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Review Article

APPLICATION OF INNOVATIONS AND ENVIRONMENTAL CHALLENGES IN USING GREEN ENERGY IN MULTIPOLAR CONDITIONS

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Abstract: *The paper discusses important approaches to the use of green energy in multipolar and post-transition conditions. The application of technological innovations with ecological concepts and attitudes is investigated. The energy system is observed in the form of a specific cluster, according to the structure: energy, technology and human resources (employees). Comparing the competitiveness of this system in several possibilities, a new concept is created. By analyzing the competitiveness of different systems, which enables the selection of an efficient post-transition path of the electrical energy system. By comparing the competitiveness of this system, with more possibilities, a new concept is created. By taking a more detailed look at the competitiveness of different, and comparable, systems that have undergone transition and transformation, the effectiveness and efficiency of the electric power system and the transition path of obtaining green electricity can be seen. In this system, the role of green entrepreneurs in the use of new technologies is important: the Internet, blockchain, to solve environmental challenges, artificial intelligence. Those ecosystems that promote green entrepreneurship and sustainable development are preferred. The aim of the work is to see how technology and entrepreneurship can synergistically contribute to social well-being. The subject of analysis is the application of each of the new technologies for energy storage are: durability, energy density, possible power, level of technology maturity, perspective of specific solutions, depending on the price and effects on the environment. Green entrepreneurship is not merely a business trend: it is strategic necessity in Society. Tehnological innovation is at basic of green entreprenaurship. Tehnological innovation is at basic of green entreprenaurship.*

Key words: *innovation, green energy, posttransitions, challenges, entrepreneurship, solar innovation;*

***JEL classification**: D12, O12,E20.*

1. INTRODUCTION

In the era of the emergence of a multipolar world and rapid technological progress, there is an increasing concern for the environment, and innovation in the application of green energy appears as an important strategy for economic and social development. The goal of this work is to find models and innovations for improving entrepreneurship in the creation of green energy. Essentially, the paper aims to contribute to this aspect of sustainable development by examining how technology and entrepreneurship can synergies in creating green energy. The use of conservative (fossil) fuels for the production of electricity leads to a series of negative effects, the most prominent of which is the greenhouse effect (methane and carbon dioxide), which, along with other phenomena, has a significant impact on climate change. Therefore, it is necessary for fossil fuel power plants to be replaced by wind power plants and solar photovoltaic power plants during the post-transition period. Innovations represent both the containment and reduction of methane emissions through the application of biogas production technology. It should be borne in mind that the energy system belongs to the group of socio-technological systems. It is defined by its energy structure, technological structure, business structure, and personnel structure. It is a major employer, a significant customer, and a large user of various services. The transition of the energy system is a long-term process that includes fundamental changes in the energy, technological, institutional, and personnel structures, the scope and content of services, and the procurement of equipment. It also involves changes in the relationships between the system and education, science, infrastructure, and institutions. Generally, changes in the structure of the energy system during the energy transition require enormous investments from various aspects, not only financial. The transition of the energy sector has two main goals: (1) ecological—reducing the greenhouse effects by decreasing fossil fuel use, and (2) sustainable development with the required level of employment and an increase in the gross social product. The realisation of the transition process in the energy sector requires a comprehensive set of resources: capital, human resources, raw materials, energy (from primary to final), and environmental-ecological resources. A very important development goal is to significantly reduce the price of electricity, for instance, from lithium batteries. In this area, it is necessary to find a balance between science, business, and politics, considering the duration of the post-transition period. Appropriate environmental resources must be engaged for the disposal of equipment and energy products that cannot be recycled. Compatibility with numerous societal demands, which are of a higher order to ensure sustainable development, means that the transition to green energy should be well conceived and realized, bearing in mind the specificities of socio-technical systems. This entrepreneurship is very dynamic and serves as a key element that anticipates the future of the economy and society, especially considering the rapid expansion of digital technologies not only in the energy sector but also in everyday life. The impact of climate change on human health can be mitigated by reducing the greenhouse effect and increasing the use of clean energy and food.

2. METHODOLOGY

In order to determine the post-transition direction in selecting modern technologies that should replace alternatives in the energy system, an analytical model is applied to analyse the competitiveness of the electric power system for the production of green electricity. The analysis can cover five different technologies. Two of them produce electricity without carbon dioxide emissions (wind turbines and nuclear power plants), while the other two are based on noticeably low carbon dioxide emissions (thermal power plants using hard coal and lignite combined with IKDU technologies). A special technology with high energy efficiency involves combined gas and steam turbines, using fuel based on natural gas. Three components were specifically taken into account: capital investment (total prices), prices of alternative energy technologies, and costs of system dispatch ability. The number of direct employees in the secondary electricity production sector is also considered. In particular, the quality of the employed workforce, including the required educational level, should be analysed. This includes assessing the quality and number of experts in supporting systems (education, state administrative services, and scientific and development institutions). A special part of the analysis refers to how green entrepreneurs use new technologies such as artificial intelligence, high-speed Internet, and blockchain. The main goal is to introduce sustainable and adaptable business models, all with the intention of facilitating accelerated transformation. It is important to focus on creating an environment that supports green entrepreneurs, who are crucial participants in post-transitional changes leading to a better vision of society.

The new aggregate indicator is 3Ee-sr as the Formula for the aggregate indicator of the competitiveness of energy technologies in the post-transition:

$$3E_e\text{-}SR = \sqrt{[(\sum R_i / E)^2 + (M\_CO_2 \cdot C\_CO_2 / E)^2]} \quad [€/MWh]$$

The sum of all capital resources engaged during the post-transition period:

$$\sum R_i = R\_in + R\_pe + R\_dc + R\_lu + R\_lc \quad [€]$$

The total amount of labor costs necessary for the production of the determined amount of green electricity in the post-transition Rlc

3. GREEN ENERGY AND ENERGY IN THE POST-TRANSITION PERIOD

The new energy strategy represents a socio-economic transition because it is a fundamental and long-term transformation directed towards specific goals, political programs, and sustainability strategies (Markard, 2018, pp. 628-633). In a multipolar world, the energy system is moving toward a new dynamic equilibrium. This process should be well conceived and designed so that it can be effectively managed (Lorbach, 2006, p. 1). However, some analysts believe that political criteria and actors are crucial in the main process of energy transition, without taking into account the progress and improvement of essential energy technologies. The energy transition should align with the needs and possibilities of specific countries, ensuring social fairness and being economically, technically, and ecologically sustainable. It should respect the sovereignty of each country over its natural resources and be realized within the framework of national plans and priorities. The starting point is to accelerate the development of underdeveloped countries and promote growth (Report of the UN, 2023). Each of the possible transition paths (trajectories) assumes the replacement of fossil fuel power plants with technologies for the production of secondary electricity without carbon dioxide emissions. Two transition paths are possible: replacing solid fuel power plants with wind power plants or nuclear power plants. Numerous analyses point to the undoubted advantage of the transition path to green energy using nuclear power plants compared to wind power plants (Grković, 2024, p. 34). Additionally, the trajectory is important in the transport sector, where it is possible to replace liquid and gaseous fuels with green energy. The storage of secondary electricity can be achieved using pumped-storage technology or reversible hydropower plants, as well as technologies for storing compressed air, different batteries, and the conversion of electricity into chemical energy—such as the production of e-fuel, which includes e-hydrogen, e-methane, e-methanol, or e-ammonia (Karol & Lentz, 2020, pp. 37-41). The simulation of resource engagement in the post-transition period can be an integral part of the complete verification of the chosen transition trajectory. In this process, it is necessary to engage a certain amount of resources: material, human, natural, and ecological. To indicate the competitiveness of specific energy technologies in modern conditions and based on numerous analyses, an aggregate indicator is used (Grković, 2024, p. 23). This indicator includes the following components: (1) the aggregate amount of investment in technology required to produce a certain volume of green electricity in the post-transition, (2) the aggregate amount of primary energy costs required to produce a determined amount of green electricity in the post-transition, (3) all costs related to the dispatchability of the power system, (4) the costs of leasing land for wind turbines, and (5) the sum of costs related to the labor force required to produce a determined amount of green electricity in the post-transition. Financial resources and capital investments are collective investments in modern technology based on three criteria: (a) the base value of the technology, (b) the cost of reconstruction to extend the life of the technology, and (c) the cost of replacing outdated technology. The total cost of specific revitalization (reconstruction) is determined based on the actual condition of the equipment as a starting point for assessing the extent of the reconstruction. For example, for the production of green energy using wind turbine technology, over a period of 60 years, it is necessary to calculate the replacement of expired turbines with new ones (Grković, 2024, pp. 12-38). However, in electric energy systems with a larger volume of variable renewable sources, there is an increase in network congestion costs in the total production of electricity on an annual basis, which can be systematized concretely and in detail (Monitoringbericht, 2019, p. 1). In doing so, the redispatching operation should also be taken into account. This means that there are power plants operating in one power system, the power of which can be adjusted according to the needs of redispatching. For such systems, this operation represents an additional cost. Furthermore, these power plants may not be sufficient for such systems, necessitating the inclusion of reserve power plants, which are activated when problems cannot be resolved solely through redispatching and countertrade (Grković, 2024, p. 32). For example, to adapt to the demands and needs of the power system, the dispatchability of wind power plants can be adjusted or combined with pumped storage hydropower technology. This combination is viewed as a unique technological unit. Renewable energy technologies reduce reliance on fossil fuels, supporting environmental sustainability—one of the important outcomes in Society 5.0. The causation within this model flows from green entrepreneurship through technology to social transformation, suggesting that fostering a sustainable entrepreneurial spirit is vital for achieving the high-tech, integrated, and sustainable vision of Society 5.0. It is necessary to strengthen collaborations between business, academia, and government to foster innovation ecosystems that specifically support sustainability. Responses to climate change risks can be broadly grouped into two categories: mitigation measures and comprehensive measures aimed at multiple systemic changes (Petrović, 2022). An additional intervention directly aimed at reducing air pollution could include: (1) reducing the use of low-quality coal and solid fuels in the energy sector; (2) increasing the use of low-emission fuels and renewable energy sources; (3) reducing emissions from industrial sites by applying new technologies; (4) increasing the energy efficiency of buildings; (5) stimulating sustainable urban mobility; (6) improving the air quality monitoring system to ensure that pollution data is more accurate, accessible, personalized, and applicable to citizens; and (7) enhancing general awareness of health risks from air pollution (Petrović, 2022).

4. INNOVATIONS FOR SUSTAINABLE SOLAR ENERGY

Motivational elements are important for introducing innovative technologies into the energy system. An important factor that significantly contributes to sustainability is be public procurement of innovations. Such a model of purchasing energy systems based on the use of solar radiation can be an important social innovation. In essence, this innovation offers several positive effects: (1) possible improvement of health, (2) stimulation of entrepreneurship at the local level; (3) enabling a higher level of resilience; and (4) affirmation and promotion of sustainable development. The process of making decisions about the purchase of innovative technologies on solar energy, and above all, they are evaluated by alternatives based on economic indicators that can minimize the risk. Purchasing innovative technologies for sustainable solar energy systems requires balancing the level of risk and prospective opportunities. A model is being created that is used to collect information in several scientific and technical research projects that are the basis for public procurement of non-solar and solar systems. In this way, the promotion of interoperability between the research community and public agencies is carried out. The possibility of improvement is offered and analyzed for future versions of the model. Potential knowledge gaps in public procurement processes and the importance of conducting systematic research using ontological models and tools can be demonstrated (Pastor R., Leucoma A., Fraga A., 2024, p.1-12). Then, promoting green technologies, stimulating market demand for sustainable solutions, encouraging innovation, supporting the Sustainable Development Goals (SDGs), reducing the environmental footprint, and creating economic opportunities can be key to achieving sustainability goals. By strategically using their purchasing power, governments can catalyze positive change and contribute to building a more sustainable and resilient future (European Commission, Innovation Procurement. 2024). The purchase and use of solar-powered systems can be a form of social innovation, bringing several opportunities to: (a) foster local entrepreneurship by stimulating demand for solar energy products and services, fostering innovation and technology development, and spreading the value of solar energy [European Commission. Employment, 2024]; (savings (directly) by promoting, and close cooperation between solar energy agents and councils' measures and verifies specific risks of air pollution. The public procurement process evaluates "value for money" according to certain criteria. Thus, it ensures transparency, accountability, and compliance with the public interest, given that practitioners are not free from making mistakes [Pastor, Leucoma, Fraga, 2024, p. 1-12]. The decision to purchase innovations contains an assessment of the public the ordering party about the alternatives resulting from economic parameters and risk management assessments, and in particular the "value for money" is evaluated according to certain criteria, thereby ensuring transparency, accountability, and compliance. The public procurement process must comply with national legislation, and the subject of the purchase should have a Technology Readiness Level (TRL) of up to 9. Within this process, some systems engineering practices can be used to adopt the buyer's perspective, as described by the International Council for Systems Engineering (INCOSE) (Pastor, R., Leucoma, A., Fraga, A.). An example of public procurement can be seen in the case of biomass boilers. They can meet most of the heating needs of a large building for their operation. Solar PV can be installed on the roof space of a building using regional subsidies. Green electricity will supplement the total electricity demand, and the replacement of boilers and pumps, i.e. refrigerators, can receive regional subsidies, creating jobs. An example of public procurement can be seen in the case of biomass boilers. They can meet most of the heating needs of a large building for their operation. Solar PV can be installed on the roof space of buildings using regional subsidies. Green electricity will supplement the total electricity demand, and the replacement of boilers and heat pumps, i.e. refrigerators, can receive regional subsidies, creating jobs. When comparing solar thermal systems, it should be borne in mind that cost reductions for industrial purposes depend from country to country. However, on average, only minimal changes were observed from 2013 to 2020. As analyzed by the International Renewable Energy Agency (Irena-Solorio, 2024). In rural areas, access to biofuel or hydrogen allows for the absence of the need to reinforce existing electrical networks to supply electricity to both HVAC systems, and at the regional level, it can be a big dilemma. However, since PPI is a public procurement case, there should be a solar industrial opportunity for the region, justifying the comparison. Since both systems are powered by solar energy, there is a need to evaluate the most suitable for the region. Solar district heating and cooling, despite being an innovative solution, offers some advantages (Pastor, R., Leucoma, A., Fraga, A.P., 2024): a) the system can avoid noise and other health impacts due to centralization and seasonal storage (the cost of the subsystem is not negligible), b) the implementation of this system could create an industry and quality jobs in the operation and maintenance of a permanent renewable central heating and cooling system as in the management of a PV field that does not require renovation of waterproofing (requires preparation and a new training program). Local engineering companies can also participate in the implementation of this innovation. They can promote high-quality jobs, and industrial and rural development, as well as neutralizing problems that arise in the training process in the treatment of small PV roofs, with solar panels. Another alternative solar-powered system could be based on several water-to-water heat pumps and a low-temperature district heating network suitable for places where several systems are maintained, not affected by the lack of specialized experts or service providers, but still offering similar benefits. We present central shallow geothermal and aerothermal energy is also possible and can complement the SSES system, assuming different initial costs and risks. However, for this research it is not necessary to consider all variants of the alternative solar powered system. Compared to other models, different life and cycle costs are found for each system, along with different effects. In terms of risk and opportunity management, a decision hierarchy can be used to evaluate the utility of each decision. Quantitative indicators and qualitative data are the basis for decision-making and the creation of models for comparing and managing the essential performance of the regional plan, and when necessary, starting with pilot projects. The operational model is an integrated cost model based on a theoretical but simplified and unified model for evaluating "value for money". It combines the cost of the cycle of the solution with opportunity cost and explores the relationships between these costs and related assumptions (Pastor, R., Leucoma, A., Fraga, A.P., 2024): 1) the solution is represented by the cost of the life cycle, and assumptions related to the aggregate risks carried by the cost; 2) The opportunity cost of the solution represents the value of the next best alternative that could be implemented for the same life cycle cost of alternative investments, projects or opportunities (using the same energy resource in the same region). The model also includes specific terms and assumptions; 3) there are also strong and weak links between life cycle and cycle cost terms and opportunity cost terms. Then, the impact, other costs, and profits can be presented as public savings, public revenue, or a combination of all of these for a specific program. In modern conditions, certain risks as well as opportunities can be included in the basic model, from the aspect of the probability of realization o realization of the distribution function using the Monte Carlo method (Holtan, 2024). Operationally, model variants can be developed based on different business model cases, such as engineering procurement -construction management, and maintenance or energy services, depending on the focus of public procurement. The program may consider the estimated opportunity cost as the initial investment of the alternative that provides each opportunity. The most important technological innovations or the optimal combination can define different scenarios and purchase alternatives, as in several European countries (Brian Vad M., Kenneth, H., 2024). In real conditions, a cost model is applied for industries, as heat energy consumers. In this model, the opportunity cost is multiplied by the risk of interruption cost is multiplied by the risk of interruption of the energy supply. Assuming this risk could be estimated at 0,5% probability per year, with an impact proportional to the time required to recover normal production plus clain cost and minus unused energy cost (estimated at 0,25% of annual sales, for example). Assuming that the cost of thermal energy is 1,5% of the annual sales for this industry (or maybe 2,25% of the total cost of the industry), the cost of energy has risen by about 11% (from 2,25 % to 2,25% +0,25 of the total annual cost), which is comparable to 12,5% of the integrated cost of energy in the public case (Pastor R., Fraga, A., Lopez-Cozar, L., 2023). In short, the generation of solar heat is rational for a specific region. It provides resilience to the industry, as long as the energy system can cope with such risks, thanks to the system storage and the reasonable reliability provided by the local workforce (perhaps the same one that produces solar goods in the region where the industry is located). The concept contains numerous costs, namely: pre-generated costs, operating costs, maintenance costs, disposal costs, environmental or health savings, local entrepreneurship opportunities, resilience building, contribution to sustainable development goals, environmental or health savings depend on maintenance costs, upfront cost could be the most interesting factor for local entrepreneurship;

5. GREEN ENTREPRENEURSHIP

Green entrepreneurship manifests its activity through ecological management and the application of technological innovations, and all activities are aimed at environmental sustainability. This entrepreneurship, in essence, promotes economic prosperity and social well-being, through the implementation of technological innovations, which solve numerous environmental issues by sustainably improving the quality of life, It includes a spirit that seeks not only financial effects. Entrepreneurship acts as a catalyst for economic growth as it encourages innovation, increases employment levels, and increases all-around economic activity. This activity drives numerous operational and strategic ventures, they have their vision for themselves and other business people, which many thinks is a distant future. On the other hand, the creation of new jobs reduces the unemployment rate and increases the standard of living. Bearing in mind that entrepreneurs find the most efficient models and ways of using all resources, by incorporating modern technology and introducing innovations, there is an increase in productivity, and with the same amount of input, they increase capacities and more effective business results. Entrepreneurial activities, with their sustainable practice, contribute to the preservation of the environment and long-term economic stability. This implies the incorporation of policies that ensure the necessary level of finance (risk capital, favorable loans) and conditions that neutralize bureaucratic restrictions, ensuring easier business. A series of post-transition measures can, to a large extent, improve the entrepreneurial ecosystem, improve the environment with extensive incorporation of innovations, improve the infrastructure and the energy system, and contribute to faster economic development. Entrepreneurship is essential in driving economic growth and development. Such an attitude towards entrepreneurship promotes innovation, increases employment, promotes competition and market regulation, and helps even regional development. Entrepreneurship, in new conditions, has a key role in translating technological innovations into practical solutions that can be integrated into everyday life, influencing the shape and dynamics of society (Ellitan, 2020, str.1-12).Entrepreneurs are considered important drivers of change and they have the task of creating jobs that promote economic growth by using the most modern technologies they can solve huge social needs such as health care, mobility, education, and environmental sustainability (Bartolini et.., 2022, p.113). In the application of the most modern technology, in the post-transition period, entrepreneurs have a big role because they are in a specific position so that they can design new models in business: That model offers a special priority in the experience of use but also in ethical considerations when applying the most modern technology. Under these conditions, entrepreneurship favours and stimulates a culture of innovation and continuous improvement, which is essential for dynamic evolution and an increasingly acceptable business environment, which includes various elements that jointly encourage the growth of innovation. Educational institutions are a fundamental part of this ecosystem, as are research facilities and processes that provide the most important elements of knowledge and numerous innovations that are incorporated into business practice. These institutions carry out fundamental research into new technologies applicable to the energy system that minimize environmental impact (De Felice et all.p.115). Green entrepreneurs address urgent environmental issues such as climate change, pollution, and biodiversity loss. These businesses act as important drivers for the transformation of traditional industries towards greener alternatives, influencing supply chains, manufacturing processes, and consumer habits (Nuringsiih, K., 2020, 117-131). Often promote a circular economy, where waste is minimized and materials are continuously recycled, reducing the overall environmental impact of production and consumption. The sub-elements under green entrepreneurship, such as innovative business models and sustainable resource management, directly feed into the development and adoption of new technologies. Clear guidelines need to be established for the environmental standards that businesses should meet to qualify for government support and public procurement opportunities. Next, it is necessary to raise the level of investment in research and development for new technologies that offer potential breakthroughs in reducing environmental impact, such as advanced materials or renewable energy sources. The numerous actions and strategies should collectively improve the capability of green entrepreneurs to contribute to society 5, driving both economic and environmental sustainability in a manner that inclusive and technologically advanced development. In general, green entrepreneurship exemplifies how businesses can go beyond profit to address societal needs, making significant contributions to environmental sustainability, quality of life improvement, and economic resilience. The continuous evolution of society will require ongoing innovation and adaptation by green entrepreneurs. The challenges of climate change, resource scarcity, and social inequality will necessitate not only a new business model but also a commitment to continuous improvement and ethical considerations. The impact of climate change on human health can be reduced by reducing the greenhouse effect and increasing the use of clean energy and food. Only two EPS thermal power plants in Serbia during 2019 emitted more CO2 than all French, Bulgarian, Polish, and Czech thermal power plants together. The energy sector in Serbia is particularly vulnerable in this regard. More than 90 percent of CO2 emissions in Serbia come from the energy sector and the cost of its restructuring is an issue that will soon gain more importance (Balkan Green Energy News, 2024). Drastic climate changes lead to natural disasters (floods, droughts, torrents, activation of landslides, etc.) that endanger human lives and property. The economic indicators of the reached levels of damages are at an increasingly higher level from year to year. For example, in the period 2022-2024, they amounted to over 950 billion dollars (2).

Green Entrepreneurship acts as the catalyst for innovations in Technology and Sustainability. The sub-elements under green entrepreneurship, such as innovative business models and sustainable resource management, directly feed into the development and adoption of new technologies. The innovations and improvements in Technology and Sustainability fostered by green entrepreneurship then contribute to the realization of Society 5.0.

Table No. 1 Total economic and insured losses in 2023 and 2024, billion $

	2024	2023	annual average	previous average (10 years)
Total economic losses	659	616	22.0%	649
Natural disasters	680	632	28%	635
Losses caused by human error	22	32	-36%	32
Total insured losses	234	208	13.0%	98
Natural disasters	224	112	17.0%	87
Losses due to human error	18	24	-24	12

Source: SWIS Institute, RE 2025.

The SWIS RE Institute has designed an important analysis that if there is no attitude towards changes in policies in the area of climate change, the global total economic damage caused by climate change in 2050 will amount to 11-14% of global economic production, and that it will amount to about 23 trillion dollars (3).

In addition, green enterprises contribute to the resilience of communities by creating sustainable local economies that can withstand environmental changes. They often promote a circular economy, where waste is minimized and materials are continuously recycled, reducing the overall environmental impact of production and consummation. Technological innovation is at thee heart of green entrepreneurship. Advanced technologies such as blockchain are increasingly employed to improve transparency in supply chains, allowing consumers and regulators to track the environmental impact of products from origin to end-of-life.

CONCLUSION

Post-transition in the conditions of a multipolar world is considered a state of new dynamic equilibrium of the system achieved during the transition. This balancing process aims to make it last as long as possible and with a minimum commitment of resources. In comparing the competitiveness of the power system in the post-transition, the concept of the energy-time framework is used, in which the system must produce the same amount of green energy. A special quantitative criterion is introduced to compare different technologies for the production of green electricity, taking into account dispatchability costs. According to this criterion, all analyzed technologies and the level of dispatchability are reduced, and each power plant requires the treatment of new technology. A well-thought-out concept of the competitiveness of the electric power system determines its most effective transitional and post-transitional direction. On the other hand, green entrepreneurs are uniquely positioned to transform traditional directions, by developing and implementing solutions that contribute to the creation of a sustainable economy. The analysis showed that it can offer a comprehensive understanding of how green entrepreneurship can be effectively integrated into the post-transitional direction and development trends of society. It is important to point out the post-transitional importance of fostering an environment that supports green entrepreneurs as key agents of change on the way to realizing the It is important to point out the post-transitional importance of fostering an environment that supports green entrepreneurs as key agents of change on the way to realizing the vision of an adaptable society. The goal of society is also changing as it strives to integrate advanced technologies: artificial intelligence, robotics, high-speed internet, and quality data. All this shapes the way of living to solve numerous challenges in society with a higher level of economic development and a sustainable environment. Green Entrepreneurship acts as the catalyst for innovation in Technology and Sustainability. In the future is necessary to Increase access to green financing options through government grants, green bonds, and venture capital that specifically targets sustainable projects. The green entrepreneurs are not only contributors to economic growth but also essential catalysts for societal transformation. Rewable energy technologies reduce relisance on fossil fuels, supporting environmental sustainability-one of the important oucomes in Society 5.0. The relatioships within the model are not strictly linear but include bi-directional interactions and feedback loops.

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