



The Main Directions of the Green Economy in the Agricultural Sector of the Republic of Uzbekistan

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Abstract

One of the key areas of the green economy in Uzbekistan's agriculture is the development of organic farming. The purpose of the article is to develop organic agriculture based on the use of natural methods of crop cultivation, the rejection of chemical fertilizers and pesticides, and the use of biological plant protection products. At the same time, in connection with the "green" economy, which is one of the most pressing tasks not only in our country, but also in the world economy, work is underway to develop the green economy in our country and in the world, as well as to analyze international cooperation.

Keywords: Water, Agriculture; Resources; Economics; Energy conservation; International cooperation; Sustainable development; Green economy; Green technologies; Sustainable development goals

1. Introduction

The purpose of the scientific article is to analyze the theoretical foundations of the formation and development of the concept of "green economy" and international programs for the protection and preservation of the environment, as well as modern processes of agricultural land degradation in our country, agriculture in Uzbekistan is defining the need to use the principles of a "green economy" for sustainable development.

2. Literature review

In scientific literature, green economics is considered as a multidisciplinary field covering environmental, economic and social spheres. Research by authors such as R. Costanza, G. Daly, N. Stern, as well as reports by international organizations (World Bank, UNEP, OECD) emphasize the importance of greening economic policy and creating a new growth model based on low-carbon technologies and sustainable environmental management. [1].

3. Methodology

Comparative and economic analysis, analysis of the results of economic comparison, analysis and generalization analysis were used in the research work.

4. Results

In recent years, Uzbekistan has seen an increase in the number of certified organic farms. According to the Ministry of Agriculture, the area of land devoted to organic farming increased by 30% in 2023 compared to previous years. Organic production is developing particularly actively in the Fergana, Samarkand and Kashkadarya regions.

Table 1: Principles of sustainable agriculture

Метод Method	Water Consumption	Efficiency
Traditional	High	Low
Drip	Low	High
Sprinkler	Medium	

Uzbekistan's water resources are under significant pressure. Agriculture accounts for over 80% of water consumption, and much of this water is lost due to inefficient irrigation methods. Therefore, the implementation of water-saving technologies is an important aspect of the green economy.

Key water conservation methods in agriculture in Uzbekistan:

- Drip irrigation – reduces water consumption by 40-60% and increases crop yields by 20-30%.
- Sprinkler irrigation – reduces water evaporation and ensures uniform soil moisture.
- Use of water-efficient plant varieties adapted to arid conditions.

The government actively supports farmers implementing water-saving technologies by providing subsidies and loans for equipment purchases. Under the "Drip Irrigation for Every Family" program, thousands of farms received financial assistance to transition to new irrigation methods.

Energy consumption in Uzbekistan's agriculture remains high, resulting in significant costs and negative environmental impacts. Therefore, the use of renewable energy sources (RES) in the agricultural sector is becoming an important part of a green economy.

Key areas:

- Solar panels for irrigation and greenhouse power supply.
- Biogas plants that convert livestock waste into energy.
- Wind energy, used in some rural areas.

The government of Uzbekistan provides support to farmers implementing renewable energy sources.

In particular, there is a program to subsidize the purchase of solar panels for agricultural enterprises.

A circular economy in Uzbekistan's agriculture involves recycling waste and implementing zero-waste technologies. The country generates over 10 million tons of agricultural waste annually, much of which is incinerated, causing environmental damage.

Promising areas of waste recycling:

- Production of biofertilizers from organic residues.
- Composting plant waste to improve soil.
- Use of agricultural waste in construction (e.g., compressed straw for home insulation).

In recent years, waste recycling plants have been opening in Uzbekistan, contributing to the development of a circular economy and reducing environmental impacts. [2].

Organic (ecological, biological) agriculture is a method of farming that consciously minimizes the use of synthetic fertilizers, pesticides, plant growth regulators, and feed additives. On the contrary, to increase crop yields, provide cultivated plants with mineral nutrients, and combat pests and weeds, crop rotation, organic fertilizers (manure, compost, crop residues, green manure, etc.), various soil cultivation methods, etc. are increasingly used.

The principles of organic farming are currently considered the foundation for the development of this industry worldwide.

1. The principle of health – organic agriculture should maintain and improve the health of soil, plants, animals, people, and the planet as a single, indivisible whole.
2. The principle of ecology - organic agriculture should be based on the principles of the existence of natural ecological systems and cycles, working, coexisting with them and supporting them.
3. The principle of fairness - organic agriculture must be built on relationships that ensure fairness in relation to the overall environment and life opportunities.
4. The principle of care - organic agriculture must be managed in a precautionary and responsible manner to protect the health and well-being of present and future generations and the environment.

Organic farming methods incorporate the principles of biological synergy:

- avoiding the use of fungicides, herbicides, artificial fertilizers, and antibiotics;
- using animal and plant waste as fertilizer;
- crop rotation for soil restoration;
- application of biological plant protection methods;
- closed-loop agriculture-livestock production (crop production – feed, livestock production – fertilizer).

Fast-dissolving mineral fertilizers and pesticides are prohibited (in “exceptional cases” with a high risk of crop loss, the use of synthetic chemical products is permitted).

In animal husbandry, the hallmark of organic farming is “species-appropriate animal housing”: the refusal of year-round stall housing, mandatory grazing of livestock, non-use of synthetic feed additives and hormones, and a ban on the preventive use of antibiotics.

Organic farming uses cropland less efficiently and requires increasing it, for example through deforestation; according to a study conducted at Chalmers University of Technology, organic farming contributes more to global warming than conventional farming.

Certified organic foods tend to be more expensive than conventional foods for a number of reasons, including the higher per-unit costs of growing organic produce.

Research from the University of Minnesota shows that the risk of contracting salmonella from organically grown vegetables is three to five times higher than the risk of contracting salmonella from conventional vegetables, since manure used as fertilizer in organic farms is a favorable environment for the proliferation of pathogenic microorganisms.

5. Discussion

Uzbekistan is implementing a number of strategies and programs aimed at developing sustainable agriculture based on the principles of a green economy.

In recent years, the Uzbek government has been actively implementing measures to develop environmentally friendly agricultural production. The key documents regulating sustainable agricultural development are:

- Strategy for the transition to a green economy (2019–2030) – provides for a reduction in water consumption and the introduction of energy-efficient technologies.
- The State Program for the Development of Organic Agriculture (2022–2026) – aims to support organic producers.
- Irrigation systems modernization program – financed by the state budget and international organizations.

To stimulate sustainable agriculture, the state provides:

- Subsidies for drip irrigation (up to 50% of the equipment cost is covered by the state).
- Preferential loans for the purchase of solar panels for agricultural enterprises.

- Grants for the development of organic farming, provided to farmers using environmentally friendly production methods. [3].

Uzbekistan actively cooperates with international organizations:

- FAO (Food and Agriculture Organization of the United Nations) – supports projects for sustainable agricultural development.
- The World Bank finances projects to modernize irrigation systems.

Developing sustainable agriculture based on a green economy is an important strategic objective for Uzbekistan. The introduction of water-saving technologies, organic farming, renewable energy sources, and waste recycling will significantly improve the environmental sustainability of the agricultural sector.

Despite existing challenges, government support, international cooperation, and growing interest among farmers in environmentally friendly technologies are creating favorable conditions for the transition to sustainable agriculture.

6. Conclusion

For further development, it is necessary to:

1. Expand government subsidy programs for green technologies.
2. Develop educational initiatives and information campaigns.
3. Improve farmers' access to credit and investment.
4. Actively implement advanced global technologies in agriculture.

Thus, the transition to sustainable agricultural production based on a green economy will not only preserve natural resources but also increase Uzbekistan's competitiveness in the global agricultural market. [4].

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