

The importance of green entrepreneurship in the context of green economy and sustainable development

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Keywords

*Green economy, green entrepreneurship,
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ABSTRACT

Green entrepreneurship is becoming more and more seen as a tool that could connect environmental goals with business development; however, empirical evidence is in many instances still scattered between the global market and national policy and energy indicators. This study assesses the role, opportunities and constraints of green entrepreneurship through peer-reviewed literature and secondary institutional data (from LSEG, World Economic Forum, OECD, ICC and Sage, IRENA and ILO as well as official sources of Azerbaijan). Non-equivalent indicators are not compared, but rather the study uses structured descriptive benchmarking in the areas of market expansion, technology costs, SME finance and Azerbaijan's renewable-energy and policy environment. The data reveal that global green-economy market capitalisation surpassed US\$10 trillion in 2026, and that green revenues increased by 5.3% in 2025; the value of the green economy is projected to exceed US\$7 trillion by 2030 and is already more than US\$5 trillion. The share of SMEs stating that sustainability is important grew from 67% in 2024 to 70% in 2025, while green-finance applications and receipts stayed at 3% and 1% respectively. The share of renewables in Azerbaijan's overall energy supply increased from 1.3% in 2021 to 2.3% in 2025, with robust renewable energy development in solar and wind, and over AZN 34 million in concessional financing for 36 green projects. The results show that the market and technology momentum need to be supported by available finance, reporting ability, regulatory certainty, and specific government assistance to ensure that green-economy growth leads to greater entrepreneurial activity.

INTRODUCTION

The shift to a low carbon and resource efficient economy is transforming the rules of business game when it comes to the creation, financing and scaling of businesses. Demand for business models that create economic value and minimize environmental pressure has surged as a result of climate change, resource limitations, pollution and a new policy focus on sustainable development. Green entrepreneurship is within this transition as it involves product, service, or process that support environmental improvement and entrepreneurial opportunity recognition. The results of its work are therefore not only measured by profitability and growth but also by the positive impact achieved by environmental, energy and resource efficiency, emissions reduction, cleaner technologies and other sustainability outcomes (Domańska et al., 2018; Neumann, 2022).

Market evidence points to an increase in commercial space for the environment-oriented activity. The competitiveness of several low-carbon technologies, green revenues and the deployment of clean-energies have significantly improved and new opportunities have arisen in the areas of renewable energies, energy efficiency, waste management, circular production, mobility and environmental services. Meanwhile, SME's capacity to be a part of this transition is not consistent. Important for innovation and diffusion of green solutions, SMEs often suffer from barriers to finance, technical capacity, sustainability reporting, regulatory know-how and collateral.

These issues have a special relevance to Azerbaijan, where diversification, environmental quality, clean energy and private sector development become a growing part of national development priorities. Current debates tend to focus on the growth of the global green economy and on indicators of national transition, but often there is a gap between the global opportunity signals and the conditions which affect the development of entrepreneurial activity in the country. This study attempts to fill this void by systematically describing some key indicators of global markets and official evidence on green-project financing and renewable energy supply in Azerbaijan, along with some indicators for SME-financing. The goal is to find out where market dynamics are transforming into entrepreneurship, where they are still missing and which policy orientations are most relevant in strengthening green entrepreneurship in the national context.

LITERATURE REVIEW

Green entrepreneurship is considered as less generic form of sustainable entrepreneurship. Sustainable entrepreneurship aims to generate value in all three aspects of economy, society, and environment; and green entrepreneurship emphasizes more on environmental issues and opportunities. This is important because the environmental advantage is not a side effect of corporate responsibility but is a component of the value proposition, production process, chosen technology, or market served by the enterprise. Green entrepreneurship has therefore been empirically associated with

cleaner production, eco-innovation, renewable energy, resource efficiency, business models based on the circular economy and environmentally responsive business models (Domańska et al., 2018; Misztal & Kowalska, 2024).

There is no automatic link between green entrepreneurship and sustainable development. Entrepreneurship is a potential source of employment, innovation, and productivity; however, the environmental impact of entrepreneurship depends on the nature of what is being produced, how it is produced and what incentives guide the choice of what to produce and invest in. Green entrepreneurship is uniquely related to a sustainable-development outcome, as green entrepreneurs would react to a market failure and a still latent demand for environmental goods and services, as demonstrated by Neumann (2022). Recent studies also highlight that green entrepreneurship can contribute to the achievement of Sustainable Development Goals if the enterprises that drive it not only innovate but also are resource-efficient and have tangible environmental impacts (Onofrei et al., 2026; Chang et al., 2026).

The literature contains three groups of enabling factors. The first is that market demand and technological change can enhance green product/service profitability. As technology costs go down, so do entry barriers and the range of viable business models. Secondly, standards, procurement, tax treatment, licensing, disclosure requirements and access to public support are all ways in which policy and institutions impact green entrepreneurship. Predictable frameworks can promote longer-term investments, while regulatory uncertainty can create risk. Third, for SMEs, it is a question of finance and organisational capabilities. Smaller companies tend to face greater limitations in regards to available collateral, management capacity and transaction costs in the provision of sustainability information or in applying for dedicated financing (OECD, 2021, 2025).

The financing issue is not, therefore, merely one of a lack of interest. Evidence from international surveys shows that many SMEs consider sustainability to be a strategic element but very few SMEs make the leap from interest to formal green-finance applications and funding. This divergence is in line with the wider literature on information asymmetry and capability constraints in SME finance. It also emphasizes that supporting tools should consider not just the provision of financing, but also firms' capacity to design viable projects, report on environmental performance, and adhere to lender requirements (International Chamber of Commerce & Sage, 2025).

In Azerbaijan, the green entrepreneurship is closely related with national priorities in renewable energies, waste management, energy efficiency and economic diversification. This has been reinforced by recent uptick in renewable-energy supplies and green project concessional finance. A useful assessment, however, should not be based on a single numerical scale for global market capitalisation, cross-country SME surveys and national energy-balance indicators as these indicators measure different phenomena. Transparent benchmarking – whether the trends in the direction of global market change, SME financing conditions and the domestic transition indicators are mutually reinforcing and where the institutional bottlenecks are located – is therefore the best way to address this research gap.

MATERIALS AND METHODS

The research is descriptive and involves structured cross-level benchmarking and secondary data. The evidence base is summarised as a range of peer-reviewed studies together with institutional and official statistics. Global market indicators are sourced from LSEG and

World Economic Forum, while SME sustainability indicators and green-finance indicators are sourced from International Chamber of Commerce (ICC) and Sage reports, respectively. Evidence on SME support is drawn from OECD reports, and employment evidence is taken from International Renewable Energy Agency (IRENA) and the International Labour Organization (ILO) reports. The National indicators are based on the State Statistical Committee of the Republic of Azerbaijan, the Ministry of Economy, Azerbaijan Business Development Fund (ABDF) and the national development-priorities document.

The quantitative analysis is based on aggregate indicators published. The main time series for Azerbaijan are the following energy supply time series: total energy supply, hydropower, biomass and waste, wind, solar, total renewable-energy supply, and the renewable-energy supply as a share of the total energy supply for the 2021-2025 period. Any percentage-point changes are calculated directly from the published values, and are also presented as relative percentage changes. The study presents the following for the global green economy: market-capitalisation, revenue-growth, annual-value, projected value and technology-cost indicators for the reference years reported by the original sources. SME indicators are based on the 2024 survey results reported by ICC and Sage versus the 2025 survey results.

The benchmarking is not a direct statistical comparison but is rather an interpretive benchmarking. It is important to remember that the units and populations and denominators are different for global market capitalisation, annual value of the green economy, SME survey percentages, values of concessional loans and national energy-balance measures, so it would be misleading to use a single indicator. This analysis is based on a comparison of four dimensions: (1) market and technology opportunity, (2) SME access to green finance, (3) national renewable-energy and project-finance development and (4) implications for entrepreneurship. From these secondary data of aggregates no causal or inferential claims are made.

Data were reviewed against the institutional or official source mentioned in the reference and the terminology was standardised throughout the manuscript. In particular, the term 'SME' is used consistently to refer to small and medium enterprises, amounts of energy are provided in thousand tonnes of oil equivalent (thousand toe) and percentage changes are differentiated from percentage point changes. Limitations of the study include the uneven geographic coverage of data, the variation in survey construction, in the definition of indicators, and a lack of Azerbaijani firm-level microdata. These restrictions are taken into account in the interpretation of the results.

RESULTS AND DISCUSSION

Costs of technology, employment and global market growth.

The global evidence indicates that there is a sizeable and growing market for green products and services. The global market capitalisation of the green economy reached a milestone value of more than 10 trillion USD for the first time in 2026 (LSEG, 2026), while green revenues grew by 5.3% in 2025, the fastest pace since 2022. According to World Economic Forum, the annual Green Economy in the world is estimated to be more than US\$5 trillion and reach over US\$7 trillion by 2030 (World Economic Forum, 2025). Don't add up these measures; they look at various aspects of the market: market capitalisation is a valuation of the asset market while annual value or revenue indicates the economic activity over a period. But, as a whole, they provide signs of size and ongoing growth.

This opportunity signal is backed up by technology costs. Solar PV and lithium battery prices have dropped by approximately 90% since

2010 and made business models relying on distributed generation, storage, electrification and energy services more competitive (World Economic Forum, 2025). Social aspects also play a major role: in 2024, IRENA and ILO estimate that there will be at least 16.6 million jobs in the renewable energy sector worldwide (IRENA & ILO, 2026). But, these trends are relevant to entrepreneurs as declining technology prices can lower the capital costs of some activities, and market growth and job creation will increase the demand for complementary services, skills, maintenance, logistics, and digital solutions.

Table 1. Selected indicators of the global green economy

Indicator	Value	Reference period
Green-economy market capitalisation	> US\$10 trillion	2026
Growth in green revenues	5.30%	2025
Annual value of the green economy	> US\$5 trillion	2025 benchmark
Projected annual value	> US\$7 trillion	2030
Solar PV technology cost decline	~90%	Since 2010
Lithium-battery cost decline	~90%	Since 2010

Sources: LSEG (2026) and World Economic Forum (2025). Market capitalisation and annual market value are distinct indicators and are not directly additive.

SMEs and their sustainability and access to green financing.

The picture is different with the SME evidence: strategic interest is more strongly expressed than financial access. Across the ICC-Sage survey evidence, the share of SMEs stating that sustainability is central or important to their business increased from 67% in 2024 to 70% in 2025, while public disclosure of environmental performance increased from 24% to 30%. There was minimal growth in interest in green finance (26% to 27%). However, the percentage of those applying for green finance has remained steady, as has the percentage of those receiving it, at 3% and 1%, respectively (International Chamber of Commerce & Sage, 2024, 2025).

This results in a clear aspiration-finance gap. The SMEs interested in green finance were 24 percentage points higher than the SMEs that applied for green finance in 2025, while SMEs that applied for green finance were 26 percentage points more than those that had received finance in 2025. The reduction in the percentage of SMEs who reported having a formal sustainability-reporting system (21% to 8%) should be taken with a grain of caution, as the data are from two different report editions and could relate to shifts in the composition of the survey and/or the measure, in addition to actual behaviour. However, this trend aligns with OECD findings indicating that collateral, lack of expertise, information needs and access to finance are all restrictions that limit SME involvement in green investment (OECD, 2021, 2025).

Table 2. SME sustainability and green-finance indicators, 2024-2025

Indicator	2024	2025
Sustainability is central or important to the business	67%	70%
Publicly disclose environmental performance	24%	30%
Interested in green finance	26%	27%

Have a formal sustainability-reporting system	21%	8%
Applied for green finance	3%	3%
Received green finance	1%	1%

Sources: International Chamber of Commerce & Sage (2024, 2025).

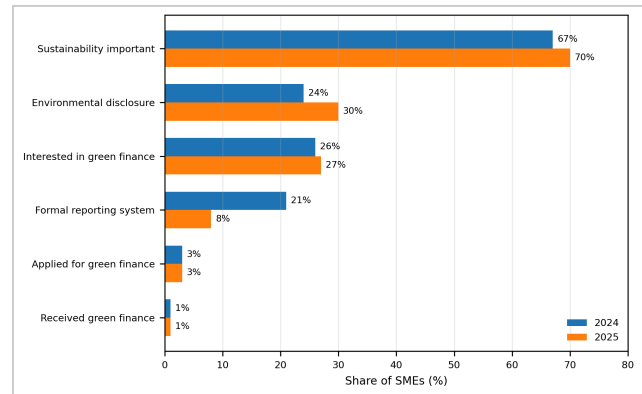


Figure 1. SME sustainability and green-finance indicators, 2024-2025, in comparison

Azerbaijan: policy support and financing for green projects and renewables.

The policy framework of Azerbaijan gives domestic foundation for the development of green entrepreneurship. The President of the Republic of Azerbaijan, 2021, in his speech 'Azerbaijan 2030: National Priorities for Socio-Economic Development' established the connection between competitiveness and private-sector development and a cleaner environment and a green-growth agenda. Waste processing, resource efficiency, transport, agriculture and energy are also identified as important areas of the green-economy transition by the Ministry of Economy (Ministry of Economy of the Republic of Azerbaijan, n.d.). Such priorities generate potential demand for solutions in the fields of renewable-energy services, energy efficiency, recycling, circular production, electric mobility and environmental technologies, which are entrepreneurial solutions.

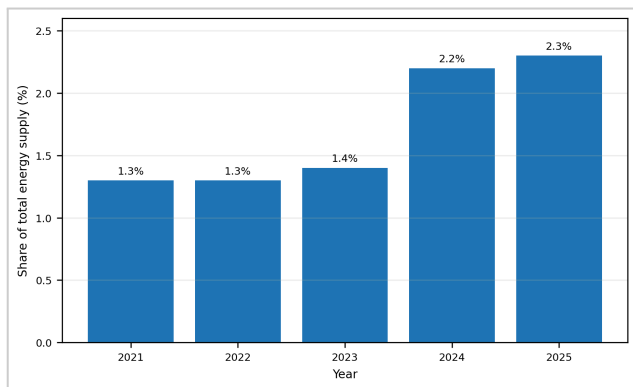
There are more signs of financing support. The Azerbaijan Business Development Fund has given over AZN 34 million in concessional loans to 36 green projects, reported the Azerbaijan Business Development Fund. The activities supported include solar energy, electric-vehicle charging infrastructure, plastics, metal, battery, glass, tyre, and other waste recycling (Azerbaijan Business Development Fund, n.d.). The importance of this support is not just the amount of loan volume; it shows that public finance is being applied to reduce barriers to entry in industries with potential environmental benefits and commercial returns that can appear on various time scales.

The official energy statistics indicate a similar change in the domestic energy mix. Total renewable-energy supply grew from 225.1 thousand toe in 2021 to 411.5 thousand toe in 2025 (+82.8%). Hydropower grew by 122.7%, wind grew by 87.3% and solar energy grew from 4.8 thousand toe to 51.6 thousand toe (a factor of 10.4 increase from a low base). Renewable energy share in total energy supply grew from 1.3% to 2.3% (+1.0 p. p.) (State Statistical Committee of the Republic of Azerbaijan, 2026). Although the contribution to the energy balance is still low, the acceleration from 2023 onwards is of economic importance, as it increases the market for installation, engineering, maintenance, financing, digital monitoring and various other services.

Table 3. Selected renewable-energy supply indicators in Azerbaijan, 2021 and 2025

Indicator	2021	2025
Total energy supply, thousand toe	17,566.6	17,857.8
Hydropower, thousand toe	109.8	244.5
Biomass and waste, thousand toe	102.6	100.6
Wind power, thousand toe	7.9	14.8
Solar power, thousand toe	4.8	51.6
Total renewable supply, thousand toe	225.1	411.5
Renewables in total energy supply, %	1.3	2.3

Source: State Statistical Committee of the Republic of Azerbaijan (2026), Energy of Azerbaijan 2026. The table reports the endpoints of the 2021-2025 series; Figure 2 presents the annual renewable-share trajectory.

**Figure 2.** Renewables' share in energy supply (Azerbaijan, 2021-2025)

Cross-level synthesis and policy implications.

Today, the lack of a green market signal is no longer the main hurdle, according to the evidence from the cross-level. The growth of products and services in the global market and the decreasing costs of technology suggest that products and services are becoming more marketable. The problem seems to be in the transition of this opportunity to investable SME projects. The interest in green finance is still significantly larger than the amounts actually received, both at international and domestic levels; and the participation of firms and private finance in green finance is still in its infancy in the domestic context. This aligns with research that considers green entrepreneurship not just as something to do with motivation but also market opportunity, institutional quality and financing mechanisms, and enterprise capabilities (Neumann, 2022; Onofrei et al., 2026).

The four signals that emerge from cross level benchmarking are the same. On one hand, the opportunity environment is very favorable due to the growth of the global green-economy and the reduction of technology costs; on the other hand, Azerbaijan demonstrates a very high growth rate of solar and wind energy supply and at the same time is at the initial stage of their transition in terms of the share of renewable energy in the overall energy supply. Second, based on the international SME evidence, there is strong interest in sustainability, but low uptake of green finance at the firm level and applications for such financing; in the domestic context, concessional green-project financing is available, but it is not possible to infer uptake of financing at the company level from the aggregate programme data. Third, the green investment and employment in the field of renewable energy continue to grow globally, while Azerbaijan's renewable energy share rose from 1.3% in 2021 to 2.3% in 2025. Fourth, evidence from around the world and evidence from the UK shows that finance,

reporting capacity, predictable regulation, advisory support and clear eligibility conditions are all key in moving green opportunities into enterprise-level activity.

Thus, the area of policy optimisation for Azerbaijan should be the link between entrepreneurs and finance. Some practical solutions are the standardisation of green project eligibility criteria, streamlined documentation for smaller companies, advisory help with environmental and financial reporting, credit-enhancement or guarantee mechanisms as applicable, and better knowledge on the available incentives. It also indicates that business ecosystems around renewable energy should be supported in addition to the generation assets, as these have seen significant growth in recent times, particularly in the solar and wind energy sectors. It is possible to expand the entrepreneurial opportunities that come with the transition by introducing local engineering, maintenance, energy-management software, recycling, charging infrastructure and efficiency services.

However, the evidence elicits cautious interpretation of scale as well. In relative terms, however, Azerbaijan's renewable share increased significantly and in 2025, renewables made up 2.3% of all energy supplies. Similarly, the presence of green loans on concession is not sufficient to proof of access to green loans for SMEs. For this reason, further empirical studies should be conducted based on the firm-level data to test what financing, regulatory and capability factors have the strongest effect on the adoption of green technologies and the access to finance in Azerbaijan.

CONCLUSIONS

This study demonstrates that the market and technology environment is conducive to green entrepreneurship but that institutional and financial environment can be a barrier for the companies to exploit these opportunities. The global green-economy market capitalisation has surpassed US\$10 trillion, green revenues are still growing, and the prices of important green technologies, including solar PV and batteries have dropped substantially. Meanwhile, evidence from the SME survey shows a longstanding disconnect between sustainability goals and green financing for SMEs. Azerbaijan has a more favorable climate for environmentally oriented business activity, thanks to the national policy priorities, green project financing with concession contracts and a growth in solar and wind energy. Renewable energy is still a small component of total energy provision and the available overall figures do not indicate to what extent green financing penetrates individual SMEs. The key policy messages are that support for green entrepreneurship should be based on a combination of predictable regulation, accessible and tailored finance, hands-on reporting and advisory services, and an ecosystem that facilitates renewable energy, circular production, waste management and resource efficiency. The study is a contribution in linking global opportunity indicators to national transition evidence without assuming that non-equivalent measures are directly comparable. Future studies should focus on assessing the causal links between policy support, access to finance, green innovation and enterprises' performance based on firm level and sector level data in Azerbaijan.

AUTHOR CONTRIBUTIONS

All authors contributed to the development and review of the manuscript and approved the final version for submission. Detailed CRediT roles may be confirmed by the authors during final production if required by the journal.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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DATA AVAILABILITY

This study is based exclusively on secondary data and published institutional sources. The data analysed in the manuscript are publicly available from the sources cited in the reference list.

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