AGORA International Journal of Juridical Sciences, http://univagora.ro/jour/index.php/aijjs
ISSN 1843-570X, E-ISSN 2067-7677
Vol. 18, No. 1 (2024), pp. 191-203

IMPACT OF ALTERNATIVE ENERGY INVESTMENTS ON EMPLOYMENT IN AZERBAIJAN

I. KARIMOV

Ilham Karimov
Azerbaijan State University of Economics, Azerbaijan
https://orcid.org/0009-0005-2525-639X, E-mail: ilham.kerimov.2001@gmail.com

Abstract: *Transition to alternative energy sources is increasingly recognized as a vital component of global efforts to mitigate climate change and foster sustainable development. This study examines the impact of alternative energy investments on employment, focusing on the renewable energy sector's role in generating job opportunities. Paper explores the mechanisms through which investments in alternative energy projects, such as wind, solar, hydroelectric, and biomass, influence employment outcomes. Key factors influencing employment generation, including technological innovation, infrastructure development, policy frameworks, and market dynamics, are analyzed to understand the complex interplay between alternative energy investments and labor markets. The study highlights the potential for alternative energy investments to create diverse employment opportunities across various sectors. Furthermore, it examines the socio-economic benefits of renewable energy projects in terms of job creation, skills development and income generation. By elucidating the relationship between alternative energy investments and employment, this research contributes to a deeper understanding of the transformative potential of renewable energy transition in devising strategies to maximize the socio-economic benefits of sustainable energy development. Findings show upward trend in average monthly nominal wages and salaries within the sector reflects positive growth in labor compensation, potentially influenced by factors such as rising demand for skilled labor and productivity improvements. Additionally government agencies and international organizations are main drivers of green investments and sustainable development in Azerbaijan.*

Keywords*: Green finance, Employment growth, Renewable energy, Non-oil sector*

Introduction

Green economy is increasingly recognized as a critical pathway for sustainable development, particularly in regions reliant on traditional industries like Azerbaijan. In this context, green finance and investments play a pivotal role in driving employment growth, fostering innovation, and diversifying economic activities (Qasimli et al ., 2022).

Aim of this study is to investigate how alternative energy investments impact employment in Azerbaijan, with a specific focus on the renewable energy sector's role in fostering job opportunities and socio-economic development. The objectives encompass analyzing investment trends, assessing employment effects, exploring influencing factors, and identifying challenges and opportunities associated with leveraging alternative energy investments for maximizing employment benefits.

IMPACT OF ALTERNATIVE ENERGY INVESTMENTS ON EMPLOYMENT IN AZERBAIJAN

Understanding how alternative energy investments impact employment in Azerbaijan is of paramount importance from both practical and scientific perspectives. Firstly, as Azerbaijan seeks to diversify its economy and reduce reliance on traditional fossil fuel industries, alternative energy investments emerge as a crucial pathway for sustainable development. Examining the employment effects of such investments provides policymakers, investors, and stakeholders with valuable insights into the potential benefits and challenges associated with transitioning to renewable energy sources.

Green finance facilitates investments in renewable energy projects such as solar, wind, and hydropower. This includes renewable energy technologies (solar panels, wind turbines), energy-efficient appliances, electric vehicles, and waste management systems. By supporting research and development, as well as providing incentives for green technology companies, investments can spur innovation and growth in this sector. Green technology manufacturing creates employment opportunities in engineering, research and development, manufacturing, installation, and maintenance. Additionally, the supply chain associated with green technology manufacturing, including raw material sourcing, transportation, and logistics, further diversifies employment opportunities across various sectors. By investing in renewable energy infrastructure, Azerbaijan can reduce its carbon footprint and simultaneously create employment opportunities. Green finance encourages innovation and entrepreneurship in green technologies and industries. Startups and small businesses focusing on renewable energy, energy efficiency, waste management, and other sustainable solutions can thrive with adequate financial support. These ventures not only create jobs but also drive technological advancements and enhance the country's competitiveness in the global green economy. Furthermore, green finance initiatives promote the adoption of sustainable practices across various sectors of the economy, leading to long-term environmental and socio-economic benefits. For instance, investments in energy-efficient technologies and green building initiatives not only reduce energy consumption and greenhouse gas emissions but also create demand for skilled workers in construction, engineering. By integrating green design principles, renewable energy technologies, and resource-efficient practices into urban planning and construction projects, cities and municipalities can reduce carbon emissions, improve air and water quality, and enhance quality of life for residents. Green construction projects create employment opportunities in architecture, engineering, construction, and urban planning, while also promoting resilience to climate change and enhancing overall urban sustainability.

Various sources shed light on the efforts and potential for scaling up green investment in Azerbaijan, with a focus on fostering a green transformation. UN Environment Document Repository highlights the importance of mobilizing green finance to support sustainable development initiatives in Azerbaijan, emphasizing the need for innovative financing mechanisms and policy frameworks to attract investment in renewable energy, sustainable agriculture, eco-tourism, and green technology manufacturing. The policy brief from the United Nations in Azerbaijan underscores the significance of a green transformation in Azerbaijan's development agenda, advocating for the adoption of policies and strategies that promote environmental sustainability, climate resilience, and inclusive growth. Furthermore, the Asian Development Bank's report on green finance for state-owned enterprises in Asia provides insights into the role of financial institutions in facilitating green investments and promoting sustainable business practices. Finally, the research paper by V.Ə.Qasımlı offers a

local perspective on green finance, discussing the challenges and opportunities for advancing sustainable development in Azerbaijan through innovative financing mechanisms.

By controlling for relevant variables such as economic growth, sector-specific trends, and government policies, comparative analysis provides insights into the significance between green investment and employment. Literature review contextualize the findings within the broader research landscape. The literature review will encompass studies, reports, and academic articles related to alternative energy investments, employment, and economic development in Azerbaijan. By synthesizing existing research findings, theoretical frameworks, the literature review provides a theoretical foundation and identify gaps in knowledge to guide the empirical analysis. Another aspect of the research methodology involves conducting a comparative analysis of employment dynamics across different sectors in renewable energy production. By analyzing sector-specific data and performance indicators, the study aims to identify the sector with the highest potential for employment generation and conduct in-depth analysis to understand its dynamics, challenges, and opportunities.

2. Factors Influencing Green Investments in Azerbaijan

Green investments in Azerbaijan are influenced by a combination of factors that span economic, environmental, social, and political dimensions. Several key influences shape the landscape of green investments in the country including:

Government Policies and Regulations: Regulatory environment plays a crucial role in shaping green investments. Clear and consistent policies that promote renewable energy, energy efficiency, and sustainable development can provide a conducive framework for investors. In Azerbaijan, the government's commitment to green initiatives through policy measures such as incentives, subsidies, and renewable energy targets can significantly influence investment decisions in the green sector. Main environmental policy measures in Azerbaijan are include:

The Azerbaijani government has enacted the following climate-related policy documents since 2021:

- On May 31, 2021, and July 12, 2021, the law "On the Use of Renewable Energy Sources in Electricity Generation" was approved.
- Adoption of the first "National Action Plan on Energy Efficiency of the Republic of Azerbaijan," creation of the "Rational use of energy resources and energy efficiency" law, and the "Roadmap for accelerating the adoption of eco-design and labelling requirements for products using energy" are all under the EU4Energy program phase I (European Union [EU], 2023).
- The project provided support to MoEnergy on establishing technical norms and standards for energy efficiency in buildings in line with EU and best international standards, such as: Energy efficiency certification system introduced; Assessment of the existing billings standards in Azerbaijan; Draft Rules for energy efficiency certification of buildings; Approximation of the EU legal framework on eco-design and energy labeling; Capacity building among relevant governmental and non-governmental Stakeholders and awareness-raising and communication programme on energy efficiency.

- On February 2, 2021, the "Azerbaijan 2030: National Priorities for Socio-economic Development" was approved. With considerable support from the EU, particularly through the EU4Energy Initiative, and from international finance institutions, Azerbaijan is making progress on its sustainable energy roadmap (European Union, [EU], 2023).

In its initial Nationally Determined Contribution (NDC), Azerbaijan pledged to meet a quantifiable goal of reducing greenhouse gas emissions by 35% by 2030 in comparison to 1990 levels (Azerbaijan President's Office, 2021). Azerbaijan declared at COP 26 that it would reduce greenhouse gas emissions by 40% by 2050. The ecological environment must be harmonized with economic growth, according to Azerbaijan's 2030. National Priorities for Socio-Economic Development, in order to ensure that water resources are effectively utilized and current resources are revived. There are plans to boost the use of renewable and alternative energy sources in order to effectively meet the nation's energy needs. In the meanwhile, it's critical to support eco-friendly green technologies and raise the proportion of alternative and renewable energy sources in primary consumption while minimizing their contribution to global warming. Air quality and the environment may benefit from initiatives to promote the use of ecologically efficient automobiles.

A report titled "Analysis of problems in the agricultural sector in Azerbaijan related to climate change" was developed and submitted to the Ministry of Agriculture. The guidelines on mainstreaming climate change into the priority sectors of energy and agriculture were developed by analyzing the national circumstances in line with strategic documents/roadmaps of the country (United Nations [UN], 2022). The Ministry of Energy received the study that was prepared and submitted, titled "Gender and Climate Change Integration Into the Energy Policy" (Ministry of Energy of the Republic of Azerbaijan [MERA], 2024).

The state financial institutions and the current budget tagging mechanisms were examined for their potential to strengthen capability for climate change adaptation and mitigation. The Ministry of Finance approved the CBT report, which was then added to the Budget Guide for Citizens.

Market Demand and Consumer Awareness: Market demand for sustainable products and services can drive investments in green technologies and industries. As awareness of environmental issues grows among consumers, there is a rising demand for eco-friendly solutions in areas such as renewable energy, green transportation, and waste management. Companies that respond to this demand by investing in green innovation and sustainability practices can gain a competitive edge in the market. Environmental impact of fossil fuel extraction, production, and consumption, including air and water pollution, greenhouse gas emissions, and climate change, has spurred heightened awareness and activism among consumers. Concerns about environmental degradation and its implications for future generations drive demand for renewable energy technologies that offer cleaner and more environmentally friendly alternatives to oil. Measures such as renewable energy targets, carbon pricing, subsidies for clean energy projects, and tax incentives for renewable energy investments incentivize businesses and consumers to transition towards sustainable energy sources.

According to World Investment Report 2023, Announcements of greenfield investment projects increased by 15% in 2022, with growth observed in most sectors and regions in the

world. International investment in the production of renewable energy, such as wind and solar power, increased as well, albeit more slowly than in 2021 (growing by 50% to 8%). Notably, announced initiatives for the production of batteries increased threefold to exceed $100 billion by 2022. In 2022, there was a rise in foreign investment in developing nations' SDG sectors, with a particular focus on infrastructure, energy, water and sanitation, agrifood systems, health, and education (United Nations Conference on Trade and Development [UNCTAD], 2023). However, because of the COVID-19 pandemic's severe reduction in investment and the early years of sluggish GDP, the increase since the SDGs were approved in 2015 has been rather small.

Access to Finance and Investment Incentives: Access to finance is critical for scaling up green investments. Availability of funding sources such as green bonds, venture capital, and international development assistance can facilitate investments in renewable energy projects, energy-efficient infrastructure, and sustainable businesses. Moreover, investment incentives such as tax breaks, subsidies, and grants can encourage private sector participation in green initiatives and mitigate financial risks associated with green projects. Several financing sources play a crucial role in funding these initiatives.

As a sovereign wealth fund established to manage the country's oil and gas revenues, SOFAZ allocate funds towards green investments and sustainable development projects. These investments may include renewable energy infrastructure, energy efficiency initiatives, and environmental conservation efforts. SOFAZ's financial resources can provide a stable source of funding for green projects and support Azerbaijan's transition to a more sustainable economy. Agency provides grants, subsidies, or concessional loans to support renewable energy projects, energy efficiency improvements, and research and development in green technologies. SAARES's funding programs help incentivize private sector investment in green initiatives and accelerate the deployment of renewable energy infrastructure (Eastern Partnership [EaP], 2018). International organizations, development banks, and foreign governments often provide financial assistance and grants for green investments in developing countries like Azerbaijan. Institutions such as the World Bank, European Bank for Reconstruction and Development (EBRD), Asian Development Bank (ADB), and United Nations Development Programme (UNDP) offer funding for renewable energy projects, climate change mitigation initiatives, and environmental conservation programs. These international donors play a crucial role in supporting Azerbaijan's efforts to address environmental challenges and promote sustainable development.

Private sector companies and financial institutions can also contribute to financing green investments through direct investments, project financing, and corporate sustainability initiatives. Large corporations may invest in renewable energy projects, green infrastructure, and sustainable technologies as part of their corporate social responsibility (CSR) efforts or to meet sustainability targets (Asian Development Bank [ADB], 2023). Financial institutions, including commercial banks, investment funds, and venture capital firms, provide capital for green projects through loans, equity investments, and green bonds. These institutions play a vital role in mobilizing private sector finance for green initiatives and driving innovation in sustainable finance.

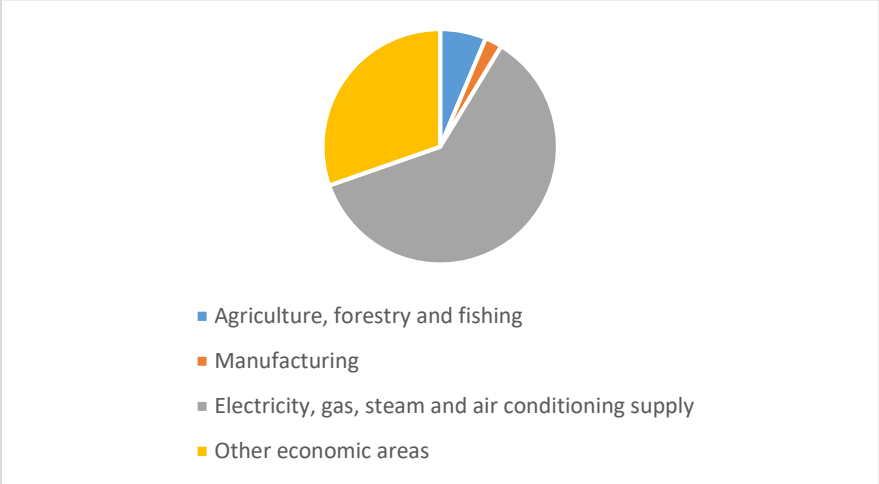
Technological Innovation and Infrastructure Development: Technological advancements and infrastructure development play a pivotal role in enabling green investments. Investments

in research and development (R&D) for renewable energy technologies, smart grid systems, energy storage solutions, and sustainable transportation infrastructure can unlock new opportunities for green investment in Azerbaijan. Additionally, improving the country's energy efficiency standards and expanding renewable energy capacity can create a more conducive environment for green investments.

International Cooperation and Partnerships: International cooperation and partnerships play a significant role in supporting green investments. Collaboration with international organizations, multilateral development banks, and foreign investors can provide access to technical expertise, financial resources, and best practices in green finance and sustainable development. Engaging in cross-border initiatives such as climate change mitigation efforts and green technology transfer can enhance Azerbaijan's capacity for green investment and foster global partnerships for sustainable development (Ankara Center for Crisis and Policy Studies [Ankasam], 2024). While talks are still ongoing on a new bilateral agreement, the European Union's (EU) relations with Azerbaijan are founded on the EU-Azerbaijan Partnership and Cooperation Agreement, which has been in effect since 1999. In addition, Azerbaijan is a member of the Organization of Black Sea Economic Cooperation (BSEC) and the Eastern Partnership program. In 2022, Azerbaijan and the EU signed a new Memorandum of Understanding (MoU) on a Strategic Partnership in the energy sector, paving the way for increased collaboration.

3. Current State of Renewable Energy Investments and Employment

Chart 1. ***Resources of energy products in Azerbaijan, 2022***



Source: State Statistics Committee of Azerbaijan, azstat.gov.az

Data provided represents the distribution of producers of renewable energy products in Azerbaijan across different economic sectors in 2022. First figure indicates that a portion of producers of renewable energy products in Azerbaijan which are operating within the agriculture, forestry, and fishing sector. This may include activities such as the production of biofuels from agricultural crops or biomass, the installation of renewable energy systems on agricultural lands (such as solar panels or wind turbines), or the utilization of agricultural waste for energy generation.

Manufacturing includes companies engaged in the production of renewable energy equipment and components. Additionally, manufacturers produce materials and technologies used in renewable energy infrastructure, such as components for hydropower systems.

This category represents the largest portion of energy product producers corresponds to the electricity, gas, steam, and air conditioning supply sector in Azerbaijan. This sector includes entities involved in the generation, transmission, and distribution of electricity, as well as the production of renewable energy from sources such as solar, wind, hydro, and biomass. These producers contribute to the expansion of renewable energy capacity and the integration of clean energy sources into the national grid.

Category of "Other economic areas" encompasses a diverse range of economic activities beyond agriculture, manufacturing, and energy supply. It indicates that a significant number of producers of renewable energy products, in sectors not explicitly specified in the dataset. These include industries such as construction, transportation, services, and research and development, where renewable energy technologies and products are utilized or developed to support sustainable practices and energy efficiency initiatives.

Electricity, gas, steam, and air conditioning supply sector plays a critical role in Azerbaijan's economy, as evidenced by the significant number of producers of renewable energy products operating within this sector. This sector is instrumental in ensuring the reliable supply of essential utilities, while also facilitating the transition towards cleaner and more sustainable energy sources.

Table 1. ***Alternative energy production in Azerbaijan, 2013-2022***

	hydroelectric power station	wind	solar power station	electricity generated from wastes incineration
2013	1 489,1	0,8	0,8	134,1
2014	1 299,7	2,3	2,9	173,5
2015	1 637,5	4,6	4,6	181,8
2016	1 959,3	22,8	35,3	174,5
2017	1 746,4	22,1	37,2	170,3
2018	1 768,0	82,7	39,3	162,2
2019	1 564,8	105,4	44,2	195,9
2020	1 069,5	96,1	47,0	200,6
2021	1 277,3	91,4	55,2	193,2
2022	1 595,7	83,3	60,9	205,3

Source: State Statistics Committee of Azerbaijan

Production of electricity in Azerbaijan, as indicated by the data provided for various energy sources from 2013 to 2022, reflects the country's efforts to diversify its energy mix and incorporate renewable energy sources into its electricity generation portfolio. The data shows the production levels for hydroelectric power stations, wind energy, solar power stations, and electricity generated from waste incineration over the specified period.

Steady growth in electricity production from renewable sources reflects Azerbaijan's commitment to diversifying its energy mix and reducing reliance on fossil fuels. This trend

signals a conducive environment for green investments in renewable energy infrastructure, including the development of hydroelectric dams, wind farms, solar parks, and waste-to-energy facilities. The expanding renewable energy sector presents lucrative opportunities for green investments in Azerbaijan. Investors are increasingly drawn to projects that harness the country's abundant natural resources, such as wind, solar, and hydroelectric power, to generate clean and sustainable energy. Green investments in renewable energy projects contribute to economic development, job creation, and environmental sustainability. Government's supportive policies and incentives for renewable energy development further incentivize green investments in the energy sector. Initiatives such as feed-in tariffs, tax incentives, and regulatory frameworks promote the deployment of renewable energy technologies and attract investment in green infrastructure projects.

Expansion of renewable energy production fosters job creation across various segments of the labor market. Construction, manufacturing, installation, operations, and maintenance of renewable energy infrastructure require a skilled workforce, generating employment opportunities. Growth of the renewable energy sector stimulates economic growth and enhances the resilience of the labor market. Job opportunities in renewable energy contribute to household incomes, consumer spending, and overall economic activity, driving prosperity and socio-economic development.

Table 2. ***Investments in fixed assets directed to the energy sector, 2015-2022, million manat***

2015	287,2
2016	370,2
2017	870,5
2018	602,9
2019	490,0
2020	486,6
2021	482,9
2022	689,8

Source: State Statistics Committee of Azerbaijan

Investments in fixed assets directed to this sector signify a commitment to infrastructure development and capacity expansion, essential for meeting growing energy demands and advancing renewable energy initiatives. These investments contribute to the modernization and upgrading of energy infrastructure, including the construction of new power plants, the expansion of transmission and distribution networks, and the implementation of renewable energy projects such as solar and wind farms. Data reveals fluctuations in investment levels over the period under consideration, reflecting changes in economic conditions, policy priorities, and investment cycles within the energy sector. Data shows a general increasing trend in investments with a substantial jump in 2017 when investments reached 870.5 million manat, more than doubling the previous year's figure. Following the peak in 2017, investments experienced fluctuations in subsequent years, with decreases recorded in 2018, 2019, and 2020 before a slight increase in 2021 and a more significant rise in 2022. Decline in investments observed in 2020 partly attributed to the global COVID-19 pandemic (State Statistics

Committee of Azerbaijan, [SSC], 2022). Rebound in investments in 2021 and 2022 suggests a recovery in investment activity within the electricity, gas, steam, and air conditioning sector, signaling resilience and renewed confidence in the long-term prospects of the energy industry.

Table 3. ***Level of average monthly nominal wages and salaries and number of employed population in supply of electricity, gas, steam and air conditioning***

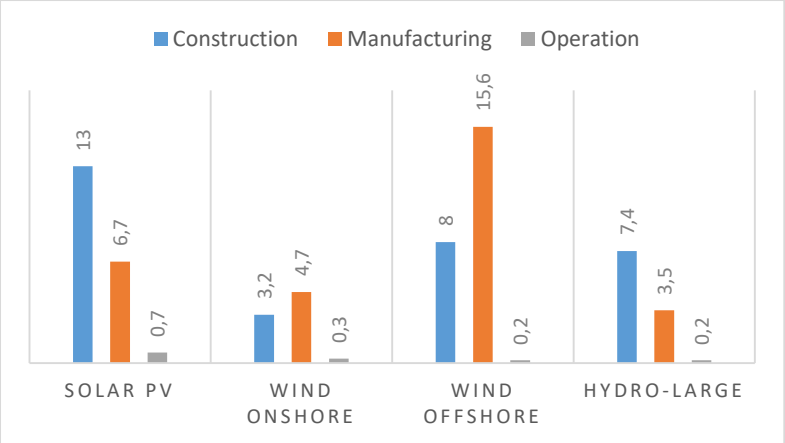
2015	513,2	27,1
2018	583,3	27,5
2019	638,9	30,5
2020	698,3	28,3
2021	770,0	27,2
2022	897,2	27,9

Source: State Statistics Committee of Azerbaijan, azstat.gov.az

There is a clear increasing trend in the level of average monthly nominal wages and salaries over the period under consideration, from 513.2 manat in 2015 to 897.2 manat in 2022. This upward trend suggests growth in wages and salaries within the sector, potentially driven by factors such as increased demand for skilled labor, improvements in productivity, and adjustments for inflation or cost of living. Data also includes the number of individuals employed in the supply of electricity, gas, steam, and air conditioning sector, measured in thousands. The number of employed population remains relatively stable over the years, ranging from 27.1 thousand in 2015 to 27.9 thousand in 2022. While there may be fluctuations in employment levels from year to year, the overall trend indicates a consistent workforce size within the sector, with no significant deviations observed over the period.

Data reflects the socioeconomic importance of this sector in providing employment opportunities and livelihoods for a significant portion of the population. Competitive wages and salaries attract skilled workers and professionals to the energy sector, fostering talent development and expertise in energy production, distribution, and management. As a result, the sector not only drives economic activity and contributes to GDP growth but also supports household incomes and standards of living.

Chart 2. ***Employment in different energy sectors (Jobs per MW)***



Source: Mustafayev, Kulawczuk, Orobello, (2022)

Manufacturing sector could be impacted by changes in the wages and employment levels within the supply of electricity, gas, steam, and air conditioning sector. Manufacturing industries often rely on energy-intensive processes and infrastructure for production, including electricity and steam. Any fluctuations or trends in the wages and employment levels within the energy supply sector can have ripple effects on manufacturing activities, influencing production costs, competitiveness, and workforce dynamics (Mustafayev, Kulawczuk, Orobello, 2022).

Construction sector is closely linked to the demand for infrastructure development, including energy-related infrastructure such as power plants, transmission lines, and distribution networks. Changes in the wages and employment levels within the supply of electricity, gas, steam, and air conditioning sector may indicate shifts in investment patterns, project timelines, and construction activities related to energy infrastructure projects. Consequently, the construction sector may experience changes in demand for construction services, labor availability, and project opportunities based on developments in the energy supply sector.

Transportation and storage sector plays a crucial role in facilitating the movement of energy resources, including electricity, gas, and steam, from production facilities to end-users. Fluctuations in the wages and employment levels within the supply of electricity, gas, steam, and air conditioning sector can influence transportation requirements, logistics operations, and storage capacities associated with energy distribution and delivery.

4. Azerbaijan's Renewable Energy Potential

As the global demand for clean and sustainable energy continues to rise, Azerbaijan stands poised to capitalize on its renewable energy potential to meet domestic energy needs, reduce dependency on fossil fuels, and contribute to environmental sustainability. Azerbaijan's abundant rivers, including the Kura, Araz, and Tovuz, present considerable potential for hydropower generation. The country's mountainous terrain and high precipitation levels contribute to the availability of water resources suitable for hydropower projects. Hydropower plants can be constructed on various scales, from large-scale reservoir dams to small-scale run-of-the-river installations, providing flexibility in meeting energy demand and enhancing energy security.

With approximately 2,400 to 3,200 hours of sunshine per year, Azerbaijan enjoys abundant solar radiation levels ideal for solar power generation (Center of Analysis of International Relations [AIR Center], 2024). The country's favorable climatic conditions and vast expanses of open land offer ample opportunities for deploying solar photovoltaic (PV) and concentrated solar power (CSP) systems. Solar energy projects, including rooftop installations, solar parks, and utility-scale solar farms, hold significant potential to diversify Azerbaijan's energy mix and reduce reliance on fossil fuels.

Azerbaijan's coastal regions and elevated landscapes present favorable wind conditions conducive to wind energy generation (Azertag.az, 2024). The Caspian Sea coastline and the foothills of the Greater Caucasus Mountains offer high wind speeds suitable for onshore and offshore wind farms. Wind energy projects, featuring modern wind turbines and advanced technology, have the potential to harness Azerbaijan's wind resources and contribute to meeting electricity demand, particularly in rural and remote areas.

Azerbaijan possesses abundant biomass resources derived from agricultural residues, forestry residues, and organic waste streams. Agricultural activities, including crop cultivation and livestock farming, generate significant biomass feedstock suitable for bioenergy production. Biomass energy technologies such as biogas production, biomass combustion, and biofuel refining offer sustainable solutions for heat and power generation, as well as for decentralized energy production in rural communities (Mammadov, 2022).

Azerbaijan's abundant solar radiation, favorable wind conditions, and hydroelectric potential provide a solid foundation for manufacturing renewable energy technologies. The country can establish facilities for producing solar panels, wind turbines, and hydropower equipment, catering to both domestic demand and export markets. With supportive policies and incentives, Azerbaijan can attract investment in renewable energy technology manufacturing, fostering innovation and job creation in engineering, manufacturing, and installation sectors. The growing emphasis on energy efficiency and conservation presents opportunities for manufacturing energy-efficient appliances in Azerbaijan. By promoting the adoption of energy-efficient technologies and setting stringent energy efficiency standards, Azerbaijan can stimulate domestic demand for green appliances and encourage local manufacturing to meet consumer needs while reducing energy consumption and carbon emissions.

With the global shift towards electric mobility, Azerbaijan has the potential to manufacture electric vehicles (EVs) and associated components such as batteries, electric motors, and charging infrastructure. Leveraging its expertise in automotive manufacturing and strategic partnerships with EV technology providers, Azerbaijan can establish assembly plants and research facilities to produce EVs tailored to domestic market preferences. Investments in EV manufacturing not only promote sustainable transportation but also create employment opportunities in vehicle assembly, component manufacturing, and charging infrastructure development.

Azerbaijan's potential to produce green technologies extends beyond manufacturing to encompass the entire supply chain, including raw material sourcing, transportation, and logistics. The country can establish partnerships with local suppliers, invest in infrastructure development, and streamline logistics processes to support green technology manufacturing. By integrating the supply chain efficiently, Azerbaijan can enhance competitiveness, reduce production costs, and ensure the sustainability of green technology manufacturing operations.

Conclusions

The findings confirm that investments in renewable energy technologies and infrastructure development play a critical role in job creation, skills development, and income generation. It underscores the transformative potential of renewable energy transition, contributing to a deeper understanding of how strategic investments in green energy can maximize socio-economic benefits and drive inclusive growth and development across the economy. It fills the research gap by showing how fluctuations of investments in renewable energy projects influence employment outcomes and wages of employees who work in this sector in Azerbaijan.

The electricity, gas, steam, and air conditioning supply sector in Azerbaijan is a cornerstone of the nation's economy, serving as the backbone of essential utilities provision

and driving the transition towards sustainable energy sources. Through investments in fixed assets, this sector underscores a commitment to infrastructure development vital for meeting increasing energy demands and advancing renewable energy initiatives. Despite fluctuations in investment levels over the years, the sector has demonstrated resilience, particularly highlighted by a rebound in investments following the disruptions caused by the global COVID-19 pandemic. This resurgence signals renewed confidence in the long-term viability of the energy industry and reflects ongoing efforts towards modernization and capacity expansion.

Upward trend in average monthly nominal wages and salaries within the sector reflects positive growth in labor compensation, potentially influenced by factors such as rising demand for skilled labor and productivity improvements. Although the number of individuals employed in the sector has remained relatively stable, fluctuations in employment levels could have broader implications for related industries, including manufacturing, construction, and transportation. Changes in wages and employment within the energy supply sector can impact production costs, construction activities, and transportation requirements, influencing workforce dynamics and economic activities across various sectors. Strategic investments and policy interventions will play a pivotal role in shaping the future trajectory of the energy sector and driving inclusive growth and development across the economy.

Collaboration between government agencies, sovereign wealth funds, international organizations, and other stakeholders is essential for driving green investments and sustainable development in Azerbaijan. By leveraging policy frameworks, financial resources, and international partnerships, Azerbaijan can accelerate its transition to a low-carbon economy and mitigate environmental risks.

Azerbaijan's commitment to renewable energy development, coupled with strategic investments in manufacturing and innovation, holds immense potential for driving sustainable growth, reducing environmental impacts, and enhancing energy security. By capitalizing on its renewable energy resources and fostering a conducive policy and regulatory environment, Azerbaijan can achieve its vision of a cleaner, more resilient, and sustainable energy future, contributing to the well-being of its citizens and the global community alike.

REFERENCES

1. Ankara Center for Crisis and Policy Studies, (2024). *Azerbaijan's Green Energy Moves.* https://www.ankasam.org/azerbaijans-green-energy-moves/?lang=en
2. Asian Development Bank, (2023). *Green Finance for Asian State-Owned Enterprises* https://www.adb.org/publications/green-finance-asian-state-owned-enterprises
3. Azerbaijan President’s Office. Presidential decree, (2022). *Azerbaijan 2030: National Priorities for Socio-Economic Development* https://president.az/en/articles/view/50474
4. Center of Analysis of International Relations, (2024). *Azerbaijan’s Green Growth Plan* https://aircenter.az/en/single/azerbaijans-green-growth-plan-1340
5. Azertag.az, (2024). *Azerbaijan is a regional leader in green energy transition.* https://azertag.az/en/xeber/azerbaijan_is_a_regional_leader_in_green_energy_transition-2882830#:~:text=In%20the%20field%20of%20alternative,being%20considered)%3B%20launch%20a

6. Qasimli, V., Huseyn, R., Huseynov, R., Hasanov, R., Cafarov, C., Bayramova, A. (2022). *Center for Analysis and Communication of Economic Reforms of the Republic of Azerbaijan, CACERRA- 2022, Green economy* https://ereforms.gov.az/files/publications/pdf/az/b87cb7433650a8abbc72f0324cc1fd71.pdf
7. European Union, (2023). *EU4Climate: Azerbaijan.* https://eu4climate.eu/Azerbaijan
8. Ministry of Energy of the Republic of Azerbaijan, (2024). *The Use of Renewable Energy Resources in Azerbaijan,* https://minenergy.gov.az/en/alternativ-ve-berpa-olunan-enerji/azerbaycanda-berpa-olunan-enerji-menbelerinden-istifade
9. Mustafayev, F., Kulawczuk, P., Orobello, C., (2022). *Renewable Energy Status in Azerbaijan: Solar and Wind Potentials for Future Development. Energies, 15, 401.* https://doi.org/10.3390/en15020401
10. State Statistics Committee of Azerbaijan, (2022). https://stat.gov.az/source/balance_fuel/?lang=en
11. Mammadov, M., Topchubashov Center, (2022, June 9). *Foreign green investments in Karabakh promise more than a zero-emissions future.* https://top-center.org/en/analytics/3385/foreign-green-investments-in-karabakh-promise-more-than-a-zero-emissions-future
12. United Nations Conference on Trade and Development, (2023). *World Investment Report 2023* https://unctad.org/publication/world-investment-report-2023
13. Eastern Partnership, (2018). *Scaling up green investment and finance in Azerbaijan* https://wedocs.unep.org/bitstream/handle/20.500.11822/37044/SGIFA_EN.pdf?sequence=1&isAllowed=y
14. United Nations, (2022). *Green Transformation in Azerbaijan: Policy Brief.* https://azerbaijan.un.org/en/245538-green-transformation-azerbaijan-policy-brief