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Editorial

Special Issue “Energy Transition and Environmental Sustainability”

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This Special Issue on “Energy Transition and Environmental Sustainability” includes thirteen papers on policies including: the challenges of the United Nations Sustainable Development Goals regarding energy transition and legal reforms in Taiwan and Japan [1] successful energy transition toward solar PV in South Korea [2]; transition from diesel buses to hybrid-driven (HEV) and electricity-driven buses (BEV) for public transport in Central Europe [3]; vehicle transition and the development of electric car production in three regions, the United States, the European Union and Japan [4]; affordable and environmentally friendly cooling solutions for buildings in Pakistan [5]; development of projects to replace fossil fuels with renewable energies, mainly hydropower in Ecuador [6]; the Role of Electrification in the Decarbonization of Central-Western Europe [7]; energy technology innovation through the application of new technologies in oil resource development [8]; the cost of a Wastewater Treatment Plant in Poland and the Impact of Atmospheric Precipitation [9]; analysis of the design of new buildings respecting the “zero-energy and low carbon emission” concept in tropical climatic regions [10]; climate change litigation risks for Australian energy companies and investors from a policy and governance perspective [11]; a demand and supply management study of a Childcare Facility in Tokyo and the need to shift from conventional power generation to renewable energy sources [12]; implementation of new policies supporting renewable natural gas production from organic wastes in Canada [13].

A brief summary of the content associated with each of the selected papers belonging to this Special Issues is included below:

In ‘National Energy Transition Framework toward SDG7 with Legal Reforms and Policy Bundles: The Case of Taiwan and Its Comparison with Japan’, the authors Mu-Xing Lin, Hwa Meei Liou and Kuei Tien Chou [1] construct an analysis structure for national energy transition to analyse the current situation within Taiwan’s electricity sector reforms, while providing evidence of the national experience of electrical industry reforms as an international reference. This study also compares the differences between the seventh Sustainable Development Goal relationship and national energy transitions in Taiwan and Japan, based on the similar initiative of the revised Electricity Act within the policy bundle.

In their paper, ‘Which Institutional Conditions Lead to a Successful Local Energy Transition? Applying Fuzzy-Set Qualitative Comparative Analysis to Solar PV Cases in South Korea’ [2], the authors Youhyun Lee, Bomi Kim and Heeju Hwang use a fuzzy-set qualitative comparative analysis to measure the success of a local energy transition. Their study provides insights on energy transition for developing or newly industrialized countries.

As diesel is the most used fuel for buses and other urban transport vehicles in European countries, in their paper, ‘Environmental Sustainability of the Vehicle Fleet Change in Public City Transport of Selected City in Central Europe’ [3], the authors Vladimír Konečný, Jozef Gnáp, Tomáš Settey, František Petro, Tomáš Skrúcaný and Tomasz Figlus explore the extent to which air pollution can be reduced if the urban public transport fleet is renewed in the city of Žilina.

In ‘Perspectives for Mitigation of CO₂ Emission due to Development of Electromobility in Several Countries’, the authors Karol Tucki, Olga Orynych and Mateusz Mitoraj-



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Wojtanek [4] use the creep trend method using historical data for the years 2007–2017 for the analysis of the development of electric car production in three regions, the United States, the European Union and Japan, and project the reduction in emissions of over 14,908,000 thousand tonnes of CO₂ in the European Union, 3,786,000 thousand tonnes of CO₂ in United States, and 111,683 thousand tonnes of CO₂ in Japan. Their study concluded that electricity-powered cars along with appropriate choices of energetic resources as well as electricity distribution management will play an important role in achieving a sustainable energy economy.

In ‘Energetic, Economic and Environmental (3E) Assessment and Design of Solar-Powered HVAC Systems in Pakistan’, the authors Sajid Mehmood, Serguey A. Maximov, Hannah Chalmers and Daniel Friedrich [5] explored cooling systems for industrial buildings in Lahore, Pakistan. They evaluated two systems, namely, electrically driven water-cooled vapour compression systems and thermally (solar) driven vapour absorption cooling systems, and concluded that electrically driven vapour compression-based cooling systems have much higher running costs and are potentially hazardous for the environment but have lower capital costs. On the other hand, solar thermal systems have lower running costs and emissions but require further reductions in the capital costs or government subsidies to make them viable.

In ‘Low-Carbon Energy Governance: Scenarios to Accelerate the Change in the Energy Matrix in Ecuador’ [6], the authors Flavio R. Arroyo M. and Luis J. Miguel used the system dynamics methodology in their study to model supply, demand and CO₂ emissions scenarios for Ecuador for the year 2030. Since oil remained the most important source of energy, their proposal for energy policies aimed at mitigating emissions by replacing fossil fuels with renewable energies, mainly hydropower.

In ‘The Role of Electrification in the Decarbonization of Central-Western Europe’, the authors Gauthier de Maere d’Aertrycke, Yves Smeers, Hugues de Peuffeilhoux and Pierre-Laurent Lucille [7] used the “variational scenario” analysis, which showed that tilting the central role of electricity to a mix of electricity and green gas offers several advantages in terms of efficiency, flexibility of investment strategies, and robustness with respect to major uncertainties.

The authors HaeOk Choi and Hwanll Park, in ‘Oil is the New Data: Energy Technology Innovation in Digital Oil Fields’ [8], explained the evolution of Digital Oil Fields (DOFs) over the course of 10 years and showed that DOF technology together with device-related technologies is developing through convergence and close links with other industries, specifically the equipment, parts, and material industries.

In ‘The Impact of Atmospheric Precipitation on Wastewater Volume Flowing into the Wastewater Treatment Plant in Nowy Targ (Poland) in Terms of Treatment Costs’, the authors Piotr Bugajski, Elwira Nowobiliska-Majewska and Michał Majewski [9] determined the costs resulting from the treatment of accidental (rain) water entering the analysed sewerage system in that region. Their research provides important information for sewage network operators to replace the combined sewerage system in Nowy Targ with a distributed sewerage system.

In ‘Transition to Zero Energy and Low Carbon Emission in Residential Buildings Located in Tropical and Temperate Climates’, the authors Modeste Kameni Nematchoua, José A. Orosa, Paola Ricciardi, Esther Obonyo, Eric Jean Roy Sambatra and Sigrid Reiter [10] analysed the design of new buildings with respect to the “zero-energy and low carbon emission” concept in tropical climatic regions in comparison with temperate zones. The results showed that the renovation of existing residential buildings facilitates a reduction of up to 35% of energy demand and a great quantity of CO₂ emissions in both climate zones; however, the investment rate linked to the construction of zero-energy buildings in tropical zones is 12 times lower than in temperate zones, and the payback was double.

The editor of this journal, Associate Professor Prafula Pearce, explored whether company directors can and, in some cases, should be considering the impact of climate change litigation risks on their business, or else risk breaching their obligation to exercise care and

diligence under the Corporation Act 2001 (Cth, Australia) in the paper entitled ‘Duty to Address Climate Change Litigation Risks for Australian Energy Companies—Policy and Governance Issues’ [11].

In ‘Solar Energy Demand-to-Supply Management by the On-Demand Cumulative-Control Method: Case of a Childcare Facility in Tokyo’, the authors Hiromasa Ijuin, Satoshi Yamada, Tetsuo Yamada, Masato Takanokura and Masayuki Matsui [12] used actual power data from a childcare facility in Tokyo and used a demand-to-supply management method for a solar power generation system by using the on-demand cumulative-control method.

Finally, the authors Omid Norouzi and Animesh Dutta, in ‘The Current Status and Future Potential of Biogas Production from Canada’s Organic Fraction Municipal Solid Waste’ [13], explored findings from data gathered from published papers, the Canadian Biogas Association, Canada’s national statistical agency, and energy companies’ websites to gain insight into the current status of anaerobic digestion plants in recovering energy and resources from organic wastes.

It is my hope that you will enjoy reading these studies and find them to be worthy of serious consideration by policy makers around the world.

Conflicts of Interest: The authors declare no conflict of interest.

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