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LEGAL POLICY AND INFORMATION PRIVACY ON RENEWABLE ENERGY SECTOR IN UZBEKISTAN

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Annotation

The writing covers geographic capabilities of Uzbekistan and its legislation on this area, plus information privacy on this sector. For example, solar power in Central Asia and what laws exist in order to regulate and promote more efficiently. As digital world expands, the crucial need for information privacy and security also has been becoming vital day by day. In addition, the crucial role of public-private partnership so that we are able to use our full potential to utilize the natural energy sources to market with it and at the same time, saving it for our future generations.

Key words: energy, solar, wind, public-private partnership, information privacy, cybersecurity, legislation, green economy, privacy impact assessment

Introduction

The hot climate of Uzbekistan allows it to use solar energy opportunities in this region, first of all. In addition, more opportunities also exist for hydropower, including pumped storage, but climate change and water use primarily for irrigation may limit this potential. So far, in terms of improving the current infrastructure on energy segment, especially alternative ones, a number of researches have been created and conferences conducted. However, none of them did focus on some root barriers of this market which is truly main body of whole economy. Because as Margaret Thatcher said at the State of The World Forum in 1995[1]: "Having the great resources does not make the country rich. Simply because it requires the framework, economy to create wealth from these resources". By remembering this statement, I

[1] https://www.youtube.com/watch?v=4_OWyr0C-5s

will look at the framework of our country from the very perspective of "an ability to create wealth".

Generally, we can say we have the potential for all energy sources, from solar to bioenergy. This potential could help Uzbekistan become a renewable energy exporter in the region and this figure has been growing[2]. Achieving these goals requires formulating a holistic and ambitious strategic vision and coordinated energetic actions including attraction of large investment. Therefore, we have chosen to focus on the new frontier of the energy: renewable energy.

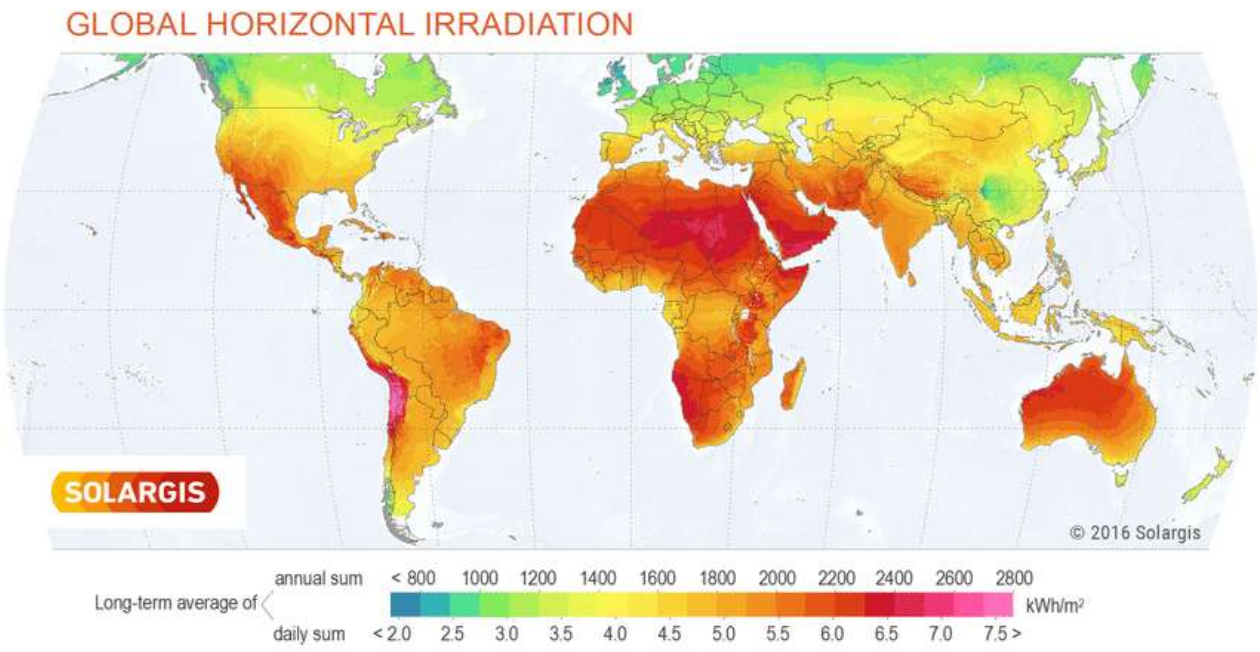
As the energy industry embraces swift digital change, the gathering and application of sensitive data have become central to its functioning. Technologies like smart grids and energy trading platforms depend on digital systems that amass extensive consumer and operational information. Yet, this shift toward digitalization brings notable privacy challenges. Ensuring information privacy within energy regulation law is crucial for safeguarding consumers, preserving market fairness, and protecting vital infrastructure.

Solar potential of Uzbekistan

The national anthem of Uzbekistan also begins with the word of "sunny". That is a significant factor in measuring the energy potential of Uzbekistan in Central Asia. In fact, in comparison with several Asian countries, Uzbekistan's position is in the middle in terms of solar energy capability) Uzbekistan is sunny and has large territories suitable for solar power plants. The best resources are in the south of the country, in the Bukhara, Samarkand and Qarshi regions. Economic potential depends also on the capacity of Uzbekistan's electricity system to integrate the variable solar power output and to export its renewable energy in the form of electricity or potentially green hydrogen. According to the information of

[2] https://www.iea.org/reports/solar-energy-policy-in-uzbekistan-a-roadmap/context-of-renewable-energy-in-uzbekistan

International Energy Agency (2022), direct normal irradiance (DNI) relevant for concentrating solar power (CSP) and solar thermal technologies is 4.44 kWh/m2/day in the median value (ranging from 3.03 kWh/m2 to 5.27 kWh/m2 per day). As a comparison, Spain and the United States, the major markets for CSP globally, show slightly higher median DNI figures (5.34 kWh/m2/day in Spain and 4.76 kWh/m2/day in the United States), but these are on par with values observed in the southern regions of Uzbekistan[3]. In other words, it is hard to image Uzbekistan without sunny days like other Asian countries. Therefore, we believe that solar potential of Uzbekistan will allows us to maintain the whole country with this energy, even to export to other countries as well.



Source: https://globalsolaratlas.info/map?c=19.611566,-13.28908,2

By looking at this temperature-map of the world, we can easily realize that the potential of solar energy of Uzbekistan is partially significant than other countries of the world. In fact, “Uzbekistan has an average of 330 sunny days a year and the potential for solar energy is huge” says the euronews.com research[4].

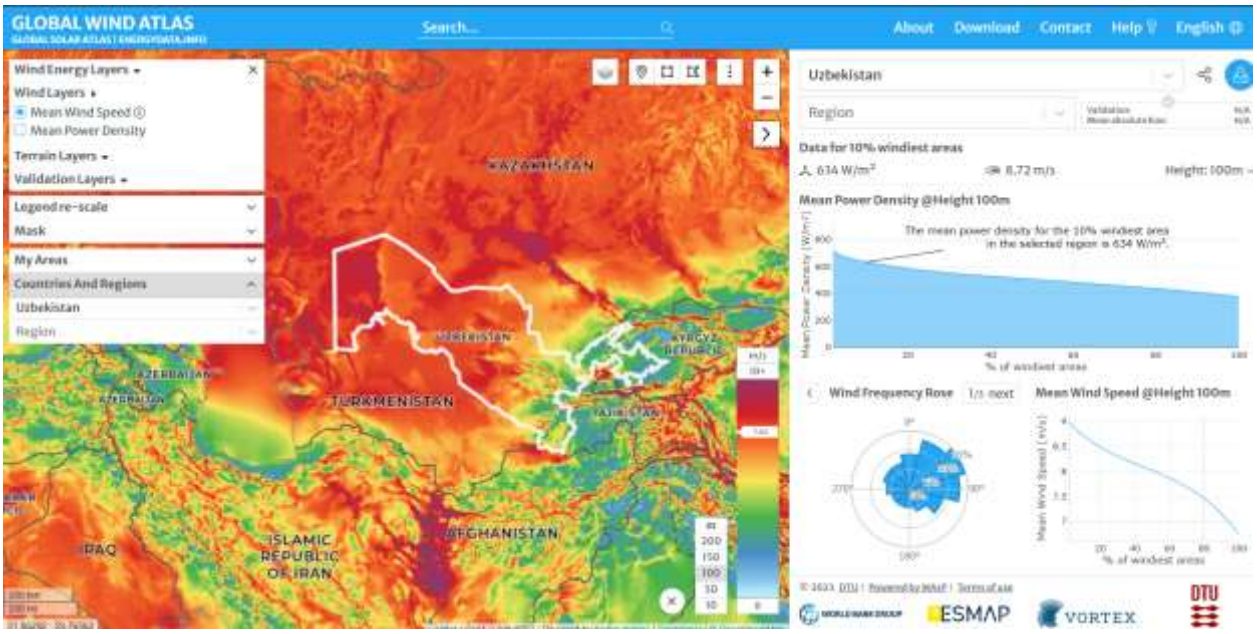
[3] https://www.iea.org/reports/solar-energy-policy-in-uzbekistan-a-roadmap/context-of-renewable-energy-in-uzbekistan
[4] https://www.euronews.com/business/2022/12/21/uzbekistan-makes-strides-towards-a-greener-future-through-solar-energy

In sum, the role of the sun in energy production of the Uzbekistan is crucial while we have not fully realized it yet.

Wind energy

I would say that wind energy is the next important source of green energy after the sun in Uzbekistan. According to data[5], 360 Mtoe of gross technical potential (Uzbekistan MoE PPT, 2022). Publicly available data (World Bank, 2020b) indicate that the best wind potential is concentrated in the western part of Uzbekistan, in particular in the underdeveloped areas of Karakalpakstan to the west and south of the drying Aral Sea. The average wind speeds of above 8 m per second. Based on this research, Uzbekistan is planning to increase its renewable energy supply to 12 GW – i.e. 25% of its energy needs – by 2030.

Again, we are going to look at scientific map of wind flow in this territory:



Source: https://globalwindatlas.info/en/area/Uzbekistan

Legislation

[5] https://iea.blob.core.windows.net/assets/0d00581c-dc3c-466f-b0c8-97d25112a6e0/Uzbekistan2022.pdf

When it comes to **legislation**, Uzbekistan has enacted the law on "Renewable energy" which entered into force on 22 May 2019. That considered as the most important law in this sphere. In addition, there are several acts as well:

Uzbekistan has accelerated relevant policy reforms and approved key acts for the transition to a green economy:

- The Strategy for the Transition to a Green Economy 2019-2030 (hereinafter the "Strategy 2019-2030") was adopted.
- The Concept of Fuel and Energy Supply of the Country for 2020-2030 was adopted. This Concept describes that during the period 2020-2030 special attention will be given to the development of RES based generation (solar energy is a priority). The Concept was developed by the Ministry of Energy with technical assistance from the World Bank and the Asian Bank.
- Decree of the President of Uzbekistan No. UP-4947 On Strategy of Actions for the Development of the Republic of Uzbekistan dated 7 February 2017,
- The Ministry of Energy was formed in March 2019. Gas, oil and other energy matters previously were regulated by several state-owned companies.

We can count other several relevant acts for this sector. Nevertheless, it is possible to see bureaucratic obstacles in legal framework. In other words, the distribution and transmission of energy system is under control of state-owned monopoly "Uzbekenergo". I think that in order to develop the energy market as we wanted healthy competition is number one unofficial requirement. Here, therefore, focusing on antitrust laws and provide the sector with enough opportunity are vital. Plus, enforcement of these laws plays the final role in the framework as well.

Secondly, it is undeniable fact that green energy is expensive, especially for developing country. In this way also, but Unfortunately, there is no exact legal framework that protects the rights of the investor stating the requirements, conditions of connection to the grid, selling the energy produced by independent power producers. This is the very reason that makes the households hesitate whether

to install the solar systems in their home or not. Local utilities may negotiate power purchase agreements on individual ad hoc basis, but this complicates the work of project developers to plan and finance projects on the basis of known and consistent rules[6]. In short, the confidence of investors has become problem since they face several problems here. There are several clean energy tech producers[7], though, still we need a FDI (foreign direct investments) and private investments on market to further develop it. But, from my perspective and research[8], the government mostly worry about negative aspects of these investments for local market. Therefore, they have been carrying on becoming conservative on it. Again, although there is a "the Law on Investment and Investment Activities"[9], the confidence of investors is still under shadow.

Thirdly, it is important to stress that "the Law on Renewable energy" covers not only the generation of electricity from renewable energy sources but also the production of the equipment that generate such energy. Both legal entities and individuals are permitted to generate electricity. **However**, only legal entities are allowed to produce equipment. We would believe that in this step that supporting individuals could be beneficial since individual business usually covers family businesses. In fact, the role of public-private partnership is huge and will discuss in the next pages.

In the end, above noted reasons would create the issue of lack of co-ordination[10] among agencies and strong, dedicated institutions in which eventually prevents the energy economy from further modern development and technologies.

Information Privacy in the Renewable Energy Sector

[6] https://unicaselaw.com/blog/re-in-uzbekistan
[7] https://energymarket.uz/
[8] https://uzbekistanlawblog.com/side-effects-of-investment-policy-to-the-restriction-of-competition-in-the-domestic-market/
[9] https://lex.uz/docs/4751834
[10] https://www.iea.org/reports/solar-energy-policy-in-uzbekistan-a-roadmap/possible-barriers-to-the-deployment-of-solar-energy-in-uzbekistan

Regarding information privacy, Uzbekistan's primary legislation is the Law No. ZRU-547 "On Personal Data," adopted on July 2, 2019, and effective from October 1, 2019. This law governs the processing and protection of personal data across all sectors, including renewable energy. It mandates that personal data of Uzbek citizens, when processed using information technologies, must be collected, systematized, and stored on technical means physically located within Uzbekistan. This localization requirement aims to safeguard personal data and applies universally, impacting how renewable energy companies handle employee and customer information.[11]

As Uzbekistan transitions toward a green economy, integrating digital technologies into the renewable energy sector has become essential. Smart grids, energy monitoring systems, and digital customer platforms are becoming more widespread, increasing both efficiency and data collection. However, this digital shift also amplifies concerns about **information privacy and cybersecurity**.[12]

There are a number of reasons that information privacy is crucial in this sector and plays a pivotal role:

First of all, it is about sensitive personal data collection. In simple words, Renewable energy providers, especially those operating smart metering systems, collect detailed personal data — such as household energy usage patterns, occupancy schedules, and even appliance usage.

Secondly, the location of data servers. Under the law "On Personal Data" (ZRU-547), companies must store and process personal data of Uzbek citizens on servers located within the country.[13] This has major implications for foreign investors and private companies operating renewable projects — particularly those using cloud-based or foreign-hosted systems.

[11] https://www.dlapiperdataprotection.com/
[12] https://www.iea.org/reports/uzbekistan-energy-profile/energy-security
[13] https://www.uzembassy.uk/news/881

Thirdly, the importance of protection of infrastructure. Cyberattacks on energy data systems could result in national security threats, economic disruptions, and loss of life. Information privacy overlaps with cybersecurity: ensuring personal data is protected also means minimizing the risk of larger-scale breaches that could destabilize the grid.

However, Uzbekistan's current legal foundation, namely the Law "On Personal Data" (ZRU-547), offers general data protection principles. However, the **energy sector introduces unique challenges** that go beyond the scope of general laws: such as Real-time energy consumption data can reveal user behavior, location, and lifestyle patterns. In that special guidelines, it should be focused on consumer consent, transparency, data sharing, third party access, localization, cloud services, incident reporting and breach notifications. In addition, conducting regulatory impact assessment by learning from EU's Smart Grid Data Protection Impact Assessment Template[14], U.S. Department of Energy's DataGuard Energy Data Privacy Program[15], IEA's Cybersecurity in Smart Grids framework[16].

Do we really need **"Public-Private Partnership"?**

As for PPP, in other words, **public-private partnership**, Uzbekistan has adopted "the Taw on Public-Private Partnership" in May 10, 2019. No ZRU-537, to my view, it is truly the most important law in terms of developing our energy sector and must focus on it with clear way. It provides the necessary conditions for attracting foreign investors to the generation market as independent electricity producers. The implementation of investment projects in the field of renewable energy on PPP terms has many advantages, the whole process of project implementation (attraction of

[14] https://energy.ec.europa.eu/system/files/2018-09/dpia_for_publication_2018_0.pdf
[15] https://www.energy.gov/oe/dataguard-energy-data-privacy-program
[16] https://www.iea.org/reports/power-systems-in-transition/cyber-resilience

financing, implementation of a feasibility study, selection of technologies, logistics, construction and installation works, operation of a power facility during the life cycle and ownership) refers to the obligation of the investor, and the task of a single purchaser of electricity. More precisely, the way of "tender" is more common in Roman-German countries as well as in Uzbekistan. Of course, the country has specific legal framework on it. However, when it comes efficiency, there is a problem. We might face corruption in tenders which are truly important projects are on in local market. Therefore, we believe that the issue is not about the legal framework, it is all about changing the mindset of officials on being inpatient for crimes in tenders in all parts of the legal framework. For instance, in 2021, during the tenders 971.1 billion sums are under the suspect of corruption and according to data, the common issues are the corruption and cartel.[17] I think these numbers have a huge negative impact on economy, in particular renewable energy sector which is new industry in Uzbekistan. Hence, we can admit that the efficiency plays a pivotal role in energy sector.

Based on the analysis above, we truly believe Uzbekistan has enormous potential for both solar and wind energy. Although the government has adopted a number of acts on the topic of energy, "The law on Renewable energy" for example, we might see several setbacks as well, including corruption in tenders, efficiency and geopolitics.

I would initiate current legislation following recommendations:

1. Increase the incentives for international investments on this sector. As I said, framework is crucial that clean energy is expensive.
2. Pay more attention to local energy producers. Initiate them with tax and customs benefits when in need. Some accept is as protectionism, however, in my mind, that is the only way to built own energy system in local market.

3. International cooperation is far more important in terms of geopolitics. Learn from the developed countries' experiences in green energy segment and implement their best methods in our country while good diplomacy with "power centers" of the

[17] https://www.gazeta.uz/oz/2022/03/31/corruption-schemes/

world, particularly near countries, such as China and Russia is another key factor as well.