field of energy by producing high-quality research with international standards and by expanding the scope of the university's educational spectrum.

MISSION & VISION

MISSION:

Through interdisciplinary educational and research activities on various energy issues at the local, regional, and global level, the center seeks to train the human power needed to solve the world's pressing energy problems and to share the data, interpretations, and analyses produced from its studies on energy and sustainable development with the national and international academic community, as well as with the public-at-large.

VISION:

Our vision is to be a significant change agent in transforming Kadir Has University into a leading institution into sustainable energy transition by:

- Contributing and improving the ongoing courses and research being conducted in the field of energy systems engineering and related departments.
- Starting, coordinating, and ensuring the flow of inter-disciplinary research activities in the field of energy.
- Launching and conducting inter-disciplinary graduate education in the field of energy at Master's and Ph.D. levels in coordination with different units of the University.
- Organizing education programs, short courses, certificate programs, workshops seminars, and conferences.

- Collecting national and international regulations, judicial decisions, and other written and visual documents in the field of energy, and publish in Turkish and foreign languages on these subjects and contribute to such works.
- Notifying the University personnel and students about domestic and international activities in the field and encouraging participation in these activities.
- Developing and guiding research and consultancy projects, and developing collaboration with stakeholders.
- Following the national and international developments and calls for projects in the fields of energy.
- Creating relationships and collaborating with domestic and international institutions and organizations.
- Preparing an environment conducive to the exchange of information between industry and the University.
- Encouraging the spread of an entrepreneurial and innovative approach in the energy sector by organizing various activities and competitions.
- Encouraging patent and license applications through the evaluation of research project outcomes and the claiming of intellectual rights.

PROJECTS H2020



GeoSmart - "Technologies for geothermal to enhance competitiveness in smart and flexible operation" project, which is awarded funding by Horizon 2020, will be carried out between March 2019 September 2024. and GeoSmart consortium comprises 19 partners across Europe under the leadership of TWI Limited. Assoc.Prof.Dr. Gökhan Kirkil (Coordinator) and Prof.Dr. Volkan Ş. Ediger (Researcher) participate in the project from Kadir Has University. The project aims to optimize and demonstrate innovations to improve the flexibility and efficiency of geothermal heat and power systems. In the project, CESD team works in close collaboration with Zorlu Energy to conduct geothermal research and technology implementation.



<u>OpenENTRANCE</u> - "Open ENergy TRansition ANalyses for a low-Carbon Economy", which is awarded funding by Horizon 2020, will take place from May 2019 to April 2023.

Assoc. Prof.Dr. Gökhan Kirkil (Coordinator), Prof.Dr. Volkan Ş. Ediger (Researcher), Asst. Prof.Dr. Emre Çelebi (Researcher), and Prof.Dr. Ahmet Yücekaya (Researcher) participate in the project. The project consortium comprises 14 members led by Sintef Energi AS. The project aims to develop an open, transparent, and integrated modeling platform for assessing low-carbon transition pathways. The platform will facilitate and improve the dialogue between researchers, policymakers, and industry. The CESD team is responsible for scenario building by developing GENeSYSMOD for Southeastern Europe and Turkey.

GEORISK

The GEORISK - "Developing geothermal and renewable energy projects by mitigating their risks" project aims to develop financial schemes that mitigate the impact of the resource risk by spreading it in such a manner that project developers can accept their fair share of it. This mitigation of the risk through financial instruments allows lowering the financial exposure of developers in case of failure to develop a geothermal reservoir. The project, which ic coordinated by European Geothermal Energy Council (EGEC)- France, is consisted of 15 European members. In the project, which was ended on September 2021, Prof.Dr. Volkan Ş. Ediger served as an Advisory Committee member.

PROJECTS ERASMUS PLUS





<u>The Good DEEDs</u> – "Digital energy efficiency designers" is a KA2 VET Erasmusplus Project" started in 2021 and will last until June 2023. The project is led by Italy with seven different partners, including KHAS. The general objective of the project is to develop and test a methodology and a learning platform for VET teachers and students, aimed at fostering a continuous and sustainable growth strategy of sectoral competencies on digital energy efficiency. Prof. Dr. Meltem Ucal (Coordinator) participates in the project from KHAS. In the project. Prof. Dr. Ucal is developing methodological and operational reference framework that will guide the subsequent activities of Open Educational Resources (OER) collection on the theme of reducing the environmental footprint of digital and its energy efficiency with the project partners.

The ENGINE "Engineering curricula modernization in renewable energy in Albanian Universities", which is co-funded by the Erasmus+ Programme of the European Union, comprises 11 partners led by Polytechnic University. The project, which was accepted in August 2020, will last 36 months. Prof.Dr. Meltem Ucal (Coordinator), Prof.Dr. Volkan Ş. Ediger (Researcher), Prof.Dr. Ahmet D. Yücekaya (Researcher), Assoc.Prof.Dr. Gökhan Kirkil and Asst.Prof. Dr. Emre Çelebi (Researcher) participate in the project from CESD. The project aims to modernize and internationalize VET and Bachelor curricula in engineering for renewable energies in the targeted universities in Albania through innovation of curricula in line with the new development in the area and the labor market demand.

PUBLICATIONS

ACADEMIC ARTICLES & BOOK CHAPTERS

Articles

Ediger V.Ş., Bowlus J.V., Dursun A.F., 2021. State capitalism and hydrocarbon security in China and Russia, Energy Strategy Reviews, Volume 38(100725).

doi.org/10.1016/j.esr.2021.100725.

Ediger, V.Ş., 2021, Doğal Gazda Yeni Umutlar: Karadeniz'de Sakarya Keşfi. YÖK Dergi. 19: 49-54. www.yok.gov.tr/Dergi/YOK-Dergi-Sayi-19/index.html

Mengi-Dinçer, H., Ediger V.Ş., Yesevi Ç.G., 2021. Evaluating the International Renewable Energy Agency through the lens of social constructivism, Renewable and Sustainable Energy Reviews, 152 (111705).

doi.org/10.1016/j.rser.2021.111705

Ucal M., Günay S., 2021. Household Happiness and Fuel Poverty: a Cross-Sectional Analysis on Turkey. Applied Research in Quality of Life. doi.org/10.1007/s11482-020-09894-3

Ucal, M., Günay, S., 2021. Energy efficiency of the housing stock in Turkey: the links between energy efficiency and energy poverty, <u>EP-pedia</u> Website.

Yücekaya, A., Jorge, V., 2021. Electric Power Bid Determination and Evaluation for Price Taker Units under Price Uncertainty. International Journal of Energy Economics and Policy, 11(6): 35-42.

Önay, S., **Yücekaya, A.,** Bilge, A., Ağca Aktunç, E., 2021. A Supply and Demand Analysis for the Turkish Electricity Market: Supply Adequacy and Resource Utilization. International Journal of Energy Economics and Policy; 11(6): 315-327.

Yükseltan, E., **Yücekaya, A.,** Bilge, A.H., Ağca Aktunç, A., **2021.** Forecasting models for daily natural gas consumption considering periodic variations and demand segregation. Socio-Economic Planning Sciences, v. 74, April 2021, 100937.

Book Chapters

Ediger, V.Ş., 2021. Chapter 4. Global Energy Use, in: Robert Brinkmann, Palgrave Global Handbook of Sustainability, Springer Nature. ISBN: <u>978-3-030-38948-2</u>.

Ediger, V.Ş., Bowlus, J.V., Dursun, A.F., 2021, "Chapter 8: China's EnergySupply Security in the Multi-Energy Transition Period from Fossil Fuels to Renewable Energy, in: Jingzheng Ren, ed., China's Energy Security: Analysis, Assessment and Improvement, World Scientific Publishing, U.K., p. 199-215. ISBN-13: 978-1786349217

Ucal M., 2021. Energy Sustainable and Development from Perspective of Energy Poverty. ln: Asif M., ed. Energy Environmental Security in Developing Countries. Advanced Sciences and Technologies Security Applications. Springer, Cham. https://doi.org/10.1007/978-3-030-63654-8_15

EVENTS

ENERGY AND CLİMATE TALKS (ENERJİ VE İKLİM SOHBETLERİ)

"Energy Environment, Climate", Dr.Oğuz Can, Director of Energy Efficiency and Environment at MENR, 5 January 2021.



"Climate, Energy and Finance", Ebru Dildar Edin, Deputy General Manager of Garanti BBVA, 19 January 2021.



"A Fresh Start for Nature and Human", Uğur Bayar, Chairperson of the WWF Turkey, 2 February 2021.



"Energy for Sustainable Future", Kıvanç Zaimler, Energy Group President at Sabanci Holding, 17 February, 2021.



"Geopolitics of Energy Transition", Barış Sanlı, at EPRC, Bilkent University, 2 Researcher March 2021.



"Hydrogen in Energy Transition", Prof.Dr. İskender Gökalp, Researcher **METU** Mechanical Engineering Dep., 16 March 2021.



"Sustainable Production and Biofuels in Turkey", Prof. Dr. Filiz Karaosmanoğlu, Faculty Member at ITU, 30 March 2021.



"Climate Change, Financial Markets and Companies", Melsa Ararat, Founding Director of Corporate Governance Forum, 6 April 2021.



"Energy Transition and Digitalization", Elif Düşmez Tek, the Clients and Industries Leader for Deloitte Turkey, 20 April 2021.



"PV Transition and %100 Renewable Energy", Prof. Dr. Şener Oktik, Faculty Member at Kadir Has University, 4 May 2021.



"Coal Power Plants and Environment", Orhan Aytaç, Member of Chamber of Mechanical Engineers at UCTEA, 18 May 2021.



"Energy, Climate Change and Geopolitics", Dr.Nejat Tamzok, Editor-in-Chief Scientific Mining Journal, 1 June 2021



"Off-shore Wind Power Plants", Dr. Murat Durak, Chairman of Turkish Offshore Wind Energy Association (DÜRED), 15 June 2021.

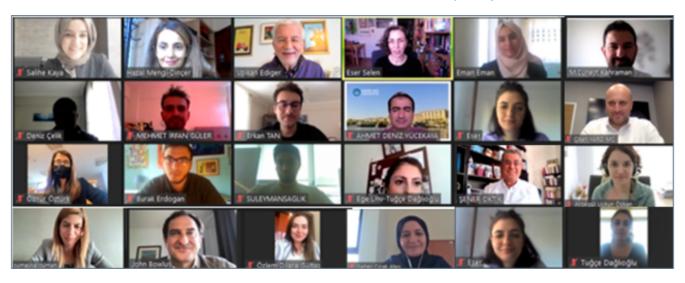


EVENTS

4TH GRADUATE STUDENT CONFERENCE ON ENERGY AND SUSTAINABLE DEVELOPMENT (GSCESD 2021)

The conference was held online on Friday, 8 October. The event was started with the opening speeches by the Honorary President of the Conference Prof.Dr. Volkan S. Ediger, Chairperson of the Scientific Committee Prof.Dr. Ahmet D. Yücekaya and the Organization Committee Chairperson Salihe Kaya. Students from Kadir Has, Ege, Hacettepe, KTO Karatay, Orta Doğu Teknik, Istanbul Teknik and Yalova Universities conference attended the with presentations. In the first session of the conference, 4 papers on sustainable energy development were presented, and Prof. Dr. Volkan Ş. Ediger and Assoc. Dr. Eser Selen evaluated them. In the second session, 4 presentations were made on renewable and alternative energy technologies, and Prof.Dr. Sener Oktik and Dr. John Bowlus commented on the presentations.

Four presentations were made in the third session on green economy and legislation and they were evaluated by Assoc.Prof.Dr. Sumeyra Duman and Dr. Okan Yardımcı. In the fourth session, four presentations were made on decarbonization and integration and they were evaluated by Assoc.Prof.Dr. Gökhan Kirkil. Closing speeches of the conference were made by Prof.Dr. Yücekaya and Prof. Dr. Ediger. The conference aims to provide students with experience in making public academic presentations and networking. The presentations, which are evaluated by professionals with experience in the field of energy in each session, are of great importance in terms of guiding students' work. The next conference is scheduled for October 2022. To learn more about the conference, visit the conference website on https://gscesd.khas.edu.tr/.



EVENTS ENERGY POVERTY SYMPOSIUM

CESD organized a symposium entitled "Turkey's Energy Poverty: Scope of the Problem and Policy Recommendations" on April 30, 2021. The symposium, which started with an opening speech by Prof.Dr. Volkan Ş. Ediger, was moderated by Prof. Dr. Meltem S. Ucal. More than 100 people from academia, civil society, private and public sectors attended the symposium, which was the first energy poverty symposium in Turkey. In the symposium program, the following 8 papers were presented by the experts on the subject:

- Prof. Dr. Meltem Ucal, "Energy Poverty in Turkey: A Conceptual Approach"
- -Dr. Işıl Şirin Selçuk, "Evaluation of Methods for Defining and Measuring Energy Poverty"

- -Oğuz Türkyılmaz, "Rising Energy Prices, Increasing Energy Poverty and the Invisible Side of the Picture"
- -Prof. Dr. Seyhan Erdoğdu, "The Outlook of Energy Deprivation in the World and Energy Poverty in Europe"
- -Zehra Sena Kibar and Prof. Dr. Begüm Özkaynak, "Energy Poverty in Turkey and Characteristics of Energy Poor Households"
- -Dr. Tamer Emre, "Energy Poverty, Scope of the Problem and Policy Suggestions"
- -Assoc. Prof. Dr. Tekin Köse, "Energy Poverty and Health: The Case of Turkey"



EVENTS GREEN DEAL AND TURKEY

"What is the Green Deal, What are its Effects?" Assoc. Dr. Çiğdem Nas, Economic Development Foundation (İKV), 12 October 2021.

"European Green Deal and digitalization: Is Turkey ready for a change?", Dr. Safa Uslu, Digital Transformation Office of Presidency of Republic of the Turkey, 23 November 2021.





"Effects of the Green Deal on the Economy", Prof. Dr. A. Erinç Yeldan, Kadir Has University, 26

October 2021.

C.P.S.D. KADİR HAS ÜNİVERSİTESİ
ENERJİ VE SÜRDÜRÜLEBİLİR KALKINMA MERKEZİ
ENERJİ VE SÜRDÜRÜLEBİLİR KALKINMA MERKEZİ YEŞİL MUTABAKAT VE TÜRKİYE "Yeşil Mutabakatın Ekonomiye Etkileri"

"Are European Green Deal's emissions targets realistic?", Dr. Tuğba Ağaçayak, Arçelik A.Ş., 7 December 2021.



"Towards Energy Transition", Assoc. Prof. Dr. Sohbet Karbuz, OME - the Mediterranean Energy Cooperation, 9 November 2021.

"R&D and Innovation Funds of the European Union", Çağrı Yıldırım, The Scientific and Technological Research Council of Turkey (TUBITAK), 21 December 2021.





CESD NEWS

Academics of the CESD are on the top 6000 academics list

In the study entitled "Ranking of the first 6000 academicians along with their major and scientific area of interests in Turkey based on Hindex and citations" published Researchgate.com by Prof. Dr. Murat Alper, lecturer at the University of Health Sciences Dışkapı Yıldırım Beyazıt Training and Research local Hospital, among the and foreign academicians working at Turkish universities, the first 6000 people with the most cited H index according to their Google Scholar profiles were announced. The list includes a number of academicians from Kadir Has University. Two of them are from CESD. Prof. Dr. Volkan Ş. Ediger ranked 1845th with 2131 citations and 2798th with 20 h-index, while Assoc. Prof. Dr. Gökhan Kirkil ranked 3707th with 1335 citations and 3935th with 18 h-index.

CESD Advisory and Executive Board Committee Meeting

The 5th Advisory Board Meeting of CESD was held on 29th June. The meeting started with Prof. Dr. Volkan Ş. Ediger's presentation, summarizing the activities of the center. Then, Advisory Board Member Dr. Selahattin Anaç, Prof. Dr. İskender Gökalp, Prof. Dr. Baha Karan, and Dr. Okan Yardımcı evaluated the activities and offered valuable suggestions.

Following the meeting, the CESD Board of Directors Meeting was also held. At the meeting attended by Deputy Director of the center, Assoc.Prof.Dr. Gökhan Kirkil and Board Members Prof. Dr. Meltem Ucal and Assoc. Dr. Eser Selen, decisions were taken regarding the future activities of CESD.





CESD NEWS

Thesis defenses in the ESD Program

Two more students are graduated from the Energy and Sustainable Development (ESD) Master's Program. Begüm Ünlü and Mohsina Majeed from Pakistan were found to be successful in the thesis jury held on 28 July. Mohsina Majeed, who examined the renewable energy development in Turkey and Pakistan in her thesis entitled "Potential and Status Renewable Energy Development in Energy Import-Dependent Countries, Turkey and Pakistan", evaluated possible cooperation opportunities between the two countries on renewable energy in her study. Begüm Ünlü examined the carbon dioxide emission reduction potential in the energy-intensive industry in Turkey in her thesis entitled "Decarbonization potentials in the Turkish Energy Intensive Industries". Currently, 12 students continue their studies in the ESD Program.



Green Deal study with CESD interns

A study on "European Green Deal (EGD) and Its Effects on Turkey" was started with the intern students in CESD in the summer term of 2020-2021. The study, directed by Prof. Dr. Ediger, is carried out by a team of five students, consisting of Nazım Çınar Duvaryapar, a graduate of METU Department of International Relations, Kemal Burç Avcı, a double major student from Koç University Sociology and **Economics** Departments, Sena Haciisaoğlu, a 3rd-year student at ITU Environmental Engineering Department, Zelal Okçuoğlu, a 4th-year student at ITU Environmental Engineering Department, and Defne Seymen, a 3rd-year student at Özyeğin University Department of International Relations. The study are carried out in four parts: (1) the history and development of the EGD, (2) the main lines and characteristics of the EGD, (3) the possible effects of the EGD on Turkey, and (4) what Turkey needs to do in order to comply with the EGD. The results of the study are planned to be published in an international journal.



CESD NEWS

Cooperation with the Adana Organized Industrial Zone

University-industry cooperation was started between CESD and Adana Sakıp Sabancı Organized Industrial Zone (AOSB) to develop AOBS's strategies on European Green Deal (EGD). Prof. Dr. Volkan Ş. Ediger was appointed as a consultant to carry out joint projects with companies for the implementation of activities and innovative processes that focus on sustainability and the EGD program. On 13-14 July, The Green Deal and Sustainability Workshop" was organized by AOBS,

where Prof.Dr. Ediger presented a conference entitled "What is the Green Deal and what is the target of it?". ESD student Sadık Erkan Tan also participated the workshop. On 5 November, The Workshop on the Role of the Public, Universities and NGOs in the Scope of the EU Green Deal Pilot Project was organized by AOSB in cooperation with Adana Bar Association, ÇOLDER (Creating Solutions Association), Adana Alpaslan Türkeş Science, and Technology University TTO and Adana Metropolitan Municipality. In the opening speech of the workshop, Prof. Dr. Ediger gave information about the AOSB Green Deal Pilot Project.







OTHER NEWS

73rd Turkey Geological Congress

Prof. Dr. Volkan Ş. Ediger delivered the opening speech entitled "Geopolitics of Renewable Energy Transformation" at the 73rd Turkish Geological Congress on May 24. The congress was organized by the Chamber of Geological Engineers of The Union of Chambers of Turkish Engineers and Architects (UCTEA).

European Green Deal Workshop

On 30 September, Hazal Mengi Dinçer and Sadık Erkan Tan from CESD participated in the European Green Deal (EGD) Workshop, organized by the Ministry of Industry and Technology, and the Turkish Structural Steel Association (TUCSA), in coordination with the Turkish Steel Producers Association (TÇÜD). Various stakeholders from the private sector, the public sector, nongovernmental organizations, and universities attended the workshop, and discussed the benefits, uncertainties, and problems that the EGD and the Border Carbon Regulation Mechanism.

FNF Turkey stakeholder meeting

Hazal Mengi Dinçer, representing CESD, attended the stakeholder meeting held for the 30th anniversary of Friedrich Naumann Foundation - FNF Turkey on 19-24 October. In the event, workshops were held on corporate communication and governance, and stakeholder relations. In addition, a panel on Turkey-EU relations was held with the participation of many experts.

Adaptation to the European Green Deal and EU Funds

On 27 October, representing CESD, Hazal Mengi Dinçer and Sadık Erkan Tan attended the meeting of the Economic Development Foundation (IKV) entitled "Adaptation to the European Green Deal and EU Funds" organized within the scope of INFL(EU)NCE Project on Increasing the impact capacity of NGOs in the EU accession process. At the meeting, information on the Green Deal and Turkey's harmonization and the funds planned on the subject was given.

Natural Gas for the Future Documentary

CESD Director Prof. Dr. Volkan Ş. Ediger was the guest of the documentary entitled "Natural Gas for the Future" (Gelecek için Doğal Gaz Belgeseli). The documentary, where Dr. Ediger talks about the importance of natural gas in the energy transition, can be accessed on the KHAS CESD YouTube channel.



OTHER NEWS

Şişli Terakki Foundation Schools

Prof. Dr. Volkan Ş. Ediger, director of the CESD, participated in the online conference organized by Şişli Terakki Foundation Schools on 24 February. The conference on "Climate Change and Global Warming" attracted great interest among high school students. CESD aims to continue such activities in order to increase the awareness of young people on climate change.

Çevre TV

Prof. Dr. Volkan Ş. Ediger was the guest of the Environmental Diary Program broadcasted on Çevre TV on March 24. The program, in which subjects such as the role of renewable energy sources in the fight against the climate crisis and the importance of green energy in the future are evaluated, can be watched on the link bit.ly/3e61PZD.



Platin Magazine

Prof.Dr. Volkan Ş. Ediger was interviewed by Platin Magazine on 28 June. Dr. Ediger expressed his opinion on current energy policies and renewable energy transition in Turkey. The details of the interview are accessible on <u>Platin</u>'s website.

International Energy and Environment Fair and Conference

Prof.Dr. Volkan Ş. Ediger delivered a speech entitled "Role of Power Generation on Climate Change" at the 28th International Energy and Environment Fair (ICCI) on 29 September.



Renewable Energy Systems Conference

Assoc. Dr. Gökhan Kirkil attended "The Renewable Energy Systems Conference" in Atılım University. Dr. Kirkil contributed to the conference with a presentation entitled "Forecasting Methods in Wind Energy" on October 22.



OTHER NEWS

ICCI Networking Event

Prof. Dr. Volkan S. Ediger attended the ICCI Exclusive Networking Event on 30 November.

Turkey's largest investors, players, and managers in the field of energy participated in the event, which could not be held for two years due to the pandemic. In his speech, Prof.Dr. Ediger remarked that there have been serious developments in energy transition since 2015 with the Sustainable Development Goals and Paris Agreement and Turkey should work much harder to be able to comply with them by developing long-term strategies and putting them into practice.

Konya Chamber of Industry (KSO)

Prof. Dr. Volkan Ş. Ediger attended the "Energy Efficiency and Energy Economy in Industry Conference", which was organized by the Konya Chamber of Industry (KSO) on 21 November. Prof.Dr. Edige runderlined the importance of sustainable energy in the new world order in his presentation entitled "Energy Efficiency in the New Energy Order." According to him, the new energy order has two basic elements: increasing the share of renewable energy in primary energy consumption and reducing energy consumption by increasing energy efficiency.







CENTER FOR ENERGY AND SUSTAINABLE DEVELOPMENT KADIR HAS UNIVERSITY

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