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Abstracts of the Divisions for the 2024 ISETS-ESCAP Youth Voice Competition



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PART 1

Northeast Asian Division



1. **Team Name:** “Fellow Travelers” Lecture Tour Team of CUMT

Title: “Fellow Travelers” Lecture Tour Team of CUMT

Team Members: Shuosong Jiang, Taojie Xu, Chengbo Lan, Zhan Xu, Wenqiang Ma, Shuhui Zhou, Jiayan Wang, Ziqi Li, Cunpeng Zhao, Yuqi Li, Tianyu Liu, Jiahao Liu, Xingyu Liu, Shanshan Peng, Xinran Ma and Shuxian Wu

Supervisor/Menor Name: Shuang Li

Institution: China University of Mining & Technology

Country/Region: China

Abstract: Based on China University of Mining and Technology (CUMT), a world-class university in the field of energy and resources, and Xuzhou, an advanced typical city for the transformation and development of resource depleted cities, “Fellow Travelers” Lecture Tour Team of CUMT is committed to using the form of “research and preaching” to spread the voice of young people in energy transformation, and to convey Chinese wisdom and solutions in the field of energy transformation to the world, with the original intention of “exploring the profound connotation of the energy industry in research and conveying the trend of energy development in preaching”.



2. **Team Name:** BJFU Energy Transition Team

Title: Climate Risk Performance and Tail Risk Contagion in Energy Stock Markets: Evidence from China

Team Members: Zihan Xu, Min Zhang, Xiuya Wang and Zihao Li

Supervisor/Menor Name: Xiaoyun Xing

Institution: Beijing Forestry University

Country/Region: China

Abstract: Facing the energy transition, this submission explores the impact of climate risk performance on the risk contagion behavior in China's fossil and clean energy stock sectoral markets, from both perspectives of tail risk spillovers and firm-level systemic importance. In this submission, climate risk performance is quantified by three indices constructed through text analysis, that is, climate physical risk, climate concern, and climate policy respectively. This submission ends up with the conclusion that climate policy significantly intensifies the risk contagion effect in China's energy stock markets, climate concern renders more influence on clean energy sectors, while physical risk only affects the financial risk in coal industry. The results of this submission can also capture the heterogeneity with respect to region and enterprise characteristics. This submission may provide better understandings about the influencing mechanism of the global climate change on the energy financial markets in China.



3. **Team Name:** Carbon Crusaders

Title: Carbon Inclusiveness: A Unified Market for Low-Carbon Incentives and Environmental Empowerment

Team Members: Ying Zou, Boyuan Chen, Xinhui Cheng and Jingxuan Zhu

Supervisor/Menor Name: Institution: Shanghai University

Country/Region: China

Abstract: This proposal outlines the impact of a carbon inclusiveness trading market to incentivize low-carbon behaviors among the public, communities, and small businesses. It allows individuals and enterprises to offset their emissions or earn rewards by engaging in green practices like sustainable transportation and recycling. However, current implementation faces challenges around the lack of unified national standards and data sharing issues. The proposed solution is to establish a centralized carbon inclusiveness trading market, which would integrate dispersed carbon reduction projects, enable more direct and effective incentives, improve data transparency, and expand participation to smaller entities. This could have significant benefits. Environmentally, it would directly reduce greenhouse gas emissions and foster sustainability. Economically, it could generate new income streams and reduce carbon credit costs. Socially, it would empower individuals and address inequalities by providing earning opportunities. The versatile platform can be customized for different regions to support the energy transition.



4. **Team Name:** CircPV Explorer

Title: Exploring the Development Path of End-of-Life PV Module Recycling and Utilization Industry Chain

Team Members: Meiling Li, Tingxu Pu, Yan Liu and Zhaoyun Li

Supervisor/Menor Name: Zhang Li

Institution: Xihua University

Country/Region: China

Abstract: Solar energy is a clean and renewable source of energy that plays a pivotal role in the energy transition, but with a lifespan of about 25 years, that means they have a huge potential for repair, upgrading, reuse and recycling. Unfortunately, there is still no recycling system in place to reuse these PV panels or to fully utilize the valuable materials contained in end-of-life panels. Therefore, this project organizes the current state of the art in decommissioning PV, brings together the players of the whole industry chain, and explores the development path of the recycling-utilization chain of decommissioned PV modules based on a system dynamics approach, with the aim of developing a sustainable and profitable proposal for a recycling management system for solar panels.



5. **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.



6. **Team Name:** EcoFrontiers

Title: Detong's Biogas Revolution: A Circular Solution for the Energy Transition

Team Members: Xiaoyu Hu, Changyu Duan, Hongyi Chan and Ting Fan

Supervisor/Menor Name: Mengmeng Guo

Institution: Southwestern University of Finance and Economics

Country/Region: China

Abstract: This study examines the innovative biogas technology developed by Chengdu Detong Environment Engineering Co., Ltd. (Detong) and its significant contribution to the energy transition in China and globally. Detong's technology effectively converts organic waste into biogas and biofertilizer, promoting a sustainable circular economy and reducing greenhouse gas emissions. The company's scalable solutions, adaptable to various regions and scales, have demonstrated remarkable environmental, economic, and social benefits. This case study highlights the immense potential of biogas technology to advance the energy transition, improve environmental quality, and foster economic and social development, making it a promising solution for a greener and more sustainable future.



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7. **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.



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8. **Team Name:** Green Energy Vanguard Team

Title: On the Unequal Roles of Urbanization in Prompting SDG7 Performance Between Developing and Developed Countries

Team Members: Yunyi Feng

Supervisor/Menor Name: Chong Xu

Institution: Southwestern University of Finance and Economics

Country/Region: China

Abstract: As one of key Sustainable Development Goals (SDGs), affordable and clean energy (SDG 7) is crucial and urgent, thereby addressing key challenges of energy poverty, climate change, and economic inequality. Yet, an in-depth investigation on global socioeconomic assessment of SDG7 is still lacking which may weaken the policy effectiveness related to sustainable development. Here, the study quantified global SDG7 scores by entropy weighting method and explored the multidimensional characteristics (i.e., inequality and future trend) by the use of Gini coefficient increment decomposition and several time-series forecasting model including machine learning across 141 developing and developed countries over 2000-2020. Further, the study investigated the impact of urbanization on SDG7 where the study found an interesting instrumental variable to control endogeneity. The results indicated that country-level SDG7 performance exhibited certain degree of heterogeneity while presenting decreasing and relatively increasing inequality of SDG7 for developing and developed countries, respectively. Multi-forecasting models suggested that SDG7 performance was expected to reach a higher level for most sample countries by 2030. The econometric model implied that urbanization construction can enhance the ability of developing countries to access clean energy whereas no similar evidence has been found in statistical significance for developed countries, after a series of tests. The study highlights the importance of prompting urbanization for developing countries achieving SDG7 in particular while controlling the enlarging global inequality between countries towards affordable and clean energy.

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9. **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.



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10. **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.



11. **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.



12. **Team Name:** HeroEE

Title: HeroEE Project

Team Members: Jun Zhou

Supervisor/Menor Name: Wei Gua

Institution: Hithium

Country/Region: China

Abstract: Our submission, the “HeroEE” project by HiTHiUM, is designed to bridge the gap in energy access and affordability, particularly in regions grappling with energy poverty. At its core, the project aims to deliver a sustainable, off-grid green energy solution that is both economically viable and environmentally friendly. By employing state-of-the-art lithium-ion battery technology and an intelligent IoT platform, HeroEE is positioned to revolutionize energy consumption patterns, enabling users to harness solar power efficiently. The potential impact of our project is profound, promising to reduce reliance on diesel generators, lower energy costs for low-income households, and contribute to a significant reduction in greenhouse gas emissions. With a scalable business model and a focus on community development, HeroEE is poised to accelerate the global energy transition towards a cleaner and more equitable future.



13. **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.



14. **Team Name:** LC youth

Title: Neglected Relationship between Carbon Inequality and Land Use: Evidence from County-level Perspective

Team Members: Miaomiao Liu, Chun Wang and Qiurui Mou

Supervisor/Menor Name: Jiandong Chen

Institution: Southwestern University of Finance and Economics

Country/Region: China

Abstract: Reducing greenhouse gas emission is one of the most important issues of the 21st century. However, different individuals, regions and countries have different levels and of carbon emissions and therefore need to undertake different carbon tasks. Using China's unique data, this paper explores the impact of provincial changes in land using on per capita carbon inequality. The results show that: 1. From 2000 to 2020, China's overall carbon inequality level remained relatively stable. 2. The degree of carbon inequality in some provinces has gradually decreased in the past 20 years. 3. Changes in the proportion of arable land area have the most significant impact on carbon inequality in China. 4. The influence of land structural diversity on carbon inequality in China is unstable, and the elasticity of the influence has spatial heterogeneity. Therefore, future decision-makers need to make differentiated carbon policies according to different land types and implement targeted policies.



15. **Team Name:** Light Chaser

Title: Evaluation of the Comprehensive Benefits and Differentiated Development of Fishery and PV Complementation: Based on the Investigation and Analysis of China Tongwei's "Fishery and PV Symbiosis" Integration Project

Team Members: Ling Lei, Xueqin Cao and Xinyi Wu

Supervisor/Menor Name: Li Ting

Institution: Southwest Petroleum University

Country/Region: China

Abstract: The new energy aquaculture model that integrates fisheries and photovoltaic industries has achieved intensive development of "one resource, two industries". It not only solves the problem of limited land resources, but also solves the dilemma of insufficient traditional fisheries supply and requirements for ecological environment protection. This article focuses on the multinational enterprise Tongwei Co., Ltd., which is engaged in the efficient and coordinated development of green agriculture and green energy. It has pioneered 54 aquavoltaics projects covering 18 provinces in China. By analyzing project application cases and combining industry integration, a cost-benefit system is constructed to analyze its comprehensive benefits. At the same time, focusing on 54 locations and 365 cities in China, using clustering methods and visualization tools to calculate and evaluate the potential for differentiated development, exploring the scalability of the model, and achieving the three harvests of "fishing, electricity, and environmental protection".



16. **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.



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17. Team Name: Miyu

Title: The Clean Energy Integrated EV Charging Road Infrastructure Network

Team Members: Miyu Kanaoka

Supervisor/Menor Name: Daisuke Fukuda

Institution: University of Tokyo

Country/Region: Japan

Abstract: This proposal establishes a Clean Energy Integrated EV (Electric Vehicle) Charging Network by linking renewable energy sources (solar panels, wind turbines) with dynamic charging lanes and plug-in/wireless charging stations. The core objectives are to fulfill the Net Zero Emissions (NZE) scenario by ensuring that EVs are powered by clean energy, significantly cutting CO2 emissions from the transportation sector. Also, it aims to enhance the efficiency of charging EVs by implementing dynamic wireless charging lanes (in-motion charging) and fast-charging technologies to optimize EV charging and save travel time. It also aims to repurpose existing infrastructure and convert gas stations into electric charging hubs, utilizing existing road networks. With that being said, this road infrastructure network will potentially drive the transition to a sustainable, low-carbon future, reducing energy costs, encouraging local renewable energy production for local consumption, and achieving NZE by 2050 in a true sense.



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18. **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.



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19. 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.



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20. **Team Name:** PV Recycling Innovators

Title: Sustainable Futures: High-Resolution Forecasts and Layout Optimization for Photovoltaic Module Recycling

Team Members: Chen Wang, Pengfei Yuan and Rongrong Guo

Supervisor/Menor Name: Jiashuo Li

Institution: Shandong University, Weihai

Country/Region: China

Abstract: Solar power is a promising low-carbon energy source to advance the sustainable energy transition. However, in the long-term, significant number of photovoltaic (PV) wastes have triggered a growing environmental concern and posed threats to sustainable development, which could be largely mitigated by strategical recycling. This project focuses on designing provinces and prefectural-level optimal recycling pathways that maximize economicresource-environmental benefits in China. We use bottom-up optimization modelling, material flow analysis, life cycle analysis, and scenario simulation to conduct the following research: ① Establishing a high-resolution database of PV wastes and resource recovery potential; ② Building a coupled model for assessing economic, resource, and environmental impacts of recycling pathways, considering technology heterogeneity and spatial facility layout; ③ Designing multi-objective compatible policy scenarios, conducting scenario simulations, and identifying optimal recycling pathways. This project enhances data and theoretical methods for PV module recycling management, providing policy recommendations for efficient recycling of PV modules.



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21. **Team Name:** Research Center for Smart Energy of CUMT

Title: A Big Data-Coupled Boiler Combustion Optimization Control System Based on Radiant Energy Signals

Team Members: Hao Yang, Delin Tao, Xiangyu Chen and Li Ding

Supervisor/Menor Name: Kuangyu Li

Institution: Jiangsu Smart Energy Technology and Equipment Engineering Research Center, School of Low-Carbon Ener

Country/Region: China

Abstract: Coal-fired power generation, a key regulatory energy source, will remain significant in China. To enhance efficiency and reduce pollution, it is vital to explore deep peak shaving potential, lower coal consumption, and minimize emissions. When operating non-standard, coal-fired boilers' efficiency drops and pollution rises, requiring swift adjustments. This study establishes a main steam cascade PID control system with feedforward control, monitoring radiant energy signals and adjusting combustion accordingly. Using three-dimensional flame image detection, high-temperature radiant energy is calculated, and a direct feedforward control law responds to load demands. Historical data trains the optimization system, providing real-time control signals to correct existing commands, adjusting fuel input to accurately control heat release and meet load changes.



22. **Team Name:** Sales Brothers

Title: Carbon Currency-a Way to Restrict Emission and Promote Energy Transformation

Team Members: Yuxuan Wang and Sile Gu

Supervisor/Menor Name: N/A

Institution: Renmin University of China, Tongji University

Country/Region: China

Abstract: Our proposal presents the innovative “Carbon Currency” system, which aims to catalyze the energy transition towards carbon neutrality. By integrating carbon emissions into the financial domain, we aim to incentivize the adoption of cleaner technologies and sustainable practices. Our research will delve into existing carbon trading policies, analyze market trends, and assess public perceptions to evaluate the system’s viability and influence. The potential impact of our work is multifaceted, including spurring innovation in the clean energy sector, enhancing environmental conservation through carbon credit revenue, and supporting the development of effective carbon pricing mechanisms. Our findings are expected to provide valuable insights for policymakers and stakeholders, steering the global economy towards a sustainable and low-carbon future.



23. **Team Name:** SCU Energy-Saving Project Team

Title: The Impact of Information Interventions on Energy-Saving Behavior in Public and Private Scenarios: A Randomized Experiment Based on Sichuan University

Team Members: Haixin Xu, Qianxin Ye and Yanchun Wei

Supervisor/Menor Name: Xiaolan Chen

Institution: Sichuan University

Country/Region: China

Abstract: Information feedback, designed as an energy-saving and emission-reduction measure based on “nudge” theory, has gained widespread attention. Numerous studies have shown that information interventions can significantly promote energy-saving behaviors. However, existing research mainly focuses on private scenarios such as household settings, with insufficient studies on public scenarios where users do not bear the cost. To address this issue, this study leveraged the unique electricity usage structure of Sichuan University dormitories, where air conditioning is paid for by students and lighting is free, to conduct a randomized field experiment. Using a difference-in-differences approach, the study analyzed the effects of ranking feedback, anticipated feedback, and coupled feedback on students’ energy- saving behavior. This research provides important references for developing energy-saving interventions tailored to different contexts, encouraging broader adoption of information feedback strategies to promote energy conservation, reduce energy waste, and protect the environment.



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24. **Team Name:** Strive towards the Future

Title: Exploring the Influencing Factors of Personal Renewable Energy Investment: An Extended Theory of Planned Behavior Approach with Multiple Policy Supports

Team Members: Shichang Zhang

Supervisor/Menor Name: Mingming Zhang

Institution: The Hong Kong University of Science and Technology

Country/Region: China

Abstract: Investments in renewable energy generation (REG) face many uncertainties, and these factors' complex interactions influence investor behaviour. Using an extended Theory of Planned Behaviour model, we studied the impact of personal internal factors, social interaction factors, supporting policy on individual investors' intent to invest in REG across 260 cities in different economic regions of China. The policies were categorized into regulation, economic, information, and voluntary policies. Data were collected through pre-survey and formal online questionnaires to ensure reliability and validity. Using partial least squares-structural equation modelling, the results show that social norms, group psychology, and perceived behavioural control positively and significantly impact intent. Environmental awareness and risk aversion significantly positively affect attitude. Among the policies, only voluntary policy has a positive and significant impact. The moderating effect of information policy on intent is negative but not significant. It's meaningful for policymakers in stimulating individual investors to participate in energy transition.



25. **Team Name:** Surprise

Title: Optimization Configuration and Performance Analysis of a Multi-Modal Campus Microgrid System

Team Members: Qinglan Wen, Chaojie Zhang and Yanbo Yang

Supervisor/Menor Name: Ding Hao

Institution: Nanjing University of Aeronautics and Astronautics

Country/Region: China

Abstract: This study constructs four microgrid operation scenarios for campus settings based on different operational modes and energy storage configurations. The core objective is to analyze the economic performance of the campus under these various scenarios, formulate optimal operation strategies and electricity purchase plans according to each scenario, and identify the main factors influencing changes in economic benefits. By focusing on campus operational modes and energy storage configurations, this research explores a broader range of microgrid compositions. It evaluates the operational scenarios of campus microgrids from perspectives such as energy utilization efficiency, power supply reliability, and economic performance. The findings aim to provide references and a foundation for the promotion and application of campus microgrids, thereby expanding the application scenarios of renewable energy and advancing the energy transition process.



26. **Team Name:** Sustain Sprinter

Title: From Risk to Resilience: Multiple Uncertainties and the Dynamic Exposures of Chinese Energy Firms

Team Members: Siyu Qiu

Supervisor/Menor Name: Dayong Zhang and Kun Guo

Institution: Southwestern University of Finance and Economics

Country/Region: China

Abstract: Amidst a dynamic and increasingly more complex world, multi-dimensional uncertainties such as climate changes, geopolitical conflicts, anti-globalization, and fluctuations in financial markets arise. These uncertainties have brought unprecedented challenges to the international society, particularly the energy sector, which must balance its way of development between security and low-carbon transition. Energy companies are critical elements in this sector. Thus, measuring their exposures to these uncertainties and identifying factors related to the risk exposures are pivotal to understanding the underlying mechanisms, which are urgently needed for policymakers to react properly to build resilience. This paper takes a two-step approach to investigate aforementioned problems in China. First, the TVP-VAR model is used to capture risk spillovers from a set of uncertainties to the energy sector in China and each individual energy firm. Second, based on the results of dynamic risk networks for 140 energy firms, the individual risk exposure found is used in the second-stage regression models to identify driving factors. In addition to the standard fixed-effect model, a multi-period Difference-in-Differences (DID) model is included to evaluate policy impacts of resilience, hoping to provide causal evidence. In particular, the low-carbon pilot program is used. Our results suggest that energy companies have increasingly exposed to multi-dimensional uncertainties. There is also significant evidence that traditional energy firms tend to behave differently from renewable energy firms. Furthermore, a set of firm-level characteristics is shown to be relevant to the level of risk-exposure. Finally, active climate policy set by government is found to be useful to reinforce resilience as well as mitigate risk exposures to energy companies, giving a non-neglectable role for policy interventions for energy risk management.

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27. **Team Name:** SWUFE GreenGen Explorers Association

Title: Youth Voice: Youth Igniting Low-Carbon Literacy for Kids University of Finance and Economics

Team Members: Xiang Wang, Xingyu Chen, Xuyang Du and Zihao Tang

Supervisor/Menor Name: Yeting Wang

Institution: Southwest University of Finance and Economics

Country/Region: China

Abstract: Our project is based on the experiences and social researches of the Youth Volunteers Association of SWUFE, which has conducted multiple environmental-themed activities. The SWUFE youth, who are focused on energy transition and dual carbon goals (carbon peaking and carbon neutrality) issues, have realized the need to provide up-to-date popular science education to teenagers and children. So as to guide them to better adapt to the future and become citizens of a new era to promote the comprehensive green transformation of society. Similarly, we formed a non-profit educational team, translating cutting-edge scientific theories into scientific and engaging science language, systematically organizing young volunteers to participate in educational outreach. Over the past four years, the project has grown from an initial group of 27 aspiring youths to encompass tens of thousands of young volunteers. Together, we remain committed to contributing young people's wisdom and strength to achieve the dual carbon goals.



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28. **Team Name:** The “Green Heart, Clean Carbon Step by Step” Practice Group

Title: “Heart Follows Green, Step by Step Net Carbon”-A Survey Study on the Driving Psychology and Enhancement Path of Public Participation in Carbon Inclusion under the ‘Dual Carbon’ Goal

Team Members: Ruoxi Huang, Zhengweixi Hong and Zhiwe Zhang

Supervisor/Menor Name: Lingyun Mi

Institution: N/A

Country/Region: China

Abstract: This scholarly investigation, “Hearts Move with Green, Step by Step to a Cleaner Carbon: A Study on Public Engagement in Carbon Inclusiveness Under the ‘Dual Carbon’ Strategy,” is conducted by an interdisciplinary team from Sun Yueqi College. The research endeavors to quantify the extant participation in carbon welfare mechanisms and to dissect the underlying psychological motivators. Utilizing a mixed-methods approach encompassing surveys, field investigations, and analytical case studies, the study aspires to elucidate the behavioral dynamics and to formulate strategic enhancements for public engagement. The findings are expected to contribute to the academic discourse on energy transition and inform policy frameworks that catalyze societal actions towards achieving carbon neutrality.



29. **Team Name:** Transformers

Title: Repurposing Fossil Fuel Infrastructures for Energy Transition: Insights from oil & Gas Production and Mining Sector

Team Members: Yang Zhang and Jiao Xiong

Supervisor/Menor Name: Yangsiyu Lu

Institution: Hong Kong University of Science and Technology (GuangZhou)

Country/Region: China

Abstract: The urgent need for renewable power sources has emerged as a top priority within the global policymaking framework, driven by the severe repercussions of excessive reliance on fossil fuels. Our proposal explores innovative strategies for repurposing fossil fuel infrastructures to achieve global renewable energy targets. By transforming coal mines into solar photovoltaic sites and repurposing offshore oil & gas platforms for wind energy, significant contributions can be made toward sustainable energy transitions. Coal mine photovoltaic projects can provide 1901 TWh of electricity annually, reducing 1297 Mt of CO₂ emissions and significantly increasing global solar capacity. Additionally, repurposing offshore platforms for wind energy offers cost-efficiency, faster deployment, and economic benefits. Equinor, as a lead in oil-to-wind shift, has developed 88 MW North Sea wind farm for energy platforms. These strategies align with Sustainable Development Goals 7 and 13, promoting affordable clean energy and climate action, while supporting economic stability and environmental sustainability.



30. **Team Name:** Travelling Photovoltaic Sheep

Title: The “Photovoltaic +” Darting from Northwest China to the World

Team Members: Bingheng Song, Lu Pei, Dun Yang and Huanying Ji

Supervisor/Menor Name: Qunwei Wang, Yudong Wang and Yuejun Zhang

Institution: Nanjing University of Science and Technology

Country/Region: China

Abstract: The Northwest region of China is rich in energy resources, supporting the country’s energy transition. The traditional and renewable energy resources in this area are not only a critical guarantee for China’s energy supply but also an indispensable part of the country’s energy transition efforts. The region has evolved from experiencing severe power shortages to becoming the site of several large-scale clean energy bases; from simply using electricity to utilizing it efficiently, and now generating power for the entire nation. The Northwest has diversified its energy production methods, incorporating hydropower, wind power, and solar power, thereby contributing its “Northwest strength” to achieving the national goals of carbon peak and carbon neutrality. Promoting the “Photovoltaic+” development model to the world. The Northwest region, leveraging its abundant solar energy resources, has vigorously developed photovoltaic power generation while integrating with local industries. This has led to the development of five major “Photovoltaic+” industry integration development models. By analyzing specific cases, it offers a new perspective for the extensive use of vast lands and limitless solar energy resources in desert and plateau regions worldwide. This approach enhances the public’s practical understanding of energy transition, better publicizes the importance of energy transition, and contributes China’s strength and solutions to the global energy transition.



31. **Team Name:** Vitality Squad

Title: Coordinated Configuration Optimization and Energy Management Strategies for Photovoltaic Microgrids with Hybrid Electric-Hydrogen Energy Storage

Team Members: Zhenhao Zhao, Jiaming Chen, Wujie Chen and Zeru Dong

Supervisor/Menor Name: Xiaoqiang Li

Institution: N/A

Country/Region: China

Abstract: Aiming at the problem of new energy utilization in industrial parks, to solve the problem of light abandonment caused by the high volatility of new energy, to establish a hybrid energy storage system combining the advantages of energy and capacity energy storage, to use artificial intelligence technology to predict, and to consider the battery life and the operating state of the electrolyzer, to optimize the configuration of photovoltaic and energy storage equipment, and to conduct energy management strategy research. To achieve the purpose of safe and efficient system operation.



32. **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.



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PART 2

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:** Eco-Vision 2050

Title: Eco-Vision 2050: Pathway to NetZero

Team Members: Alland Dharmawan and Dylan Pon

Supervisor/Menor Name: Yuneng Khong

Institution: Presidential Advisory Council of the Republic of Indonesia; Yonsei University

Country/Region: Indonesia, Singapore, Brunei Darussalam

Abstract: Eco-Vision 2050 aims to help countries to transition to net zero emissions by 2050 through a five-phase strategy. Phase 1 focuses on long-term policy design, involving all stakeholders and ensuring continuous improvement. Phase 2 shifts towards equity financing, establishes a Renewable Energy Fund, and invests in local startups. Phase 3 builds local manufacturing capacity and develops transmission grids, creating jobs and skilled labor. Phase 4 supports pilot projects with tax incentives and R&D. Phase 5 scales up successful startups and extends renewable energy to rural areas and remote islands. The strategy integrates tax incentives, a Renewable Energy Fund, collaboration with civil society and academic institutions, and regional partnerships. Addressing challenges like government changes and financial support, Eco-Vision 2050 aims for an inclusive, equitable, and sustainable energy transition.



3. **Team Name:** Enerhiya

Title: Harnessing Power for Rural and Remote Communities: Energy from Wastes Using Solar Pyrolysis

Team Members: Alan Aycardo

Supervisor/Menor Name: N/A

Institution: University of the Philippines Los Ba-os

Country/Region: Philippines

Abstract: The proposed mechanism aims to provide energy for rural and remote communities using agricultural residues and other solid wastes. Through solar pyrolysis, the wastes that are traditionally disposed will be converted into valuable energy sources, with aid of a pyrolysis reactor that utilizes the sun's power. Hence, the technology's objectives are to: (a) provide renewable energy (RE) access to rural communities using resources that are available to their locale; (b) create a pathway for the utilization of agricultural residues and wastes; and (c) provide these communities with RE options that will not greatly abrupt their ecosystems, environment and their way of life. Not only will it have an impact and make contribution to renewable energy transition, but also make unexplored areas, and unnoticed communities a part of this movement and conversation.



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4. **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.



5. **Team Name:** Green4Growth

Title: Solar Water Pump Systems for Climate Resilience Agriculture through the Transition to Renewable Energy

Team Members: Loem Chhuncheng, Ly Sreylin and Thatt Iengmonor

Supervisor/Menor Name: Leng Meng Thong (Solar Technician)

Institution: N/A

Country/Region: Cambodia

Abstract: In Cambodia, the agriculture sector contributed about 22 percent of Cambodia's gross domestic product (GDP) in 2023 (Dith Tina, MAFF). Most of the farmers have got to irrigate their plantations with a water pump. The main problem is that in most cases, farmers own diesel-powered pumps, which, apart from the disastrous environmental impact, also means a significant and harmful economic impact for the farmer. That's why this project will make it possible to install a Solar water pump system and therefore, provide farmers with a sustainable solution, to improve both their quality of life and their incomes. Especially linked with App to solve the problem during farmers' access and implement the solar water pump system. Then technician can resolve quickly. Our core objective: - To provide energy transition through solar water pump system - Switch from diesel engine to solar energy for climate resilience and - Promote sustainable agriculture and smart practice in community.



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6. **Team Name:** NexWater

Title: Micro-Power Plant Water-Energy Nexus for Effective Energy Transition Advancement

Team Members: Khairunnas Ahmad, Pati Kemala and Raihan Athyya Putri

Supervisor/Menor Name: N/A

Institution: Universitas Syiah Kuala

Country/Region: Indonesia

Abstract: Our solution proposes a micro-power plant system as a transformative solution for addressing the challenges associated with large-scale water-based renewable energy technologies. By focusing on smaller-scale operations, these micro-power plants effectively mitigate issues such as sedimentation, thermal pollution, and disruptions to aquatic ecosystems. This idea offers practical solutions by minimizing sediment buildup, maintaining natural water flow patterns, and enhancing biodiversity. Economically, the system significantly reduces initial investment and operational costs, making renewable energy more accessible and affordable, particularly for smaller communities. Socially, it improves energy resilience in remote areas, reduces reliance on fossil fuels, and lowers greenhouse gas emissions. The micro-power plant system supports local energy needs, aligns with global sustainability goals, and contributes positively to environmental protection and community well-being. This innovative approach balances reduced environmental impact, economic feasibility, and enhanced social resilience, making it a crucial component in the transition to a sustainable energy future.



7. **Team Name:** NINOPUKA

Title: Fashion Forward, Energy Smart

Team Members: Nguyen Phuong Minh Kha, Bui Man Nghi, Nguyen Thi Hoai Ngoc and Nguyen Thi Phuc

Supervisor/Menor Name: N/A

Institution: N/A

Country/Region: Viet Nam

Abstract: The project “Fashion Forward, Energy Smart (FFES)” proposes the establishment of a network dedicated to promoting sustainable practices within the Ho Chi Minh City (HCMC) fashion industry. This initiative aims to contribute to the Vietnamese government’s Net Zero Commitment established at COP26. The dual focus targets both fashion providers and consumers to foster a greener fashion industry in HCMC. First, the network will collaborate with member brands to implement energy-efficient measures within their operations. FFES collaborates with members to implement energy-efficient measures and conducts quarterly reports to track progress. Secondly, the project will engage in targeted Public Relations (PR) campaigns aimed at raising public awareness about the environmental impact of fashion choices. By empowering consumers to make informed decisions, the project seeks to stimulate demand for eco-friendly fashion products. “Fashion Forward, Energy Smart (FFES)” offers a unique and impactful model to accelerate Vietnam’s energy transition through a collaborative fashion community.



8. **Team Name:** N/A

Title: Comprehensive Policy Framework for Initiating the Offshore Wind Industry in Vietnam

Team Members: Tran Ngoc Dun

Supervisor/Menor Name: N/A

Institution: ADN Solutions

Country/Region: Viet Nam

Abstract: Our submission outlines a comprehensive policy framework aimed at initiating the offshore wind industry in Vietnam, focusing on Ninh Thuan as a strategic location. The core objectives are to attract foreign investment, ensure legal and financial protections, promote technological innovation, and establish robust infrastructure and workforce capabilities. This initiative aims to leverage Vietnam's vast wind resources to meet its net-zero emissions target by 2050, contributing significantly to the global energy transition and sustainable development.



9. **Team Name:** Power Pioneer

Title: SEANERGY: Renewable Electrical Energy from Waves and Ocean Heat with IoT and Wireless

Team Members: Ahmad Arro'uf Sulfuadi

Supervisor/Menor Name: N/A

Institution: Islamic University of Indonesia

Country/Region: Indonesia

Abstract: The rising demand for electrical power has made it necessary to diversify renewable sources of energy. Utilizing ocean wave power and ocean thermal (OTEC), SEANERGY is a sea water friendly power station. The use of Internets of things and undescriptive electricity displays how it has been engineered to harvest oceans' resources turning waves into electricity on turbines. The OTEC-facility is constructed with a heat engine that is powered by low temperature refrigerant evaporation and high temperature steam condensation. This solution consists in remotely managing farms. All energy on farms as well as at individual autonomous systems is generated out of the wind power. The implementation of SEANERGY is expected to be able to answer global energy challenges, increase energy access in coastal areas, and support Indonesian renewable energy policies. SEANERGY is expected to have a significant positive impact on the environment and economy, like in sustainable development goals (SDGs) 2030.



10. **Team Name:** Shrimpx

Title: From Diesel to Solar, From Destroy to Conserve: A Gradual Energy Transition and Ecosystem Based Approach for Sustainable Climate Smart Shrimp Farming

Team Members: Dhimas Upadyandaru S and M. Yasiqy Haidar Banna

Supervisor/Menor Name: N/A

Institution: JALA

Country/Region: Indonesia

Abstract: Shrimp farming, the most valuable species farming in Indonesian aquaculture which has been widely farmed since the early 1980s, requires lots of energy and produces greenhouse gas emissions. The use of fossil fuel powered generators makes the investment costs for shrimp farming expensive, therefore reducing profits for farmers. To increase profitability and resource efficiency, the Indonesian shrimp industry can make immediate changes in renewable and clean energy. Solar energy is considered as the cheaper and cleaner energy source than diesel generators. Combined with silvofishery, this can further enhance the climate-smart and sustainable shrimp farming. This sustainable energy management approach lowers operational costs and minimizes the environmental footprint of shrimp farming. Shrimp farms that are located in remote areas are faced with frequent energy outages, so solar-powered solutions are particularly well-suited for these regions, providing a cheap and reliable energy source.



11. **Team Name:** The SERA Initiative

Title: Sustainable Energy for Rural Areas (SERA) Initiative

Team Members: Dawam Faizul Amal and Diah Retno Yuniarni

Supervisor/Menor Name: N/A

Institution: N/A

Country/Region: Indonesia

Abstract: The Sustainable Energy for Rural Areas (SERA) Initiative aims to revolutionize rural energy landscapes by developing sustainable energy infrastructures through community care funding. By providing workshops and training, SERA supports local economic growth and empowers communities with the skills needed to maintain and expand renewable energy projects. The initiative also facilitates engagement with energy policies, ensuring that rural voices are heard and considered in the broader energy discourse. By increasing knowledge, skills, and awareness about renewable energy and sustainable practices, SERA fosters a culture of sustainability within rural communities. The potential impacts on the energy transition are profound: SERA can accelerate the adoption of renewable energy, reduce dependency on fossil fuels, and promote just and equitable energy access. Through its comprehensive approach, the initiative not only advances the energy transition but also ensures that rural areas benefit economically and socially, creating a more sustainable and inclusive future for all.



12. **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.



13. **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.



14. **Team Name:** Yumetera

Title: Innovative Approaches to Energy Storage: Nanofluid Technology in CAES Systems

Team Members: Zahra Risqi Indriyani

Supervisor/Menor Name: N/A

Institution: PT Mash Moshem Indonesia

Country/Region: Indonesia

Abstract: The global challenge of meeting rising energy demands sustainably amidst climate change necessitates innovative solutions like Compressed Air Energy Storage (CAES). CAES utilizes electrically driven compressors to store compressed air, converting it back to electricity as needed, supporting renewable energy stability. Enhancing CAES efficiency is crucial, achieved through advanced heat exchangers utilizing nanofluids. These novel fluids, containing nanomaterials such as graphene, enhance heat transfer and reduce energy loss due to their high thermal conductivity and stability. This technology supports the integration of renewable energy sources by providing reliable energy storage. As countries prioritize energy efficiency and renewable adoption, CAES with nanofluid advancements emerges as a pivotal solution, ensuring a sustainable energy future amid climate challenges.



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PART 3

South Asian Division



1. **Team Name:** Balochistan Biogas Pioneers

Title: Circular Biogas Economy for Rural Communities in Jaffarabad, Pakistan

Team Members: Faheem Gul

Supervisor/Menor Name: N/A

Institution: National Defence University, Islamabad

Country/Region: Pakistan

Abstract: This project proposes a "Circular Biogas Economy" model for rural communities in Jaffarabad, Pakistan. By establishing a network of community-owned biogas digesters, the model aims to achieve clean energy access through biogas for cooking and potentially electricity. It promotes a circular economy by transforming organic waste into biogas and nutrient-rich compost for agriculture. This reduces reliance on firewood, deforestation, and promotes sustainable waste management. The model fosters community participation, capacity building, and job creation, contributing significantly to Jaffarabad's energy transition towards a cleaner and more sustainable future.



2. **Team Name:** Climatedenza Solar

Title: Solar Heating for Industrial Applications in Global Markets (SHIP-GM)

Team Members: Akshay Makar, Rahul Sharma & Shubham Makar

Supervisor/Menor Name: N/A

Institution: Climatedenza Solar

Country/Region: India

Abstract: The integration of Climatedenza Solar's CL-ASC Solar thermal technology into industrial applications presents a transformative opportunity for energy economics. By generating temperatures exceeding 1,500°C, the CL-ASC enables significant reductions in fossil fuel dependence across hard-to-abate sectors such as steel, cement, and food processing. This shift not only lowers operational costs through reduced energy expenses but also enhances energy security by mitigating exposure to volatile fossil fuel markets. The widespread adoption of solar thermal solutions like the CL-ASC aligns with global sustainability goals, fostering economic stability and promoting a transition to a low-carbon economy in various industries.



3. **Team Name:** Eco-fusion Energy Solutions

Title: Energizing the Future: Driving the Transition to Sustainable Energy through Piezoelectric Innovation

Team Members: Shakila Ifham

Supervisor/Menor Name: N/A

Institution: Earth Lanka News, Global Youth Biodiversity Network & EarthLanka Youth Network

Country/Region: Sri Lanka

Abstract: We are planning on implementing piezoelectric flooring in various highactivity indoor spaces such as futsal grounds, badminton courts, basketball courts and cardio areas in the gym. With the rising popularity of physical activity programmes worldwide with Sri Lanka not being an exception, this approach offers a practical solution. The cost primarily involves updating the flooring thus the investment is relatively low compared to other energy options like solar, wind or hydropower. Piezoelectric flooring captures the mechanical stress from physical activity and converts it into electrical energy, efficiently generating power while leveraging existing high electricity consumption in these facilities.



4. **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.



5. **Team Name:** Green Lead

Title: Re-energize Bangladesh

Team Members: Md. Fahim Hossain and Navia Hasan Novelty

Supervisor/Menor Name: N/A

Institution: Founder, Green Lead

Country/Region: Bangladesh

Abstract: The project Re-energize Bangladesh is a digital platform to accelerate the energy transition of Bangladesh. It will support the national renewable energy plan specifically the Mujib Climate Prosperity Plan (MCPP)'s key priority area 6, "Maximized Renewable Energy, Energy Efficiency, and Power & Transportation Sector Resilience". Our first objective is to develop a one-stop web portal for renewable energy education which will include an energy landscape dashboard, a visual representation of current energy scenarios, a map with all ongoing projects, and a visual tracker of progress. Our Second objective is to create an education module titled "energeizED" providing a dashboard user guide, energy explainer Ebooks, and curated energy education resources. This project will empower young energy enthusiasts and policymakers in Bangladesh, enabling informed decision-making, fostering a competent workforce, and serving as a comprehensive resource for learning about the nation's energy programs.



6. **Team Name:** Renewable Rangers

Title: Machine Learning Integrated Thermochemical Conversion of Waste Plastic to Optimally Rejuvenate Aged Bitumen

Team Members: Jawad gul and Talha Ahmed

Supervisor/Menor Name: Muhammad Nouman Aslam Khan

Institution: National University of Sciences and Technology

Country/Region: Pakistan

Abstract: Recycling aged bitumen had always been challenging due to its deteriorated physiochemical qualities. Traditional chemical treatment methods are resource-intensive and laborious. Our study introduces reliable and economical pathway to rejuvenate bitumen, using waste plastic and machine learning. Machine learning models predicted the condition of aged bitumen to select the best rejuvenation process conditions. They also assessed the yield and quality of bio-oil produced from the thermochemical conversion of plastic waste, which served as a rejuvenator. Rejuvenated bitumen was examined for mechanical properties and chemical composition. Experimental tests, including viscosity, penetration, softening point, ductility, and elastic recovery, demonstrated that bio-oil from plastic waste was an excellent rejuvenator. The global market for bitumen rejuvenators had a rapid expansion recently, projected to reach USD 900 million by 2024, with a CAGR of approximately 7.2%. This innovative method extended life and flexibility of asphalt with an eco-friendly solution reducing environmental impact supporting economic growth.



7. **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.



8. **Team Name:** Team 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.



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PART 4

African Division



1. **Team Name:** B-Ext

Title: B-Ext: Revolutionizing Energy Access and Reliability in Africa and Beyond.

Team Members: Magesa Wambura, Brian Mengo and Abdul Nambunga

Supervisor/Menor Name: Philemon Wambura

Institution: B-Ext

Country/Region: United Republic of Tanzania

Abstract: B-Ext addresses the critical energy challenges in Sub-Saharan Africa, where millions lack reliable electricity. Our innovative device, resembling a standard extension cable, stores charge to provide backup power during outages and integrates with solar panels in off-grid areas. Additionally, B-Ext utilizes footsteps to generate electricity, ensuring a continuous power supply even in the absence of sunlight.



2. **Team Name:** Bioflame for Schools

Title: BioFlame for School: Transforming School Energy Systems with Biogas Solutions

Team Members: NZABANDORA Venant, Tuyishimire Eric and Ndikumana Emmanuel

Supervisor/Menor Name: Earthman

Institution: GS Bushonyi

Country/Region: Rwanda

Abstract: The BioFlame for School project is designed to transition Rwandan schools from traditional firewood cooking methods to biogas systems, significantly reducing deforestation and promoting environmental sustainability. By harnessing organic waste to produce biogas, the project aims to provide a clean, efficient, and cost-effective energy source for schools. This initiative not only addresses the pressing issue of deforestation but also enhances the educational environment by promoting health and sustainability. The core objectives of BioFlame for School are to reduce the carbon footprint, improve air quality, and foster an educational culture that values sustainable practices. The project's potential impact extends beyond schools, serving as a model for community-wide adoption of biogas technology.



3. **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.



4. **Team Name:** Dhabuka

Title: Circular Energy System for Sustainable Power Generation Using Waste and Solar Integration in Low-Income Countries

Team Members: Cosmas Mandikonza, Gift Chikowo and Elias Muturure

Supervisor/Menor Name: N/A

Institution: Dhabuka Power Private Limited

Country/Region: Zimbabwe

Abstract: This submission proposes a circular energy system that combines human and agricultural waste with solar power to address load shedding issues in least developed countries affected by climate change. The system utilizes anaerobic digestion to convert waste into biogas, which, along with solar energy, generates continuous electricity to formulate low cost microgrids. This solution aims to reduce reliance on fossil fuels, mitigate greenhouse gas emissions, and provide stable, renewable energy. The project emphasizes community involvement, economic benefits through job creation, and environmental sustainability, making a significant impact on the global energy transition.



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5. **Team Name:** Grassroot Initiative for Sustainable Development (GISDEV)

Title: Empowering Last-Mile Communities with Renewable Energy Youth Ambassadors

Team Members: Wudindolo Fantina and Feh Marie Louis

Supervisor/Menor Name: Ntang Caleb Yufanyu

Institution: Grassroot Initiative for Sustainable Development (GISDEV)

Country/Region: Cameroon

Abstract: Our project, "Empowering Last-Mile Communities with Renewable Energy Youth Ambassadors," aims to drive sustainable energy transition in remote villages like Bessom, Ambo, and Enyoh in Cameroon. Through the training of 20 youth ambassadors in renewable energy advocacy, solar system installation, and green entrepreneurship, we target direct impact on over 500 households. The implementation of solar energy systems will enhance energy access, improve health outcomes, and promote environmental sustainability by reducing reliance on polluting energy sources. With a focus on resource mobilization, our initiative seeks to create a self-sustaining ecosystem where local renewable energy projects can thrive, fostering economic growth and community resilience. By empowering youth ambassadors to establish green enterprises, we anticipate a positive economic impact, driving job creation and poverty alleviation within these communities. Through advocacy efforts and community engagement, we aspire to inspire behavior change towards clean energy adoption and sustainable practices. This grassroots movement has the potential to catalyze a societal shift towards a greener and more resilient future. Overall, our project holds promise for significant and lasting impact on the energy transition in these last-mile communities, paving the way for a more sustainable and equitable energy landscape.



6. **Team Name:** GreenMovement Energy

Title: Woodies: A Step Closer to Cleaner Energy

Team Members: Radiseogoane Benjamin Lentsoane and Mathabo Penny Sithole

Supervisor/Menor Name: Zethu Kunene

Institution: GreenMovement Energy

Country/Region: South Africa

Abstract: Woodies, a lignocellulosic-based biomass derived from wood waste, presents a renewable energy solution poised to replace fossil fuels and combat climate change. With the depletion of fossil fuel resources and deteriorating environmental conditions, the adoption of renewable energy sources is imperative. Our primary goal is to offer a sustainable energy alternative, reducing greenhouse gas emissions and promoting a circular economy. By 2030, our vision for industrial and other energy sectors includes integrating Woodies to significantly lower carbon footprints. This shift will reduce reliance on coal and fossil fuels in South Africa's Manufacturing sector, decrease carbon emissions and air pollution, enhance energy security and sustainability, and generate new industries and job opportunities. Utilizing agricultural, sawmill, and forestry waste, Woodies provides a high calorific value alternative to A- and B-graded coal. Currently supplying 8-15% of energy needs globally and up to 50% in developing countries, biomass is projected to meet 30-50% of primary energy consumption by 2050.



7. **Team Name:** Greensphere

Title: IGNITE: Energy Literacy for a Greener Future

Team Members: Tabe Brandon, Mboza Jerry Clinton Atiajoh Laris and Forbah Sandra

Supervisor/Menor Name: Richard Muang

Institution: University of Buea

Country/Region: Cameroon

Abstract: Ignite is a program that seek to bridge the critical gap in energy education in Cameroon's primary education system by introducing a virtual energy lab through a comprehensive curriculum of educational graphics and video series display in classrooms and organizing inter school competitions. This is aimed at stimulating innovation amongst this young minds, fostering a deeper understanding of renewable energy and its benefits, and to bring about renewable energy consciousness within this young minds. Its impacts include: Empowering the next generation of young changemakers with practical and evidence based skills to drive just transition. And promote creativity in developing innovative solutions that tackles local energy needs from a community standpoint and bridge the knowledge gap on renewable energy technologies through awareness raising.



8. **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.



9. **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.



10. **Team Name:** SEED2FUTURE

Title: Empowering a Sustainable Future: A Solar RET Action Plan for a Greener Tomorrow

Team Members: Amanda Maphosa, David Tirivavi, Mitshell Shumba and Tapiwa Mafuhure

Supervisor/Menor Name: N/A

Institution: Ashesi University

Country/Region: Ghana, Zimbabwe

Abstract: Undoubtedly, energy is both a necessity and a driving force behind human activities. Energy consumption has steadily risen throughout history, evolving from basic needs like food and fire for early humans to complex industrial and technological requirements today. With the global population growing, the energy demand will increase. In response to the recent urgent need for a worldwide transition toward sustainable energy sources, this submission explores the fundamental use of Building-Integrated Photovoltaics (BIPV), roofs designed to serve as electric energy generators, and weather-tight barriers for the building. Moreover, the core objective of this action plan is to generate clean and renewable energy, reduce reliance on fossil fuels and green energy emissions, and achieve energy independence. Potential impacts include decarbonization, grid resilience, economic benefits, and energy security.



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11. Team Name: TEAM ZOE

Title: A Proposed Mobile Application for Climate Change

Team Members: Makubuya Andrew and Jooga Andrew

Supervisor/Menor Name: N/A

Institution: Climate Change Activist

Country/Region: Uganda

Abstract: i. Enviro-Meet. To provide a platform for connectivity for environmentalists across the globe with general cluster of persons, then smaller clusters of persons in the same locality or nation to enable them meet and solve issues specific to their locality. ii. Enviro-Ask to Provide information on climate friendly alternatives through use of an AI ChatBot. [Enviro-Ask]. This will give rise to more environmental activists as knowledge is shared. iii. Enviro-Trade; A Sales place on the app where people can sell and buy environmentally friendly alternatives such as cooking stoves. For example in Uganda, trees are cut down to use as fuel for cooking. Forest damage contributes to 10% of global warming. This will reduce through these collective efforts. iv. Enviro-Design; A place on this platform that enables designers to showcase environmentally friendly designs and engage people on eco-friendly building to reduce carbon emissions that come through current existing construction trends. Construction accounts to about 4-8% of global carbon emissions. v. Enviro-Next; A place on this app for innovators to meet and showcase and "What's Next?" in combating negative climate change. Here, these innovators can also meet mentors to guide them in their initiatives. Courses on climate change could be introduced for the same.



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12. **Team Name:** The Watt Africa Team

Title: Watt Africa

Team Members: Lewis Kamau Kimaru, Ifrah Farah Fuso and Bridgette Nthuka Musango

Supervisor/Menor Name: N/A

Institution: Jomo Kenyatta University of Technology and Agriculture

Country/Region: Kenya

Abstract: Watt Africa is revolutionizing the energy landscape in Sub-Saharan Africa by deploying small-scale modular concentrated solar power (CSP) systems. Our core objective is to provide sustainable, locally-fabricated solutions for reliable 24/7 electricity and industrial heat to remote and resource-limited communities. Small-scale CSP is more efficient than solar PV, utilizes locally-sourced materials, and avoids reliance on rare earth minerals, thus reducing environmental degradation. By leveraging the Jua Kali sector for local manufacturing, we reduce costs and enhance community involvement, fostering economic growth and resilience. Watt Africa's innovative approach addresses the challenge of energy poverty, improving health, education, and economic opportunities. Our scalable solutions not only contribute to reducing carbon emissions but also empower communities, ensuring a sustainable and equitable future for all.



13. **Team Name:** N/A

Title: Empowering Voices: Scaling COP Mashinani for Regional Energy Justice and Resilience Across Africa

Team Members: Nelson 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.



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PART 5

Mixed regions and Others



1. **Team Name:** BAKSO-Bakso Addicts Kindly Sharing Opinions

Title: Increasing Childhood Science Literacy and Awareness of Energy Transition in Indonesia Through Olimpiade Sains Kuark (OSK)

Team Members: Muhamad Nabil Alhanif and Eugenia Aileen Putrijaya

Supervisor/Menor Name: Melisa Apriyani

Institution: Massey University

Country/Region: Indonesia, Canada, New Zealand

Abstract: Energy transition refers to the change from non-renewable to renewable energy. It is important that modern society is educated about this matter to implement a sustainable lifestyle. Olimpiade Sains Kuark (OSK) is a primary school-level national science competition organised by Kuark International that utilises self-produced comics to educate and spread awareness to the younger generation. It also features collaboration-based research projects that provide scientific hands-on experiences. This method combats the anti-science mentality and inspires children to care for the environment by living sustainably through energy transition. The nationwide competition itself has proven to be a success, with thousands of primary school students from 565 different schools across 132 cities and/or regencies in 30 provinces in Indonesia. OSK proves to be able to provide effective childhood education to raise awareness of the need for energy transition through science.



2. **Team Name:** EcoChampions

Title: GreenGeek Energy Shift Initiative (GESI)

Team Members: Juliana Sun, Yu Zhang, Yaxuan Shang and Jiahe Chen

Supervisor/Menor Name: Ye Huang

Institution: N/A

Country/Region: China, United States of America and Republic of Korea

Abstract: GreenGeek promotes awareness of the energy transition through an innovative low-carbon educational website that aggregates a wealth of educational activities, attracting participants of all ages in engaging ways. Our website hosts a variety of activities, including online programs like the Youth Innovators Reading Camp and Geek Talk, which foster knowledge dissemination and inspire innovation, as well as offline experiences such as green cycling and tree planting, which encourage low-carbon living. By integrating online and offline resources, GreenGeek motivates individuals and communities to actively participate, offering customized low-carbon solutions and innovative educational models. Our website serves as a hub for individuals and communities to access environmental information and engage in activities, creating a multidimensional educational ecosystem that promotes sustainable lifestyles and advances the energy transition and green development.

Website Link:<https://greengeek66.mystrikingly.com>



3. **Team Name:** EcoTech Innovation

Title: Optimizing Energy Consumption in Single-Family Homes: An AI-Driven Approach for Enhanced Efficiency and Cost Reduction

Team Members: Valeria Belén Cerpa Salas

Supervisor/Menor Name: N/A

Institution: Universidad Católica de Santa María

Country/Region: Peru

Abstract: Optimizing Energy Consumption in Single-Family Homes: An AI-Driven Approach for Enhanced Efficiency and Cost Reduction" leverages artificial intelligence to transform energy management for single-family residences. By employing predictive consumption analysis, the proposed platform provides information and advice on energy usage, cost reduction and sustainability support. Key features include predictive consumption analysis, smart device integration for automated control, continuous learning of user preferences and dynamic optimization of energy sources. A unique interface visualizes energy flow, enhancing user engagement and decision-making. This solution addresses the need for efficient residential energy management, promotes the adoption of renewable energy and contributes to reduced carbon footprints. The project offers a scalable model for broader application, significantly impacting energy conservation and sustainability in residential settings.



4. **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.



5. **Team Name:** Megawatt

Title: Megawatt: Raise Energy Literacy Through Play

Team Members: Miguel Trenkel-Lopez

Supervisor/Menor Name: N/A

Institution: Curieus Games CIC

Country/Region: United Kingdom of Great Britain and Northern Ireland

Abstract: Our mission is to raise energy literacy and inspire curiosity in energy and sustainability through play. Our vision is a future where diverse, informed young people are choosing careers that transform how we produce, transmit and use energy. We are a Community Interest Company, a non-profit organisation, which exists to pursue a social purpose. In our case, our social purpose is to raise energy literacy. www.megawatt.game/ .We do this through Megawatt, a STEM card game that challenges players to build an electricity grid. We work with schools to deliver engaging workshops built around Megawatt that teach students about energy and inspire curiosity in a career in the energy industry. Our work supports the energy transition by tackling the STEM skills shortage and encouraging young people to work in energy. We also communicate the importance of new net zero infrastructure and increase community support for new energy projects.



6. **Team Name:** O'KANATA

Title: O'KANATA Agri-Support

Team Members: Justin Langan & Jason Wolbert

Supervisor/Menor Name: N/A

Institution: O'KANATA

Country/Region: Canada

Abstract: The O'KANATA Agri-Support project empowers Indigenous youth in Canada by integrating traditional ecological knowledge with modern sustainable energy practices. Our core objectives are to enhance food security, reduce carbon emissions, and foster community resilience. By implementing renewable energy solutions and sustainable agricultural practices, we aim to create a model for energy-efficient, community-led development that can be replicated in other Indigenous communities, thus contributing positively to the global energy transition. The O'KANATA Agri-Support project empowers Indigenous youth in Canada by integrating traditional ecological knowledge with modern sustainable energy practices. Our core objectives are to enhance food security, reduce carbon emissions, and foster community resilience. By implementing renewable energy solutions and sustainable agricultural practices, we aim to create a model for energy-efficient, community-led development that can be replicated in other Indigenous communities, thus contributing positively to the global energy transition.



7. **Team Name:** Ready Recycling

Title: Ready Recycling

Team Members: Yefry Nunez

Supervisor/Menor Name: Freddy Nunez

Institution: Malaysia Johor Bahru

Country/Region: Dominican Republic

Abstract: This submission introduces an innovative waste management solution: a smart container with pre-sorting capabilities, waste compression, and digital connectivity. The core objectives are to streamline waste collection, improve recycling rates, and reduce the energy footprint of waste management processes. The container features a movable lid for waste compression, increasing storage capacity and reducing collection frequency. Integrated digital sensors connect to a mobile application, optimizing collection routes and schedules. This system aims to significantly impact the energy transition by; reducing fuel consumption in waste collection, enhancing the efficiency of waste-to-energy processes through improved pre-sorting, supporting circular economy initiatives by facilitating better recycling, providing data-driven insights for smarter resource allocation and policy-making. By addressing inefficiencies in current waste management systems, this solution contributes to lowering overall energy consumption and greenhouse gas emissions in the urban environment.



8. **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.



9. **Team Name:** Youth Shifters

Title: A New Way to Equitably Finance a Just Energy Transition

Team Members: Akanksha Tiwari, Natasha Mamuhewa, Oliver Pang and Taylah Bland

Supervisor/Menor Name: N/A

Institution: The Red Dot Project

Country/Region: India, Sri Lanka, Australia and United States of America

Abstract: A major climate finance gap still exists, with BCG (2023) estimating there is an \$18Trillion investment gap to finance the energy transition through to 2030. Our team's proposal is to bridge this gap with a low-interest blended finance facility for the Asia-Pacific region, with the exclusive scope of funding energy transition projects. Its core objective is to ensure a resilient and just energy transition by mobilising both public and especially private capital to increase access to finance traditionally out of reach of the developing economies and direct the flow of vital funds to energy transition projects that will enhance the green growth potential and climate resilience of the most vulnerable communities in the region. Our proposal will provide the means to achieve carbon reduction at scale and foster equitable, inclusive and sustainable economic development in the Asia-Pacific region.



10. **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.