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Research Article/Araştırma Makalesi

Contributions of green entrepreneurs traders to green economy and problems they face in global climate change

Tarımda yeşil girişimci tacirlerin yeşil ekonomiye katkıları ve küresel iklim değişikliğinde karşılaştıkları sorunlar

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ABSTRACT

The purpose of this research is to investigate the problems faced by green entrepreneur traders working in the agricultural sector in their contributions to the green economy and global climate change, and to offer solutions. The "interview technique", one of the qualitative research methods, was used in the research. In the study, interviews were conducted with 32 farmer entrepreneurs who carry out entrepreneurial activities working in the agricultural sector in The Southeastern Anatolia Region. The research data were analyzed with the MAXQDA 2024 program, and the problems encountered by the interview participants in green entrepreneurship were examined with the word cloud. In the research, entrepreneur farmers stated that farmer entrepreneurs in Turkey should be supported by the state, that large-scale entrepreneurs have been earning more, and that state support for small-scale entrepreneurs in Turkey is very little. They remarked that production planning should be made to prevent waste of surplus production, and that those who sell quality agricultural products increase their earnings more.

Key Words: Agriculture, green economy, entrepreneur traders, MAXQDA, farmer

ÖZ

Bu araştırmanın amacı, tarım sektöründe çalışan yeşil girişimci tacirlerin yeşil ekonomiye ve küresel iklim değişikliğine katkılarında karşılaştıkları sorunları araştırma ve çözümler sunmaktadır. Araştırmada nitel araştırma yöntemlerinden biri olan "mülakat tekniği" kullanılmıştır. Çalışmada Güneydoğu Anadolu Bölgesi'nde tarım sektöründe çalışan girişimcilik faaliyetleri yürüten 32 çiftçi girişimciyle mülakat yapılmıştır. Araştırma verileri MAXQDA 2024 programı ile analiz edilmiş ve mülakat yöntemi ile katılımcıların yeşil girişimcilikte karşılaştıkları sorunlar kelime bulutu ile incelenmiştir. Araştırmada girişimci çiftçiler, Türkiye'de çiftçi girişimcilerin devlet tarafından desteklenmesi gerektiğini, büyük ölçekli girişimcilerin daha çok kazandığını, Türkiye'de küçük ölçekli girişimcilere devlet desteğinin çok az olduğunu, üretim fazlasının israfının önlenmesi için üretim planlaması yapılması gerektiğini, tarımda kaliteli ürün satanların kazançlarının daha çok arttığını belirtmiştir.

Anahtar Kelimeler: Tarım, yeşil ekonomi, girişimci tacirler, MAXQDA, çiftçi

Introduction

Green entrepreneurship farming is innovation, marketing, and business development activities that aim to eliminate the damage that humans have caused to nature (Cheche and Prokopenko, 2024). The difference from traditional farmer entrepreneurship is that the goal of making a profit in green entrepreneurship is combined with the mission of solving environmental problems for example, conscious irrigation in agriculture, the installation of wind turbines and solar panels on agricultural lands, and the recycling of household waste, clothing, and food are green entrepreneurship activities. In Turkey, the incentives given by the Ministry of Trade and Republic of Turkey, Small and Medium Enterprises Development and Support Administration, have led to large-scale investments which aim to contribute to the country's economy through environmental and economic returns.

As technological developments increase, digital waste also increases and the problem of how to dispose of this waste arises. It is thought that “Green and digital transformation”, which is shown as a solution to global warming, will increase efficiency and welfare in international competition. International organizations have acted for climate change, which has emerged as a global problem, has reached dimensions that will cause the extinction of water and energy resources and all living species. International institutions and organizations such as the World Trade Organization, the European Union, the United Nations, and the World Bank, which seek solutions to international disputes, are seeking solutions to events that deeply affect the world. The purpose of this research is to investigate the problems encountered by green entrepreneur traders engaged in agriculture in their contributions to the green economy and global climate change and to offer solutions to these problems. This research will provide information about the sustainable activities of green entrepreneurs engaged in agriculture who contribute to the green economy; the difficulties they face in sustainable green entrepreneurship activities will be examined. Green entrepreneurship is a topic that government institutions, policy makers, researchers and educators focus on due to climate change.

Green entrepreneurship in agriculture

Economic activities carried out without harming nature and people to achieve organizational goals are called green entrepreneurship in agriculture. Farmer entrepreneurs seeking solutions to global climate change compete by trading in accordance with the policies of international organizations. Combining green economy with environmental sustainability supports economic development and the green entrepreneurship school is shown as a target for economic development (Bowen and Kuralbayeva, 2015). Green entrepreneurship in agriculture is becoming an important part of the competition process by encouraging the development and implementation of environmentally friendly business models (Schaltegger and Marcus, 2024). The new farmer entrepreneurship model that aims to develop environmentally friendly products and services is green entrepreneurship. Green farm entrepreneurship refers to the establishment and management of businesses that develop environmentally friendly products and services (York and Venkataraman, 2020). The ability of green entrepreneurs to offer innovative solutions to environmental problems, their sensitivity to ethical business practices and social responsibility are the main factors affecting the success of these initiatives (Nicholls ,2006). Green farm entrepreneurship has impacts on the green economy. These impacts are: innovation and competitiveness, employment opportunities, social awareness and responsibility, impact on policy and regulation. Green entrepreneurships help governments and local authorities develop environmentally friendly policies. The concept of green economy: Climate change directly or indirectly affects 40% of jobs in global market industries. For a business to be considered green entrepreneurship. Sustainable agriculture

development, and green economy sustainable development refers to development seen from a very broad perspective at the country level, rather than a perspective stuck at the organizational or business level (Urdan and Luoma, 2020). The green economy is defined by the United Nations Environment Programme (UNEP) as an economic system that minimizes environmental risks and ecosystem losses to improve human well-being and reduce social inequalities (UNDP, 2015). This ecosystem-based approach is based on three key elements: economic growth, environmental sustainability, and social justice (Hart, 1997).

Growth dynamics of green farm entrepreneurship: There are various factors that affect the success of green entrepreneurship, including access to financial resources, market demand, regulations, and the environmental awareness level of society (Kuckertz and Marcus, 2010).

In the UN Climate Change Conference held in Rio in 1992, the issues of reducing greenhouse gas emissions in OECD member countries, combating climate change, financial technological assistance, and cooperation reporting in accordance with the "common but differentiated responsibilities principle" were discussed. The Global Green Growth Institute was established in 2012 by the Organization for Economic Cooperation and Development, the United Nations Environment Program, and the World Bank (https://www.unep.org/explore-topics). Trade in natural and agricultural goods is an important part of economic growth. In Turkey, the Twelfth Development Plan (2024-2028) includes the following topics: "*to produce environmentally friendly, high value-added products with advanced technology, to achieve the sustainable development goal of green and digital technology in the industry, agriculture and service sectors, to increase efficiency in the medium and long term, to produce value-added products, to achieve "stable growth, strong economy", "competitive production with green and digital transformation", sustainable environment" and macroeconomic goals , etc"*. It is no coincidence that the UN focuses on Turkey's environmental problems. According to UN data, 100-150 million tons of plastic were dumped into the seas and oceans in 2024 because it was costly to dispose of them. These plastics, which affect the lives of people who feed on marine creatures, cause the death of creatures living in the sea and ocean and damage the ecosystem [https://tudav.org]. With the United Nations Framework Convention on Climate Change (UNFCCC), 197 countries have undertaken a responsibility to reduce the amount of greenhouse gas in the atmosphere and solve the climate problem. The Kyoto Protocol was signed in 1997 and aimed to reduce greenhouse gas emissions by 5%. The Paris Agreement planned to keep global warming at 1.5 degrees. It is aimed to eliminate greenhouse gas emissions by 2050. The European Union has presented the European Green Deal with many directives, strategies, and action plans since 2019. The green transformation strategies of the countries include sustainable development, circular economy, and digital transformation beyond environmental policies. The European Union aims to reduce carbon emissions by 50 percent by 2030 and become the world's first climate-neutral continent by 2050 with the Green Deal. The New Green Deal plan in the USA aims to reduce greenhouse gas emissions to net zero by 2030 and meet all the country's electricity demand with clean and renewable energy sources. The EU Green Deal is not only a document to combat climate change but also focuses on green economic growth and transformation. At the United Nations Conference on Environment and Development, The Bruntland Report emphasized that the parameters such as gross national product, pollution level of natural resources, etc. were not sufficient as sustainability indicators, and that indicators of the effects of environmental, demographic variables, and social/development parameters in different sectors should be developed for sustainable development (United Nations, 2024). At the Rio Earth Summit, the sustainable development action plan, which included the titles of "Rio Declaration" and "Agenda 21", was signed by the participating

United Nations member states. In 2020, the EU published Directive (EU) 2024/825, which aims at green transformation with the aim of empowering the consumer with principles (Karakaya, 2019). The “New Consumer Agenda and 2020 Circular Economy Action Plan”, in the EU Official Journal on March 6, 2024.

The concept of sustainable development is one of the concepts that is emphasized a lot in today's literature. The concept is derived from the Latin word "Sustainability", which originates from the Latin word "Sustinere". The use of the concept in dictionaries means to continue, sustain, provide, support, and exist (Onions, 1964). Sustainability farming has three important steps. These are economic, social and environmental or ecological.

Material and Methods

When we typed “Green Entrepreneurship” on Google Scholar on 12.24.2024, as many as 14.100 articles were found. This is an example of how entrepreneurship is a current research topic, and thousands of academic articles have been written in the literature to solve the problems of global climate change. An empirical research model was planned for this study. The universe of this research is Turkey. The Southeastern Anatolia Region was selected as a sample. Farmers who carry out green entrepreneurship activities in the Southeastern Anatolia Region, who adopt the principle of protecting the environment, were selected randomly. A meeting date was determined for the participants, and the information provided by the farmers was transcribed and audio-recorded with their permission. The research questions were implemented with permission from Turna (2023). The scientific research study was initiated after receiving approval from the Ethics Committee of the Harran University Institute of Social Sciences (approval number E-76244175-050.04-392998, dated December 24, 2024The scope of the research, the concepts of green entrepreneurship and green economy, and examples of green entrepreneurship are presented. This article was prepared as part of a joint project with the Siverek Chamber of Commerce and Industry, Balikesir University Faculty of Economics and Administrative Sciences Department of International Trade and Logistics Department of International Finance. The project requested the preparation of this article to develop green agriculture. Thirty-two farmers in the Southeastern Anatolia Region known to be interested in green agriculture were invited to interviews between January 1, 2024, and July 15, 2025. Fifteen farmers from Şanlıurfa, five from Mardin, two from Diyarbakır, eight from Gaziantep, and two from Şırnak participated voluntarily. The project aims to conduct a situation analysis in the field of food production, address the problems of farmers and suppliers working in the field through interview techniques, and propose solutions to these problems. The interviews revealed that farmers face difficulties in production, accessing government incentives, and selling their products due to global climate change. While the GAP project in the Southeastern Anatolia Region partially solved the problems related to irrigation in the region, climate change began to be seen rapidly with the GAP project, and this situation changed the quality and quantity of the product produced. Farmers stated that they need soil analyses to be conducted in the face of climate change and that they need training on the changing climate and technological developments in agriculture (f:32). Farmers demand training from the state on this issue. This research contains valuable information for researchers who will conduct research in the fields of agricultural policies, agricultural economics, and legislation to combat global climate change.

Results and Discussion

32 entrepreneur farmers were interviewed in the research. According to Baltacı, a sample size of 30 people is considered ideal in qualitative research (2018, 235). Therefore, 32 people were interviewed in the study. The problems the interviewees encounter in entrepreneurship are expressed as follows: 55-year-old entrepreneur farmer from Sanliurfa, who participated in the

research, stated that he has been employing 800 farm workers on his land for 30 years. The entrepreneurs stated the following about his green enterprise activities: “Wheat, corn, legumes make farmers happy in the world market. Producing vegetables, selling them domestically and abroad, can harm the seller and the producer, and vegetables can be delayed in logistics services and spoil quickly." “The state should determine what the producer will plant in the field, if the soil and climate are analyzed in cooperation with universities, everyone will know what to plant. If the planning is followed, the product will not be wasted. The state should decide what the farmer will produce. The farmer has no information about what to plant in which region. I plant the product that is supported in which region. For example, if there is no incentive for lentils in this region, I declare that I plant wheat. I plant the product that has the most incentive support. It is not clear whether large farmers or small-scale farmers are desired in agricultural policies in Turkey. Our agricultural policy is not clear on this issue. It is not clear where we will give the stalks of wheat during harvest time.”

A 45-year-old farmer who participated in an interview in Gaziantep stated that natural disasters have increased disaster insurance costs, that global warming has exacerbated environmental problems, that many of the crops from the plants are deformed due to drought, and that the quality and quantity of his crops have decreased. A 44-year-old farmer from Mardin stated that indiscriminate water consumption is increasing daily, crop varieties are decreasing, and that war and frost are increasingly causing damage. Solar energy can be used to generate electricity in the region, but it's currently insufficient. Farmers are being forced into dry farming due to global warming. Using water resources are also becoming increasingly difficult. A nationwide mass mobilization should be declared, and farmers should be educated by the state about global climate change. Instead of incurring losses through trial and error, we should be educated and guided by the state on what to plant. Otherwise, the losses could be significant. In the research conducted by Taşkonlu and Güngör in 2025, it was stated that drought analysis studies are vital to reduce damages and increase food production in sectors affected by drought and that the state allocates a budget for these studies.

The 44-year-old farmer from the Hilvan district of Sanliurfa, who participated in the interview, stated that they didn’t take out insurance due to their religious beliefs, that their almonds froze every time they experienced frost, that the public suffered significant losses, that fertilizer and diesel fuel subsidies were insufficient, that their houses and barns were destroyed by earthquakes, that they had difficulty irrigating due to frequent power outages. He also stated that the quality of their crops had decreased due to drought, that they had to work the fields alone due to rising wages, and that they were not receiving a return on their investment in the fields. Most of the Islamic jurists have a negative view of commercial insurance from an Islamic perspective, while they have a positive view of mutual aid and social insurance. State-supported agricultural insurance in Turkey is not mandatory. Tarsim is not entirely organized by the state, but it is managed through a collaboration between the state and the private sector. Premiums are collected by private companies and transferred to the agricultural insurance pool. Companies also create policies. Half of the premiums are covered by the state to support agriculture and ensure farmers can purchase insurance without difficulty. The state also provides financial support to this pool when the collected premiums fail to cover losses. Insurance companies often avoid agricultural insurance due to the high risks involved in agricultural insurance, or they offer agricultural insurance at very high premiums. By establishing this pool system, the state assumes the risks that insurance companies are hesitant to undertake. It also provides premium support to farmers so they can purchase insurance without difficulty (Güler,2019). The 40-year-old entrepreneur farmer from Sanliurfa, who participated in the research, stated that: The number of bio -energy

facilities in our country should be increased. A bio -energy facility has just been established in the region we are in. Here, after the farmers receive their products, the valuable parts left at the bottom, the stems of the plant, could be used, but these stems are destroyed by burning, causing enormous damage to the environment. There is animal husbandry in the region, animal feces are not used, and while millions of local currencies could be earned and contributed to the national income, fertilizers are thrown into garbage containers. Another participant who is engaged in entrepreneurship farmer activities in the Southeastern Anatolia Region stated that he sends what he produces on his land in the Southeast of Turkey to The United States of America and employs hundreds of people. The participant stated that burning the stalks of the crops after harvesting them is a national loss and that this process harms nature. The green entrepreneur stated the following regarding the research questions: “There is a lot of rocky land in the Southeastern Anatolia Region and the grass and stems in this land are destroyed by burning, damaging the nature. With the state-university collaboration, the state can collect all the stems and fertilizers of farmers in these lands and generate national income. The participant stated, “We also produce electricity with solar energy. However, we want to sell this electrical energy, which we need for 3 months to irrigate our agricultural land, to the state. The state may choose to buy it from us for 9 months. If the state buys the electricity produced by farmers in the Southeastern Anatolia region, farmers would put electrical panels on their fields and produce electricity today. However, since the state does not buy the electricity produced by farmers, farmers produce what they need for three months and use the electric energy for irrigation.” Many universities in Turkey collaborate with the Ministry of Agriculture and Forestry. For example, Harran University, the General Directorate of Agricultural Enterprises, and Kobe University have established collaborations on academic studies, reporting, and cultural matters. A project between Harran University and the GAP Agricultural Research Institute, and the "Agricultural Education and Application Infrastructure Development Project", a joint project between Niğde Ömer Halis Demir University and the KOP Regional Administration, covering infrastructure, personnel, training, R&D, activities, student and farmer training, and agricultural extension services, are just a few examples (https://www.ohu.edu.tr/haber). However, these efforts are expected to be expanded.

The 35-year-old entrepreneur farmer from Sanliurfa, who participated in the research, stated that “I employ 1200 people in my farm. I monitor the products I plant with drones. All products planted by farmers should be analyzed and monitored by the state, and an Agricultural Information System should be established. We should have a system that measures the moisture under the soil. All farmers should have data entries in the Farmer Registration System. The state should follow up on farmers and producers”.

The 43-year-old entrepreneur farmer from Diyarbakir, who participated in the research, stated that “The tax on agricultural earnings should be followed up by the state. We are moving towards whatever the state provides. Farmers should be informed according to Turkey's needs, soil, plant and climate characteristics, and the state should guide farmers in this regard. One of the deficiencies that entrepreneurs in Turkey encounter is the lack of an information management system where logistics companies are integrated with each other. For example, I sent products to Italy. There is no system yet where we can communicate with logistics companies so that trucks do not return empty. The Ministry of Transport and Infrastructure Services should establish a network system covering all operators and ensure that vehicles do not return empty when returning. This is a national loss. Although many companies try to find solutions to the problem among themselves, vehicles mostly return empty, and losses are incurred in logistics”.

The 42-year-old entrepreneur farmers from Diyarbakir who participated in the research, stated

that “Our conscious entrepreneurial farm activity has increased our profits. Modern agriculture is very costly, Soil constantly wants us to invest and gives us back the product as we invest. I have 1 million dollars as capital. After becoming a green entrepreneur, my profit and the quality of my product increased. It became easier for me to expand abroad. The climate of the Southeastern Anatolia Region has changed due to global climate change. The products we used to plant do not grow immediately at harvest time as they did before. We must leave the soil moister than before. We must create artificial humidity. A desert climate is developing in the Southeast.”

45-year-old a green entrepreneur in Diyarbakir expressed his activities and experiences as follows: “Climate change is changing the crop pattern. Due to climate change, analyses are needed to grow the right product in the right place. Faculties of Agriculture in universities should conduct soil analyses and inform farmers. District and district agricultural directorates should educate farmers”.

41-year-old entrepreneur from Sanliurfa, who participated in the research, stated that “The Soil Products Office said, “Plant the flower I will buy it from you.” I planted it, but they did not buy it. I had to leave it to nature as bird food. I plant products that are beneficial to nature. Cereals take nitrogen from the soil and release phosphorus. Legumes do the opposite. I try to clean nature by planting both periodically. Machines can’t do the same job as humans do, for example, when cutting a tomato to dry, the machine cannot cut it as humans do. Machines also need to be developed. If you are going to establish a business, the business should be large and branded. Products suitable for the region should be produced.” Another entrepreneur in Sanliurfa, aged 50, stated that he employs 1000 people in his business and that they export tomatoes to America and European countries. The participant said the following about his green entrepreneurship: “When people in an unknown community hear that I'm a farmer, I feel belittled. My family is well-known. I'm a farmer, a green entrepreneur. I employ thousands and ship tons of products to America and Europe. People look down on farmers. I earn more than a district governor or governor, yet our society harbors prejudices against farmers. Farming and animal husbandry are belittled in this country. We employ Syrian refugees as intermediate workers because young people want desk jobs. Although we want to employ them for high wages, they don't want to become farmers. They become civil servants, earning a salary one-third of a farmer's income, but they don't want to be associated with this profession. Even if agricultural and animal husbandry departments are opened in vocational high schools, students do not go to those high schools and study. Universities have been opened everywhere; however, graduates cannot do the job that intermediate workers can do. We need intermediate workers. Instead of university graduates working at desks, we need people who will go to the field and make analyses, follow animal diseases and developments, analyze the soil, observe the product during the process and know how to harvest, and work on renewable energy. That's why I can't give jobs to those who come in suits and want desk jobs. Our youth doesn’'t want to work in agriculture. The importance of agriculture and green entrepreneurship should be explained to the youth through the press. In Boyraz and Çağlar's (2023) study, "The Unseen and Unheard Sector of Seasonal Agricultural Work: Older Workers," seasonal agricultural workers reported experiencing problems in many areas of life, including nutrition, housing, transportation, healthcare, education, and the economy, due to the conditions in their sector of employment, and that their income is very low. Young people should be employed in agricultural fields. If I were to be born again, I would still be a green entrepreneur and do a job related to soil. Because agriculture will save the world. If it is planted consciously, if it is watered correctly and planted in the right soil, it is a very big source of income. Whatever we plant, no matter how much effort we put into it, the soil gives us more than enough. " 58-year-old a green entrepreneur in Sanliurfa stated that he exports vegetables to America and constantly analyzes the

products that Americans produce. “Americans test whether we use chemicals in natural farming activities and perform quality control during the process, and as long as we work honestly, they are satisfied with us and want to sign a contract for the following year. They have standards. These standards allow us to be green entrepreneurs. When we put fertilizer on the soil, we put natural fertilizer. We produce our own electricity and use this electricity for irrigation. We went to visit an entrepreneurial business in America. A private institution in America was informing the entrepreneur we went to. The state decides which product grows in the soil. Planning should also be done in Turkey. Farmers and all entrepreneur should produce in accordance with this planning. In Turkey, incentives are given to large enterprises. There should be e-incentives for large enterprises. Small enterprises are supported in Turkey. Support should also be given to large enterprises. For example, machinery support. Purchasing machinery is very expensive. However, farmers are forced to buy it,” he said.

45-year-old a green entrepreneur farmer from Diyarbakir said the following about his activities: “Removing too many wild animals or plants to take crops from the land and plant new ones can cause populations to decline and ultimately ecosystem collapse. Clearing land for crops removes essential habitat for wildlife and threatens water, air and soil resources,” he said. 40 years old a green entrepreneur farmer from Diyarbakir stated the following: “My business employs 5 people. With 3 partners who graduated from agricultural engineering, we carried out studies in the fertile lands of Sanliurfa that would not harm the soil or nature. We entered this business to make the agricultural sector profitable, to bring more income, and to combat the climate crisis. Our aim was to protect the soil. Our profit margin did not increase too much with green entrepreneurship activities. Our number of customers did not decrease, we made very large investments. Since we are new in the field, our investment did not yield a very large profit margin yet. However, I see that the number of our customers is gradually increasing,” he said.

55-year-old a green entrepreneur farmer from Sırnak said the following about his entrepreneurial activities: Technology changes every day. Being transformative leader to these changes and being an innovative company, you should always follow technology, increase the range of your products, and be very innovative about what the customer wants and where the world is going. I obtained my capital with my previous savings. The company's growth targets (opening a second branch, opening branches in different cities, increasing the number of employees, increasing product variety, etc.) can be increased according to needs. The profits of companies are related to dynamic marketing and investments you make according to needs. If you are good at what you do; your profit will be good. The number of dealers increases in line with dynamic marketing and needs. Green entrepreneurship, which develops green economy, aims at sustainable environmental protection that contributes to the environment, ensuring that the environment is protected with the least damage in global climate change, and that the sustainability of environmentally friendly green activities is achieved. We had bakery products and many dealerships before. You can give directions to the future with feasibility reports and researches to be done in advance about what people need. We generally work with a dealership system in the production, marketing, and distribution of natural spring water. We have been doing this job for 17 years. We employ 25 people between the ages of 20 and 35. In feasibility studies, Sanliurfa Siverek has a rich resource in terms of natural spring water and also has a very advantageous position in terms of logistics. “Green entrepreneurs should meet their energy needs from renewable sources, avoid activities that create environmental pollution, and avoid harming ecosystem diversity. We receive government support, but it's not enough. High-value-added activities increase the profit margins of producers like us. We want to produce high-value-added products. We need more government support. When we research the issues frequently raised by

green entrepreneur farmers through the Maxqda program, we see that they frequently touch on the following:

Figure 1. Words and Topics Focused on by Green Entrepreneurs

It has been seen that entrepreneurs in the Southeastern Anatolia Region want a network to be established so that the vehicles do not return empty after the delivery of the product, as they need a logistics information system where carriers will communicate with each other in the logistics sector [Maxqda.com, 2024]. In the logistics sector, GPS Tracking determines the location of the vehicles and delivery processes can be monitored. The Data Collection system provides information about the fuel, speed, and engine status data of the vehicles. With mobile networks and special radio frequencies, vehicles can send messages to each other and share current information. Cloud-Based Platform: collects all data. Thanks to artificial intelligence and machine learning of the Internet of Things, algorithms estimate traffic density. Thanks to Blockchain technology, vehicles are prevented from returning empty. Software that provides transparency and increased efficiency IoT (Internet of Things), sensors, communication modules, Cloud computing services are used to store and analyze data securely. Delivery Tracking, Arrival Estimation, Driver Performance, smart transportation, Logistics 4.0, GPS tracking, IoT logistics, Cloud-based logistics solutions, With the growth of the logistics sector in Turkey, various software has been developed for more efficient management of logistics processes. This software is used in many different areas such as tracking shipments, route planning, inventory management. There is software such as Lojisoft, Demsoft: Select Optimus: Capterra in Turkey. Smart and autonomous logistics systems are being developed in the field of artificial intelligence and logistics. However, this software needs to be widespread in the Southeastern Anatolia Region. One of the issues that green entrepreneurs focus on is that manure cannot be utilized and is thrown away. The number of bio energy facilities needs to be increased. The total installed capacity of Biogas in Turkey is 2,414 MW. In 2021, 7,371,770,000 kilowatt-hours of electricity were produced with Biogas, Biomass, Waste Heat and Pyrolytic Oil Power Plants. Table 1 shows the profile of Biogas, Biomass, Waste, Heat and Pyrolytic Oil Power Plants in Turkey.

Table 1 Profile of Biogas Biomass Waste Heat and Pyrolytic Oil Power Plants in Turkey

Number of Registered Switchboards	187
BES Installed Power	2,414MWe Registered: 1,552 MWe
Installed Capacity Ratio:	2.20%
Annual Electricity Production:	~ 6.912 GWh
Production to Consumption Ratio:	2.30%

Source: https://www.enerjiatlasi.com/biyogaz) Accessed Date 12.09.2024.

The Bio Energy Plants established in the Southeastern Anatolia Region and the amount of energy they produce. Entrepreneurs working in the region stated that these plants are not sufficient for the people engaged in animal husbandry. Table 2 shows the profile of Bio Power Plant Southeastern Anatolia Region.

Table 2 Bio Power Plant Southeastern Anatolia Region (Anonymous, 2024)

Gaziantep Solid Waste Biomass Power Plant	Gaziantep	Gazişehir Energy	14 MW
Blue Flag East BES	Mardin	Blue Flag East Energy	12 MW
Sanliurfa Biomass Power Plant	Sanliurfa	BBF Energy	6.24 MW
Gaziantep Landfill Gas	Gaziantep	CEV Energy	5.66 MW
Natural energy Biomass Power Plant	Sanliurfa	Natural Energy Services	5.20 MW
Mardin Biogas Power Plant	Mardin	Sanvar Construction	4.69 MW (9.384 MW)
GASKİ Wastewater Biogas Power Plant	Gaziantep	Gaziantep Metropolitan Municipality	1.66 MW

Source: https://www.enerjiatlasi.com/biyogaz) Accessed Date 12.09.2024.

Green entrepreneur farmer participants suggested opening agriculture and animal husbandry departments at universities, avoiding prejudice towards the public, not underestimating the farming profession, the government collaborating with universities to protect nature, and providing incentives for small and large businesses. The entrepreneurs stated their demands for lower agricultural income taxes, purchasing electricity produced by farmers, training farmers, conducting regional analyses, and supporting those involved in agriculture in the face of climate change, training entrepreneurs on the need for climate- and soil-appropriate agriculture, maintaining communication with farmers, providing entrepreneurs with information about their areas of activity, bringing investors and entrepreneurs together through the chamber of commerce, and disclosing agricultural policies to producers and entrepreneurs in advance and maintaining consistency on this matter.

Conclusion

The activities of green entrepreneur farmers stem from social responsibility and the desire to solve a need. When we examine the results of our research, it is seen that the demands of green farmers entrepreneurs are almost the same as the EU green agreement. This research was conducted through interviews with a small group of farmers. Farmers, who are experiencing difficulties accessing water and energy resources due to global climate change, are facing difficulties cultivating the land and need government support and training to cope with these challenges. The support provided by the Ministry of Agriculture and Forestry to farmers are conveyed to farmers, and farmers who apply benefit from these supports. The damage humans inflict on agricultural land, indiscriminate construction, forest fires, gas released into the atmosphere, and the harmful effects of technological and industrial waste create a greenhouse effect, and the Earth's surface temperature is rising. CO2 emissions and the burning of fossil fuels negatively impact global climate change, making it necessary to revise agricultural economics, energy, and environmental policies.

Scientists state in their reports that measures must be taken against environmental disasters within 10 years (Karaduran and Atak, 2024). Farmers participating in our research also stated that the agricultural economy is experiencing stagnation and decline, and that they are unable to achieve the desired yields from their agricultural products due to desertification, climate change, fires, and disasters and can't be cultivated using traditional methods as before. Production should be supported by government support, and the

products produced through government support should be sold. Future research could contribute to literature by conducting supply chain research with a larger group of farmers. Green entrepreneur farmers need state support in many areas from energy to transportation, from agriculture to taxation, as specified in the EU agreement. It includes the monitoring of agricultural areas by the state, the evaluation of animal manure, the evaluation of agricultural lands with zero waste, the purchase of produced energy from the producer by the state, and the monitoring of modern machines and technology by entrepreneurs. The decrease in water resources in the world, the increase in epidemics due to war, the damage caused by technological waste to the environment and human health, the increasing need for drinking water and food products, the need for environmentally friendly practices for food products cause us to search for new resources. At this point, the concepts of green economy and green entrepreneurship come to the fore. While green economy refers to a growth method that targets environmental sustainability; green entrepreneurship refers to the development and implementation of innovative business models that adopt this method. During Turkey's accession process to the European Union, production quotas imposed on Turkey by the European Union should be abolished, and common agricultural policies should be pursued with the EU. Agricultural agreements with the World Trade Organization should include effective measures to prevent inequalities in foreign trade. Urgent measures should be taken to increase productivity, ensure food safety, improve producer and consumer quality, modernize agricultural machinery, and build and increase the capacity of factories to process the produced products for Turkey's full EU membership. The state, private sector, and universities should collaborate to increase producer-farmer training, agricultural and trade incentives, and promote products in foreign markets and organize fairs. Green economy is an economic approach that encourages the reduction of environmental risks and the sustainable use of natural resources. In this context, elements such as less carbon emission, the use of clean energy sources and the protection of ecosystem services are taken into consideration. This economic model not only provides environmental benefits but also supports employment creation and economic growth. Green entrepreneurship is an entrepreneurial farm model that aims to develop environmentally friendly products and services. Green entrepreneur farmers aim to both make a profit and reduce their environmental impact by developing innovative ideas and using natural resources efficiently. In this context, initiatives operating in areas such as energy efficiency, waste management and sustainable agriculture stand out. Green economy and green entrepreneurship are complementary concepts. In green entrepreneurship, the farmer makes significant contributions to the growth and sustainability of the green economy. Therefore, the green entrepreneurship farmer is not only a business model but also a dynamic force that will shape the economic farm structure of the future. For a sustainable world, supporting and encouraging green entrepreneur farmers are of critical importance for the future of our society.

Conflict of Interest

We declare that there are no conflicts of interest regarding the publication of this article.

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Ethical Approval Certificate

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Author's Contributions

The authors declared that they contributed to the article equally.

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