

ISETS-ESCAP Global Competition of Youth Voice on Energy Transition

Abstracts for the Division Finalists

14 September 2024

Northeast Asian Division

1. **Team Name:** Digitized Cleaner Cities Lab
Title: AR Visualization of Carbon Emission Supported by Small World AI
Team Members: Wenjie Gong and Liyu Zhang
Supervisor/Mentor Name: Haoran Zhang
Institution: Smart City Lab, Peking University
Country/Region: China

Abstract:

Our solution aims to dynamically simulate the city traffic mode and human move patterns, and compute the energy use and carbon emissions of individual buildings by leveraging multi-source urban data, including pedestrian trajectories and energy consumption specifics. This data is visualized for the public through augmented reality (AR) technology, enabling real-time, first-person perspective insights via smartphones and AR glasses. The core objectives are to enhance public awareness and engagement in energy transition initiatives and to motivate proactive involvement in carbon reduction efforts.

By providing city managers with precise data analysis and dynamic simulation tools, SmallWorldAI enables more efficient energy management and lower carbon emissions. Additionally, the intuitive AR visualizations foster greater public understanding and participation in urban energy transition and carbon reduction programs, thus contributing to the development of green, low-carbon cities.

2. **Team Name:** Energy Victory (EV)
Title: Drawing the Blueprint of Traffic Electrification with Digital Twin
Team Members: Junxiang Zhang, Shibo Zhu, Dayin Chen and Haolan Chen
Supervisor/Mentor Name: Ying Du
Institution: The Hong Kong Polytechnic University & Shanghai Jiao Tong University
Country/Region: China and Hong Kong, China

Abstract:

EV plays a crucial role in achieving the UNSDG through transportation electrification. Charging, as a primary interaction between EVs and the energy system, significantly influences the energy transition process. Given the critical role of EV charging, we proposed a comprehensive framework to forecast the dynamic development roadmap through a digital twin of the EV charging market. Our framework builds up a digital twin of EVs incorporating urban characteristics such as policy, population, buildings, urban forms, socioeconomics, and market. This allows us to simulate various development scenarios, providing insights into how population dynamics, economic trends, and technological advancements impact the future of EVs and their role in sustainable development. Additionally, we consider the impact of globally significant agendas, including climate change actions, migration and refugee movements, AI advancements, population aging, and global pandemics. This study aims to

elucidate how EVs can enhance global sustainable development and contribute to a greener future.

3. **Team Name:** Green Energy Warriors
Title: Efficient Cold Storage Technology for Energy Transition - Wide Temperature Phase Change Cold Storage Technology with Polyethylene Glycol and Lauric Acid Esterification
Team Members: Yitong Cao, Guo Li, Yixuan Lin and Long Geng
Supervisor/Mentor Name: Changhui Liu
Institution: China University of Mining and Technology
Country/Region: China

Abstract:

Global warming and improved modern living standards have led to a significant increase in carbon emissions from refrigeration energy consumption. To reduce energy consumption in the refrigeration process, our team synthesized a new phase change cold storage material through the esterification reaction of polyethylene glycol and lauric acid, and successfully regulated the phase change temperature of the product by controlling the molecular weight of the polyethylene glycol and the molar ratio of the reactants. This product can be widely used in the fields of cold chain transportation, freezing preservation and thermal management, which can satisfy different temperature requirements and greatly reduce the energy consumption in the mechanical refrigeration process. Thus, it can reduce the dependence on traditional energy sources and promoting energy transformation.

4. **Team Name:** Green Pioneer Team
Title: Research on the Development of Green Electricity Energy Labeling System Based on Carbon Tracking
Team Members: Yuan Sui, Pin Li, Jiahui Song and Hua Qing
Supervisor/Mentor Name: Xiaolei Bai
Institution: N/A
Country/Region: China

Abstract:

With the total global carbon dioxide emissions increasing year by year, it has become an international consensus to alleviate global warming by reducing anthropogenic carbon dioxide emissions, and the grid emission factor is an important indicator of carbon accounting. Through the use of green electricity energy consumption labels, the power emission factors and the proportion of renewable energy generation in the regional power grid were accurately calculated, and users were guided to analyze and display key data by adjusting their own energy consumption behavior and through the digital platform. The innovative application of this project can improve the accuracy of carbon footprint accounting, meet the needs of domestic and foreign carbon emission trading markets, and help the construction of new power systems and the realization of national carbon neutrality goals.

5. **Team Name:** Guardians of Clean Energy
Title: Photovoltaic Doctor: Smart PV Inspection System
Team Members: Wenqian Zhang, Yanzhen Zhang, Hongdi Fu and Junteng Liao
Supervisor/Mentor Name: Haoran Zhang
Institution: Peking University & South China University of Technology
Country/Region: China

Abstract:

In the context of the global energy crisis and climate change, our team has developed the "Photovoltaic Doctor" smart PV inspection system, addressing the technological challenges

and market demands faced by the PV industry. This system overcomes the limitations of various traditional inspection methods, including manual detection, embedded performance detection, and intelligent vision-based detection. Its innovations encompass intelligent drone inspections, time series forecasting, three-dimensional visualization of results, traceability of “medical records”, and automatic generation of maintenance plans, aiming to enhance inspection efficiency and accuracy. Furthermore, through the analysis of application scenarios such as PV power plant maintenance, distributed PV inspection, and circular economy, the “PV Doctor” system provides an efficient, accurate, and cost-effective inspection solution, promoting the transition and development of solar clean energy.

6. **Team Name:** HUSTGOGO
Title: China-ASEAN Collaboration for Integrated Electricity Market Enhancing the Sustainable Energy Transition
Team Members: Yuyan Dai, Cong Peng, Ying Liu and Die Han
Supervisor/Mentor Name: Jiangyuan Fu
Institution: Huazhong University of Science and Technology
Country/Region: China

Abstract:

Our project focuses on international cooperation to address the challenge of energy transition, propose China-ASEAN collaboration for integrated electricity market, our team of Chinese law students, Including two interns at the Mekong Institute in Thailand, working to address global energy challenges through innovative and equitable solutions.

China and ASEAN countries are separated by a narrow belt of water. By giving full play to China's advantages in technology, capital and other aspects, the project will establish a cross-regional integrated electricity market through ASEAN platform dialogue to fill the power gap in ASEAN and ensure the stability of new energy power supply.

Our cross-country collaboration demonstrates the power of international partnerships to advance renewable energy and mitigate climate change. By leveraging our diverse experience and legal expertise, we aim to create sustainable, adaptable energy solutions that benefit local communities and contribute to the SDGs.

7. **Team Name:** Lumio
Title: Building a Vibrant and Carbon-Neutral University Campus
Team Members: Chuanting Wang, Zhengzhen Jiang, Fan Fei and Yinuo Chen
Supervisor/Mentor Name: Huanxiu Guo
Institution: Nanjing Auditing University
Country/Region: China

Abstract:

This project presents an innovative plan to improve energy sustainability and efficiency in the education sector, with Nanjing Audit University's Mo Chou International Campus as the pilot site. The initiative aims to achieve campus carbon neutrality by accurately monitoring energy usage to calculate CO₂ emissions and then offsetting these emissions by purchasing corresponding amounts of I-REC. This initiative will make the Mo Chou campus the first carbon-neutral university campus in China, setting a benchmark for sustainable energy practices in other universities. The initiative includes rigorous strategies, such as carbon accounting, I-REC offsetting, awareness campaigns, energy conservation, and adoption of alternative energy sources. A comprehensive plan is proposed to achieve cost-effective carbon neutrality and promote energy transformation in Chinese universities.

8. **Team Name:** PKUNEVs

Title: Research on Urban Charging Network Demand Characterization and Spatial-Temporal Planning Technology

Team Members: Likun Peng, Shiyin Cao, Jian Xu and Zeru Zhang

Supervisor/Mentor Name: Qing Yu

Institution: Peking University

Country/Region: China

Abstract:

Against the backdrop of a global push for sustainable energy transition, this project's primary objective is to advance the adoption of new energy vehicles and renewable energy through cutting-edge technological innovation. The project aims to optimize electric vehicle (EV) charging infrastructure by analyzing demand patterns and implementing spatiotemporal planning techniques. By enhancing the efficiency of EV charging networks, the project seeks to minimize energy waste and promote sustainable transportation. Leveraging mobile signaling data and other big data combined with advanced data analytics, the project optimizes the layout of energy facilities, improves energy use efficiency, and offers scalable solutions that reduce reliance on fossil fuels and lower carbon emissions. By characterizing the spatiotemporal network of charging demand, this project balances energy needs and promotes environmental protection, highlighting the importance of sustainable development and aiding the widespread adoption and promotion of new energy sources.

9. **Team Name:** PoWater

Title: Store the Surplus Renewable Energy and Use the Stored Energy for Atmospheric Water Harvest (AWH) or Dehumidification

Team Members: Haosheng Lin and Xinya Hao

Supervisor/Mentor Name: Wei Wu

Institution: City University of Hong Kong

Country/Region: Hong Kong, China

Abstract:

We present a novel power-to-water (P2W) battery that can store electricity as thermal energy and discharge it as a heat source for hygroscopic solution desorption. The battery can work in two scenarios: atmospheric water harvesting (AWH) and dehumidification. The involvement of high-grade energy and sophisticated design enables better sorption kinetics and storage density. Also, the battery can achieve a round-trip efficiency of 90% for AWH and 68% for dehumidification in large-scale storage. The inexpensive storage medium contributes to a very low cost per energy (~ 20 \$ kWh⁻¹) which means that P2W batteries excel in short- and long-duration storage. P2W provides new directions for the development of versatile, scalable, repeatable, and sustainable energy storage systems.

10. **Team Name:** ZillionTech Intelligent PV Maintenance Team

Title: Smart Solar Guardian: Intelligent PV Inspection and Maintenance System

Team Members: Yong Sun, Haoran Zhang, Qi Chen and Yuntian Chen

Supervisor/Mentor Name: Jinyue Yan

Institution: The University of Tokyo, Peking University, China University of Geosciences (Wuhan) and Eastern Institute of Technology

Country/Region: Japan, China

Abstract:

The “Smart Solar Guardian: Intelligent PV Inspection and Maintenance System” leverages advanced drone technology and robotic automation to enhance photovoltaic (PV) maintenance. By integrating multi-sensor fusion, real-time data analysis, and 3D visualization, our system provides comprehensive and precise PV inspections. This innovative approach

addresses critical challenges in the PV industry, such as inefficient manual inspections and high operational costs, by utilizing intelligent drones for inspection and robots for automated cleaning. Our solution significantly improves PV performance and operational efficiency. By employing cutting-edge technologies, the system ensures detailed monitoring and maintenance of PV panels, reducing the likelihood of failures and extending the lifespan of PV installations. This results in increased energy production and reduced maintenance costs, making the system a valuable asset for the sustainable development of the PV industry and the broader energy transition.

Southeast Asian Division

1. **Team Name:** AGASA Initiatives
Title: AGASA: Bioprospecting Microalgae for Decarbonization Initiatives and Urban Energy Harvesting in Air-Polluted Urban Areas
Team Members: Adnan Hasyim Wibowo, Fathan Mubina, Rani Marhyani and Tria Indah Lestari
Supervisor/Mentor Name: N/A
Institution: Sustainable Development Goals Hub, Universitas Indonesia
Country/Region: Indonesia

Abstract:

AGASA's project aims to deploy photobioreactors in urban environments, utilizing high-efficiency microalgae to capture and sequester carbon dioxide. Key objectives include enhancing air quality, generating renewable biofuels, and fostering community engagement through job creation and environmental stewardship. By integrating advanced biotech and technological innovations, AGASA optimizes algae growth conditions to maximize carbon capture efficiency and biofuel production. Our idea targets the densely polluted Jabodetabek region, notably Jakarta, where conventional decarbonization methods are logistically challenging. AGASA's scalable approach addresses local pollution issues while supporting energy transition efforts with sustainable biofuel production. This model not only delivers environmental benefits but also promotes economic growth and social inclusion through localized green technology solutions. The project's potential impact extends from local urban settings to broader regional and global sustainability initiatives.

2. **Team Name:** Go Green Sustainable
Title: CACA SOPAN (Carbon Capture and Storage-Solar Panel-Biotechnology): Integrated Trisystem to Maximize CCS Technology in Supporting a Circular Economy
Team Members: Josafat Pasaribu, Efraim Yunus and Renanda Wafi
Supervisor/Mentor Name: Adam Febriyanto Nugraha
Institution: University of Indonesia
Country/Region: Indonesia

Abstract:

The CACA SOPAN system integrates Carbon Capture and Storage (CCS), Solar Panels, and Biotechnology to address Indonesia's energy and environmental challenges in line with Indonesia Emas 2045 and the Net Zero Emission target for 2060. By capturing CO₂ with CCS, harnessing solar energy to power CO₂ reduction processes, and utilizing biotechnology to convert captured CO₂ into butanol and hexanol with 12,900 moles of alcohol per hour, the system enhances carbon emission reduction and supports sustainable development. Economically, the system requires an initial investment (CAPEX) of IDR 164.5 billion and incurs annual operational costs (OPEX) of IDR 19 billion, with a return on investment (ROI) 33.33% and payback period of approximately 4.5 years. Socially, it generates employment and

fosters community involvement in sustainability. Environmentally, it significantly mitigates CO2 emissions, promotes renewable energy use, and contributes to a circular economy, thus advancing Indonesia's SDG goals and climate objectives.

3. **Team Name:** UNPAR

Title: Integrating the Social Brain and Faith-Based Initiatives: An Innovative Solution for Advancing Energy Transition Through Behavioural Public Policy

Team Members: Aditya Barus

Supervisor/Mentor Name: N/A

Institution: Parahyangan Catholic University

Country/Region: Indonesia

Abstract:

This is an innovative program aimed at advancing renewable energy adoption through a multidimensional approach. This initiative harnesses insights from behavioural science to design tailored interventions that promote community engagement and acceptance of renewable energy technologies. By incorporating faith-based stakeholders into the policy framework, the program addresses cultural and societal norms crucial for sustainable energy transitions. The initiative demonstrates how behavioural public policy can effectively enhance inclusivity and sensitivity in renewable energy strategies. By fostering collaboration between scientific research, faith-based communities, and public policy, this initiative not only promotes environmental sustainability but also fosters social cohesion and equitable access to renewable energy solutions for diverse populations.

4. **Team Name:** Y4E Southeast Asia

Title: Achieving SDG 7 Through the Power of Youth: Building Youth for Energy Southeast Asia

Team Members: Jitsai Santaputra, Amira Bilqis and Alicia Tien Weei

Supervisor/Mentor Name: N/A

Institution: Youth for Energy Southeast Asia

Country/Region: Malaysia, Thailand and Indonesia

Abstract:

Youth For Energy Southeast Asia (Y4E-SEA) addresses critical challenges in SEA's energy transition, including infrastructure gaps, policy inconsistencies, and fossil fuel dependence. Leveraging the dynamism of young people, Y4E-SEA promotes renewable energy adoption and fosters youth-led innovations for a sustainable future. Our network spans over 200 public members across SEA.

Through initiatives like the ASEAN Youth Energy Forum and Project Clean Future, Y4E-SEA empowers youth to influence policy and drive practical energy solutions.

Collaborations with global partners like ASEAN Youth Organization, BRICS Youth Energy Agency, and Sustainable Energy for All amplify our impact and facilitate knowledge exchange.

Innovative programs such as the IRENA-Italy Climate Action Toolkit help youths navigate the energy-climate nexus, ensuring long-term environmental stewardship.

By 2030, Y4E-SEA aims to scale, engaging 3,000+ youths, executing 7,000+ projects, and establishing over 120 partnerships across ASEAN.

South Asian Division

1. **Team Name:** GEMS Team

Title: GEMS-Grassroots Energy Management Support

Team Members: Shradha Pandey, Naman Mishra and Anushka Mishra
Supervisor/Mentor Name: Abhishek Dubey
Institution: GEMS
Country/Region: India

Abstract:

India faces environmental and energy challenges in rural settings. Most households use energy-inefficient, highly polluting, and labor-intensive methods to collect and burn biomass for cooking, heating water, and lighting.

The Grassroots Energy Management Support (GEMS) project aims to reduce the harmful effects of domestic biomass usage in rural households and villages by modifying the usage method (e.g., replacing open-pit stoves with Low-Smoke Cooking Stoves) and the energy source (e.g., replacing kerosene and castor oil lamps with solar-powered study lamps) as the first stage of energy transition policies.

The strength of the GEMS project approach is its focus on linking environmental and socio-economic improvements.

Thus, energy transition offers a dual upgrade: preserving the environment with lower pollution and enhancing women's and girls' health and social welfare in rural India. By framing energy transition as a lifestyle enhancement of the weakest link of society (the rural households, which are routinely ignored in the top-down policies to counteract climate change), GEMS makes it an appealing choice, fostering voluntary adoption.

2. **Team Name:** Team Veni Vidi Vici
Title: NutriSpark Tech: Transforming Banana Peels into Electricity
Team Members: Fahmida Sultana Naznin, Takbir Hossain and Kazi Samia Fairuj Sejuti
Supervisor/Mentor Name: Celia Shahnaz
Institution: BUET
Country/Region: Bangladesh

Abstract:

The electricity sector in Bangladesh is the largest emitter of greenhouse gases (GHGs), predominantly relying on non-renewable sources such as natural gas and coal, which are rapidly depleting and contribute significantly to environmental pollution and health issues. NutriSpark Tech proposes an innovative solution to address these challenges by utilizing banana peels to generate electricity. With Bangladesh producing over 826,151 metric tons of bananas annually, NutriSpark will use 0.42% of the peels to produce 100KW of electricity through the Microbial Fuel Cell (MFC) method. This eco-friendly approach not only saves 4.9 million taka compared to traditional biomass plants but also reduces GHG emissions by up to 51.3 MMt, contributing to a 4-48% reduction in CO₂. The project offers a sustainable and affordable energy solution with minimal environmental impact.

3. **Team Name:** Tram AlgaeN
Title: AlgaeFuel: Powering Tomorrow
Team Members: Rajanya Tridha, Tanvir Ahmed, Sameus Sabik Sutro and Iram Ajmain Mughdho
Supervisor/Mentor Name: N/A
Institution: AlgaeN
Country/Region: Bangladesh

Abstract:

AlgaeFuel: Powering Tomorrow" focuses on creating eco-friendly biofuel from algae. The goal is to use algae's natural oils to produce a renewable energy source, helping to cut down on carbon emissions and reduce our reliance on fossil fuels. By using innovative methods like

capturing CO₂ from factories to feed the algae and developing cost-effective ways to harvest it, we show that algae biofuel can be both practical and beneficial for the environment. This project aims to lower greenhouse gases, boost energy security, and support a circular economy. AlgaeFuel offers a scalable solution that can be applied in different regions, helping the world move towards sustainable energy.

African Division

1. **Team Name:** Climate Smart Irrigator
Title: Climate Smart Irrigation
Team Members: Edmond Ng'walago, Cornel Mtavangu and Chanda Chalwe
Supervisor/Mentor Name: David Meyer and Nteranya Sanginga
Institution: N/A
Country/Region: United Republic of Tanzania

Abstract:

Climate smart irrigation systems powered by solar energy using AI, machine learning, SMS, IOT sensors and big data technologies for detecting leakages, moisture content in soil, current flow, current lost, pressure variations, carbon emissions and inefficiencies with unprecedented accuracy. The system uses Chabot, sending SMS to farmer with tailored tips and reminders to sustain optimal long term sustainable irrigation. Enables farmers to control and monitor energy, water and carbon emission ensuring 40% energy and 50% water saving, cutting irrigation cost for up to \$345.85 per hectare per season and yield increase from 1 to 3 tons per acre while eliminating 202.18 Kgs of carbon emission per hectare per farmer per season. The irrigation systems operate on shared basis. It uses electronic cards allowing farmers paying irrigation bills on pay as you irrigate but also on credit and on instalment as a special program for youth and women farmer with serious limited financial making it affordable for every farmer in anywhere.

2. **Team Name:** Guinea Eco Innovators
Title: Transforming Waste to Energy: Moonsoftbio's Sustainable Solution for Africa's Energy Transition
Team Members: Gbadé Koivogui, Gnama Bilivogui, Barre Koivogui, Suzanne Toupou, Jaques Dobo Beavogui And Antoine Topka Soua Haba
Supervisor/Mentor Name: Ouo Ouo Jonas Sagno
Institution: MoonSoftBio
Country/Region: Guinea

Abstract:

Moonsoftbio's innovative solution addresses Africa's energy challenges by converting waste into clean energy. Our core objectives are to reduce environmental pollution, promote circular economy principles, and provide sustainable energy sources. By processing up to 1,200 kg of organic waste daily, we produce 800 liters of biofertilizer and biogas each day, offering clean energy alternatives in Guinea and, Africa. Our approach mitigates climate change and supports the energy transition in African communities by transforming plastic and organic waste into biodigesters, biogas, and organic fertilizers. This dual solution not only tackles waste management but also provides affordable, renewable energy, contributing to economic development and improving quality of life. With proven success in several African communities, Moonsoftbio's model is scalable and adaptable, offering a viable path toward a sustainable and inclusive energy future.

3. **Team Name:** Kyuka Ventures Innovation Hub

Title: Plastics to Fuel
Team Members: Sonko Jamal, Matini Janepher and Abenaitwe Humayiya
Supervisor/Mentor Name: N/A
Institution: N/A
Country/Region: Uganda

Abstract:

Kyuka Ventures is a tech-enabled startup that addresses the twin challenges of plastic waste and energy poverty in Uganda by recycling plastic waste into clean cooking fuel (LPG). Using our proprietary "Soot-free reactive extraction technology," we convert 8-10 tonnes of plastic waste monthly into gas, offering a low-cost alternative to charcoal and fossil fuels. This solution not only reduces pollution and greenhouse gas emissions but also provides affordable energy, creating income-generating opportunities for marginalized communities. Our "Waste Insure" program further enhances our impact by enabling slum dwellers to pay for healthcare services using plastic waste. Through these innovative approaches, Kyuka Ventures aims to significantly contribute to environmental conservation and economic empowerment in Uganda.

4. **Team Name:** N/A
Title: Empowering Voices: Scaling COP Mashinani for Regional Energy Justice and Resilience Across Africa
Team Members: Nelsom Chege Sam Moseti Nyamwange
Supervisor/Mentor Name: N/A
Institution: Seatrust Institute
Country/Region: Kenya

Abstract:

This submission presents "Empowering Voices: Scaling COP Mashinani for Regional Energy Justice and Resilience Across Africa," a project designed to amplify grassroots engagement and drive equitable energy solutions. Originating from the COP Mashinani initiative, this project focuses on scaling a community-led model, initially successful in Isinya, Kenya, to diverse regions across Africa. By leveraging locally-driven workshops and storytelling, the initiative captures the unique challenges faced by marginalized communities, particularly Maasai women, in the energy sector. The core objective is to integrate these grassroots insights into broader energy policies and practices, fostering gender-sensitive and region-specific solutions. This approach aims to address critical energy needs—cooking, lighting, and transportation—while promoting socio-economic empowerment. The project's potential impact lies in its ability to create scalable, replicable models that enhance community resilience and contribute to a just energy transition across Africa.

Mixed Regions and Others

1. **Team Name:** ENERGIZED
Title: ENERGIZED App
Team Members: Vera Allue
Supervisor/Mentor Name: N/A
Institution: EU Neighbours East
Country/Region: Spain

Abstract:

To accelerate the energy transition and promote sustainable tourism, the creation of the app "Energized" will let tourists around the world find rewards in the destination they are visiting with the condition that they perform energy-efficient actions during their stay. Some examples

include using renewable-energy powered transportation, partaking in energy awareness campaigns, or attending workshops and tours of renewable energy facilities. The main goals of this system is to create a new form of tourism based on promoting the utilization of renewable energies in cities and smaller nuclei, reducing the carbon footprint derived from tourism, supporting local economies and sustainability efforts, and awakening environmental stewardship and accountability. All in all, it will incentivize the energy transition in businesses and local councils due to the consumers' increasing demand, influence green policy making and the expansion of renewable energies investment, and establish new green jobs in the innovation and tourism sector.

2. **Team Name:** The Global Compasses
Title: Energy Transition Careers Compass
Team Members: Laura Melo Amaro, Areti Aikaterini Stefani, Aline Bolis and Adriana Magli
Supervisor/Mentor Name: Pedro Sereno
Institution: European Youth Energy Network
Country/Region: Brazil, Italy, Greece and Portugal/Spain

Abstract:

A skilled workforce is crucial for driving innovation, efficiency, safety, and economic growth in the energy transition. The IEA predicts over 30 million jobs in clean energy by 2030, but significant skill gaps pose challenges. Reskilling the fossil fuel workforce is difficult, risking their exclusion. Young aspiring entrants lack resources and clarity about their roles. The misconception that a STEM degree is essential overlooks diverse contributions needed from various disciplines, discouraging many from pursuing a career in renewable energy sources (RES). The Energy Transition Careers Compass (ETCC) addresses these challenges by providing a comprehensive online platform mapping the RES job value chain. It documents professional paths and describes the skills required for each role. Users can explore the stages of the RES value chain, browse jobs, receive skills training, and discover recommended skills based on data from over 300 professionals. This platform aims to bridge the skill gap, ensuring an inclusive and equitable energy transition.

3. **Team Name:** N/A
Title: Biofuel of Sheep Manure
Team Members: Karmenova Dilnaza
Supervisor/Mentor Name: N/A
Institution: Debrecen University
Country/Region: Hungary

Abstract:

Our biofuel project transforms sheep manure, a typically unusable waste due to its high nitrogen content, into a cost-effective and environmentally friendly fuel. By adding bentonite clay for structural integrity and coal dust and biochar to neutralize odors, we enhance the efficiency and usability of the manure-based pellets. The core objectives are to repurpose agricultural waste into a renewable energy source, reduce CO₂ emissions compared to fossil fuels, and support rural economies through new revenue streams. Our solution is adaptable to different regions and types of animal manure, making it versatile and scalable. With production costs between £141 to £220 per ton, it competes with coal prices, offering a sustainable alternative that benefits the environment, economy, and society. This project aims to significantly contribute to the energy transition by providing a cleaner, renewable energy source and promoting sustainable waste management practices.