This research project is aligned with Sustainable Development Goal 7 (SDG 7) — ensuring access to affordable, reliable, sustainable, and modern energy for all. Today, issues of energy security, the development of renewable energy sources, and improving energy efficiency are of critical importance at the global level. In this context, the study examines scientifically grounded solutions that contribute to the formation of sustainable energy systems.

The research analyzes the rational use of energy resources, reduction of environmental impact, lowering carbon emissions, and increasing the potential of renewable energy sources. It also proposes ways to implement energy-efficient technologies, ensure environmental sustainability, and build a safe energy infrastructure for future generations.

The results of the study provide practical recommendations aimed at improving sustainable energy policy, maintaining a balance between economic development and environmental safety, and increasing access to energy. This research has not only scientific significance but also contributes to the implementation of sustainable development strategies at national and regional levels.

Thus, the study represents an important scientific contribution to ensuring clean, sustainable, and accessible energy, supporting socio-economic development, and mitigating the negative impacts of climate change.

1.

Title	Functional biomass/biological macromolecular phase change composites and their applications in different scenarios: A review
Authors	Cao, Y.| Su, J.| Xiao, Y.| Ren, J.| Algadi, H.| Yeszhanova, E.| Sartayeva, A.| Huang, J.| Guo, Z.| Tynybekov, B.| Min, Y.
Year	2025
Abstract in Scopus	https://www.scopus.com/record/display.url?eid=2-s2.0-85219435588&origin=resultslist
DOI	10.1016/j.ijbiomac.2025.141377

2.

Title	Coaxial electrospun PEG-4000@PVDF composite membranes with intumescent flame retardants: Toward multifunctional fabrics for thermal management and ultra-safe lithium-ion battery separators
Authors	Xiao, Y.| Lin, J.| Cao, Y.| Liu, X.| Wang, H.| Alshammari, S.| Shi, X.| Guo, H.| Helal, M.H.| Algadi, H.| Ren, J.| Zhumanova, N.| Akimbayeva, N.| Toktarbay, Z.| Huang, J.| Guo, Z.
Year	2026
Abstract in Scopus	https://www.scopus.com/record/display.url?eid=2-s2.0-105013573139&origin=resultslist
DOI	10.1016/j.jmst.2025.07.004

3.

Title	NATURAL-SIMULATION MODEL OF PHOTOVOLTAIC STATION GENERATION IN PROCESS OF ELECTRICITY BALANCING IN ELECTRICAL POWER SYSTEM
Authors	Lezhniuk, P.| Komar, V.| Hunko, I.| Jarykbassov, D.| Tussupzhanova, D.| Yeraliyeva, B.| Katayev, N.
Year	2022
Abstract in Scopus	https://www.scopus.com/record/display.url?eid=2-s2.0-85139201993&origin=resultslist

DOI	10.35784/iapgos.3030

4.

Title	Analysis of conditions of biofuel production in Kazakhstan: Case study
Authors	Bergenzhanova, G.| Mauletuly, T.| Adilbekov, A.| Kokazhayeva, A.| Revalde, G.
Year	2021
Abstract in Scopus	https://www.scopus.com/record/display.url?eid=2-s2.0-85101223396&origin=resultslist
DOI	10.15866/irecon.v9i1.18479

5.

Title	Increasing the energy supply of the population of remote regions of the republic of kazakhstan with the help of compact autonomous bioenergy plants
Authors	Bergenzhanova, G.| Mauletuly, T.| Kokazhayeva, A.
Year	2021
Abstract in Scopus	https://www.scopus.com/record/display.url?eid=2-s2.0-85119701342&origin=resultslist
DOI	10.15866/irecon.v9i5.20751

6.

Title	Integrated Approach to Aerodynamic Optimization of Darrieus Wind Turbine Based on the Taguchi Method and Computational Fluid Dynamics (CFD)
Authors	Kalassov, N.| Baizhuma, Z.| Manatbayev, R.| Yershina, A.| Isataev, M.| Kalassova, A.| Seidulla, Z.| Bektibay, B.| Amir, B.
Year	2025
Abstract in Scopus	https://www.scopus.com/record/display.url?eid=2-s2.0-105006751561&origin=resultslist
DOI	10.3390/app15105739

7.

Title	Synthesis, Structure, and Electrophysical and Electrochemical Properties of Novel Composite La0.9MnO3-LaFeO3
Authors	Mataev, M.| Sarsenbaeva, Z.| Keskin, B.| Nurbekova, M.| Meldeshov, A.| Tursyn, Z.| Seitbekova, K.
Year	2025
Abstract in Scopus	https://www.scopus.com/record/display.url?eid=2-s2.0-85214498540&origin=resultslist
DOI	10.3390/molecules30010132

8.

Title	Experimental and Computational Study of the Aerodynamic Characteristics of a Darrieus Rotor with Asymmetrical Blades to Increase Turbine Efficiency Under Low Wind Velocity Conditions
Authors	Isataev, M.| Manatbayev, R.| Seydulla, Z.| Kalassov, N.| Yershina, A.| Baizhuma, Z.
Year	2025
Abstract in Scopus	https://www.scopus.com/record/display.url?eid=2-s2.0-105003385143&origin=resultslist
DOI	10.3390/asi8020049

9.

Title	Eucalyptus wood waste biochar: a green solution for fluoranthene contamination in wastewater
Authors	Ren, Y.S.| Tynybekov, B.| Nurmahanova, A.| Ibragimov, T.| Kurmanbay, U.| Nazarbekova, S.| Kuatbayev, A.| Sartayeva, A.| Ilyas, M.| Machado da Silva Acioly, T.
Year	2025
Abstract in Scopus	https://www.scopus.com/record/display.url?eid=2-s2.0-105002585223&origin=resultslist
DOI	10.1080/09603123.2025.2483976

10.

Title	Production of ethyl alcohol from plants of the Asteraceae family
Authors	Azimbayeva, G.E.| Kamysbayeva, A.K.| Sagimbayeva, A.E.| Yessenova, M.D.| Bakibaev, A.A.
Year	2023
Abstract in Scopus	https://www.scopus.com/record/display.url?eid=2-s2.0-85138194308&origin=resultslist
DOI	10.1007/s13399-022-02840-3

11.

Title	Features Resistance of Sugar Sorgo (Sorghum Saccharatum (L.) Pers.) Varieties to Environmental Stress Factors
Authors	Danagul, M.| Ahmetkalievich, K.Y.| Gulnaz, B.| Adilkhan, O.| Gulnur, A.
Year	2022
Abstract in Scopus	https://www.scopus.com/record/display.url?eid=2-s2.0-85124197912&origin=resultslist
DOI	10.3844/ojbsci.2022.46.57

12.

Title	A method for increasing the efficiency of a wind turbine
Authors	Yershina, A.K.| Sakipova, S.E.
Year	2020
Abstract in Scopus	https://www.scopus.com/record/display.url?eid=2-s2.0-85100186713&origin=resultslist

DOI	10.31489/2020NO2/73-77

13.

Title	RESULTS OF THE EXPERIMENTAL STUDY OF THE FLOW FIELD OF A STATIONARY AIR FLOW DURING THE OPERATION OF A FOUR-BLADE BIDARRIEUS-1 TURBINE
Authors	Yershina, A.K.| Manatbayev, R.K.| Baizhuma, Zh.
Year	2022
Abstract in Scopus	https://www.scopus.com/record/display.url?eid=2-s2.0-85145295749&origin=resultslist
DOI	10.31489/2022No3/60-68