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Investment in Green Energy: Financing strategies, Challenges and Opportunities for Businesses in case of a developing country

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Abstract

The global imperative to combat climate change and transition to sustainable energy sources has ushered in a new era of investment in green energy. This transition offers not only environmental benefits but also substantial economic opportunities for businesses. However, navigating the financing landscape for green energy projects poses various challenges and uncertainties that require innovative strategies. Investment needs are much higher in developing than in developed economies, relative to their existing asset bases. In developing countries, energy investment is needed not only for the transition, but also to ensure access to sustainable and affordable energy for all. This paper explores the key financing strategies, challenges and opportunities that businesses encounter when investing in green energy. The study is based on primary data which have been gathered through a questionnaire with medium and large businesses in Albania. In addition, secondary data regarding the sector and other public information for green energy sources are used to complete the analysis. The results indicate that businesses in Albania have made limited progress towards green investments. Adapting businesses to new energy sources means new innovative solutions and requires them to change business models.

Key words: green energy, renewable energy, SDG, solar panel, developing country.

1. INTRODUCTION

The 2030 Agenda requires that businesses change their priorities and move from traditional financial and monetary objectives to more sustainable objectives that lead to poverty reduction, gender equality, environmental protection, etc. The current orientation of businesses in global level is to align and meet these objectives, even though they lead to increased costs for businesses. They are strategic priorities that reduce costs due to the better use of resources, minimization of risks, use of innovative

solutions, and generally bring long-term benefits to the businesses themselves and to the economy.

The energy transition is crucial to achieving the 2030 Agenda for Sustainable Development, and it is mainly linked with SDGs 7 and 13. A well-established energy system is needed to ensure a sustainable economic development which is generated with the contribution of all sectors: from businesses, medicine and education to agriculture, infrastructure, communications and high technology. Investing in renewable technologies is one of the key drivers towards a sustainable and reliable energy system, which can be afforded by everyone (United Nations, 2023).

In this context, the contribution of all public and private actors is needed to coordinate efforts and actions. Governments can improve the legal frameworks and offer incentives to businesses which are committed to making green investments. Businesses can revise their strategies and integrate more social and environmental goals in their vision. Investors can invest in sustainable projects which offer not only financial benefits.

The economic development is impacted at a large extent by the sustainable energy strategies, especially those derived by green energy sources. In the countries where such sources are used, it is identified a significant improvement in terms of industrial, technological, sectoral and social developments (Midilli, Dincer, & Ay, 2006). The study of (Newbery , 2016) places the logic of the Energy Market Reform (EMR) firmly within the green growth strategy by arguing that a main justification for green investment is to be consistent in using the same low discount rate that justifies climate change policies with a low cost of borrowing for that investment.

International investment in renewable energy has nearly tripled since the adoption of the Paris Agreement in 2015 (UNCTAD, 2023). However, much of this growth has been concentrated in developed countries. In developing countries, and especially the least developed countries, the energy transition is one of many competing policy priorities, reflected by high ambitious national targets set by most of these countries. But so are the investment needs associated with the targets and the structural barriers to attracting that investment. The cost of capital is a key barrier for energy investment in developing countries.

Because of the restrictions that the Basel capital requirements place on lending by financial institutions, and because banks consider most RE projects to be risky, banks are reluctant to finance them. Another problem is that banks' resources come from deposits, and deposits are usually short to medium term, whereas green infrastructure projects require long-term finance, resulting in a maturity mismatch for banks. Banking finance cannot, therefore, provide all the finance for green projects and we need to look for new channels of finance for this sector to fill the financing gap (Sachs, Woo, Yoshino, & Taghizadeh-Hesary, 2019).

Green energy projects are considered of high risk and not highly profitable for businesses, therefore they are not so interested in such investments. At the same time, governments, especially in developing countries cannot afford to support these projects 100% with public financing. This has caused a financing gap and discouragement for green projects (Yoshino & Taghizadeh-Hesary, 2018). Therefore, financial institutions show more interest in fossil fuel projects than green projects. In this context there is a funding challenge that may be alleviated by some possibilities such as exploring and implementing a range of innovative financing mechanisms, from international

payments for ecosystem services to financial and currency transactions taxes to international financing facilities (Barbier, 2011)

In order to achieve the SDGs, it is needed to scale up the financing of investments that provide environmental benefits, through new financial instruments, known as "green finance" and new policies, such as green bonds, green banks, carbon market instruments, fiscal policy, green central banking, financial technologies, community based green funds, etc. (IFC, 2023)

The paper is organized as follows. In the next section, the literature review on green energy investments and financing in Southeast Europe is summarized. Then the methodology of the study is presented, followed by the analysis of results. At the end of the paper are the conclusions and the discussion.

2. LITERATURE REVIEW

The transition towards low-carbon environment is accompanied with benefits and costs in both macroeconomic and microeconomic level. (IRENA, 2019) emphasizes that the key benefits are socio-economic, considering the increased employment in the whole value chain of solar photovoltaic technologies. The domestic industries can benefit from the high demand for input, new skills are being developed etc. The transformation of the energetic sector together with sustainable financial system can boost economic development, especially in developing countries (Almarafi, Khudari, & Abdullah, 2023).
A comprehensive literature review on green energy investments and financing in Southeast Europe (SEE) reveals a complex landscape characterized by both opportunities and challenges. The region's transition to green energy sources is vital for achieving sustainability goals, reducing greenhouse gas emissions, and enhancing energy security. However, several factors impact the financing of these projects.

SEE countries, including Albania, Bulgaria, Croatia, Greece, Romania, and Serbia, possess substantial renewable energy potential, particularly in wind, solar, hydropower, and biomass resources. This potential represents a significant opportunity for green energy investments. Many studies emphasize the importance of stable and supportive policy and regulatory frameworks to attract green energy investments (Polzin, Egli, Steffen, & Schmidt , 2019). This includes feed-in tariffs, guaranteed power purchase agreements (PPAs), and incentives like tax benefits.

International financial institutions such as the European Union, World Bank, EBRD, and IFC have played a crucial role in financing green energy projects in SEE through grants, loans, and technical assistance. Public-Private Partnerships have been explored to leverage private sector investments and expertise in green energy projects (Prasad, Loukoianova, Xiaochen Feng, & Oman, 2022). These partnerships can help bridge the funding gap and mitigate risks. Literature discusses various financing mechanisms, including project finance, green bonds, venture capital, and private equity funds, to fund renewable energy projects in the region. Green bonds, in particular, have gained attraction as a means of attracting responsible investment (OECD, Green Bonds. Mobilising the debt capital markets for a low-carbon transition, 2015). Studies highlight the need for risk mitigation instruments, such as political risk insurance and currency hedging, to address the perceived risks associated with SEE investments (OECD, 2021). Capacity building and technical assistance programs are essential to develop local expertise and ensure the successful implementation of green energy projects. Research underscores the significance of involving local communities and

stakeholders in the planning and development of renewable energy projects to build public support and reduce opposition (Enserink, Van Etteger, Van den Brink, & Stremke, 2022).

Numerous challenges impede green energy financing in SEE, including political instability, regulatory uncertainty, limited access to capital, and the need for infrastructure upgrades (IRENA, Renewable Energy Market Analysis: Southeast Europe, 2019). These barriers require targeted interventions. Based on a systematic review, (Darweesh, Khudari, & Othman, 2023) found contradictory results in literature regarding the impact of financial system on CO2 emissions. On the other hand, several studies offer case studies and best practices from SEE countries that have successfully attracted green energy investments (Energy Community Secretariat, 2020), (ECRB, 2023), (EBRD, 2021).

Greece implemented a stable feed-in tariff system for renewable energy projects, providing long-term price guarantees for electricity generated from green sources. Additionally, they have successfully introduced competitive auctions for renewable energy capacity, ensuring cost-effective project development.

Croatia has enacted supportive legislation, including the Renewable Energy Sources Act, which provides a clear legal framework for green energy investments. The country has also invested in grid infrastructure to facilitate the integration of renewable energy sources.

Serbia offers guarantees to investors to mitigate political and regulatory risks. The government has also provided long-term power purchase agreements (PPAs) to renewable energy projects, offering a stable revenue stream.

Romania has attracted investments through incentives such as a green certificate system, which grants certificates for every megawatt-hour of electricity generated from renewable sources. These certificates can be sold on a dedicated market, providing additional revenue for green energy projects.

Albania has encouraged public-private partnerships (PPPs) to develop renewable energy projects, leveraging private sector expertise and capital. This approach has been particularly successful in the hydropower sector.

North Macedonia has adopted investor-friendly policies, offering tax exemptions and other financial incentives to attract green energy investments. The country has also streamlined permitting processes to reduce project development timelines.

Bulgaria has diversified its renewable energy sources, including wind, solar, biomass, and hydropower. This diversification reduces risks associated with relying on a single renewable energy type.

Montenegro has engaged in regional cooperation for the development of cross-border renewable energy projects. Such collaborations enhance project viability and attract international financing. Slovenia has invested in research and innovation in green energy technologies, fostering a culture of innovation and sustainability.

Many SEE countries have accessed European Union (EU) funding and grants to support green energy initiatives. EU support has been instrumental in financing renewable energy projects across the region. These best practices demonstrate the diverse approaches that SEE countries have adopted to attract green energy investments. Success often involves a combination of stable policy frameworks, financial incentives, supportive legislation, and regional cooperation. Additionally, many SEE nations have benefited from international funding and partnerships, highlighting the importance of collaboration in achieving sustainable energy

transitions. These examples can serve as models for other nations in the region. Scholars advocate for regional cooperation to develop cross-border renewable energy projects and regional energy markets (Caldes, Del Rio, Lechon, & Gerbeti, 2018), (Aras, 2021), (Ecofys and eclareon, 2018). Such cooperation can enhance investment opportunities and energy security. Researchers discuss the integration of sustainable finance principles and Environmental, Social, and Governance (ESG) criteria in green energy investments to attract socially responsible investors. The literature on green energy investments and financing in SEE reflects a growing awareness of the region's potential and the need for coordinated efforts to overcome challenges. However, the effectiveness of these strategies may evolve as new policies and economic conditions emerge. Researchers and policymakers should continue to monitor developments in this dynamic field to achieve sustainable energy transitions in SEE.

In summary, SEE has significant potential for renewable energy generation, including solar, wind, hydro, and biomass. However, attracting investment and securing financing for these projects can be challenging due to various economic, political, and regulatory factors. Therefore, some strategies and considerations for financing green energy in South East Europe that should be considered by SEE countries include:

- *Policy and Regulatory Frameworks:* Governments in SEE should establish clear and stable regulatory frameworks that promote renewable energy investments. This includes setting feed-in tariffs, power purchase agreements (PPAs), and providing incentives like tax breaks or subsidies for green energy projects.

- *International Cooperation and Funding:* Seek support from international organizations such as the European Union (EU), World Bank, International Finance Corporation (IFC), and European Bank for Reconstruction and Development (EBRD). These organizations often provide grants, loans, and technical assistance for green energy projects in SEE.

- *Public-Private Partnerships (PPPs):* Encourage public-private partnerships where governments collaborate with private companies to develop and finance green energy projects. PPPs can help leverage private sector expertise and capital.

- *Project Financing*: Secure project-specific financing through banks, financial institutions, and investors. Green bonds, venture capital, and private equity funds dedicated to renewable energy can be potential sources of financing.

- *Energy Auctions and Tenders*: Organize competitive auctions and tenders for renewable energy projects. This can attract private sector investments by providing a transparent and predictable process for securing power purchase agreements.

- *Local and Regional Investment Funds*: Establish local and regional investment funds dedicated to green energy projects. These funds can pool resources from governments, private investors, and international organizations to support renewable energy development.

- *Risk Mitigation Instruments*: Implement risk mitigation mechanisms such as guarantees, insurance, or currency hedging to reduce the perceived risks for investors, especially related to political and regulatory stability.

- *Banking and Financial Incentives*: Offer favorable terms and conditions for green energy project financing through local banks and financial institutions. This can include lower interest rates and longer repayment periods.

- *Capacity Building and Technical Assistance*: Invest in capacity building and technical assistance programs to develop local expertise and ensure the successful implementation of green energy projects.

- *Community Engagement and Support:* Involve local communities and stakeholders in the planning and development of renewable energy projects. This can help build public support and reduce opposition to green energy initiatives.

- *Green Bonds and Sustainable Finance*: Promote the issuance of green bonds and incorporate sustainable finance principles to attract socially responsible investors.

- *Regional Cooperation*: Encourage cooperation among SEE countries to develop cross-border renewable energy projects and regional energy markets, which can attract larger investments and improve energy security.

Financing green energy in Southeast Europe requires a multifaceted approach that combines supportive policies, international cooperation, and innovative financing mechanisms. By addressing the unique challenges of the region while capitalizing on its renewable energy potential, SEE can transition toward a sustainable and secure energy future (IFC, 2023).

3. MATERIALS AND METHODOLOGY

The aim of the study is to identify the level of investment in green energy in Albania and to explore the key financing strategies, challenges and opportunities that businesses encounter when investing in green energy. For this, the study is based on primary data which have been gathered through a questionnaire with businesses. Secondary data regarding the sector and other public information for green energy sources have also been used to complete the analysis.

The study was carried out in several steps:

First, a deep review of the theoretical, regulatory and methodological frameworks was done based on official reports, laws and by-laws, research articles, etc.

Second, the questionnaire was prepared and piloted in some businesses. Comments and suggestions were reflected in the final version of it.

Third, the questionnaire was physically distributed in order to reach a higher number of responses and to increase the accuracy.

Fourth, questionnaire data was processed, and the analysis of results was done.

A key aspect of research based on primary data is the determination of the sample. In our study, several criteria were taken into consideration:

1. *The size of the business* - medium and large businesses were selected, which are potentially more oriented towards investments in solar energy, due to the financial position to cover costs, as well as the awareness to complete the standards related to the protection of environment, etc.

2. *Geographic position* - businesses have been selected in proportion to the number of businesses operating in 2022 in each district. For this reason, the cities with the highest number of businesses were selected, which resulted in Tirana, Durrës, Shkodra, Elbasani, Fieri, Korca and Vlora (INSTAT, 2022).

3. *Sector composition* - the sampling included sectors with the highest contribution in GDP.

In total, 50 questionnaires were correctly filled. There is no official database on the businesses that use solar panel, therefore it was difficult to determine the population of the study and the sample consequently. This is a limitation of the study, but considering this is the first study in this field in Albania, the sample can help us to draw important conclusions and can be further extended in the future.

In the following section we give the results of the analysis. We present the descriptive statistics combined with correlation analysis to identify if there is any relation between variables.

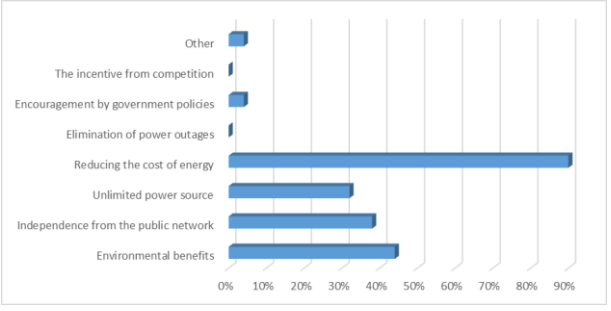
4. RESULTS AND DISCUSSION

The focus of this paper is medium and large companies operating in Albania. According to Law No. 10042, dated 22.12.2008, "For Small and Medium Enterprises", medium-sized companies are considered those companies that have 50-249 employees, while companies with over 250 employees are consequently considered large companies.

The number of medium companies operating in our country (1,227) is significantly bigger than the number of large companies (174) (INSTAT, 2021). Based on this structure, the questionnaire was completed 80% by medium companies. The majority of questionnaires is completed in Tirana, because of the high concentration of businesses in this area. Regarding the sector, the distribution is: industry (28%), construction (20%) and trade (20%) sectors, which are three out of four sectors with the largest number of medium and large companies according to (INSTAT, 2021). The average age of companies is 17 years, ranging from 2 – 33 years.

Investing in solar energy can be considered as an innovation for Albanian companies. The results show that 44% of the companies made the investment no later than a year ago and another 44% made the investment no more than 5 years ago. Regarding the main reasons that have encouraged businesses to invest in solar energy, the results of the questionnaire show that the main reason is the financial aspect: reduction of the cost of energy. On the other hand, the increase in public awareness regarding the damage caused to the environment by the production of traditional energy and the fact that water resources are limited and affected by atmospheric conditions, has led companies to move towards the use of energy produced by solar panels.

Figure 1: Incentives for using green energy

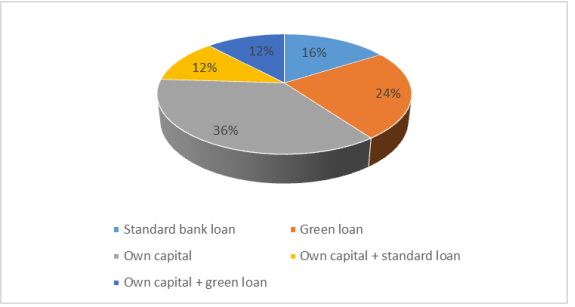


Source: Authors' calculations

Based on the correlation analysis, there is a weak positive relation between the age of the business and the number of years invested in solar panels (Corr = 0.3712). This means that such investment is not dependent by the time the company is operating in the sector.

One of the main bottlenecks in new technology investment is financing. Even though financial institutions have started offering green loans as a financing source directly linked to green energy investments, only 24% of businesses have used only this financing source. In some cases, standard crediting is used (16%) or a combination between bank financing and own capital (24%). On the other hand, there is a significant number of businesses (36%) which use their own funds in buying solar panels.

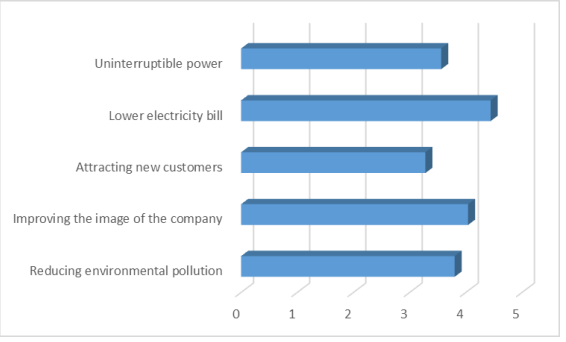
Figure 2: Financing sources



Source: Authors' calculations

Only 8% of businesses meet all their needs using solar panels, while 84% of companies are willing to invest more in the future The highest share of electricity used by businesses comes from the traditional hydro sources. This means that there is space for potential investment in green energy to fulfil their needs in the future. To understand the reasons why they are willing to increase investments in the future, we asked for the benefits derived by solar panels. The results show that the most important benefit is financial due to lower electricity bill (4.44 / 5). There are also important non-financial benefits, such as: improving the company's image (4.04 / 5) and reducing environmental pollution (3.8 / 5).

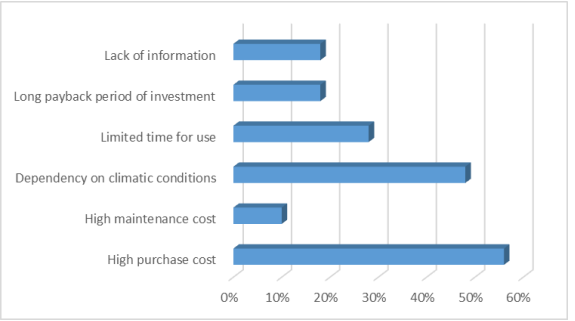
Figure 3: Benefits of using solar panel



Source: Authors' calculations

Although investing in solar panels is more profitable compared to the cost of the traditional electricity (Kapidani & Numani, 2023) and companies have shown interest in increasing investment in the medium term, there are a lot of disadvantages and challenges faced by Albanian businesses. The main disadvantage is related to the high cost of investment. Despite the financial aspect, the dependency on climatic conditions and the long payback period are key non-financial disadvantages for businesses.

Figure 4: Disadvantages of using solar panel



Source: Authors' calculations

The average solar panel capacity of the sample is 15 kwh. Based on the results of the correlation analysis, the capacity has very weak relation with the financing strategy, the age of the business and the number of years of green investment.

5. CONCLUSIONS

Albania is a developing country which focuses on producing energy from hydro sources. This structure of the energetic sector is associated with many disadvantages, which originate primarily from the dependence on atmospheric conditions. One of the biggest problems is energy inefficiency, which comes mainly from outdated networks and weak infrastructure in this sector (Đuraškovic, Konatar, & Radovic´, 2021). This has caused network losses of 20% of energy produced and imported in the last 5 years (INSTAT, 2022).

In the last decade, there is a slight shift towards consumption of green energy from both households and businesses. Nevertheless, based on national official data, green energy comprises only 0.8% of the gross electricity consumption (INSTAT, 2022), which is very low considering the requirements set by the Paris Agreement. Since Albania remains a net importer of energy, there is a potential to complete the internal demand by other sources, such as green energy.

The Green Agenda for Western Balkans specifies a set of objectives in line with the European Green Deal and can be used as a roadmap to move towards a sustainable economy. In this context, the government of Albania has improved the legislation in recent years, but the results are not so satisfying due to low implementation. Moreover, several policies to support businesses and households to invest in solar panel have been undertaken, but they are considered not effective and are accompanied with many bureaucracies. Based on the results of the questionnaire, only 4% of businesses are encouraged by such policies.

Despite the role of government, the business ecosystem plays an important role towards achieving the environmental oriented goals. Adapting businesses to new energy sources means new innovative solutions and requires them to change business models. Companies should do cost-benefit analysis to choose the most suitable systems. In field of green innovation, businesses in Albania have made limited progress (Jorgji & Gjika, 2023). This is supported also by our study, because approximately 90% of businesses have invested in solar panels in less than five years.

One of the main barriers for businesses is considered the high cost of investment (56%). Financing by loans is used in almost 50% of cases (alone or combined with own capital) but it is considered expensive. There are also non-financial factors that discourage businesses such as: dependency on climatic conditions, limited time for using solar panels, etc.

On the other hand, businesses benefit from low electricity bills and the improvement of the company image. Environmental benefits such as reduction of pollution are also considered an important benefit.

Medium and large businesses play an important role in the overall economic development of Albania in terms of GDP contribution, employment, exports, etc. Therefore it is of high importance to address their needs and to support them in creating higher value and reducing costs.

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