Paper	Sustainability statement
40	The survey of the scientific literature on the energy transition shows that it raises the complexity of the interrelated subsystems of the global economy, which include society, economy, legislation, and the environment. At the same time, societies cannot give up on either developing the green energy sector (as it is a remedy for global warming) or striving for sustainable development of the global economy (as this is a condition for the survival of humanity).
41	The large-scale implementation of PE technologies, in particular, will promote the appearance of more personalized devices, lower cost solutions, the use of more sustainable feedstock products, and 'greener' alternatives for the end of cycle of these products will become available.
42	In reaching sustainability goals, such as net-zero emissions, the energy sector is incorporating renewable energy sources into the energy system. This requires transformation that combines big conventional energy producers with multiple small- and large-scale energy producers (rooftop photovoltaic panels, wind farms and solar plants) in one system.
44	Given the commitment to mitigate climate change, pressures have been growing for 'sustainability', 'green' pathways, against a background of uncertainties in the global economy and the looming risks of prolonged COVID crises. The recent adoption of the Sustainable Development Goals (SDGs) framework by Malaysia and Indonesia marks a big departure from sectoral-based planning but an overarching vision for improving people's lives, prosperity, and wellbeing.
46	In the active distribution networks (ADNs), the emerging trend of high penetration of sustainable energy sources such as wind turbines, photovoltaics, and the forthcoming integration of energy storage devices and additional dynamic loads like plug-in-electric vehicles (PEVs) influences to change the nature of electric distribution networks.
47	The future of the IoT is entwined with the design of efficient and sustainable agricultural systems. When implementing IoT in farming activities, we highlight the potential contribution of the IoT to achieve sustainability in regards to soil, water, energy, workforce, traceability, and business relationships.
49	In environmental sustainability, the digital transition involves the application of technologies such as AI, big data analytics, IoT, social media, and mobile technologies that are used to develop and implement sustainability solutions in areas such as sustainable urban development, waste management, sustainable production, and pollution control. In economic sustainability, emerging digital technologies can boost transformation in the more sustainable circular economy (CE), the digital sharing economy, and establish sustainable manufacturing and infrastructure design.
50	Energy, sustainability, and smart cities are associated concepts and require an integrated approach in promoting urban sustainability and quality of life of the world's population that today lives concentratedly in cities. The sustainable energy issue is a critical and integral part of the smart and sustainable cities agenda. Promoting energy sustainability is possible by applying appropriate technological solutions to obtain energy efficiency, but this should be implemented along with investing on renewable energy resources.
51	In conclusion, it can be stated that data-driven and AI approaches have been and are likely to continue to be instrumental in achieving the SDGs, although the potential remains untapped to date. For this reason, the achievement of the UN' 17 SDGs by 2030 must be considered ambitious but not very likely. It should be in all of our interests to continue to work towards achieving the SDGs
52	the AI and robotics revolution must be carried out in accordance with sustainable development goals
54	BC provides a great mechanism for prosumers to access a satisfactory energy price while maintaining and promoting system sustainability. Moreover, it encourages using clean energy, thus reducing carbon emissions. Nevertheless, the energy cost in BC should be linked to carbon emission allowances, so the behavior of the consumer, prosumer, and utility can support zero-emission targets.
1	Energy-ICT as an integrated system can effectively help households, enterprises, and economies achieve SDGs and can eliminate energy and economic inefficiencies.
56	This paper discussed the environmental influence of Bitcoin (as illustration of the POW based mining industry) on the anthropocene by conceptualizing its current unsustainability through a general relationship integrating the potential shift toward a renewable energy
57	Digital technologies are up-scaling sustainable agricultural land and resources management and strengthening the associated productivity, services, and livelihood security worldwide.
59	Moreover, we show that 5G wireless networks might become in the future sustainable energy systems paving the road to even more advanced technologies and the new generations of networks.
62	The peculiarities of the functioning of the modern Russian energy sector indicate the pressing need to ensuring its sustainable economic development in terms of the economic, environmental and social components. The unsatisfactory indicators of energy efficiency in the industrial enterprises are due to a number of reasons, among which are the lack of development of organizational and economic mechanisms for energy efficiency management, which is aimed at ensuring the sustainable development of the economy and steady economic growth.
67	Based on the Automated Content Analysis (ACA) results, we find that the digital transformation in both manufacturing and the products themselves (e.g., electric cars) and the requirements to adapt the business to and operation of products following the United Nations Sustainability Goals lead to a reorganization of their supply chains, what has positive and negative consequences for society itself.
70	smart factories need to be sustainable and renewable in terms of energy pattern (electric system industry). Furthermore, the United Nations Industrial Development Organization (UNIDO) has set the relevancy of industry 4.0 and sustainability in the global Sustainable Development Goals (SDG 7 and 9) that digital industrial development should support the growth of industrial sustainable energy. This has pointed towards the evolution of new energy concept known as energy 4.0.

71	The increasing number of studies that underline the relationship between industry 4.0 and sustainability shows that sustainability is one of the pillars of smart factories.
72	We came to the conclusion that Industry 4.0 technologies enable the full use of green processes to achieve sustainability objectives primary based on traditional energy saving, resources/material, climate/emission reduction and cleaner production green technologies. The importance of green processes lies in functions they can perform to create sustainability outcomes. The facilitating, enabling and supporting functions of green processes explain how Industry 4.0 technologies create sustainability outcomes through these processes.
73	Integration of renewable energy and optimization of energy use are key enablers of sustainable energy transitions and mitigating climate change. Modern technologies such the Internet of Things (IoT) offer a wide number of applications in the energy sector, i.e, in energy supply, transmission and distribution, and demand. IoT can be employed for improving energy efficiency, increasing the share of renewable energy, and reducing environmental impacts of the energy use.
74	Against this background, the analysis and optimisation of single and partial problems are of course important, and it is a prerequisite, but is not sufficient, as interdisciplinary knowledge is needed, to achieve the sustainability goals which are a 'sine qua non' to ensure the population's survival into the 22nd century. This review paper was focused on recent advancements in the wider spread field of smart technologies to provide a foundation for the two main axes of sustainability, namely efficient conversion of resources and rational waste management, through the implementation of the smart technologies.
75	In conclusion, the implementation of Smart Cities (SCs) is still lacking some basis: the definition of the concept and the standardisation of its pipeline; addressing the biggest challenges (such as providing basic needs and services and promoting the sustainability and environmental protection) and following a roadmap which satisfies a best practice guideline that is still not settled in the field of SCs.
76	The characteristics such as affordability, modularity, flexibility, and sustainability offer Distributed Renewable Energy (DRE) solutions competitive advantages in small-scale price-sensitive market segments, and rural and remote settings. In additional to bringing market value, DRE entrepreneurs also generate co-benefits in climate change mitigation, job creation, and the accompanying health and social impacts.
77	The transformation of the energy system to a renewable one is crucial to enable sustainable development for mankind. The integration of high shares of renewable energy sources (RES) in the energy matrix is, however, a major challenge due to the low energy density per area unit and the stochastic temporal patterns in which RES are available
85	In line with sustainable development in energy systems, solutions for increasing the share of these energy sources in heat supply and further improving overall efficiencies are the primary areas for future research.
90	Access to renewable energy for purpose of off-grid and for small-scale application is one of effective way that proves effective determination towards energy crisis, mitigation of climate change, and sustainable development.
93	Through reviewing several emerging low-carbon technologies, this article offers insights into the feasibility and sustainability assessment of transnational clean electricity networks for supplying power throughout the world.
94	Energy transformation and sustainability have become a challenge, especially for developing countries, which face broad energy-related issues such as a wide demand–supply gap, extensive fossil fuel dependency, and low accessibility to clean energy
97	The current paper details big data analytics in the smart grid and discusses how big data analytics are used in association with grid visualization as a future technology contribution towards the attainment of other SDGs The challenges and future directions were discussed with regards to the implementation and improvement of smart grid technologies with big data analytics to reduce energy poverty and greenhouse gas emissions for a sustainable environment.
102	Smart MicroGrids (SMGs) can be seen as a promising option when it comes to addressing the urgent need for sustainable transition in electric systems from the current fossil fuel-based centralised system to a low-carbon, renewable-based decentralised system.
5	The occurrence of several energy price shocks in less than two years has intensified the debate in the energy community on alternative pathways to increase the resilience of energy systems. This may coincide with the efforts for the decarbonization of the energy sector, and, more broadly, with ambitions toward a sustainable energy transition.
103	Finally, the article discusses the challenges and recommendations for the effective implementation of digital technologies in the energy sector for meeting sustainability. Based on the analysis in the article, the study has formulated vital recommendations that can be applied in future work. These recommendations are formulated with the importance of technical capability in resolving the problems in the energy system with efficiency and sustainability.
106	Smart agriculture is real-time farm management providing a high degree of automation, and data-driven intelligent decision-making to improve productivity, save natural resources. Digital technologies can support farmers' production of safe, sustainable, and quality food.