

THE CONSTRUCTION OF HYDROTECHNICAL FACILITIES AND THE ROLE OF HYDROELECTRIC POWER STATIONS IN WORLD LIFE

Azimov Azizbek Usmon o'g'li

Student, Tashkent Institute of Irrigation and Agricultural Mechanization Engineers

National Research University

Faculty of: Hidrotechnical Construction

azimov09011998@gmail.com

ABSTRACT

Construction of hydrotechnical objects can have a significant impact on the surrounding environment, including disruption of habitats, alteration of water flow patterns, and disturbance to aquatic ecosystems. Ensuring proper environmental assessments and mitigation measures are in place is crucial to minimize these impacts. Hydropower plants generate electricity by harnessing the power of flowing or falling water. They provide a reliable and renewable source of energy, contributing to the global energy mix and reducing dependence on fossil fuels. Hydropower is considered a clean energy source as it produces minimal greenhouse gas emissions during operation.

KEYWORDS: *hydraulic engineering, Ges, construction.*

INTRODUCTION: Climate change resilience: Hydrotechnical objects, such as dams and levees, need to be designed and constructed with consideration for the potential impacts of climate change, including increased flood risks and changing precipitation patterns. Ensuring that these structures are resilient to future climate scenarios is essential for their long-term effectiveness.

Cost and funding: Construction of hydrotechnical objects can be expensive, requiring substantial financial resources. Securing adequate funding for these projects

can be a challenge, especially in regions with limited financial resources or competing priorities. Finding innovative financing mechanisms and cost-effective construction techniques is important to ensure the successful completion of these projects.

Stakeholder engagement and community acceptance: Construction of hydrotechnical objects often involves multiple stakeholders, including local communities, indigenous groups, and government agencies. Engaging these stakeholders throughout the planning and construction process is crucial to address their concerns, ensure transparency, and build community acceptance. Failure to involve stakeholders can lead to conflicts and delays in project implementation.

Technical challenges: The construction of hydrotechnical objects can present various technical challenges, such as dealing with complex geology, designing structures to withstand extreme weather events, and ensuring long-term maintenance and operation. Overcoming these technical challenges requires skilled engineering expertise and the use of advanced technologies.

Resettlement and displacement: In some cases, the construction of hydrotechnical objects may require the resettlement or displacement of local communities. This can lead to social and economic disruptions for affected populations. Implementing adequate resettlement plans, providing compensation and livelihood restoration measures, and ensuring the participation of affected communities in decision-making processes are important to address these issues.

Maintenance and operation: Hydrotechnical objects require regular maintenance and operation to ensure their long-term functionality and safety. However, inadequate funding, lack of skilled personnel, and limited institutional capacity can pose challenges in maintaining and operating these structures effectively. Developing robust maintenance and operation plans, investing in capacity building, and establishing sustainable financing mechanisms are essential to address these challenges.

Hydropower plants play a significant role in the world's energy production and have several impacts on various aspects of life.

Climate change mitigation: Hydropower plants help mitigate climate change by reducing greenhouse gas emissions. They do not release carbon dioxide or other pollutants associated with fossil fuel-based power generation. By replacing fossil fuel-based power plants, hydropower helps to reduce overall emissions and combat climate change.

Economic development: Hydropower projects often require significant investments, which can stimulate economic development in the surrounding areas. Construction and operation of hydropower plants create job opportunities, attract investments, and contribute to local economies.

Additionally, hydropower plants provide a stable and affordable source of electricity, supporting industrial growth and improving living standards.

Water resource management: Hydropower plants rely on water resources for their operation. This requires effective water resource management to ensure sufficient water supply for both energy generation and other uses, such as irrigation, drinking water supply, and ecosystem maintenance. Proper coordination between hydropower operators and water management authorities is crucial to balance competing water demands.

Environmental impacts: While hydropower is considered a renewable energy source, the construction and operation of hydropower plants can have environmental impacts. Large dams can alter river ecosystems, disrupt fish migration patterns, and impact downstream water quality. It is important to implement proper environmental assessments, mitigation measures, and fish passage systems to minimize these impacts and maintain ecological balance.

Social considerations: The construction of hydropower plants can lead to the resettlement or displacement of local communities. This can have social and cultural implications, including loss of livelihoods, disruption of traditional practices, and changes in community dynamics. Ensuring proper consultation, participation, and compensation for affected communities is essential to address these social considerations and promote sustainable development.

Energy security and diversification: Hydropower provides a reliable and predictable source of electricity, contributing to energy security. It reduces dependence on imported fossil fuels and diversifies the energy mix, reducing vulnerability to price fluctuations and supply disruptions. Hydropower plants can also provide grid stability and support the integration of intermittent renewable energy sources, such as wind and solar, by providing a flexible and controllable source of electricity.

CONCLUSION: In general, hydroelectric facilities play an important role in the global energy landscape, providing clean, renewable and reliable electricity, while contributing to economic development and climate change mitigation. However, it is important to carefully consider and address the environmental, social and economic impacts associated with hydropower projects to ensure their sustainability and maximize their benefits.

REFERENCES:

1. Badalov.A.S, Uralov.B.R, Zenkova.V.A, Shaazizov F.Sh. “Gidroelektrostansiyalar”
2. O‘.Husanxodjayev, I.Ahmedov, X.Fayziyev, Sh.Boymatov “Gidrotexnika qurilishini tashkil etish va rejalashtirish”