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NOVEL SOLUTIONS FOR THE PROBLEM OF ALTERNATIVE SOURCES OF ENERGY

Inogamov Said Alimovich, Yeoju Technical Institute in Tashkent, Uzbekistan
said.inogamov@gmail.com

Abstract

The article considers the current situation in the Uzbek energy sector. The lack of natural gas supply pushed Uzbekistan's population towards other means of heating their homes as well as cooking. Some renewable energy solutions (biofuel) to mitigate such problems proposes in the article.

Keywords: renewable energy, biofuel, heating system, solar cells

MUQOBIL ENERGIYA MANBAALARI MUAMMOLARINING YANGI YECHIMLARI

Inogamov Said Alimovich, Toshkent shahridagi Yeoju texnika instituti
said.inogamov@gmail.com

Annotatsiya

Maqolada O‘zbekiston energetika sohasidagi hozirgi vaziyat ko‘rib chiqiladi. Tabiiy gaz ta’minotining yo‘qligi O‘zbekiston aholisini ovqat pishirish bilan birga uylarini isitishning boshqa usullariga ham majbur qildi. Maqolada bunday muammolarni yumshatish uchun qayta tiklanadigan energiyaning ba'zi echimlari (biologik yoqilg'i) taklif etiladi/

Kalit so'zlar: muqobil energiya, bio yoqilg’I, isitish tizimi, quyosh panelleri.

НОВЫЕ РЕШЕНИЯ ПРОБЛЕМЫ АЛЬТЕРНАТИВНЫХ ИСТОЧНИКОВ ЭНЕРГИИ

Иногамов Саид Алимович, Технический институт Ёджу в г.Ташкенте
said.inogamov@gmail.com

Аннотация.

В статье рассматривается текущая ситуация в узбекской энергетике. Отсутствие поставок природного газа подтолкнуло население Узбекистана к использованию других средств отопления своих домов, а также приготовления пищи. Некоторые решения в области возобновляемых источников энергии (биотопливо) для смягчения подобных проблем предлагаются в статье.

Ключевые слова: альтернативная энергия, биотопливо, системы отопления, сольнечные панели.

As the most populous country in Central Asia (as of October 1, 2019, 33.7 million people: 50.5% - urban and 49.5% - rural) [1], Uzbekistan experienced rapid rates of urbanization over the past decade. Starting from 2009, nearly 966 rural settlements nationwide with over 4 million residents, evolved into urban townships and suburbs, pushing the overall urbanization rate sharply from 35.8% to 51.7% [2]. In the rural areas, the access to electricity doesn’t exceed 78%, while the access to natural gas is 67% [3].

Almost 40% of the nation’s available generating capacity is operating past its retirement and decommissioning point, leading to frequent power outages, especially in rural areas. It is not surprising that development of renewable energy resources became a national priority in an effort to diversify the country's energy supply. However, the analysis of electricity generation projects currently in development shows that about 60% of those planned and under construction are still based on the use of natural gas [4]. Additionally, the export of natural gas remains a substantial revenue source in the country’s foreign trade. Obviously, the solution to this demand should be a sustained development of energy efficient methods of energy resources distribution in all spheres of Uzbekistan's economy, including residential.

At the same time, the national economy features a low level of inclusiveness, accompanied by a poor quality of human capital, inequality in the distribution of generated income, inadequate social welfare, dilapidated scientific and technological potential, poor utilization and eminent depletion of natural resources [5]. In May 2020,

more than 1.7 million of officially employed residents of the republic (42.6% of the total number of officially registered workforce) received a monthly income of less than one million Uzbek soums [6]. In the meantime, the cost of one cubic meter of natural gas sold to households equipped with gas meters is 380 soums, and 1 kg of liquefied gas sold to households for residential consumption is 1120 soums, - the rates burdensomely expensive for low-income strata of Uzbekistan’s population.

Considering that a significant share of Uzbekistan’s territory is in desert and semi-desert zones, it is not only feasible, but imperative to foster the emergence of infrastructure that provides the rural population with fuel, such as wood combustion briquettes used for cooking and indoor heating. The following efforts should receive a high priority:

1. Encourage plantation of fast-growing species from native, drought-tolerant tree species to absorb carbon dioxide, thereby reducing greenhouse gas emissions, while simultaneously slowing down the desertification;
2. Identify the stakeholders of this process to ensure effective, measurable, and fair management of the projects;
3. Through the public-private partnerships business model to organize the production of fuel briquettes and energy-efficient stoves using local supply, to better match the principles of a resource-efficient economy and contribute to the "greening" of the country's economy as a whole, the creation of new jobs and the bump in the living standard among of the rural population.

Considering that this proposal is a relatively new solution to Uzbekistan’s endeavor in developing alternative sources of energy, there is a possibility to initiate grant projects with the budget of $1M and above, subject to the three UN Rio Conventions (UN Framework Convention on Climate Change, UN Convention to Combat Desertification and OUU Convention on Biodiversity Conservation). As the funding for such projects is feasible through resources of the Global Environment Facility, the Green Climate Fund, etc. the Yeoju Technical Institute finds itself in an enviable position to emerge as a leading expert and executive organization providing pivotal coordination and technical validation for such projects.

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