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IMPROVING MECHANISMS FOR THE USE OF RENEWABLE ENERGY SOURCES FOR A GREENER WORLD

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Abstract. Alternative energy is essential not only for environmental protection but also for creating a sustainable energy system. The use of non-conventional energy sources depends on two conditions: the renewability of the fuel source and its availability in a given area. Today, global challenges like ozone depletion, climate change, the greenhouse effect, droughts, desertification, soil degradation, and declining biodiversity highlight the urgent need for sustainable practices. Additionally, the rise in pollution-related diseases underscores why the transition from conventional to renewable energy is no longer optional but a necessity. Renewable energy sources provide a cleaner, more sustainable way to meet energy demands, directly addressing these global environmental concerns. The goal of this research is to examine key economic trends in the development of renewable energy sources. The study employs methodologies such as system analysis, statistical and expert evaluations, and methods of comparison, analogy and

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classification. Together, these approaches provide insights into the economic incentives and regulatory mechanisms supporting renewable energy, helping clarify complex factors that drive or hinder its development. A key contribution of the research is the use of classification to organize the main components of economic regulation for renewable energy. This method helps identify the most influential regulatory areas, making it easier for stakeholders to focus on priority factors that drive renewable energy adoption. Furthermore, the study evaluates the reserves of renewable energy sources, examines investment support, and analyzes economic incentives that could accelerate growth in this sector. These insights form a framework for understanding the financial and policy measures needed to support renewable energy. Proposed improvements to economic incentives aim to make renewables more appealing to investors and stakeholders, essential for accelerating adoption. The research's relevance goes beyond practical application, offering value to organizations in the fuel and energy sector, as well as in educational and academic contexts. Its findings can inform university courses and contribute to scientific research, supporting the dissemination of knowledge on renewable energy economics and policy. By bridging economic theory with practical application, this research provides valuable insights for policymakers and organizations worldwide working to promote a sustainable, environmentally friendly energy future.

Keywords: energy products, renewable energy sources, support schemes, principles, economic mechanisms

Introduction. Energy is one of the cornerstones of efforts to achieve sustainable development goals. About two billion people lack access to modern energy services. The challenge is to find ways to balance meeting these needs with the growing demand for energy and the impact of energy on the natural resource base in order to achieve sustainable development goals [1].

We are in a period of increasing demand for the use of alternative and renewable energy sources. Energy obtained from wind, solar, sea and underground steam, i.e., geothermal sources, has accelerated further large-scale experiments in this direction. Experiences are carried out by experts in this field in developed countries, and projects are being drawn up. Many scientists are paying more attention to this topic.

The purpose of the article is to prepare proposals and measures, taking into account the more favorable and efficient use of alternative and renewable energy sources in preventing the pollution of the natural environment due to serious climate changes that have recently occurred in our world.

The following applies to the scientific novelty of the article:

- Recoverable amount of carbon dioxide released into the environment.

the study of reduction by the application of energy devices.

- Theoretical foundations of building geothermal, wind, solar plants

studied and the procedure of obtaining energy was studied.

- In this direction, proposals were made for the preparation of plans for the construction of modern facilities where more energy can be obtained.

- Application of concepts about alternative energy sources aimed at environmental protection.

In the globalizing modern world, global electricity demand has been increasing for decades due to increasing population and industrialization. The world is witnessing a constant increase in energy demand, which currently exceeds the currently projected available conventional energy resources, i.e. natural fuels. The problem of finding new renewable energy sources (RES) has attracted the attention of the world community for a long time [2]. Their use can bring numerous economic and environmental benefits. Renewable energy sources can replace traditional fuels and reduce dependence on imported energy resources, create additional opportunities for some industries and agriculture, and reduce emissions of greenhouse gases and other harmful substances. Renewable energy sources, which are often local in nature, can eliminate the need to transport fuel over long distances. Therefore, in most developed countries,

there has recently been a trend towards an increase in the use of such energy resources. Based on this necessity, the Republic of Azerbaijan declared 2024 as the "Year of Solidarity for the Green World". All this justifies the fact that the article is devoted to solving the actual problem [3].

Literary sources analysis and problem statement. The literature referenced in this text primarily centers on alternative energy sources, economic incentives for renewable energy, and energy policies aimed at sustainability. Key studies include analyses of Azerbaijan's renewable energy capabilities and policies, as well as global perspectives on renewable energy incentives, market conditions, and cost-effectiveness assessments. Specific sources, such as IRENA (International Renewable Energy Agency) and the Asian Development Bank Institute [7,9], provide statistical data and insights into the trends, infrastructure, and policies supporting renewable energy adoption. Other authors Suleymanov G., Ismayilova H. [3;5], Nitsenko V. [6], Sutterlin B. [8], Ulviyye Aydin [10] contribute to the theoretical and practical aspects of renewable energy development in Azerbaijan, offers insights into the significance of energy security and its relationship to renewables.

Formulation of the problem and the purpose. Formulation of the Problem: The rapid increase in global energy demand, combined with the environmental challenges posed by conventional energy sources, has created a critical need for alternative energy solutions. Countries heavily dependent on fossil fuels face challenges in transitioning to renewable energy due to established infrastructures and market systems that prioritize oil and gas. For Azerbaijan, an oil-rich nation, diversifying its energy sources towards renewables is particularly complex, requiring substantial policy changes, financial investments, and technological advancements. In addition, the global pressure to reduce greenhouse gas emissions in line with agreements like the Paris Climate Accord highlights the urgency of adopting renewable energy on a larger scale. Despite its potential in solar, wind, and bioenergy, Azerbaijan's renewable energy sector remains underdeveloped. This situation raises questions about the economic, regulatory, and infrastructural mechanisms needed to overcome barriers to renewable energy adoption, ensuring an environmentally sustainable and energy-secure future.

Purpose of the Article: The purpose of this article is to analyze and propose measures that enhance the efficient use of alternative and renewable energy sources in Azerbaijan, aiming to mitigate environmental degradation caused by climate change. The research identifies key economic trends, regulatory mechanisms, and incentives critical for fostering the development of renewable energy in Azerbaijan. Using methodologies such as system analysis and classification, this article offers a structured approach to understanding and improving the financial, policy, and technological frameworks that support renewable energy. Additionally, it examines the potential for renewable energy within Azerbaijan and provides targeted recommendations to accelerate adoption, facilitate investment, and improve overall energy sustainability. This research aims to serve as a resource for policymakers, energy organizations, and educational institutions in fostering an eco-friendly energy system aligned with global sustainability goals.

The statement of basic materials. Structure of existing energy resources in Azerbaijan. Azerbaijan is a traditional oil-producing country, where the oil and gas industry dominates the economy and provides the majority of the country's energy supply. It should be noted that the oil and gas sector is the main pillar of state exports and budget revenues. In 2022, the share of crude oil in the production of energy products of Azerbaijan amounted to 50.5%, natural gas – 49.1%, renewable energy – 0.4% (Figure 1).

Figure 2 shows the final consumption of energy products in Azerbaijan for 2018-2022. In 2022, natural gas accounted for 46.5%, oil products for 37.8%, electricity for 13.1%, thermal energy for 2.3%, renewable energy for 2.3%, and other types of fuel for 0.1%.

Azerbaijan is one of the countries with high potential for renewable energy sources. Thus, the potential of economically viable and technically usable renewable energy sources of our country is estimated at 27,000 MW, including 3,000 MW for wind energy, 23,000 MW for solar energy, 380 MW for bioenergy, and 520 MW for mountain rivers.

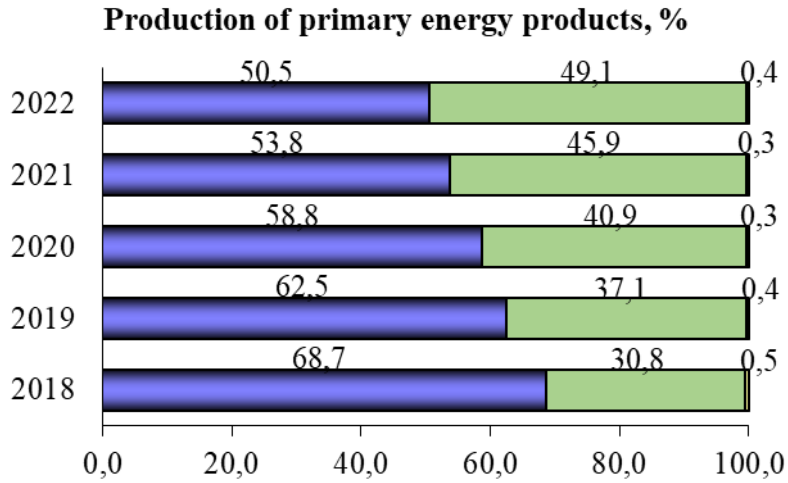

Figure 1 – Production of primary energy products in Azerbaijan 2022
Source: State Statistical Committee of the Republic of Azerbaijan [1]

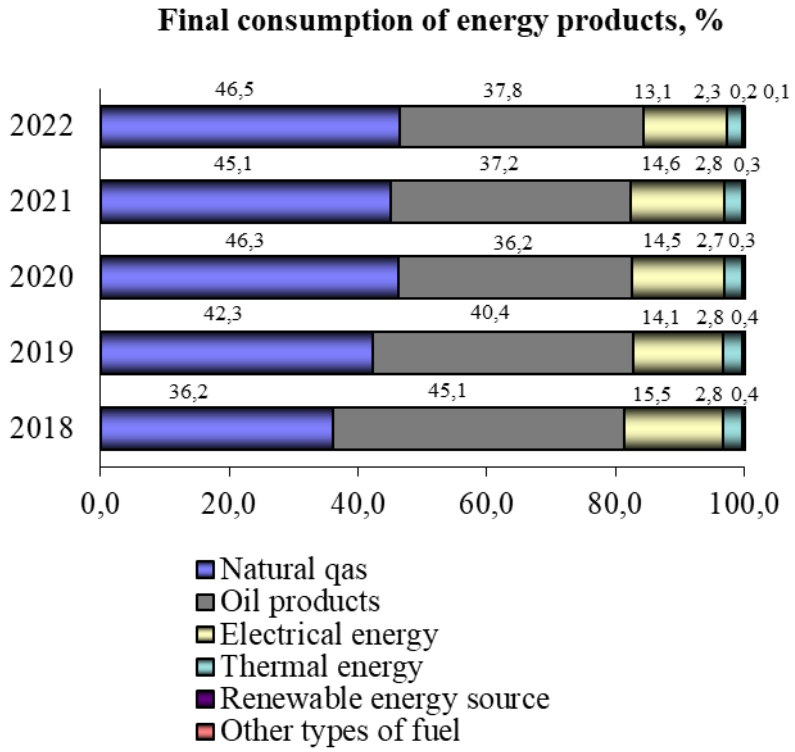

Figure 2 – Final consumption of energy products in Azerbaijan 2022 [1]
Source: State Statistical Committee of the Republic of Azerbaijan [1]

The total power generation capacity of Azerbaijan is 7542.2 MW, and the capacity of renewable energy power plants, including large hydroelectric power plants, is 1304.5 MW, which is 17.3% of the total capacity.

Hydropower capacity 1154.8 MW (30 plants, 20 small hydropower plants), wind energy capacity 66.1 MW (7 plants, 2 hybrid), bioenergy capacity 37.7 MW (2 plants, 1 hybrid), solar energy capacity It is 45.9 MW (12 plants, 2 hybrid). In 1 hybrid power plant (Gobustan), wind - 2.7 MW, solar - 3 MW and bioenergy - 0.7 MW based devices have been installed. During 2021, the production of electricity in the Republic amounted to 27.8 billion kWs [2-4].

The structure of alternative energy in Azerbaijan and the world. A number of works are being carried out on the assessment of the possible potential for the production of electricity from renewable energy sources in the Republic and the steps to be taken and the measures to be implemented in order to use this potential. 8 areas have been selected in the direction of identification and prioritization of areas with the potential of renewable energy sources. Appropriate measures are already being taken regarding the implementation of pilot projects in the 3 selected areas. Work is being continued in the direction of investing in selected and prioritized renewable energy sources in areas with high potential through an auction. Currently, the project "support for renewable energy auctions in Azerbaijan" is being implemented with the European Bank for Reconstruction and Development (EBRD). Within the framework of the project, the preparation of the auction rules, the set of conditions for the auctions, as well as the electricity purchase agreement, the qualification requirements for participation in the auction (RFQ) and the form of the proposal for the auction (RFP) will be provided.

According to the Paris Agreement adopted at the 21st Conference of the Parties on December 12, 2015, the Republic of Azerbaijan submitted its nationally determined contributions to the Convention Secretariat. As a contribution to initiatives to mitigate the effects of global climate change, Azerbaijan has set a goal of maintaining a 35% reduction in greenhouse gas emissions by 2030 compared to the base year (1990). İn November 2021, at the COP26 conference in Glasgow, our country adopted a new commitment to reduce emissions by 2050 by up to 40% as a voluntary commitment and to create a "Netto Zero Emission" Zone in the liberated territories. On January 9, 2020, Executive agreements on the implementation of pilot projects on renewable energy were signed between the Ministry of Energy and the companies "ACWA Power" of Saudi Arabia and "Masdar" of the United Arab Emirates in the Cabinet of Ministers of the Republic of Azerbaijan. In accordance with the contracts, pilot projects related to the construction of wind power plants with a capacity of 240 MW with "ACWA Power" and solar power plants with a capacity of 230 MW with "Masdar" are planned to be implemented [2,5].

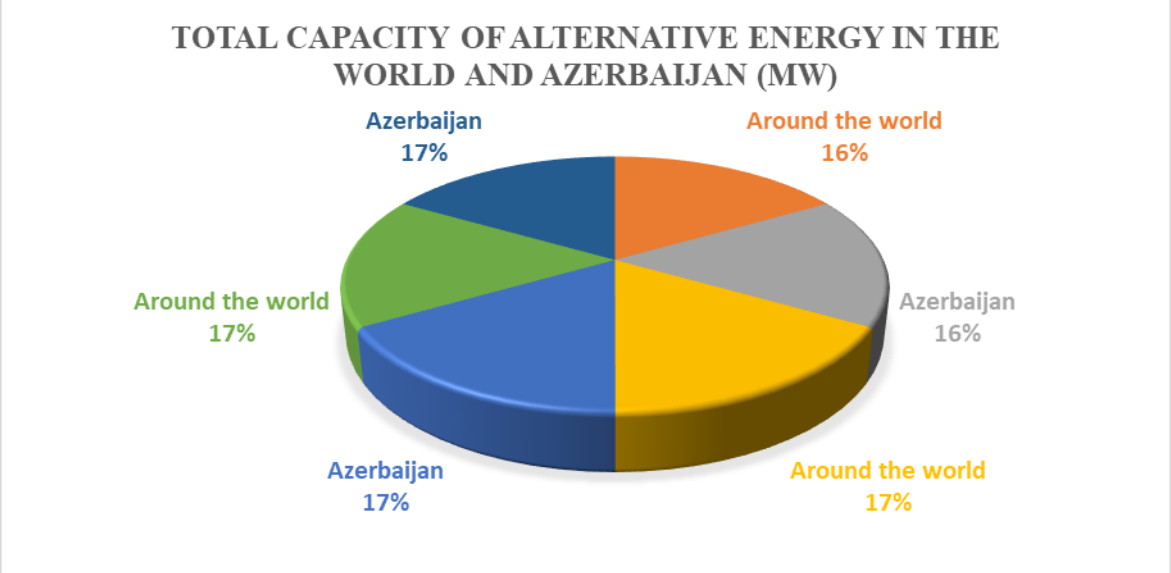

Figure 3 – Total capacity of alternative energy in the world and Azerbaijan (MW) [8]
Source: Sütterlin, B.; Siegrist, Michael (2017). "Public acceptance of renewable energy technologies from an abstract versus concrete perspective and the positive imagery of solar power"

The positive results of reforms related to alternative energy in the country are given in Table 1. As can be seen from the table, there has been an increase in alternative energy capacity for total renewable energy, hydropower and wind energy. Table 2 shows the share of renewable energy in electricity production in Azerbaijan [6].

Table 1 – Total capacity of alternative energy in the world and Azerbaijan (MW)

	Years		
	2020	2021	2022
Total renewable energy			
World	2813159	3077238	3371793
Azerbaijan	1296	1316	1339
Hydropower			
World	1334078	1362718	1392598
Azerbaijan	1149	1157	1177
Wind energy			
World	731656	824171	898824
Azerbaijan	66	66	66
Solar energy			
World	720429	861537	1053115
Azerbaijan	35	48	51
Bioenergy			
World	133236	141302	148912
Azerbaijan	45	45	45

Source: IRENA International Renewable Energy Agency [7]

Table 2 – Share of renewable energy in electricity production (in %)

	Years		
	2020	2021	2022
World	36,6	38,3	40,2
Azerbaijan	17	16,5	16

Source: IRENA International Renewable Energy Agency [7]

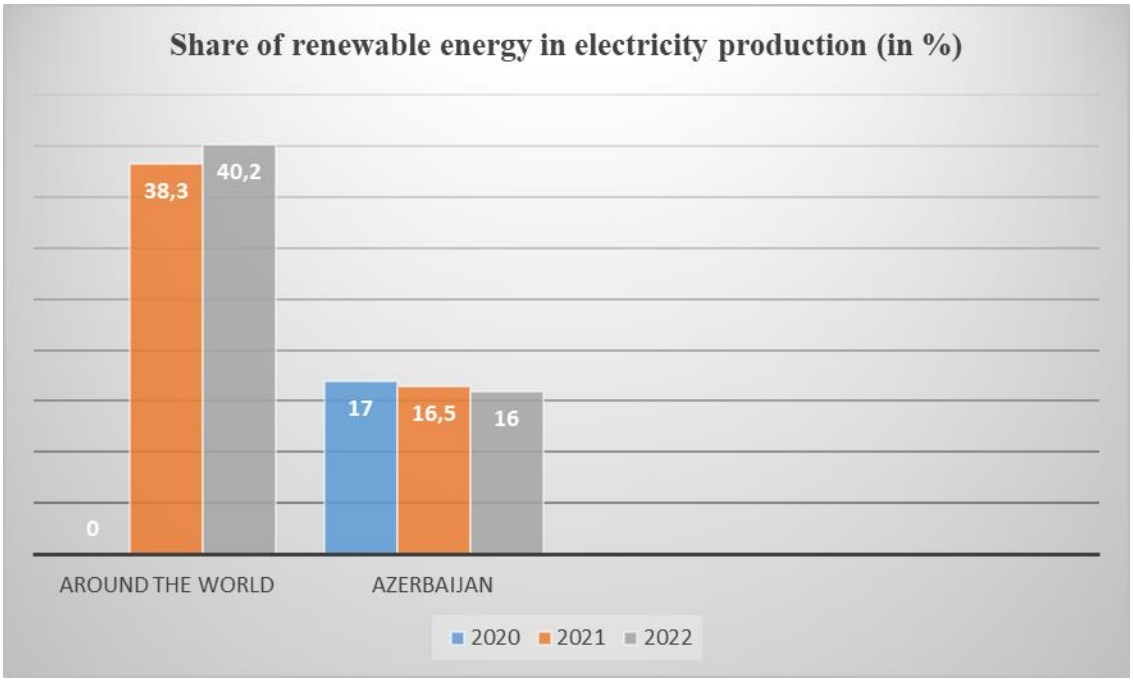

Figure 4 – Share of renewable energy in electricity production (in %)
Source: Compiled by the author

Renewable energy strategy research. In addition to governments, the world's largest energy companies, banks, international organizations and foundations are investing in the development of RES. Various forms of public support are used to stimulate and support the implementation of RES in many countries [7]:

- additional tariffs for the sale of electricity generated from the RES to the grid;
- the use of the concept of "green energy" for energy from renewable energy sources, which implies a higher price for the conscious consumer;
- tax benefits;
- preferential loans;
- the share of the RES in the energy balance is legally fixed by a certain date and etc.

Table 3 presents the advantages and disadvantages of various policy support tools [9].

Table 3 – Renewable Energy Policy Support Schemes [9]

	Advantages	Disadvantages
Green tariff (FİT)	high efficiency; high investment security; strong market dynamics	higher electricity prices; the complexity of policy making
Quotas for renewable energy sources	strong market orientation; less government intervention; Easier policy development than FiT	lower efficiency than FiT; not necessarily cheaper than FiT
public investment	facilitate investments in renewable energy projects	generally less effective than involving the private sector
Open Competitive Bidding/Auctions	strong market orientation; competitive prices; verification of energy production capacity	bidders may bid too low a price to win the tender; it may lead to the failure of the project.

Source: International Energy Agency

In the transition to clean energy sources, old infrastructures pose different problems for oil and gas producing countries (Azerbaijan and Kazakhstan) and non-oil producing countries (Kyrgyzstan and Ukraine). In Azerbaijan and Kazakhstan, the medium-term goal is to promote a partial transition to low-carbon sources to reduce greenhouse gas emissions and mitigate the financial consequences of the energy transition undertaken by major European countries as they seek to transform their energy sector. (Table 4 presents the main results of the comparative analysis) [9]. In oil-dependent countries, the state can play a leading role in the transition to renewable energy. Here, the state dominates the energy production and processing sector, and state-owned companies often occupy a monopoly position. The state can and does direct part of its oil revenues to renewable energy investments, such as the installation of solar panels and wind turbines. State domination in energy supply and electricity generation is likely to hinder the expansion of renewable energy, as excessive government regulation leads to market distortions that prevent investments.

Calculating the cost-effectiveness of alternative energy depends on many factors, including the type of alternative energy (e.g., solar, wind, hydro), project location, technology, equipment costs, energy source costs, tax incentives and subsidies, operating costs, and other factors.

There are several methods for calculating the economic efficiency of alternative energy:

1. NPV (Net Present Value) Method: This method uses the concept of discounting to determine the value of future cash flows generated by an alternative energy system. The initial investment is then deducted. If the NPV is positive, the project is considered cost-effective.
2. Internal Rate of Return (IRR): IRR is the interest rate at which NPV is zero. This method allows to evaluate the profitability of investments in alternative energy. Projects with an IRR greater than the discount rate are considered cost-effective.

Table 4 – Comparative assessment of the effectiveness of promoting renewable energy sources [9]

	Azerbaijan	Kazakhstan	Kyrgyzstan	Ukraine
Purpose of renewable energy	yes	yes	yes	yes
Purpose determination	2030 - 30%	2020 - 3% sun and wind 2030- 10% 2050- 50%	There is no electricity generation target.	2035 - 25%
The degree of achievement of the goal	The target has been set recently.	The goal of 2020 has been largely achieved	No information	The target has been set recently.
Current share of RES in electricity	2019 - 7,3% (total) Hydro: 6% Wind: 0.5% Sun: 0,17%	2019 - 11% (total) Mostly hydro: 9% sun and wind: 2%	2020 - 90% (total) Mainly large hydroelectric power plants (HPPs).	2020 - 10% (total) Hydro: 5.3% Wind: 3.7% Sun: 0.75%
Regulatory Support Scheme	yes	yes	yes	yes
the type of support schemes available	State investments; "Green Tariff"	State investments; "Green tariff"; Competitive auctions	"Green tariff" (law)	"Green Tariff"
	Mainly public/government investments ie. pilot projects: Solar: 230 MW ($200 million; Masdar, Abu Dabi), Wind: 240 MVt (Saudi ACWA Power); FiT is included in the Renewable Energy Law passed in 2021 (not yet in force).	The "green tariff" was introduced in 2013-2017; In 2018-2019, a total of 28 auctions were held; Janatas wind project with a cost of us $ 95.3 million.	"Green tariff" does not apply A new strategy for the construction of 180 small HPPs with a total capacity of 100 MW.	"Green tariff" from 2009 to 2030; Auctions (the bill was adopted in 2021)

Source: International Energy Agency

3. Payback Period: This method determines the number of years required to recoup the initial investment. A project with a shorter payback period is usually considered more cost-effective.

4. Cost of Electricity (COE) Analysis: The cost of producing a unit of energy is defined as the total cost of installing and operating the system divided by the projected energy production over its lifetime. This method is used to compare the costs of different energy sources.

5. Net Cost Analysis (NCA): This method takes into account both financial and external (e.g. environmental) factors. It allows to compare the economic efficiency of alternative energy with traditional energy sources, taking into account external costs and benefits.

In order to find out the payback period and economic benefits, we will analyze solar energy in a private house, for example, let's take a private house in the city of Baku, which annually consumes 21,000 kWh (on average 1,750 kWh monthly). Let's take a Mono (Twin Power) solar battery with a power of 550 W, costing $325 per 1 piece, which, taking into account installation data in Baku, as well as an efficiency AECC (available energy conversion coefficient) of 24%, will generate about 800 kWh annually (on average 70 kWh monthly) electricity. During 2016-2022, the price of electricity for the population increased by 86%, an annual increase of about 12%.

Installation of 1 panel costs on average $60, since we are considering the installation of a fairly large panel (2.6 m2), we will take into account the installation price of $120 for 1 panel. Total costs are 325 + 120 = $445. The service life is indicated at least 30 years, while the power loss over 30 years will not exceed 20%, and in the first 12 years no more than 10%.

Let's calculate the payback period of 1 solar panel from our example; we will include an annual increase of 12% in the price of electricity; for this we will use the formula for determining the future value of the annuity post-numerand:

$$NPV = P * \frac{(1+i)^{in}-1}{i} \quad (1)$$

Where,

NPV is the future value, in our case, to calculate the payback period, we consider it equal to our costs, i.e. $445;

P – payment amount, in our case 0.1 cent/kWh * 800 kWh per year;

i – interest rate, in our case 12% per year;

n - is the number of periods, in our case the payback period, the payback period is 6 years and 3 months.

Now we calculate what economic benefit we will get if we operate 1 solar panel over a period of 10 years.

To calculate potential savings on the price of electricity, we will use the same formula for determining the future value of an annuity (1), only now we will look for exactly the future value over a period of 10 years:

$$FVA = 0{,}1 * 800 * \frac{(1+0{,}12)^{10}-1}{0.12} = 1403{,}9\ dol. \quad (2)$$

From the calculation we can conclude that over 10 years of operation of 1 solar panel, the savings on electricity costs will be $1,403.9, minus the initial investment, which amounted to $445, the economic benefit is $959.

The main principles of energy efficiency policy in the electric power industry based on RES in the Republic of Azerbaijan are as follows [10]:

Ways to improve economic mechanisms that promote the use of renewable energy sources.

Improving economic mechanisms to promote the use of renewable energy sources is an important step towards a sustainable energy future. These economic mechanisms include:

1. Tariff concessions: Offering a guaranteed tariff to renewable energy producers is an incentive for investors. More competitive tariffs and long-term power purchase agreements can facilitate the financing of renewable energy projects.
2. Tax benefits. Incentives such as tax credits, rebates or tax credits can reduce the costs of renewable energy projects and increase returns for investors. These incentives promote the spread of renewable energy technologies.
3. Financial support mechanisms: Governments can provide financial support to renewable energy projects through financial support mechanisms such as low-interest loans, grant programs or equity funds. This facilitates the financing of projects and reduces risks.

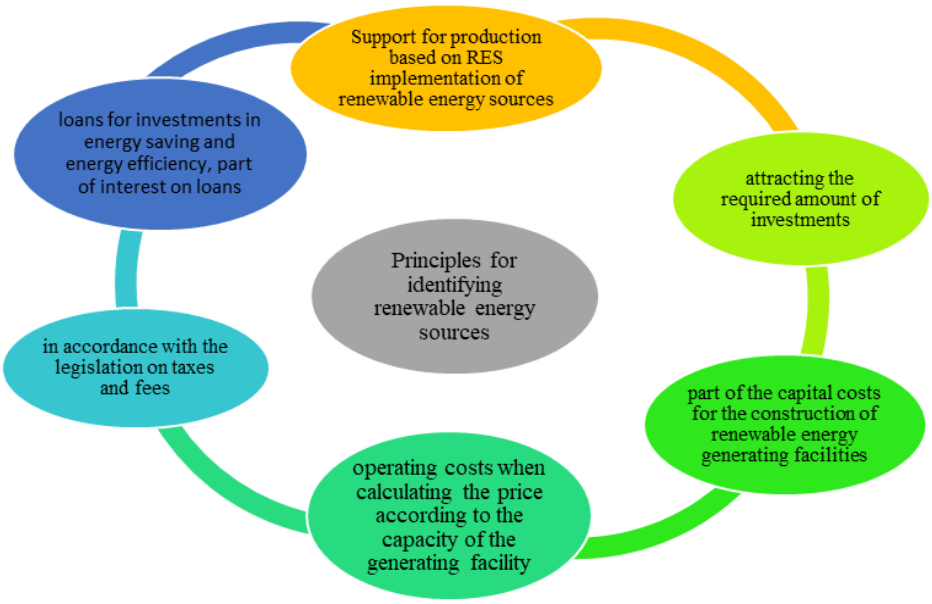

Figure 5 – Principles for identifying renewable energy sources [10]

Source: Ulviyye Aydin (2019) "Energy insecurity and renewable energy sources: prospects and challenges for Azerbaijan." Asian Development Bank Institute.

4. Green energy certificates: Green energy certificates are additional sources of income for renewable energy producers from energy sales. These certificates certify the source of electricity produced from renewable energy sources and indicate that it provides "green" energy to the consumer.

5. Net Metering: Net metering allows consumers who generate renewable energy to save excess energy they produce by feeding it into the grid and use that credit when they need it. This system encourages renewable energy investments and reduces energy costs.

6. Research and development incentives: Research and development incentives are important for the development of renewable energy technologies and for finding innovative solutions. Collaboration and funding between governments, universities and the private sector supports the discovery and commercialization of new technologies.

7. Awareness campaigns: It is important to inform the public about the benefits and importance of renewable energy sources. Training programs and awareness campaigns on energy efficiency, renewable energy technologies and applications should be organized.

8. Infrastructure development: Power transmission and distribution infrastructure needs to be strengthened to support the growth of renewable energy projects. Adapting transmission lines and distribution networks to renewable energy sources facilitates the integration of energy sources.

9. Cooperation and partnership: Cooperation and partnership between governments, the private sector and non-governmental organizations are essential to promote the use of renewable energy sources. Sharing of knowledge, integration of RES and exchange of experience between stakeholders helps to successfully implement renewable energy projects.

10. Reducing the costs of renewable energy technologies: It is important to increase investment in research and development activities and reduce costs by taking advantage of economies of scale in renewable energy technologies. This makes renewable energy sources more competitive.

11. Improving Legislation: An appropriate legal and regulatory framework should be created to promote the development of renewable energy projects. Reducing barriers such as licensing processes, permits, and bureaucracy helps renewable energy projects come to fruition quickly.

Conclusions. İmproving economic mechanisms to promote the use of renewable energy sources aims to reduce costs, facilitate financing and increase the profitability potential of investors. These mechanisms should be implemented through the cooperation of governments, the private sector and society. In addition, other measures such as awareness raising, infrastructure development, research and development, cooperation and regulation also play an important role in promoting the use of renewable energy sources.

The following steps are recommended for upgrades:

1. Increasing government support for renewable energy: Governments can encourage investors by increasing incentives and financial support for renewable energy projects. For example, measures such as price guarantees, long-term power purchase agreements or financial support programs can be implemented for renewable energy producers.
2. Expanding tax incentives for renewable energy: Incentives such as tax incentives, exemptions or tax credits can reduce the costs of renewable energy investments and increase the profitability of investors. Governments can encourage renewable energy projects by expanding these incentives and making them more attractive.
3. Development of financing opportunities: Financing of renewable energy projects is often a major obstacle. Governments can facilitate investors' access to finance by providing financial opportunities such as low-interest loans, grant schemes, risk-sharing mechanisms or equity funds.

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ВДОСКОНАЛЕННЯ МЕХАНІЗМІВ ВИКОРИСТАННЯ ВІДНОВЛЮВАНИХ ДЖЕРЕЛ ЕНЕРГІЇ ЗАДЛЯ СТАЛОГО МАЙБУТНЬОГО

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Анотація. Альтернативна енергетика необхідна не тільки для захисту навколишнього середовища, але й для створення сталої енергетичної системи. Використання нетрадиційних джерел енергії залежить від двох умов: відновлюваності джерела палива та його наявності на даній території. Сьогодні такі глобальні виклики, як виснаження озонового шару, зміна клімату, парниковий ефект, посухи, опустелювання, деградація ґрунтів і зменшення біорізноманіття, підкреслюють нагальну потребу в сталих практиках. Крім того, зростання захворювань, пов'язаних із забрудненням, підкреслює, чому перехід від традиційної до відновлюваної енергії більше не є необов'язковим, а є необхідністю. Відновлювані джерела енергії забезпечують більш чистий і стійкий спосіб задоволення потреб в енергії, безпосередньо вирішуючи ці глобальні екологічні проблеми. Метою цього дослідження є вивчення ключових економічних тенденцій розвитку відновлюваних джерел енергії. У дослідженні використовуються такі методології, як системний аналіз, статистичні та експертні оцінки, а також методи порівняння, аналогії та класифікації. Разом ці підходи дають змогу зрозуміти економічні стимули та регуляторні механізми, що підтримують відновлювану енергетику, допомагаючи з'ясувати комплекс факторів, які стимулюють або перешкоджають її розвитку. Ключовим внеском дослідження є використання класифікації для організації основних компонентів економічного регулювання відновлюваної енергетики. Цей метод допомагає визначити найвпливовіші регуляторні сфери, полегшуючи зацікавленим сторонам зосередитися на пріоритетних факторах, які стимулюють впровадження відновлюваної енергії. Крім того, дослідження оцінює запаси відновлюваних джерел енергії, розглядає підтримку інвестицій та аналізує економічні стимули, які могли б прискорити зростання в цьому секторі. Ці ідеї формують основу для розуміння фінансових і політичних заходів, необхідних для підтримки відновлюваної енергетики. Пропоновані вдосконалення економічних стимулів спрямовані на те, щоб зробити відновлювані джерела енергії більш привабливими для інвесторів і зацікавлених сторін, що є важливим для прискорення впровадження. Актуальність дослідження виходить за рамки практичного застосування, пропонуючи цінність організаціям у паливно-енергетичному секторі, а також в освітньому та академічному контекстах. Його висновки можуть стати основою для університетських курсів і зробити внесок у наукові дослідження, підтримуючи поширення знань з економіки та політики відновлюваної енергетики. Поєднуючи економічну теорію з практичним застосуванням, це дослідження дає цінну інформацію для політиків та організацій у всьому світі, які працюють над сприянням сталого, екологічно чистого енергетичного майбутнього.

Ключові слова: енергетичні продукти, відновлювані джерела енергії, схеми підтримки, принципи, економічні механізми.