

ASSESSMENT OF AZERBAIJAN'S POSITION IN THE ENVIRONMENTAL SUB-INDEX OF THE SOCIAL PROGRESS INDEX

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Abstract. In the modern era, the level of societal development is no longer assessed solely through economic indicators, but also by incorporating factors such as human well-being, social equality, inclusiveness and environmental sustainability. This multidimensional approach enables a more human-centered evaluation of social progress. Environmental protection and ecological sustainability have become fundamental pillars of this progress. Key priorities now include the adoption of sustainable production and consumption patterns, efficient use of natural resources, combating climate change and promoting the green economy. Sustainable development is increasingly viewed as a strategy that meets the needs of current generations without compromising the ability of future generations to meet their own needs. The Social Progress Index (SPI) is a globally recognized metric that evaluates the fundamental aspects of social development. One of its key components, the “Environmental Quality” sub-index, assesses the impact of environmental factors on human life. It includes indicators such as air and water quality, ecological sustainability and the use of renewable energy sources. This study analyzes Azerbaijan’s performance in the “Environmental Quality” sub-index of the SPI and presents a comparative analysis with neighboring and selected countries. The research employs comparative economic-statistical methods and graphical tools to evaluate and interpret the results.

Keywords: *Environmental quality, Social Progress Index, quality of life, air pollution, ecology, lead contamination, waste recovery.*

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1. Introduction

Assessing the social welfare levels of countries and measuring the actual state of social progress has become an increasingly important issue for both economists and policymakers. Alongside traditional economic indicators, there is a growing need for tools that more comprehensively reflect social development. In this context, the Social Progress Index (SPI) is recognized as a crucial instrument for evaluating social welfare and the overall development of societies.

The SPI was developed starting in 2014 by Michael Porter, a professor at Harvard University and the analytical group he leads, the Social Progress Imperative. It is updated annually based on new data. The index aims to measure the extent to which societies meet the social and environmental needs of their citizens, serving as an important tool for governments and civil society organizations in designing policies and programs that support social progress.

Moreover, the index enables a deeper analysis of the relationship between economic growth and social progress, helping to better understand both the objective and subjective causes of disparities in social development across countries. It also serves as a powerful instrument for monitoring the Sustainable Development Goals (Institute of Economics of ANAS, 2021).

The SPI is calculated based on 57 indicators organized into three sub-indexes: basic human needs fulfillment, foundations of well-being and the opportunity for individuals to realize their full potential.

Therefore, the Social Progress Index serves not only as a diagnostic tool for assessing development levels but also as a strategic instrument for informing social policy and directing reform initiatives.

2. Literature review

According to the authors of the index, economic growth alone is no longer sufficient to measure well-being and development in today's world. They argue that *“rising social and environmental challenges-such as the rights of future generations, environmental protection and social inclusiveness-demonstrate the need for new measurement tools. Therefore, tools designed for economic decision-makers aim to go beyond GDP (Gross Domestic Product) in order to promote sustainable and inclusive development”* (Social Progress Imperative, (n.d.)).

For example, Stiglitz et al. (2018) in their report *“Beyond GDP”*, emphasize that although GDP remains a popular indicator for assessing economic performance, it fails to reflect real impacts on well-being, equality and environmental sustainability. Similarly, economist Diane Coyle and others have argued that GDP is inadequate for capturing the nature of 21st-century digital and service-based economies (Coyle, 2025).

As a result, the more indicators are considered, the more accurately and comprehensively the social, economic and environmental dimensions of development can be evaluated.

Currently, some experts argue that using the “comprehensive wealth” approach is more appropriate for assessing countries' development. According to this approach, relying solely on GDP does not allow for an accurate assessment of a country's true well-being and sustainability. This perspective emphasizes the importance of considering social and environmental factors, particularly in long-term planning and is seen as helpful for governments in designing more balanced and equitable policies (International Institute for Sustainable Development, 2024).

Moreover, the United Nations Secretary-General and a high-level panel of experts have pointed out that excessive reliance on GDP hinders attention to “more human-centered, planet-conscious and future-responsible outcomes”. Accordingly, they stress the need for a new measurement framework for development-one that aligns with the Sustainable Development Goals (SDGs) and includes inclusive and sustainable indicators (UN DESA, 2023).

The implementation of the comprehensive wealth approach is not only supported by scientific reasoning but is also logical in terms of promoting social justice, ecological sustainability and long-term well-being.

The analysis shows that evaluating development solely through economic indicators does not reflect the realities of the modern era, while the variety and multiplicity of

indicators provide an opportunity for a deeper, more comprehensive and scientifically grounded analysis of development.

In the SPI, “*Environmental Quality*” is presented as a distinct sub-index within the *Foundations of Wellbeing* dimension. This sub-index primarily includes indicators such as air quality (PM2.5 levels), waste treatment, biodiversity protection and environmental sustainability (Social Progress Imperative, 2020). These indicators reflect not only the ecological situation but also key social factors that affect human health, living conditions and social equity.

The importance of these indicators is widely emphasized in the literature. In the third Environmental Performance Review on Azerbaijan prepared by the United Nations Economic Commission for Europe (UNECE), it is noted that “*Azerbaijan requires structural reforms in its environmental policies and problems such as air and water pollution persist*” (UNECE, 2024). This observation indicates that environmental quality indicators have yet to reach an acceptable level in the country. It also implies that ecological problems are not merely technical issues related to the exploitation of natural resources but hold strategic importance for human health, social equity and the overall well-being of society.

There are numerous studies confirming a strong link between environmental quality and human well-being. For instance, research conducted in European countries shows that air pollution and other environmental risks negatively affect life satisfaction. Orru et al. note that “*environmental pollution plays a significant role not only in health but also in subjective well-being*” (Orru et al., 2015). These perspectives indicate that environmental protection is directly connected to social welfare. In particular, in regions with high levels of air pollution, people’s life satisfaction significantly decreases. Welch states that “*increased air pollution adversely affects not only physical health but also psychological well-being*” (Welsch, 2006). A study conducted in Hong Kong found that “*proximity to green spaces and satisfaction with public areas positively influence the physical aspects of quality of life (QoL), whereas the psychological well-being is more related to factors such as stress and sleep*” (Chang et al., 2020). These findings suggest that sustainable development should consider not only economic indicators but also environmental protection and people’s subjective well-being.

As a result, the “Environmental Quality” sub-index of the Social Progress Index holds strategic significance not only for ecological assessment but also for analyzing social well-being. These indicators represent essential criteria that should be integrated into public policy to ensure harmony between social development and environmental sustainability.

3. The Overall Structure and Global Outlook of the Social Progress Index

The structure of the Social Progress Index (SPI) is based on three main sub-indices: Basic Human Needs, Foundations of Wellbeing and Opportunity (Figure 1). Each sub-index is further divided into four components, forming a comprehensive measurement system composed of 57 distinct indicators. In 2024, the SPI covered more than 99% of the world’s population. Through these indicators, countries are evaluated in detail across key areas such as healthcare, sanitation, education, access to information technologies, human rights and environmental quality. This multidimensional approach enables a comprehensive analysis of countries' social and environmental sustainability.



Figure 1. Framework of the SPI: Dimensions and components

Source: ALTi Foundation (2025)

The Basic Human Needs sub-index evaluates the most fundamental requirements related to survival and safety—such as access to adequate food and basic medical care, water and sanitation, personal safety and shelter. These indicators reflect the extent to which the population has access to minimum living standards.

The Foundations of Wellbeing sub-index covers areas such as education, access to information and communications technology (ICT), health and environmental quality. These domains play a foundational role in the development of human capital and the achievement of long-term well-being.

The Opportunity sub-index assesses the conditions necessary for individuals to realize their full potential. It includes indicators such as personal rights and freedoms, freedom of choice and decision-making, gender equality, social inclusion and access to higher education.

Its comprehensive structure enables the index to provide a deep and multifaceted social assessment based on the socio-economic inclusiveness of societies across different countries. The index serves as an important tool for objectively measuring the level of social development and facilitating international comparisons.

In recent years, the analysis of year-on-year changes has become increasingly important for assessing the dynamics of social progress. During the period from 2014 to 2024, a steady and positive increase in social progress has been observed (Figure 2).

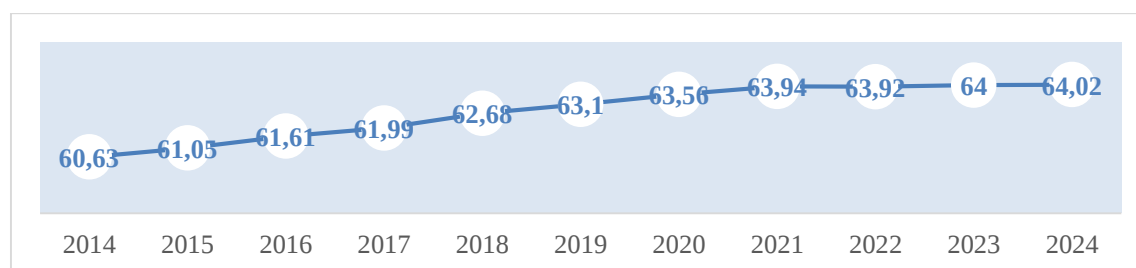


Figure 2. Social Progress Index in the world 2011-2024

Source: <https://www.socialprogress.org/>

Over these 11 years, the overall improvement amounted to 3.39 points. However, since 2020, the growth rate has slightly slowed and has almost stabilized in recent years. This stagnation can largely be attributed to the global social and economic impacts of the COVID-19 pandemic. In particular, the slowdown in development in countries with large populations, along with climate change and political instability, have been key factors contributing to setbacks in global social progress.

Table 1 presents the 2024 Social Progress Index (SPI) scores of the top ten countries, along with those of Azerbaijan. The countries in the top ten demonstrate very high social development with scores ranging between 88 and 92. In these states, the basic needs of the population are well met. Key areas essential for ensuring long-term wellbeing, such as education and healthcare, have significantly improved in both quality and coverage. Their success can be attributed not only to economic strength but also to people-centered social policies. Consequently, these countries are distinguished by advanced infrastructure and robust social protection.

Table 1. Top ten countries and Azerbaijan according to the Social Progress Index (SPI)

2024 Ranking	Countries	SPI	Basic Human Needs	Foundations of Wellbeing	Opportunities
1	Norway	91.95	92.19	92.17	91.48
2	Denmark	91.65	93.12	90.82	91.01
3	Finland	91.28	99.66	90.03	91.16
4	Sweden	90.75	91.78	90.58	89.89
5	Switzerland	90.44	92.64	91.31	87.37
6	Iceland	89.57	91.59	88.90	88.22
7	Luxembourg	88.86	91.74	89.88	84.96
8	Netherlands	88.82	90.02	88.36	84.96
9	Ireland	88.76	89.38	89.05	87.86
10	Germany	88.24	91.51	88.18	85.02
98	Azerbaijan	63.44	87.28	62.39	40.65

Source: Social Progress Imperative (2024)

The highest score in the “Basic Human Needs” sub-index-99.66 points-belongs to Finland, indicating that the population has full access to fundamental services such as food, drinking water, sanitation and housing. It also reflects minimal issues related to safety and health, a high quality of life and effective government policies in the social welfare sector.

In the “Foundations of Wellbeing” sub-index, Norway and Switzerland lead with scores of 92 points, which is attributed to their long-term investments in high-quality education systems, ecological balance and innovation.

In the “Opportunities” sub-index, Finland, Norway and Denmark lead with a score of 91 points.

This results reflects the presence of strong democratic institutions and broad protection of civil liberties in these countries. Other developed nations ranking high also demonstrate strong performance in this area. Overall, the success of countries leading in social welfare is not accidental but closely linked to the existence of systematic social institutions and accessibility of public services.

In 2024, South Sudan ranked last in the Social Progress Index (SPI). This situation stems from profound social, economic and political challenges in the country, particularly conflict, poverty, inadequate infrastructure and limited access to healthcare and education services. It also indicates significant difficulties in developing human potential and restoring social stability.

This outcome highlights the necessity for the international community to focus on strengthening social protection and humanitarian support mechanisms in such countries. Moreover, this decline reflects the uneven distribution of social progress globally and

underscores the need to develop more inclusive policies to achieve sustainable development goals.

In 2024, Azerbaijan scored 63.44 points in the Social Progress Index, ranking 98th and demonstrating a below-average level of social development. The strongest dimension was the “Basic Human Needs” sub-index (87.28 points), indicating satisfactory access to food, water, shelter and basic medical services. The “Foundations of Wellbeing” sub-index showed weaker results (62.39 points), while the “Opportunity” sub-index recorded the lowest score (40.65 points).

4. Environmental Quality

Environmental quality for humans is measured primarily by its impact on health. According to data from the World Health Organization (WHO), 24% of deaths worldwide are related to environmental pollution, which corresponds to approximately 13.7 million people. *“Ninety-one percent of the global population breathes air that exceeds WHO’s recommended pollution limits. Low- and middle-income countries face greater exposure to ambient air pollution compared to high-income countries”* (World Health Organization, n.d.).

Based on WHO’s 2019 estimates, *“ambient (outdoor) air pollution is responsible for an estimated 4.2 million premature deaths globally. Approximately 89% of these premature deaths occur in low- and middle-income countries, with the highest burden in the WHO South-East Asia and Western Pacific regions”* (World Health Organization, 2018).

These statistics demonstrate that environmental pollution poses a significant threat to human health on a global scale, particularly in low- and middle-income countries. Therefore, environmental protection, improvement of air quality and the implementation of sustainable development strategies must be prioritized.

It should be noted that since its inception, the indicators used to measure the index have been regularly updated over time. These changes aim to reflect the evolution of social priorities, enhance measurement accuracy and rely on new, reliable data sources. As a result, the relevance of the index is maintained, ensuring a more objective assessment of social progress levels across different countries (Krylova *et al.*, 2025).

As societies develop, new social challenges and opportunities emerge. Therefore, the framework of the index must be flexible enough to respond to changing realities. Such updates ensure that contemporary challenges in measuring social progress are taken into account and that the results are represented more comprehensively.

In the “Environmental Quality” sub-index, which is the focus of our study, changes in indicators have also occurred. While in previous years the calculation of this sub-index relied on indicators such as “Greenhouse gas emissions”, “Particulate matter”, “Biodiversity protection” and “Deaths related to air pollution” (Aliyeva, 2021). It currently incorporates indicators like “Lead exposure,” “Outdoor air pollution,” “Particulate matter pollution” and “Waste recovery” (AITi Global, 2025). The primary objective of this sub-index is to address the question: “Does the environment support social well-being?”

The indicator “Outdoor air pollution” measures environmental contamination caused by particulate matter. This pollution originates from industrial activities, households, automobiles and trucks emitting various pollutants. The indicator accounts

for health damage in humans, specifically considering disability-adjusted life years (DALYs) and reductions in life expectancy attributable to this pollution.

The “Lead exposure” indicator quantifies the health years lost due to lead poisoning. Lead exposure is assessed in two ways: acute exposure-measured as the concentration of lead in blood per deciliter (in micrograms) and chronic exposure-measured as the amount of lead per gram in bone (in micrograms). Additionally, this indicator not only monitors environmental risks but also includes the proportion of waste that contributes economically through recovery processes, such as recycling, composting or energy recovery via combustion.

The “Particulate matter pollution” indicator represents the average concentration of fine particulate matter with an aerodynamic diameter of less than 2.5 microns (PM_{2.5}). These particles can easily penetrate the human respiratory system, causing significant health issues, particularly cardiovascular and respiratory diseases.

The “Waste recovery” indicator reflects the percentage of waste generated within a country or region that is managed using environmentally sound and beneficial methods.

Data for the first three indicators were derived from the Institute for Health Metrics and Evaluation (IHME), an internationally recognized research center affiliated with the University of Washington. The “Waste recovery” indicator, on the other hand, is based on data from the Environmental Performance Index, which is developed by Yale University and Columbia University in collaboration with the World Economic Forum.

The “Environmental Quality” sub-index, included within the “Foundations of Well-being” dimension, is one of the key indicators demonstrating the extent to which ecological issues are linked to social development. Among the main components of this sub-index are air and water cleanliness, mitigation of environmental impacts and the use of sustainable energy sources.

In recent years, developed countries have undertaken serious and systematic efforts to combat climate change. As part of these efforts, various economic, social and ecological models have been implemented with the primary aim of protecting the natural environment while ensuring the sustainability of economic growth. Notably, global assessments conducted under the Environmental Quality sub-index show that Scandinavian countries stand out and consistently hold leading positions. This outcome is a direct reflection of the effectiveness and purposeful implementation of the Scandinavian green model.

One of the main strengths of the Scandinavian green model is that it does not only aim to protect the environment, but also helps to improve social welfare and change the economic structure in a sustainable way. Scandinavian countries follow the principle of a fair transition, meaning they try to balance the social effects of climate policies. This helps them gain stronger public support and achieve long-term success in fighting climate change.

For this reason, the Scandinavian model should be seen as an example for other countries. Developing countries, including Azerbaijan, should consider the main ideas of this model when creating their climate policies and apply them in ways that suit local conditions. In this process, it is important to focus not only on environmental protection but also on expanding the use of green technologies. At the same time, systems for protecting the environment should be improved and ecological thinking should be encouraged among all parts of society.

The top ten countries in the Environmental Quality sub-index for 2024 reflect diverse approaches and successful policies in the environmental sector (Table 2). Finland

leads with particularly high scores in clean air and waste recovery. This success is attributed to the use of clean energy and the implementation of modern technologies and strict regulations in waste management. Sweden and Switzerland also demonstrate strong performance both overall and specifically in waste recovery and the reduction of harmful substances such as lead. Notably, Switzerland has achieved the best results in waste recovery. Although Japan leads in the lead exposure indicator, it ranks lower in the outdoor air pollution indicator, indicating the country needs to improve in certain environmental areas.

Table 2. Top 10 countries by the Environmental Quality Sub-Index, 2024

Countries	Environmental quality		Outdoor air pollution		Particulate matter pollution		Lead exposure		Waste recovery	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Finland	1	97,15	2	98,74	1	94,17	5	97,15	3	99,40
Sweden	2	97,12	3	98,58	2	94,08	2	97,49	4	99,20
Switzerland	3	95,17	10	96,69	15	89,62	17	96,42	1	100
Denmark	4	95,08	16	95,55	14	89,75	7	97,17	2	99,90
Norway	5	91,95	4	98,39	6	93,03	3	97,37	12	87,30
Luxembourg	6	94,70	9	96,94	16	89,44	9	96,98	10	95,90
Germany	7	93,94	23	94,64	24	87,64	13	96,72	5	98,90
Netherlands	8	93,85	20	94,77	26	87,38	6	97,19	7	97,70
Austria	9	93,41	22	94,69	27	87,25	18	95,90	8	97,60
Japan	10	93,24	18	95,14	33	85,88	1	97,98	11	94,40

Source: <https://www.socialprogress.org/>

Overall, the Scandinavian countries stand out for their sustainable environmental policies and green technologies. These results demonstrate that improving the environment requires not only technology but also regulations, public awareness and community involvement. Tailoring environmental measures to each country's unique social and economic characteristics is a key factor in effectively addressing environmental challenges.

5. Analysis of Azerbaijan's Position in the Environmental Quality Sub-Index

Table 3. Azerbaijan and neighboring countries by components of the Environmental Quality Sub-Index, 2024

Countries	Outdoor air pollution		Particulate matter pollution		Lead exposure		Waste recovery	
	rank	bal	rank	bal	rank	bal	rank	bal
Azerbaijan	154	58.00	94	73.21	78	82.22	54	12.60
Turkey	115	73.04	96	72.73	66	85.30	55	12.30
Iran	124	70.80	127	60.13	147	63.97	48	17.00
Kazakhstan	134	66.95	69	78.70	56	88.31	52	13.00
Georgia	100	78.77	55	88.25	108	74.88	86	4.60
Russia	67	85.00	22	87.81	51	89.54	92	4.00
Armenia	145	62.88	118	64.67	61	86.59	87	4.50

Source: <https://www.socialprogress.org/>

Environmental issues have today become an integral part of social problems. Environmental degradation directly affects human health, quality of life and social stability.

Analysis of the components of the “Environmental Quality” sub-index for 2024 shows that Azerbaijan has the lowest score in the outdoor air pollution category (Table 3). Specifically, Azerbaijan ranks 154th in outdoor air pollution with a score of 58, indicating significant challenges in this area. However, Azerbaijan performs relatively better in particulate matter pollution and lead exposure, achieving scores of 73.21 and 82.22 respectively, which are above average. Nevertheless, the situation in waste recovery is also unsatisfactory. Overall, the analysis highlights that reducing outdoor air pollution and improving waste management should be priority areas for Azerbaijan. Progress in these fields is crucial for enhancing both environmental conditions and the well-being of its citizens.

6. Conclusion

Research findings indicate that Azerbaijan's position in the “Environmental Quality” sub-index of the Social Progress Index is significantly low both regionally and globally. In particular, the country ranks 154th in the “outdoor air pollution” indicator, reflecting a very poor performance. This poses a serious challenge to public health and overall quality of life.

Low scores are also observed in the area of waste management, highlighting existing gaps in environmental governance and infrastructure. Comparative analysis shows that Azerbaijan performs close to the global average in certain components, such as particulate matter and lead exposure. However, the overall situation does not meet the requirements of sustainable development.

Based on these findings, it is recommended that reducing air pollution and improving waste management be prioritized in Azerbaijan's environmental policy. To achieve this, environmental standards in the industrial and transportation sectors should be strengthened and modern environmental monitoring mechanisms should be implemented.

At the same time, infrastructure for waste processing and recycling needs to be developed, with expanded technological and institutional capacities in this field. Raising public awareness about environmental protection and increasing civic participation can contribute to fostering environmental responsibility. Preventive measures should be taken to reduce the impact of lead and other harmful substances on human health.

Additionally, it is necessary to align the environmental indicators used in the Social Progress Index with national statistical data and to improve the data infrastructure in this area. Finally, it would be advisable to study and adapt the green model and environmental governance practices of developed countries, particularly those of the Scandinavian region, in a manner suited to Azerbaijan's national context.

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