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METHODOLOGY OF TEACHING ENERGY SUPPLY IN AGRICULTURE AND WATER RESOURCES (NATIONAL AND FOREIGN EXPERIENCE)

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Abstract
In the following article the methodics of teaching the issues of energy supplies in the agriculture and irrigation. The new innovational technologies of supply of energy are discussed. The proposals are given based on the scales of national and international experience.

Keywords: the innovational technologies of teaching the syllabus of energetic, supply of electric energy, "Smart water" technologies, water sector, project "Modernization of agricultural sector", Vestas Wind Systems A/S, Siemens Gamensa Renewable Energy A/S, usage of electric energy in pumping stations.

Introduction

The Republic of Uzbekistan aims to introduce drip irrigation technology on 430,000 hectares in the near future. Through this, 3 bln. meters3 of water is targeted. The contribution of the World Bank is invaluable. First of all, this project will ensure the rational use of electricity resources at pumping stations.

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According to the International Energy Agency (IEA), by 2030, more than 30% of the world's energy balance will be powered by renewable energy resources. To achieve this goal, investments in the sector will be at least 400 billion soums. Should be USD [1].

On December 11, 2020, the President adopted a resolution "On measures to further accelerate the introduction of water-saving technologies in agriculture." Plans and programs have been identified in each region and district for the tasks set out in this meeting and resolution [2].

The main part. The methodology of teaching energy supply in agriculture and water management, as well as the transition of national and foreign experience on the basis of modern pedagogical technologies should be based on the following legal and regulatory documents:

According to the Decree of the President of the Republic of Uzbekistan "On organizational measures to radically improve the system of public administration of agriculture and water management" dated February 12, 2018 No PF-5330, the Ministry of Agriculture and Water Resources was established on the basis of the Ministry of Agriculture and Water Resources. According to the Resolution of the President of the Republic of Uzbekistan dated April 17, 2018 No PP-3672 "On the organization of the Ministry of Water Resources of the Republic of Uzbekistan" organizational structure of the Ministry of Water Resources, limited number of management staff structures of organizations and a limited number of management staff were approved. In accordance with the Resolution of the Cabinet of Ministers "On approval of regulations governing the activities of the Ministry of Water Resources of the Republic of Uzbekistan" dated July 3, 2018 No 500, the Regulation on the Ministry of Water Resources of the Republic of Uzbekistan was approved. According to the Resolution of the President of the Republic of Uzbekistan "On measures to further improve the water resources management system" dated October 9, 2019 No PP-4486, further improvement of water management and water management in the country introduction of market principles and mechanisms in the field of management, implementation of priorities in the development of science in this area.

Obsolete electric motors at 2,100 pumping stations will be replaced with new ones; An online power consumption monitoring system will be introduced at 1,687 pumping stations; The existing units at 1750 pump stations will be replaced with energy-saving pump units.

In order to prevent corruption in the water management system, an action plan for the widespread introduction of digital technologies was approved, in which the following tasks were identified: ensuring that cases of concealment are not allowed; - Ensuring the supply of water by water management workers on the basis of an application with a contract in the water exchange; -creation of a single interagency information system for the development of address lists and coordination with relevant ministries; - Development of a transparent mechanism for forming a list of irrigation and reclamation facilities to be included in the address list of design and survey works; - overhaul of observation wells to assess the reclamation status of irrigated lands and automatic real-time high-precision online monitoring of groundwater levels, temperatures and salinity; - Introduction of a single electronic system for accounting of electricity consumed at pumping stations and control over repair work; -improvement of recruitment, appointment and dismissal in the ministry system; -Organization of online monitoring of their operation by means of remote control (GPS) devices for the efficient and

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rational use of machinery and vehicles at the expense of system organizations; - Introduction of a mechanism for online electronic monitoring of cash flows by the Ministry on the management of budget funds in the system organizations (salaries and equivalent payments, inventory, work, services, etc.), etc.

- With the financial support of the Swiss Agency for Development and Cooperation, a computer program was developed to develop a water use plan and improve its calculation.
- Due to the installation of energy-saving technologies at pumping stations, an average of 4-5 million tons per year. kWh of electricity is saved.
- 219 electric motors will be replaced in 2020, 573 in 2021–2022 and 2,100 by 2030. As a result, 7.897 million kWh in 2020 and 18.036 million kWh in 2021-2022. hours, a total of 25.933 mln. kWh of electricity is expected to be saved.
- 163 pumps will be replaced in 2020, 344 in 2021–2022 and 1,750 by 2030. As a result, 5.442 million kWh in 2020, 10.933 million kWh in 2021-2022, a total of 16.375 million. kWh of electricity.

The Ministry of Water Resources of Uzbekistan and New Zealand's Sustainable Energy Services International signed a memorandum of understanding on November 25, 2019 on the introduction of public-private partnership at pumping stations. The memorandum defines the tasks related to the management of pumping stations in the water management system on the basis of public-private partnership. It is planned to introduce public-private partnerships at 50 water facilities in the water management system located in 22 districts of the country, and a list of 25 pumping stations has been approved on the terms of public-private partnership.

https://t.me/TGminwater, https://t.me/tomchiguruhi and other groups created to cover water management activities on the social network, the total number of members exceeded 7,000.

From 2021, the state will provide subsidies to agricultural producers to cover part of the costs of introducing water-saving technologies in the cultivation of agricultural products. According to the resolution, by December 1, 2021, the Ministry of Water Resources will launch a single electronic information system in the country, which will account for electricity consumption and water output at 1688 pumping stations. From the 2021/2022 academic year, a system of training, retraining and advanced training on the introduction and use of water-saving technologies will be introduced in vocational education institutions [3].

According to the Decree of the President of the Republic of Uzbekistan dated June 17, PF-5472 "On measures for the efficient use of land and water resources in agriculture" The Ministry of Water Resources, the Ministry of Information Technologies and Communications, the Ministry of Innovative Development, and the relevant ministries and departments are responsible for expanding the scope of the electronic system [4].

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