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Topic: **Business analysis based on sustainable development indicators**

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## SUMMARY

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The following problems were reviewed and analyzed:

- The relationship of sustained commercial success.
- Consideration of some of the main indices of sustainable development, making their analysis and calculation methodology.
- Country-specific analysis based on selected indicators. Analysis of business companies that affect sustainable development indicators.
- Interaction with various stakeholder groups.

The purpose of the study is to formulate a system of theoretical principles, methodological approaches and practical recommendations for developing analytical as well as information support for the process of substantiating and making strategic decisions in the field of achieving sustainable development goals.

It monitors and publishes materials on the most pressing issues.

Three development application indices are considered: Sustainable Development Goals Index (SDG); Global Green Economy Index (GGEI); Emerging Markets Outlook.

The object of the work is Ukraine and its position of sustainable development, it analyzes the statistics and behavior of the above indices regarding the country and identifies recommendations that will affect the increase in the SDGs Index in relation to all 162 countries.

The business analysis of 20 Ukrainian companies is analyzed, taking into account the indices considered in the work, the main directions on which the companies are based to increase the level of sustainable development in the country, as well as having the success of their business with a successful choice of a goal, its strategy and operational activity, are identified.

Key words: sustainable development, business analysis, sustainable development goals index (SDGs), global green economy index (GGEI), climatescope, stakeholder, strategy.

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## INTRODUCTION

**Relevance of the research topic.** Modern enterprises are faced with the problem of adapting to dynamically changing conditions, as well as the possibility of their existence. Actual trends in economic development are manifested in the more global nature of crises, their frequency. Given that modern society is gradually entering a period, the core of which is fundamentally new high technology. Their value is growing so much that makes it possible to talk about a deep modification of the resource base of the modern economic system.

The interconnection of the stable commercial success of the organization and its sustainable development efforts are becoming more and more obvious. In order to take full advantage of the benefits of such a relationship, first of all, it is necessary to formalize it within the framework of the main goal of the organization. The main goal should be consistent with the SDGs and determine the organizational structure and management structure of the company. Despite the fact that many large companies have a clearly defined main goal, only a fourth of them associate it with sustainable development goals. And very few organizations demonstrate a true commitment to their main goal.

Ways to realize the benefits inherent in the main goal development will vary depending on individual and industry specifics of the organization. However, there are general, “golden” rules that should be followed: truthfulness, proper balance and consistent implementation. For a true purpose the goal is understood, which translates into real actions of the organization.

Proper balance means maintaining an optimal balance between the organization’s short-term financial goals and long-term social and environmental obligations, while monitoring the understanding of the ever-growing expectations of all stakeholders. Finally, the right underlying goal should be implemented in a consistent and consistent manner and demonstrate viability in the light of subsequent corporate changes.

To develop or not to develop the main goal of development is an individual choice of each organization, and a choice that will entail many consequences. However, more and

more often, the presence of a company's main goal is perceived as a necessary condition for creating long-term advantages both for parties directly interested in the organization and for society as a whole.

The main goal works both for the benefit of individual organizations, and for the global good.

**The extent of the problem.** The problem of sustainable development is one of the most relevant both at the macro - and at the micro level. A significant contribution to understanding the need for environmental and social orientation of the economy was made by the works of H. Daily, C. Holling, A. Enders. The methodological basis for the study of sustainable development of socio-economic systems is based on the theory of economic dynamics. At the level of the economic subject, mainly individual aspects of sustainable development are considered, rather than the global problem of implementing a sustainable development strategy. Thus, the most relevant areas of research are sustainable supply chain management, effective relationships with all groups of stakeholders in the framework of the implementation of the sustainable development strategy, the impact of sustainable development on operational activities, as well as the development of a system of indicators for sustainable development.

Following the fact that the problems of implementing the sustainable development strategy are of high practical importance, international organizations have a large role in raising the awareness of the business community about SD problems and the need to move to this strategy. Constant monitoring and publication of materials on the most pressing issues that companies face when implementing the SD strategy are carried out by such organizations:

- Association of Certified Chartered Accountants - ACCA,
- World Business Council for Sustainable Development, WBCSD,
- International Federation of Accountants, IFAC,
- International Integrated Reporting Committee, IIRC,
- International Institute on Sustainable Development, IISD.

Despite, the great importance of the results of the research, not enough reflection was found on the development of a system for the timely generation of information about the current economic situation of SD goals.

**The purpose and objectives of the study.** The purpose of the study is to formulate a system of theoretical principles, methodological approaches and practical recommendations for developing analytical as well as information support for the process of substantiating and making strategic decisions in the field of achieving sustainable development goals.

This goal has set the need to solve problems, namely:

1. Consideration of some of the main indices of sustainable development, making their analysis and calculation methodology.
2. Country-specific analysis based on selected indicators. Analysis of business companies that affect sustainable development indicators.
3. Interaction with various stakeholder groups.

# **1. SUSTAINABLE DEVELOPMENT CONCEPT: ENTITY, DEVELOPMENT PROSPECTS.**

## **1.1 Sustainable development concept, principles and factors, indicators.**

“The concept of sustainable development reflects one of the fundamental aspirations humanity, reflected in almost all philosophical systems and religions, striving for a brighter future.”

As a significant advance along the path of theoretical understanding the problems of limited economic growth should be considered emergence sustainable development concept developed by the International Commission on environment and development led by Brundtland created by the UN in 1983 This concept received official status within the UN as a “strategy world development.” In 1987, the Commission prepared an extensive report on its work under titled “Our Common Future”, which issued a warning that a sharp deterioration of the environment is inevitable if humanity will not make adjustments to its lifestyle. According to the commission, the economy must satisfy the needs and legitimate desires of people, but its growth must take into account the limits of the ecological capabilities of the planet. Long-term proposed an environmental strategy that could ensure sustainable the development of the world economy for a long period, and also means and ways in which the world community could effectively solve problems use of natural resources. In the report “Our Common Future” for the first time the term “sustainable development” was also spoken: it is a development that satisfies needs of the present, but does not compromise the ability of future generations to meet their needs. [2]

The attempt made to link economic development and social, and environmental constraints sparked extensive discussion in academic circles and the business community, because it did not clearly articulate the subject sustainability (what to support), the subject of development (what to develop), the relationship between entities that should be supported and entities that should be developed, and also time frame. After the publication of the report, numerous research on the development of alternative definitions. [32]

Sustainable development is continuous economic development without prejudice to natural resources and the environment (Themes Sustainable Development, 2004).

The concept of sustainable development is not a list of possible threats, this is a question system analysis; in particular, it is about effective or ineffective the interaction of environmental, economic and social systems ... (Transportation Research Board, 1997). [25]

Sustainability is an opportunity for long-term continuation of activity. Everything, that can last indefinitely - steadily. All that cannot go on indefinitely unstable (Center for Sustainability, 2004). [26]

Environmental Economics (a discipline dealing with environmental assessment resources) determines the sustainability of indicators of natural capital reserves, value natural resources in the production of goods and services (including clean air and water) and climate stability (Jansson et al., 1994).

Sustainability is development without growth that goes beyond environmental capacities where development means qualitative improvement and growth means quantitative increase (Herman E. Daly, 1996).

Sustainable Development Council report by US National Academy of Sciences (here in after referred to as the “Council for Sustainable Development”, “Council”) “Our Common Development: Transition to Sustainability” emphasizes the value of the concept of sustainable development lies in trying to match the real contradictions between the economy and ecology, as well as between the present and the future. [36,37]

According to the experts of the Council, from the whole variety of definitions of sustainable four non random factors can be distinguished with the help of which one can understand essence of sustainable development:

1. What to maintain (subject of sustainability)?

According to the Council, the three most important categories need to be supported: nature, life support systems, and cultural diversity. Where in the greatest emphasis is on life support systems, where in the first place human life is ensured. This category also includes natural resources, renewable and non-renewable, required by many generations



seeking use, preserve or store them. In addition, it is also important to maintain cultural diversity, as well as the livelihoods of groups of people and regions, representative and at risk communities. [39]

## 2. What to develop (subject of development)?

The subject of many of the early studies was economic development with a developed manufacturing sector providing jobs desired level of consumption and health. Later, attention shifted to human development, including values such as increased life expectancy, education, equality, equal opportunities. Sustainable Development Council outlined the need for the development of society and emphasized the value of security and well-being of nation states, regions and institutions, as well as social capital that ties relationships and society.

## 3. Types of relationships between subjects that should be supported by subjects, which should be developed.

The concept of sustainable development connects what needs to be supported and what must develop. Depending on how clearly marked the links, accents vary. For example, the Presidential Council on Sustainable Development believes that sustainable development “at the same time strengthens the goals of economic growth, protection environment and social equality”. This shows that goals are equal between themselves and are interconnected. The union “and” is the bridge between what should supported, in fact, by the environment, and what should develop is the economy and society. [40, 37]

## 4. Time frame.

The time period for sustainability is also mixed formulated in the definition as “now and in the future”, had many interpretations. It was defined from small - “generation” - when almost everything is stable, to eternity - when, of course, nothing can be sustainable.

Later, Robert W. Cates extended the classification of definitions of sustainable development and identified several more characteristics with which you can try more clearly formulate this term:

### 1) Aims.

Another way to define sustainable development is what goals it seeks to achieve. To illustrate this, it would be useful to study a set of goals for different time periods: short-term (until 2015) United Nations Millennium Declaration (Millennium Declaration of the United Nations), two-generation goals (2050), “Set forth in the Transition to Sustainability” document of the sustainable development (Sustainability Transition of the Board on Sustainable Development), long-term (after 2050) “Great Transition” of the Global Scenario Group. [10]

## 2) Indicators.

Despite the ambiguity created by the term “sustainable development”, the most serious attempts to define it, although not explicitly, are implemented in the form of indicators. Combining global, national and local initiatives, many attempts have been made to identify and measure suitable indicators. According to the results of the study and synthesis of research data, Robert W. Cates notes two important observations. The first is an extremely large list of subjects of sustainability and development. This indicates the inherent concept of “sustainable development” of flexibility, as well as domestic politicians to measure it. In most cases, research is carried out for a diverse range of stakeholders, and the final list reflects the diversity of their expectations. For example, in a document of the UN Commission on Sustainable Development (UN Commission on Sustainable Development), states are identified as stakeholders, whose main task is to measure progress in the field of sustainable development at the state level.

In the Boston Indicators Project, key groups are citizens with differing views on goals, sustainable development policies and investment priorities. In the Global Reporting Initiative, users are companies, investors, government agencies, and civil society, whose interests must be taken into account when evaluating the actions of economic entities in the field of sustainable development. [12]

Table 1 below provides definitions of sustainable development that are explicitly or implicitly contained in various sustainable development initiatives.

Organization	Number of indicators	Explicit or implicit definition?	What is supported?	What is developing?	How long?
Sustainable Development Commission	58	Implicitly, but set out in "Agenda 21"	Climate, clean air, land fertility, ocean productivity, fresh water, biodiversity.	Equality/justice, health, education, housing, security, stable population growth.	Random link for 2015
Sustainability Indicators Advisory Group	46	See above	See above	See above	Not indicated, data are used for 1990 and 2000 years.
Well-being index	88	Clear-cut	A condition in which an ecosystem maintains its diversity and quality. Thus, this is the ability to support people and the rest of life, as well as its potential to adapt to changes and provide many opportunities in the future.	A condition in which all members of society are able to identify and satisfy their needs and they have many options for this.	Not indicated, data for 2001 is used and includes some indicators of recent changes (such as inflation and deforestation).
Environmental sustainability index	68	Clear-cut	Vital ecological systems are maintained at a healthy level and to the extent that levels evolve rather than collapse, while the man-made impact is sufficient to not cause significant damage to ecological systems.	Resistance to environmental damage (people or social systems are not susceptible (in terms of basic needs, such as health and nutrition); reduced dependence is a sign that the company is on the path to greater sustainability); "Institutions and their underlying examples of skills, relationships and networks that foster effective responses to environmental problems", as well as interaction between countries to "manage common environmental problems".	Not indicated, the most recent data for 2002 has been used and includes some indicators of recent changes (such as deforestation) or predicted changes (such as population in 2025).
True progress indicator	26	Clear-cut	Clean air, land and water	Economic Activities, Families and Security	Not indicated, calculated annually from 1950 to 2000.

Table 1 - Definitions of sustainable development, which are explicitly or implicitly contained in the selected initiatives on indicators for sustainable development.

## **1.2 Why sustainable development important to business.**

Today there is an urgent need to find a more sustainable development path for the world community as a whole. The Sustainable Development Goals (SDGs) developed by the UN member countries represent the first comprehensive coordinated program in world history designed to help solve the basic social environmental and economic problems of humanity. Despite a number of major achievements in this area, the world community still faces many different serious problems.

Inequality continues to grow both between citizens of one country and between citizens of different countries. About 800 million people still live in extreme poverty and suffer from hunger. Gender inequality persists. Approximately 946 million people still fulfill their natural needs in the open. The adverse effects of climate change continue to grow. More and more people are forced to leave their homes due to natural disasters. 40% of the world's population lacks water, and this figure continues to grow.

Meanwhile, progress in this area is slow. Based on the data of the Social Progress Index, experts predict that while maintaining current trends, the level of human well-being will increase very little by 2030. [2]

The 17 Sustainable Development Goals constitute a common, jointly implemented program involving urgent systemic measures. Considering that governments of various countries take part in achieving these goals, an important role will be played by civil society and commercial organizations, which will need to apply creativity and innovation to solve the problems that we face as a society and as a biological species.

Despite the fact that all elements of society should participate in the process of ensuring sustainable development, a commercial organization has a particularly important role in it. In particular, they make an invaluable contribution to improving the welfare of society and its individual representatives, help solve the problems of humanity with the help of their products and services, and as a result of their activities significantly affect the state of the environment. [7]



Image 1 - The Global Goals for Sustainable Development ([www.un.org](http://www.un.org)).

Sustainability and commercial success are interdependent. A stable contribution to the development of society not only humanity benefits, but also creates benefits for the company itself. The SDGs and related goals of companies create huge opportunities for business development.

For example, according to the latest UN reports, the most profitable business, as well as business that is in demand for society, is the direction of “smart” agriculture technology.

To succeed, a company must:

- ensure sustainable development of the territories in which they operate;
- have qualified specialists, stable local communities and a favorable company environment for the person;

- technologies of environmentally sound and socially responsible production.

Based on the trends, there is one of the clear advantages that gives the focus on sustainable development and which will help the company surpass its competitors, due to the expansion of interaction with interested parties. According to one study, this relationship gives a 2% increase in the value of shares, that is, sustainable development and commercial benefits are inextricably linked. [3]

## **2. SUSTAINABLE DEVELOPMENT AND BUSINESS SUCCESS (TYPES OF STAKEHOLDERS).**

### **TYPES OF THE MAIN INDICATORS AND METHODOLOGY.**

**2.1 Sustainable development and commercial success. Stakeholders.** For an organization to act for the good of society means not just doing the right thing in terms of business ethics, but also benefiting your business. The organization can achieve greater commercial success and more sustainable development in the long run if it sets itself more global goals that take into account social, economic and environmental factors.

Companies that strive for sustainable development and work in this direction, inspiring stakeholders and establishing more effective interaction with them (including employees, consumers, partners, regulators and investors), become market leaders.

Given the growing interdependence of organizations for the benefit of society and their simultaneous commercial success, today they must more clearly and openly talk about how they contribute to social development. Moreover, this contribution cannot be a “by-product” of the business model. It should be a driving factor that helps the company build its strategy, culture and order of interaction with stakeholders. Such a contribution should reflect how the organization sees itself and the fundamental purpose of its activities, and should be the core of any of its statements about the meaning of its existence.

Formulating a common goal that encompasses the strategy and operational model, as well as the culture, values and mechanisms of brand promotion and interaction with stakeholders, the organization can contribute to solving economic, social and environmental problems, and at the same time overcome the growing difficulties associated with achieving commercial success in the long run.

In order to use all the advantages of sustainable development and economic benefits, the company must clearly indicate its main goal, and focus on this goal in the formation of its business and corporate culture.

## **Types of stakeholders:**

### **1. Staff.**

Today, companies around the world are finding it increasingly difficult to ensure the satisfaction of their employees. About 78% of companies say that building a corporate culture and building employees' feelings of involvement in the organization is one of the main priorities. Two-thirds of the generation representatives surveyed are considering leaving their organization. Given the situation, those companies that have managed to establish mutual understanding with their employees will receive significant benefits.

Everything indicates that it is possible to build such an interaction with organizations that set themselves the goal of benefiting society. Employees who share the socially significant values of the employer are more likely than others to stay in their organization for a long time. The results of one of the studies suggest that in companies that gave their employees the opportunity to participate in socially significant activities, labor productivity increased by 13%. [17]

Taking a course towards sustainable development, commercial organizations will be able to offer their employees something more than just money and thereby win the “battle” for talents. Today, intangible assets such as people, ideas, and relationships are a key success factor. Companies that concentrate their efforts on creating a favorable corporate culture and relentlessly ensuring high employee satisfaction, first experience some stagnation, but then begin to show a steady and tangible increase in shareholder returns. [15]

### **2. Consumers.**

It is not easy for commercial organizations to gain consumer confidence. After the financial crisis, they have to be responsible for their actions and impact on society and the environment. The company calls to account both the owners of the companies and unauthorized brokers. Most respondents believe that commercial organizations around the world only seek profit, and therefore do not meet their expectations.

The leaders of various companies are aware of these difficulties. Thus, in order to reverse the current trend and obtain a “social license” for their activities from the public, companies must demonstrate their contribution to solving society's problems. Research



results suggest that companies appear in the public eye as organizations, who make a positive contribution to the development of society, attract more customers who are willing to pay a higher price for their goods and services and recommend such companies to others. Consumers are increasingly choosing to switch to those brands that they associate with activities for the benefit of humanity. In particular, in 2013, 50% of consumers reported that they are willing to pay more for the products and services of those companies that openly declare their commitment to the principles of sustainable development. A study conducted in 2012 by MIT revealed that labels containing information on compliance with labor standards attract women consumers who are targeting high-priced products. Sales growth among consumers of this group amounted to 14%.

Companies that commit themselves to sustainable development meet customer needs. And changing working methods provides them with commercial success in the long run.

### **3. Partners.**

The existence and prosperity of commercial organizations is entirely dependent on the communities and ecosystems within which they operate. After all, the latter provide companies with land, labor, and raw materials for production. And therefore, cooperation aimed at ensuring balanced development without harming society and the environment, can bring positive results in all aspects of the company.

If we talk about supply chains, then cooperation with other companies, which is based on a common desire for sustainable development, is beneficial for all partners. Companies that adhere to the SD principles often have the opportunity to reduce production costs, which can reduce competition among suppliers and sell products at lower prices, which in turn provides savings for customers. On the other hand, consumers want to purchase goods produced by ethical methods that do not apply harm to society and the environment. This means that such products can be sold at a higher price, and provides even greater profitability for the organization. Companies are also heading for SD and trying to optimize their operational processes and energy use, and they have opportunities to significantly reduce costs. Compliance with the principles of

sustainable development can be beneficial for suppliers, because they get the opportunity to gain competitive advantages by concluding profitable contracts with organizations-buyers who seek to satisfy consumer needs.

Establishing relationships and cooperation between different companies gives a particularly noticeable result if they adhere to the same values. Long-term cooperation brings mutual benefits and helps to increase efficiency, reduce costs and optimize operations. [9]

#### **4. Regulators.**

In parallel with optimizing the interaction with employees, consumers and partners of the company, which are focused on SD, can also achieve success by revising the interaction with regulators. Tight control of core business in order to achieve broader goals of a social, environmental or economic nature will give companies the opportunity to establish relationships with regulators and industry leaders and create conditions within the organization that will create a wide range of opportunities for further business growth. This is of particular importance in view of the growing expectations of regulators, which require companies to comply with more stringent business ethics, as evidenced by the tightening of regulatory requirements in the social and economic sphere. It is especially important to follow the principles of SD in the event that control over compliance with standards in this area comes or may soon come into the competence of regulatory authorities.

An increasing number of organizations are switching to integrated reporting, within the framework of which information is provided on the company's strategy, corporate governance mechanisms, as well as on the results and prospects of its development in the context of environmental, social and ethical aspects of activity.

It is obvious that the success of companies in the medium and long term will be increasingly determined by their commitment to global tasks of a social, environmental and economic nature, which will help them to be proactive and implement working methods that ensure compliance with the future expectations of regulators. [6]

## **5. Investors.**

As issues of sustainable development are becoming increasingly important for employees, consumers, partners and regulators, so does recognition of their importance among investor circles. Thanks to “responsible” investments and the introduction of non-financial indicators for assessing the performance of organizations, investors are beginning to understand the interdependence of sustainable development and commercial success.

The practice of “responsible” investment, that is, investment aimed at stimulating social and environmental changes, is growing rapidly. The fact that SD programs are cost-effective is gaining widespread acceptance among investors. For example, studies of various portfolios in the profitability of a fund engaged in socially responsible investments and the portfolios of traditional investors showed that the returns of the former are much higher. SD issues are also taken into account when developing criteria for admission to registration of shares on stock exchanges.

When making investment decisions, investors are increasingly paying attention to non-financial information. Using the Dow Jones Sustainability Index has also become common practice for investors.

More and more organizations are beginning to realize that activities for the common good contribute to commercial success, regardless of whether it is about collaboration. In the context of the digital revolution, the recognition of this interdependence is especially acute and relevant as never before.

The digital era marked the beginning of the spread of greater openness and transparency, which makes it easy for stakeholders to track company information. Thanks to new methods of data collection, any actions of companies, whether operations or supply chains, are becoming more transparent. In order to “survive” and succeed, companies will have to strive to bring real benefits to society. Moreover, digital technologies have led to a transformation of the mechanisms of interaction between companies and stakeholders. Today, when there is an opportunity to instantly exchange information and use the “wisdom of the crowd”, the reputation of companies is more vulnerable than ever. However, in order to ensure effective interaction with

stakeholders, commercial organizations must actually do good deeds. and not limited to unfounded statements. [18]

Finally, due to the rapid development of technology, which undermines established working methods, the company is at risk of losing its identity. Now, as never before, companies need to understand who they are and in the name of what they exist in order to determine the direction and strategy of their further development.

## 2.2 Types of the indices and theirs methodology.

**Global Green Economy Index (GGEI).** Climate change has affected the urgent need to confront it, which is becoming increasingly relevant, and the basic understanding of the changes in the economy that are needed as a counter to this threat is not entirely clear. A green economy and green growth - powerful ways to reorient global growth towards more sustainable directions - still do not allow us to understand the main role that climate change plays in international discourse. In this context, the Global Green Economy Index (GGEI) as a means of communication to give politicians, international companies and the private sector a chance to focus on both the extraordinary indicators of the green economy and the way experts evaluate these indicators over time.

The GGEI Performance Index is defined by 32 key indicators and data sets, each of which is contained in one of the four main aspects of leadership and climate change, sectors of efficiency, markets and investments, environment and natural capital. The table below shows the general structure of these four main dimensions and their related subcategories. [3]

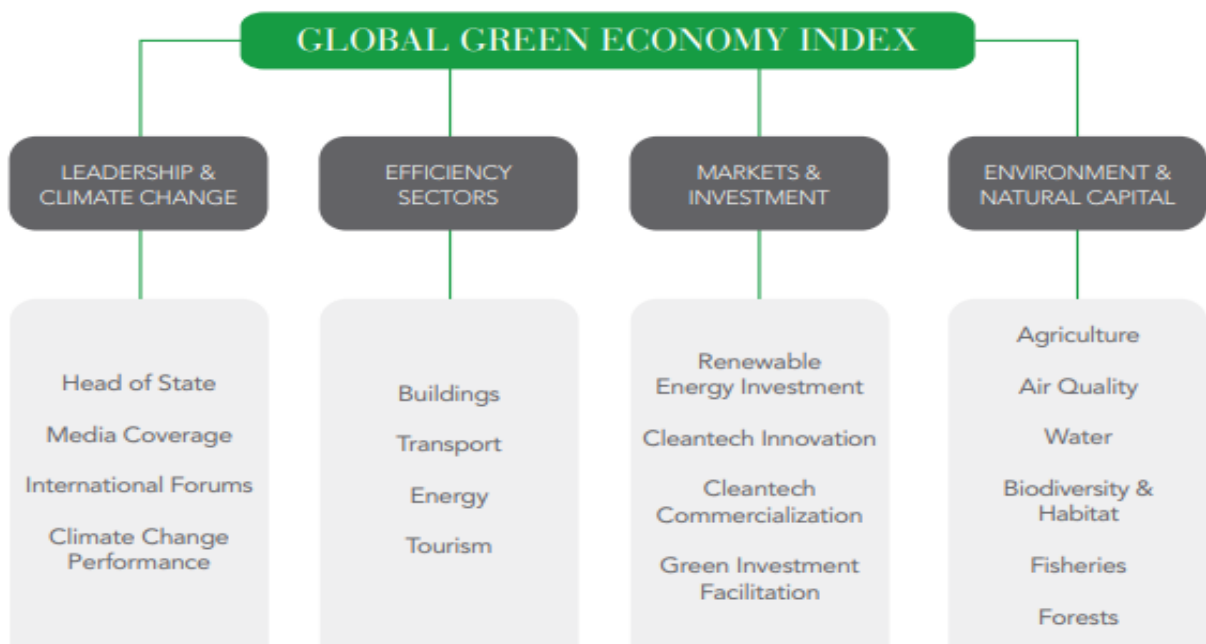


Table 2 - The general structure of four main dimensions and their related subcategories.

Political leadership plays a decisive role in updating the concept of green economy and green growth. Various leaders have powerful communication platforms to apply, as well as influence, to uphold fiscal and political instruments that stimulate green investment and low-carbon development. The GGEI measurement “Leadership and Climate Change” implies both perception and an indicator of performance for 60 countries, identified by four subcategories: head of state, media coverage, forums and climate change. In view of the change of leadership as a result of elections or significant events that fall into the global media related to the green economy of the country, these values often rise and fall at a high pace. The United Nations Climate Summit has just concluded by providing another global forum for leaders to advance collective action on climate change. Actions and rhetoric in these forums are very important for the perception of the country's “green” brand, and that is why we include a qualitative assessment of the effectiveness of the country's behavior.

In earlier releases of the GGEI, which measured only the tourism sector, currently represent a much broader view of the efficiency sectors, including coverage of buildings, energy, transportation and tourism as the four subcategories underlying this GGEI measurement. While the importance of this broader spectrum of views on efficiency sectors is critical to a better understanding of green economy indicators, producing a reasonable method for comparing them in a comparable way is methodologically difficult. [4]

Various factors that influence these strong performance in emerging markets are: commitment to sustainable construction (Chile, Colombia); high levels of renewable energy as a source of electricity production (Zambia); and improving carbon efficiency in the transport sector (Colombia, Zambia). Costa Rica performs well in all four subcategories of this dimension, especially tourism, where it ranks as the top rated country in terms of performance in the five areas ranked by GGEI, crowding out New Zealand and a long list of other strong merit countries around sustainable tourism .

## TOP 10 GGEI RESULTS – EFFICIENCY SECTORS

PERCEPTION RANK	COUNTRY	SCORE	PERFORMANCE RANK	COUNTRY	SCORE
01	Sweden	96.3	01	Sweden	76.7
02	Denmark	96.2	02	Costa Rica	73.9
03	Norway	92.3	03	Norway	73.6
04	Germany	91.7	04	Colombia	72.8
05	Netherlands	91.5	05	Austria	69.6
06	Japan	84.8	06	Switzerland	65.1
07	United States	73.6	07	Zambia	64.4
08	United Kingdom	70.2	08	Portugal	63.2
09	Finland	68.1	09	Germany	62.3
10	Australia	67.9	10	Chile	60.8

Table 3 – Top 10 GGEI results – efficiency sectors.

The transition to a green economy requires significant public and private investment, as well as the commitment of national leaders to foster the right combination of tax incentives to accelerate green growth. The GGEI measurement of markets and investments calculates government performance indicators for the attractiveness of energy sources with the particularities of renewing, innovating and commercializing green technologies and promoting green investments by connecting with government bodies. He also calculates the perception of these four main subcategories, because investment determination is often determined by the quality of market information available. By providing both perceptions and performance indicators in this way, GGEI offers governments and business organizations the basic conditions for understanding the 60 green markets that we cover and how to formulate a strategy to increase their effectiveness and attractiveness in the future. [1]

The United States and China, along with Denmark and Germany, are the main markets for green investment and company development and clean technology products.

FACTOR	DESCRIPTION	IMPORTANCE
Green focus	To what extent is the green economy and market opportunities within it prominently displayed on the website for the country's lead investment promotion agency?	The hierarchy of sectors and investment opportunities signals to the marketplace national priorities. By prominently displaying green business opportunities, countries signal that they are dedicated to developing them.
Presentation of related national initiatives	What information is provided about national initiatives in place or planned to foster greater green investments and support international investors and entrepreneurs?	This background further signals that nations are serious about pursuing green economic growth and supporting the businesses that enable it. It can also provide tangible resources for entrepreneurs who may be considering joint ventures in the market.
Market data provided	Is there easily accessible and clearly formatted country-level data available so that investors and businesses can better understand the characteristics of the market?	Investors need data to evaluate investments and having these relevant data clearly displayed show transparency and a willingness to support investors with tangible tools as they evaluate their options.
Interactive & social media outreach	Does the investment promotion agency have a sophisticated grasp of digital and social communications tools in a manner than successfully leverages them to share useful information?	When approached strategically, digital and social platforms enable cross border communications and information exchange in new and useful ways. Agencies that use these tools properly can advance their attractiveness as a green investment target.
People	Are there people highlighted as contacts related to certain market segments so that serious investors and entrepreneurs can contact them for more in-depth information exchange and knowledge sharing?	Despite the power of digital these days, people still matter a lot. Linking individuals to different green market segments offers investors comfort that they can follow up with a person to discuss more nuanced questions.

Table 4 - The GGEI qualitative score assessing national performance at facilitating green investments in based on the five factors.



DIMENSION	INDICATOR	TYPE	WEIGHTING	DESCRIPTION	SOURCE(S)
Leadership & Climate Change	Head of State	Qualitative	20%	Head of State's advocacy for green economy	Google Analysis scored by Dual Citizen LLC on scale of 0-10
	Media Coverage	Qualitative	10%	Positive media coverage of national green economy	Google Analysis scored by Dual Citizen LLC on scale of 0-10
	International Forums	Qualitative	20%	National positions & statements in international forums	Climate Action Network (ECO) reporting scored by Dual Citizen LLC on scale of 0-10
	Climate Change Performance	Quantitative	50%	CO2 emissions per capita CO2 emissions per unit of gross domestic product (GDP) CO2 emissions per unit of primary energy use	International Energy Agency (IEA), Climate Change Performance Index (CCPI)
Efficiency Sectors	Buildings	Quantitative	25%	LEED certification of building construction	LEED certification as reported by the U.S. Green Building Council (USGBC)
	Energy	Quantitative	25%	Renewable electricity as a percentage of national total	International Energy Agency (IEA)
	Tourism	Qualitative	25%	Ranking of national tourism ministry efforts	Scored by Dual Citizen LLC on scale of 0-10
	Transport	Quantitative	25%	Emissions from transport and 10-year trend	International Energy Agency (IEA)

Table 5 – Indicators and Data Source (GGEI)

**Methodology.** GGEI is driven by data that meets two key criteria: quality and coverage. By creating an index such as GGEI, it is quickly recognized that data sets are often less complete than they might seem and rarely cover a fairly wide range of states in a uniform way. This is partly due to how countries are organized (i.e., EU, OECD, G20), whereby these organizational bodies use data collection efforts and related parameters. For example, reliable data sets may exist for OECD countries, but not for the entire G20. In addition, not all countries meet the requirements for timely reporting, which means that even if for some countries there is full coverage of the data, the time series may not be compatible with some countries that have more recent data than others.

The data selection method assumes “top to bottom”, not “bottom to top”. That is, the most important measurements and related subcategories for the measurement are first determined based on the goals and objectives of the Global Green Economy Index. The next step, on the basis of this structure, is the selection of third-party data sets that provide the best cost indicator taking into account the required coverage of the GGEI country, or, where appropriate, a system is created to calculate high-quality scoring.

There are two main reasons for a top-down approach to data. First, real data are not necessarily important measurement values associated with a particular topic. Sometimes data exists because of approaches or processes that may be outdated, or because of institutional priorities that no longer reflect the more important issues of the day. First, defining the overall structure ensures that the index is selected for topics that are important, and not just for topics that are easiest to measure. The second reason to justify this top-down approach is that it focuses on areas where data is incomplete, which encourages statistical agencies, ministries and international agencies to make their collection a priority.

It must be recognized that this top-down method has its limitations, and it is important to recognize it in the context of the theme of green economy. To understand the green economy, there remain vital components that today simply cannot be measured in a reasonable way. One example is green jobs, where a workable definition remains elusive, and the data are inconsistent across country profiles. Another example

is manufacturing — a vital sector of efficiency — where complexity is due to supply chains and the varied input data needed to create a reliable dataset, while there is no solid approach to assessing the extent to which domestic production is green.

Imputation of missing data. (Despite the fact that efforts are not being made to identify sources of data covering the country, some data will not be available. In GGEI 2016, this problem arose mainly in the “Markets and Investments” aspect, where it is not possible to find full sources of four subcategories due to Diversity In surveys of countries with more developed and developing economies.

In this system, the approach to imputing missing data is to make at least rough estimates for countries with missing data by averaging estimates from the five nearest countries in terms of factors. For example, if an indicator that measures a country's attractiveness for renewable energy investments is referenced by a country's result in the Doing Business report of the World Bank, the missing value will be evaluated if you look at the five Doing Business estimates of the five countries closest to it. Report, and then averaging their scores for the indicator to calculate the missing point data for a given country. Like any presentation of assessment, this method is imperfect and makes some assumptions about national indicators in one aspect of the economy based on the results of another related one. In terms of best practices for creating indexes and aggregating data, this is a more advanced approach than leaving the value blank or giving an arbitrary average score to countries with incomplete data.

To a lesser extent, there is a collision with problems and with missing data in the field of environment and natural capital, but for other reasons. In such cases, data gaps were due to the natural characteristics of each country. For example, there is no way to create value for forests if there are none in the country, or for fisheries if there is no access to the sea. In these restrictions, these countries received the highest score from the category. Again, this approach is imperfect in the sense that it mainly lends to the country for the highest results in the environmental category, which is absent, which may distort the overall results in its favor. But the alternative to our approach is less attractive and exposes the GGEI results to the risk of imbalance. The exclusion of precisely these categories for the countries under consideration will lead to a greater

imbalance of other subcategories in the aggregate result and will create a situation where internal coefficients will vary depending on the country. On the other hand, if we leave these gaps in values, it will punish these countries for the natural characteristics of their territory beyond their control.

Normalization, weighting and aggregation. (The application of a consistent approach to normalizing using GDP to expressed values with an inherent imbalance based on the size of the country's economy. Based on the top-down approach to data selection, equal weight is applied to both four dimensions and their subcategories. The only exception is the Leadership and Climate Change dimension, where the weight coefficient decreases for subcategories of heads of state and the media, and they, in turn, are more weighted internationally forums and indicators of climate change. [13]

Obviously, GGEI relies on an extensive range of core data sets, and it is important to adopt a consistent method of aggregating them. The approach was to calculate the average and standard deviation for each individual indicator or data set, which, in turn, allows us to calculate the z-indicator and the corresponding percentile. Then these percentile values can be aggregated in a uniform way, getting a score for the country, which is expressed in a range of 0-100.

GGEI is a reliable device that allows you to get a wide range of significant points of view on environmental economic indicators and their expert perception.

**Emerging Markets Outlook (Climatescope).** Climatescope 2019 covers 104 emerging markets of almost all non-OECD countries with a population of more than two million people, as well as Mexico, Turkey and Chile, which are identified as OECD countries, but are among the most emerging emerging markets for clean energy. Iran, Cuba, Yemen, North Korea and Libya are not in the coverage area due to local conflicts or international sanctions that make them difficult to research..

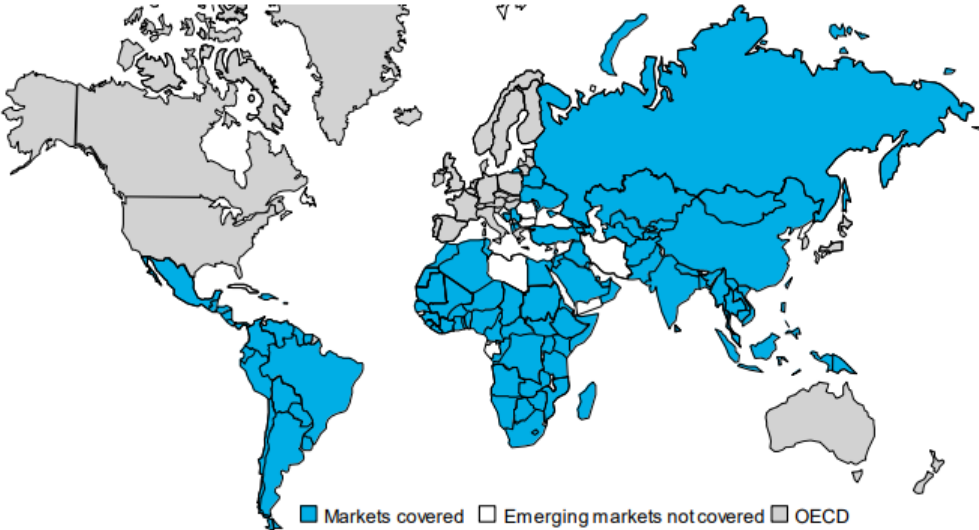


Image 2 - BloombergNEF, Climatescope. The map above is an approximate representation, and should not be taken as accurate as far as international boundaries are concerned. **(Countries covered in Climatescope 2019).**

Climatescope nations account for 82% of the global population and produce about two-thirds of global CO2 emissions. In addition, 56% of financing for clean energy projects occurred in these markets in 2018. Still, these nations represent just 38% of global GDP.

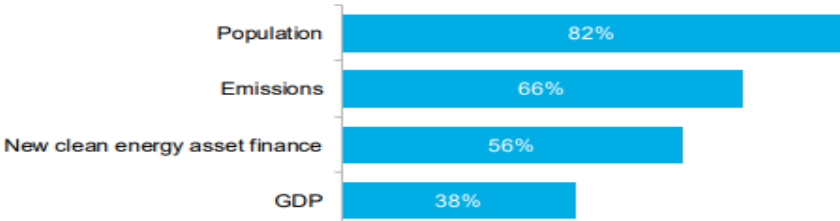


Image 3 - World Bank, World Resources Institute, BloombergNEF, IMF. Clean energy asset finance is for 2018. **(Markets studied for Climatescope 2019 as a percentage of global totals).**

Driven by rapid improved electricity access and economic growth, emerging markets are where power demand is expected to grow most in coming years. BloombergNEF’s New Energy Outlook 2019 estimates that global power demand will reach around 42,400TWh by 2050, up 62%, or 16,200TWh, from 2018. In OECD markets, demand expands just 13% between 2018 and 2050 while in non-OECD countries it will double over that period. By 2050, emerging economies will account for 70% of global power demand.

These countries also remain the source of at least three-quarters of emissions in the energy sector over the next three decades, and their energy matrices are expected to decarbonize at a much slower rate than richer countries. BNEF predicts that from 2018 to 2050 emissions in the energy sector of developing countries will be reduced by only 21%, while in OECD countries this figure decreased by 69%. [4]

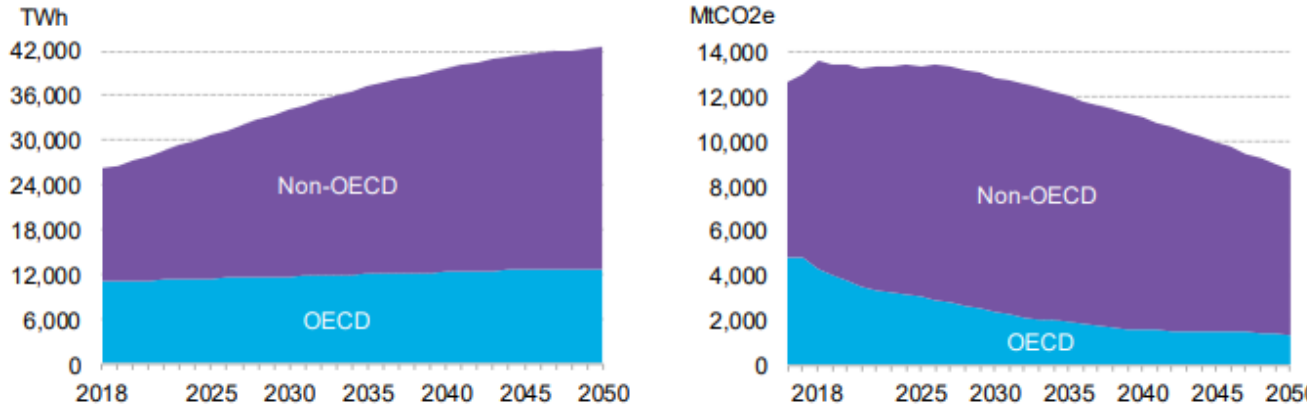


Image 4 - BloombergNEF 2019 New Energy Outlook (**Projected global power demand and Projected power sector CO2 emissions**).

This year’s Climatescope Emerging Market Outlook begins in earnest examining new clean power capacity added in developing nations through 2018, then exploring how such countries can potentially accelerate the transition to lower-carbon grids, particularly through the deployment of low-cost capital.

**Methodology.** The Climatescope 2019 methodology includes 167 indicators and sub-indicators, divided into three key thematic areas, which include each country's previous achievements, current investment environment and further opportunities for clean energy growth. These are the following:

1. **Fundamentals.** This thematic area covers the country's clean energy policy, the rules and structure of the energy sector, and local barriers that may hamper the development of renewable energy sources. A country with a strong and integrated policy and a more liberalized energy sector is generally more encouraged by private investment than a country with lower structures and less liberalization. This thematic area seeks to appreciate the fundamental structures that can help the flow of clean energy.
2. **Opportunities.** This includes both current and future electricity demand in the country, its CO<sub>2</sub> emissions in the energy sector and energy consumption, as well as the general attractiveness of prices, short and medium-term opportunities for the purchase of renewable energy sources, a history of corporate commitment to sustainable development and available levels of electrification. This thematic area seeks to embody further opportunities for the growth of clean energy available in the country.
3. **Experience.** This includes the amount of clean energy installed in the country, historical levels of investment in the completeness of non-production value chains of clean energy, and renewable energy. Markets with extensive experience in developing renewable energy potential typically offer lower risks, lower capital costs for investors, and lower technology costs.

It is important that several key indicators are “aligned” with the country's gross domestic product, installed capacity, output and population. The methodology draws attention and then ignores the fact that some countries attract large volumes of capital simply because they are larger. [6]

## Climatescope scope of top 15 countries

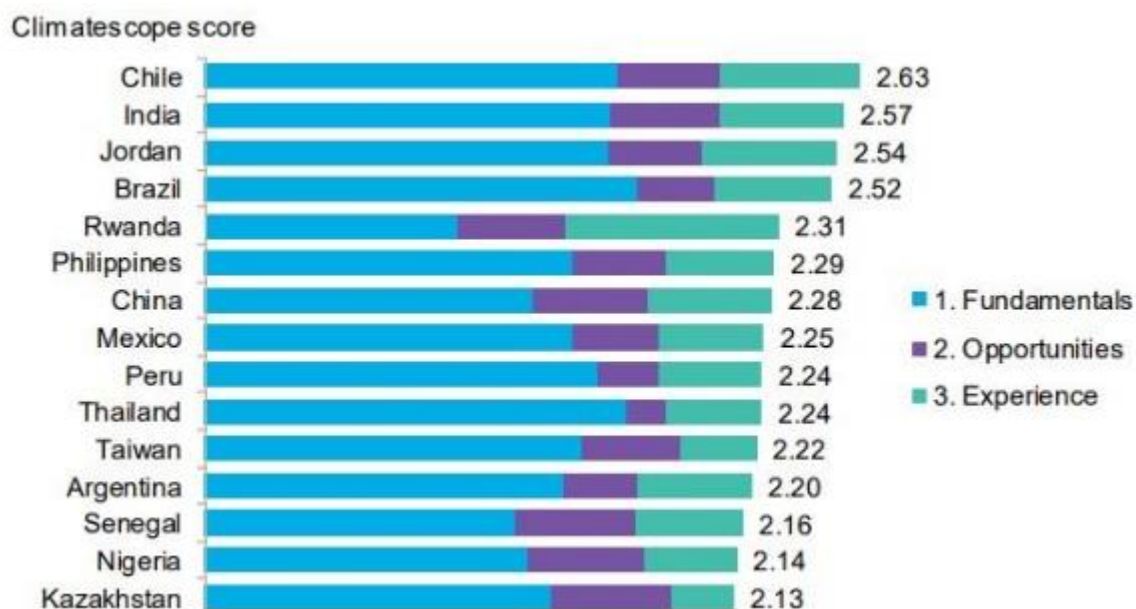


Image 5 - Climatescope

**Sustainable Development Index (SDG Index).** The SDG index tracks the performance of countries in relation to the 17 SDGs, as agreed by the international community. Thus, all 17 goals are equally weighted in the index. Evaluation means the position of the country between the worst (0) and the target or best (100) results. The general Danish index (85) shows that the country's path is on average 85% to the best possible outcome for the 17 SDGs. To ensure transparency and stimulate further analysis, all basic data are available to the public.

Ratings and Indices are not comparable with previous editions, primarily due to changes in the basket of indicators. The SDGs are a partially dynamic agenda, including within the statistical community. Thus, the number of indicators changes with the advent of new data. In some cases, the methodology for certain indicators, including among indicators developed by international organizations, is also being revised based on efforts at the global level that are aimed at improving the quality of SDG monitoring measures. The results for the dashboards and the SDG index are not directly comparable from year to year in light of minor adjustments made this year to the methodology and findings of an independent statistical audit.



The SDG dashboards highlight both the strengths and weaknesses of each country in the 17 SDGs. The methodology section shows that they focus on the two worst indicators for each goal. This year, the dashboards included average statistical population data for each region. Although the SDGs include the same basket of indicators for all countries, the OECD dashboards include many more indicators than other dashboards, due to the more data available for these countries. SDSN promotes regional releases of the index and SDG dashboards such as the Arab States, Africa, Latin America and Europe. [2]

**Methodology.** The 2019 Sustainability Report describes countries' progress in achieving the SDGs, and identifies areas that require faster progress. The SDG index and goal scores can be interpreted as a percentage of achievement. Therefore, the difference between 100 points and country points is the percentage distance that needs to be filled to achieve the SDGs and goals. The same list of indicators is used for all countries to obtain comparable ratings and scores. It should be noted that the difference in ratings may be associated with small differences in the total score.

SDG trends indicate whether a country is on track to achieve a specific goal by 2030, based on recent results for this indicator. Trends are then aggregated at the task level to give an idea of how the country is progressing towards the goal as a whole.

The methods below describes how the SDG Index and Dashboards were computed:

#### **A) Data Selection**

Where possible, the Sustainability Report 2019 uses official SDG indicators approved by the UN Statistical Commission. Where there is insufficient data for the official indicator and to fill data gaps, other indicators from official and unofficial providers are included. There are five criteria for selecting an indicator that were used to determine the appropriate indicators to include in the report:

- 1) **Global relevance and applicability to a broad range of country settings:** The indicators are relevant for monitoring the achievement of the SDGs and are applicable to the entire continent. They are internationally comparable and make it possible to directly compare indicators in different countries. In particular, they

allow quantification of thresholds for effectiveness that imply the achievement of the SDGs.

- 2) **Statistical adequacy:** The indicators selected represent valid and reliable measures.
- 3) **Timeliness:** The indicators selected are up to date and published on a reasonably prompt schedule.
- 4) **Data quality:** Data series represent the best existing measure for a particular problem and are obtained from official international or state sources (for example, national statistical offices or international organizations) or from other authoritative sources, such as peer-reviewed publications.
- 5) **Coverage:** Data must be available for at least 80% of the UN Member States with a national population greater than 1 million.

#### **B) Missing data and imputations**

The goal of the 2019 Sustainability Report is to guide countries on their SDG priorities today based on reliable and accessible data. To minimize deviation from missing data, the SDG index includes only countries that have data for at least 80% of the variables included in the global SDG index or in the expanded SDG index for OECD countries.

Taking into account that in many SDG priorities there are no generally accepted statistical models for imputing data at the country level, as a rule, no missing data were imputed or modeled. Made from exceptions for the following variables in the table (imputation), often because otherwise they would not be included due to missing data.

SDG	Label	Imputation
1	Poverty headcount ratio at \$1.90/day (% population)	Data was not reported for those countries where no survey data was available.
1	Poverty headcount ratio at \$3.20/day (% population)	Data was not reported for those countries where no survey data was available.
2	Prevalence of undernourishment (% population)	FAO et al. (2015) report 14.7 million undernourished people in developed regions, which corresponds to an average prevalence of 1.17% in the developed regions. We assumed a 1.2% prevalence rate for each high-income country with missing data.
2	Prevalence of stunting (low height-for-age) in children under 5 years of age (%)	UNICEF et al. (2016) report an average prevalence of stunting in high-income countries of 2.58%. We assumed this value for high-income countries with missing data.
2	Prevalence of wasting in children under 5 years of age (%)	UNICEF et al. (2016) report an average prevalence of wasting in high-income countries of 0.75%. We assumed this value for high-income countries with missing data.
3	New HIV infections (per 1,000)	We impute values from IHME's Global Burden of Disease Study (2017) when countries are missing empirical data in UNAIDS.
4	Lower secondary completion rate (%)	We used OECD data for upper secondary completion in Germany. This value is similar to the latest datapoint available on the UNESCO data before a sharp break in the series.
8	Prevalence of Modern Slavery (victims per 1,000 population)	We assume missing data points for those countries in which the Walk Free Foundation's methodology has less confidence due to survey unavailability.
9	The Times Higher Education Universities Ranking: Average score of top 3 universities (0-100)	We impute values from the Global Innovation Index's indicator on university scores in the QS University Rankings for countries with missing data. We assumed a value of 0 for countries with no universities in the rankings.
9	Research and development expenditure (% GDP)	We assumed zero R&D expenditure for low-income countries that did not report any data for this variable.
10	Gini Coefficient adjusted for top income (1-100)	We impute the World Bank Gini coefficients for those countries missing data on the adjusted Gini coefficient from Brookings.
13	CO <sub>2</sub> emissions embodied in fossil fuel exports (kg/capita)	We assumed a value of 0 for countries with little to no production of fossil fuels that for which data was not reported.
15	Permanent Deforestation, 5 year average annual %	We did not report data for countries with insignificant forest area as per the Environmental Performance Index (2018). Countries with forest area but no data on drivers of permanent deforestation (shifting agriculture, urbanization and land use for commodity production) were assigned a value of 0.
16	Children 5–14 years old involved in child labour (%)	The best performing upper-middle-income countries have a child labor rate of 1% (UNICEF, 2015). We assumed 0% child labor for high-income OECD members for which no data was reported.
16	Transfers of major conventional weapons (exports) (constant 1990 US\$ million per 100,000 population)	We assumed a value of 0 for countries with unreported export data and from which there are no major companies that produce weapons.
17	Government Health and Education spending (% GDP)	We use OECD data for OECD member countries.
17	Tax Haven Score (best 0-5 worst)	We impute a value of 0 for all countries without data on this indicator.

Table 6 - Imputations

To reduce the bias of the missing data when calculating the SDG index, missed goal points are used, using the average for the region. This relates primarily to goal 14 (living under water) and goal 10 (reducing inequality). Implicit goal estimates are used solely for calculating the index, and they are not shown in the SDG dashboards or country profiles. For Goal 14, suitable indicators will be identified in the future for assessing the impact of landlocked countries on the oceans.

### **C) Method for Constructing the SDG Index**

The procedure for calculating the SDG index consists of three stages: (I) censorship of extreme values for the allocation of each indicator; (II) resize data to ensure comparability of indicators; (III) aggregate indicators within and between the SDGs. To produce data comparable in terms of performance, each variable was changed from 0 to 100, where 0 indicates the worst performance and 100 the optimal. Scaling is usually much more sensitive to the choice of boundaries and extreme values (emissions) in both tails of the distribution. The latter can become an unintended threshold and lead to false data variability. Therefore, the choice of upper and lower boundaries may affect the relative ranking of countries in the index.

The upper bound for each indicator was determined using a five-step decision tree:

- The use of absolute quantitative thresholds in the SDGs and goals: for example, universal graduation, zero poverty, universal access to water and sanitation, and gender equality. Some SDG Goals suggest relative changes (Goal 3.4: [...] reduce by 1/3 premature mortality from noncommunicable diseases [...]), which today cannot be transferred to the global baseline. Such goals are achieved using step 5 below.
- Where no explicit SDG target is available, apply the principle of “Leave-No-One-Behind” to set upper bound to universal access or zero deprivation for the following types of indicators:
  - 1) Measures of extreme poverty (e.g. wasting), consistent with the SDG ambition to end extreme poverty in all its forms.
  - 2) Public service coverage (e.g. access to contraception).
  - 3) Access to basic infrastructure (e.g. mobile phone coverage, wastewater treatment).
- Where science-based targets exist that must be achieved by 2030 or later, use these to set 100% upper bound (e.g. zero greenhouse gas emissions from electricity as required by no later than 2070 to stay within 2°C, 100% sustainable management of fisheries).

- Where several countries already exceed an SDG target, use the average of the top 5 performers (e.g. child mortality).

For all other indicators, use the average of the best indicators. In the case of maintaining global indicators, the upper limit was established by taking the average of the 5 best world performers. According to OECD indicators, the average top 3 performers. These principles interpret the SDGs as “stretchable goals” and focus on indicators for which a country is lagging. Each distribution of indicators was censored, so all values exceeding the upper limit were rated 100, and values below the lower limit were 0.

In some cases, the upper limit exceeded the thresholds that must be reached by 2030 to achieve the SDGs. For example, the SDGs require reducing child mortality to no more than 25 per 1000 live births, but many countries have already exceeded this threshold (that is, mortality rates below 25 per 1000). By defining the upper bound as the “best” result (for example, 0 mortality per 1000), rather than the threshold for achieving the SDGs, the SDG index encourages improvements in the entire distribution. This is especially important for countries that have already reached certain SDG thresholds, but still lag behind other countries in this indicator. [8]

After establishing the upper and lower bounds, variables were transformed linearly to a scale between 0 and 100 using the following scaling formula for the range [0; 100]:

$$x' = \frac{x - \min(x)}{\max(x) - \min(x)}$$

where  $x$  is raw data value;  $\max/\min$  denote the bounds for best and worst performance, respectively; and  $x'$  is the normalized value after scaling.

The scaling equation ensured that all rescaled variables were expressed as incremental variables (i.e., higher values meant better performance). Thus, the changed data has become easy to interpret and compare for all indicators: the country that received 50 points in the variable is halfway to the optimal value; the country with 75 points has gone three quarters of the way from worst to best.

To calculate the SDG index, we first evaluate the estimates for each goal using the arithmetic average of the indicators for this purpose. These target estimates are then averaged over all 17 SDGs to obtain an SDG index metric. Various sensitivity tests are available on the Internet, including comparing arithmetic and geometric mean and Monte Carlo simulations at the index and target level. Monte Carlo simulations require caution when interpreting small differences in the ratings and ratings of the Index between countries, as they may be sensitive to the weighting scheme.

#### **D) Method for Constructing the Dashboards**

To assess the country's progress on a specific indicator, you need to consider four bands. The green bar is limited by the maximum that each variable can reach (i.e., the upper limit), and the threshold value to achieve the SDGs. Three color bars from yellow to orange and red indicate the growing distance from the SDGs. The red bar is connected below the value of the 2.5th percentile of the distribution. The upper and lower bounds are the same as for the SDGs.

Additional thresholds were set in consultation with experts and based on statistical methods. Country assessments have been the subject of public consultation and direct consultation with members of the Sustainable Development Network. All thresholds were indicated in absolute terms and apply to all countries.

#### **E) SDG Trends**

Using historical data, it is estimated how quickly the country is moving towards the SDGs and it is determined whether — if extrapolated to the future — will this pace be sufficient to achieve the SDGs by 2030. For each indicator, the SDG achievement is determined by the green threshold set for SDG dashboards. The difference in percentage points between the green threshold and the normalized score for the country indicates the gap that needs to be closed to achieve this goal.

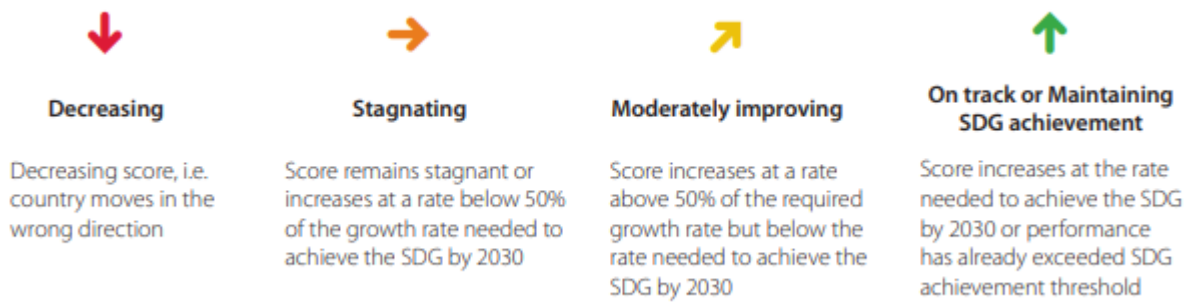


Image 6 - The 4-arrow system for denoting SDG Trends

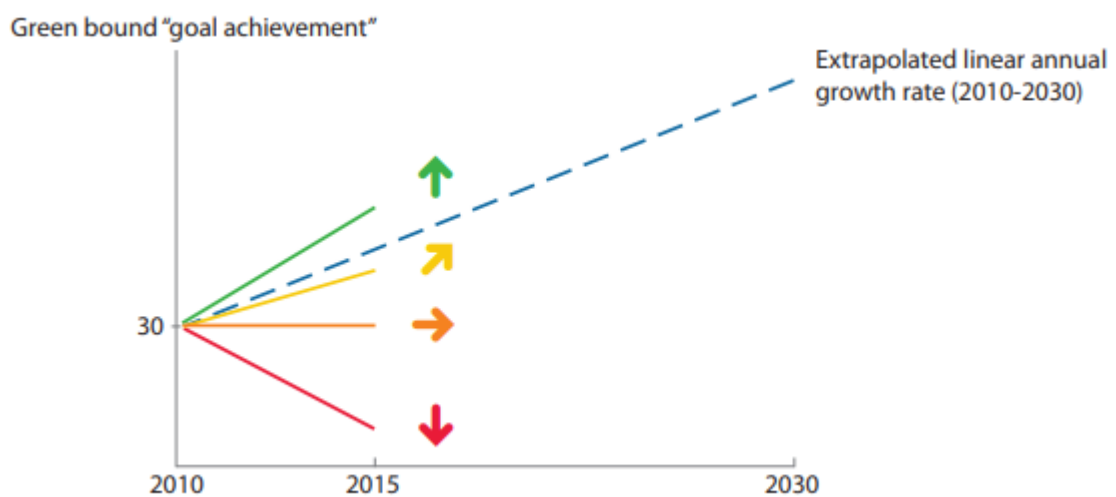


Image 7 - Graphic representation of the SDG Trends methodology

Trends are presented at the SDG level only if trend data were available for at least 75% of the trend indicators within the target. An exception was made for goal 4, which requires trend data for at least 2/3 of the trend indicators due to the large number of missing values for these indicators. [1]

The trend for the SDGs was calculated as the arithmetic average of all trend indicators for this purpose. SDG trends are usually based on data that precedes the adoption of the SDGs, since data are presented with large delays at the international level due to lengthy validation processes.

In conclusion, a small decline in the countries that are among the most successful is viewed differently than a small decrease in countries with medium or low rates. Only

for the most successful participants, very small declines are now considered “stagnation”. They are reported as such at the indicator level and are taken into account when calculating the overall target trend. Maximum performance is considered a result equal to or greater than the "green threshold". If the indicator for the country decreased, but remained above the green threshold, the “stagnant” arrow was retained. However, a country that used to be above the green threshold and that falls to below the green threshold receives a "downward trend."



### 3. ANALYSIS OF COUNTRIES BASED ON PREVIOUSLY REVIEWED INDICES AND BUSINESS ORGANIZATIONS THAT CONTRIBUTE TO THEIR IMPROVEMENT.

#### 3.1 Analysis of Ukraine based on previously reviewed indices.

##### Sustainable development goals index.

## UKRAINE

Eastern Europe and Central Asia

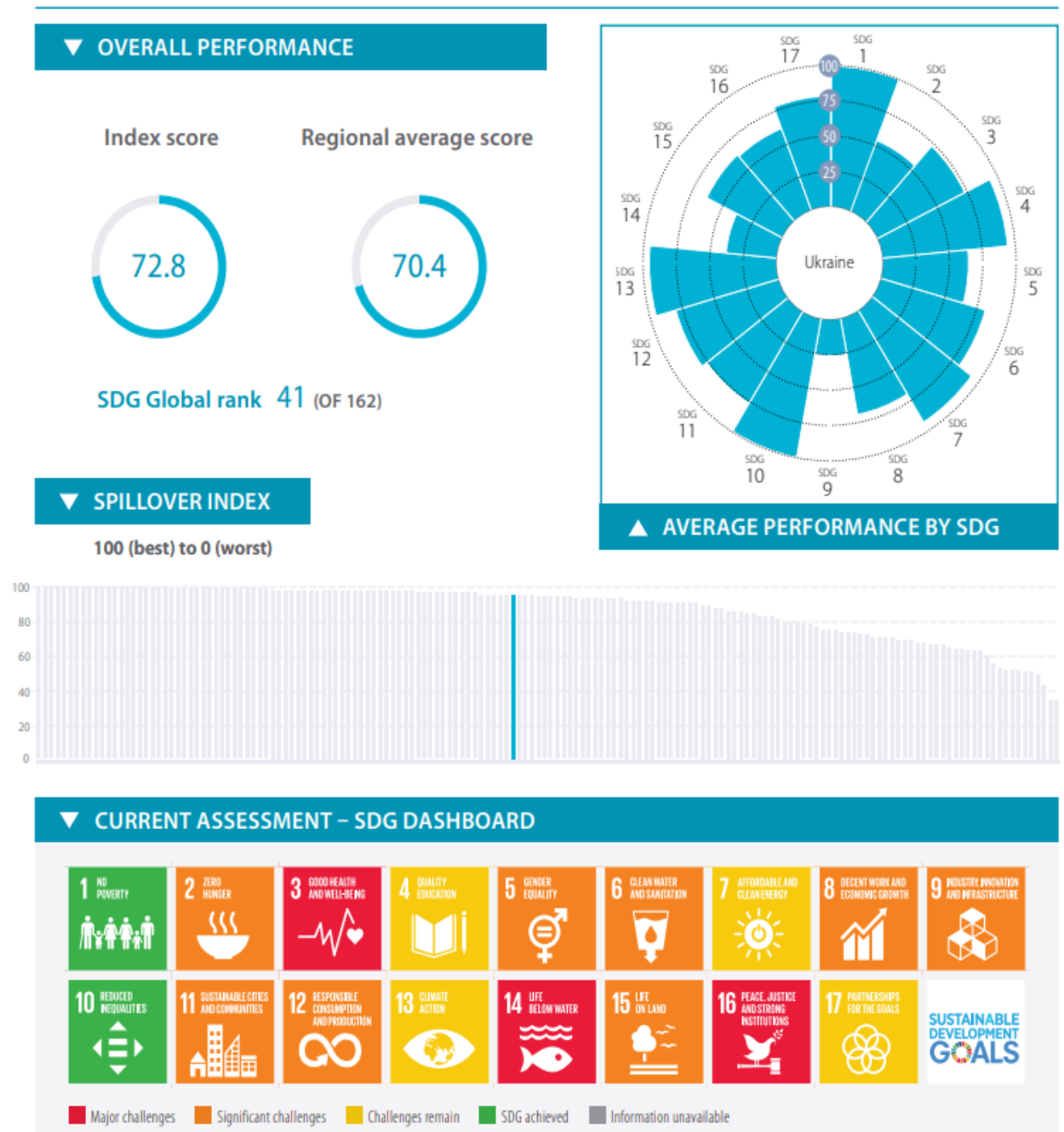


Image 8 - Sustainable development goals index of Ukraine.

Looking at all 17 goals that describe the country, you can make some recommendations for raising the level of some of them, including companies that are striving to improve performance, as well as affect the efficiency of their business.

Goal 2. Main problems:

- population decline;
- low level of productivity due to worn-out production funds, use of outdated technologies, underdeveloped rural infrastructure;
- lack of motivation for agricultural producers to comply with agri-environmental requirements;
- incompleteness of land reform.

Recommendations:

- increasing the level of investment attractiveness of the agricultural sector (this requires, among other things, completing the process of creating a civilized market for agricultural land);
- carrying out information campaigns on the promotion of healthy eating, especially in preschool and school institutions;
- encouraging the creation of small farms (up to 50 ha), in particular family farms, by improving the legal framework and ensuring favorable economic, organizational and social conditions for their activities;
- technical modernization of agricultural production and food industry, improvement of their energy efficiency and realization of energy saving potential;
- creation of a clear mechanism of regulation of the market of organic products and raw materials, a proper system of its certification;

Goal 3. In Ukraine, a high social problem remains a high rate of premature mortality, especially for men, which causes a life expectancy of 12-14 years lower than in developed countries. Of every thousand 20-year-olds under the age of 65, 389 (300 more than in Sweden or Switzerland, 200 more than in Poland). The most striking differences are observed in the young and middle-aged and mainly for preventable reasons: more than half of the deaths of men aged 20-64 are avoidable. There is no

narrowing of the 10-year gap between the life expectancy of men and women, which is twice as high as in developed countries. [1,2]

Recommendations:

- creation of a legislative framework for the functioning of a new health financing system based on the principles of social responsibility, transparency and socio-economic justification;
- introduction of a model of state guarantee of the package of medical aid, which should be accessible to the whole population, regardless of gender, place of residence, level of wealth and other socio-demographic characteristics;
- disseminating knowledge and practices on healthy lifestyles and responsible self-preservation behavior, especially among children and young people;
- development and implementation of a comprehensive transport safety program, which should include strict control of road and vehicle safety, improving the quality of roads, conducting educational and information work to prevent traffic and traffic violations;

Goal 7. Main problems:

- underutilization of installed capacity;
- shortage of shunting and reserve capacities in the existing power generation structure, combined with a significant imbalance in their regional location;
- the lack of technically achievable potential of renewable energy sources (about 50% of the country's total energy consumption), along with the limited use of it;
- high energy consumption of production.

Recommendations:

- creation of conditions for growth of energy production and its accessible, reliable and sustainable supply to consumers (population, municipal and industrial sectors, service sector);
- diversification of primary energy imports;
- increasing the production and use of energy from renewable sources and implementing programs and measures to improve energy conservation and energy efficiency in the economic sectors.

Goal 8. A necessary prerequisite for the transition to sustainable economic growth is the implementation of a strategy of active inclusive development, which could guarantee annual GDP growth of 6-7% and at least double the volume of production. This will significantly increase the standard of living of the population of the country and launch a chain process of transformation towards achieving all other sustainable development goals. Such growth is possible only under the condition of realization of structural-innovative model of development, intensive technical and technological updating of production. The basis of structural-innovation transformations should be:

- the innovation axis of the priority industries that will be national flagships in the implementation of innovative technologies and around which modern clusters will be formed;
- the sector of startups, which in developed countries is mainly a leader of scientific and technological progress and development of competitive environment of the country's economy;
- the SME sector, whose role in ensuring employment and well-being of the population is crucial. Institutional support for SME development will contribute to the gradual improvement of Ukraine's Doing Business ranking on ease of doing business (by more than 60 points in the rating at the end of 2030);
- large exporters whose task is to promote domestic high-tech goods to foreign markets.

Recommendations:

- improving the conditions for doing business, including through improving regulatory conditions, simplifying the procedure for administering taxes and fees, establishing simple and transparent tax rules, and creating a favorable investment climate;
- introducing instruments to stimulate priority (max. 5) economic activities that meet at least the following criteria: have high added value, export potential and are innovative;

- creation of incentives for intensification of technical modernization and innovation, including special attention to high value-added sectors and labor-intensive sectors;
- creating incentives for the introduction of sustainable consumption models on the basis of sustainable development and preventing environmental degradation;

Goal 9. In the 20th century, Ukraine formed a developed industrial complex, which today still accounts for a high share in the structure of the economy, covering all types of industrial production. However, deindustrialisation processes, which were initiated by the transformation crisis of 1992–1994 and are still ongoing, have led to the destruction of much of Ukraine's production potential, and especially its high-tech component. This was largely due to the breakdown of cooperative ties with other republics of the USSR in the absence of a complete production cycle within Ukraine. Over the past two years, production declines reached 21.8%, in particular as a result of hostilities in the east and a decline in the presence of Ukrainian products on traditional markets. The share of industry in gross value added decreased from 25.6% in 2011 to 23.3% in 2015. [31]

#### Recommendations:

- development of capital markets infrastructure, in particular the rehabilitation of the banking system, which should become the main source of cheap financial resources; establishment of public and private institutions providing financial resources and reducing the risks of entering the world markets for small and medium-sized exporting enterprises;
- creating an incentive system to increase resource efficiency, promote the use of clean and environmentally friendly technologies and industrial processes;
- creation of effective effective system of protection of intellectual property objects;
- expansion of various forms of state participation in the implementation of infrastructure projects, ensuring the implementation of flexible tariff policy to create attractive conditions for business and investors.

Goal 13. Human activity is one of the powerful drivers of climate change. The biggest contribution to such changes is related to the emission of gases produced during combustion of carbon energy and in other processes that cause the greenhouse effect. The main sources of greenhouse gas emissions in Ukraine are concentrated in the following four sectors of economic activity:

- 1) energy (exploration and production of primary energy sources; conversion of primary energy sources into more usable forms; transportation, stationary and mobile use of fuel);
- 2) industry;
- 3) agriculture, forestry and other land uses (CO<sub>2</sub> emissions and sequestration in agricultural and forestry processes);
- 4) waste management (disposal, biological treatment, incineration of solid waste, wastewater treatment).

Recommendations:

- reduction of greenhouse gas emissions, which is envisaged by Ukraine's international commitments. Such reductions are achieved both directly (in particular by improving energy efficiency and the use of renewable energy sources) and indirectly (eg by activating GHG absorption mechanisms);
- informing the public about the effects of climate change, climate change factors, response mechanisms and practices; implementation of appropriate educational programs at all levels of formal and non-formal education;

The impact of climate change is on everyone, whether we feel it or not.

## **Global Green Economy Index (GGEI).**

The leading tendency of modern social development is the spread of globalization processes. In the context of the globalization of the world economy, the level of exhaustion of natural resources is increasing. Resource requirements far exceed the volume and speed of their natural replenishment. As a result, depletion of natural resources inevitably occurs, which leads to scarcity of resources, pollution of water and air, lack of fresh water, etc. Based on the aggravation of these issues, the concept of a "green" or "green" economy has been actively promoted in the world socio-political and scientific circles.

In the world practice, along with the green economy, there are concepts of green growth and sustainable development. It should be noted that their main purpose is to ensure the rational use of environmental opportunities in the organization of economic activities, each of which contains social justice. [22]

The analysis shows the similarity between the three concepts. The concepts of "green growth" and "green economy" are consistent with each other and foresee sustainable development as the ultimate goal. The key difference between a "green economy" and "green growth" is seen in the levels of implementation: the first contains strategic implementation aimed at systemic challenges - the highest level, and the second provides the greening of products, processes, services, technologies - the lower level. Each of the concepts analyzed implies the harmonization of three components: economic, environmental and social. Theoretical concepts in real economic life are being implemented slowly throughout the world economy.

Ukraine remains one of the most energy-intensive countries in Europe. In 2010, the energy capacity of the Ukrainian economy was 0.47 toe, while the OECD average is 0.15 toe. In Ukraine, fossil fuels remain the main source of energy, most polluting the air. The transition to a green economy involves complex changes in all sectors of the economy. The primary sector, which covers agriculture, fisheries, forestry and mining, requires the most radical changes, as it is here that products are created to meet the primary needs of mankind. Agriculture should focus on organic production (without the use of chemical additives). In 2011 the Federation of Organic Movement of Ukraine

counted 120 farms producing organic products. Their total area exceeds 270 thousand hectares or 0.7% of agricultural land. By this indicator, Ukraine is in twenty countries of the world.

The secondary sector of the economy, which covers industry and construction, is most in need of rational use of energy resources. In the context of the transition to a green economy, the country's industry requires deep technological modernization, as production facilities are the basis for the creation of machinery, equipment and equipment that will help clean up production and use scarce resources effectively. In addition, the “greening” of the economy involves the revitalization of the waste processing industry. Today, waste, on the one hand, carries unprecedented threats to the environment and, on the other, can be used to increase production competitiveness by reducing raw material costs and reusing them. The role of the “green economy” in the Ukrainian industries needs further thorough research, as developed countries are shaping neo-industrial policies at the present stage.

Improving energy efficiency in construction is one of the promising areas that will help to save energy, reduce harmful emissions and create new jobs.

In addition to the direct effect, the greening of the construction industry causes a number of related effects: improving the comfort of the premises, extending the life of the buildings, increasing employment in related industries, reducing the consumption of imported resources and more.

The tertiary sector is the link between the primary and secondary sectors, which provides the concept of a green economy. This sector is like a system of industries and activities related to the provision of services to both the public and business. It is this area that covers the development of complex research and development, the creation of business plans and programs, the development of energy-efficient technologies that can provide qualitative shifts in the direction of landscaping primary and secondary sectors. Creating eco-innovations will allow us to improve production processes, effectively organize businesses by saving resources, and improve commercialization and implementation of clean technologies.



A well-thought-out regulatory system can identify rights and create incentives that stimulate the transition to a green economy, as well as remove barriers to green investment.

Green investment is an important tool for sustainable economic development in any country. Their absence can deepen the country's difficult environmental situation. Despite the gradual increase in environmental tax for environmental pollution, the financial motivation of pollutants to reduce emissions is insufficient. It is more beneficial for thermal generation companies to pay taxes than to invest in environmental measures. Ukraine must urgently implement a national greenhouse gas emission and absorption system. [18]

The priority areas for the development of the Green Investment Facility are the following: - detailing the accounting system to the level of individual stationary sources of emissions; - Formation of a system of metering of greenhouse gas emissions in transport based on data on consumption of motor fuels and modes of transport and applied technologies; - direct observation of the use of geoinformation and satellite technologies on emissions and absorption in agriculture and forestry; - inclusion in the accounting system of regular monitoring based on direct measurements of greenhouse gas concentrations and the scheme of verification of the results obtained.

Currently GGEI Performance Index of Ukraine - 0.3813, which ranks 100+ among 162 countries.

## **Emerging Markets Outlook (Climatescope).**

In 2019, Ukraine ranked 8th in the world in terms of attractiveness for investments in alternative energy, rising to 55 positions in the ranking.

This is stated in the annual Climatescope 2019 report prepared by Bloomberg New Energy Finance.

Ukraine has done the incredible: it immediately rose to 55 positions in the attractiveness rating of developing countries, in terms of investments in renewable energy in 2019. In last year's report, our country occupied a modest 63rd place, and in the report of 2019 rose immediately to 8th place.

The think tank says energy sector reforms, attractive green tariffs and tax rates have been the cause of growth.

The top lines of the rating are traditionally shared by the largest emerging economies: India, Chile, Brazil, China, Argentina. They were joined by Jordan and Kenya.

Also, as noted in the ranking, Ukraine became the reason that European countries that are not members of the European Union set a record for attracted investments in clean energy in the amount of \$ 2.2 billion. The amount for 2018 amounted to more than a quarter of the total investment in the region over the past decade.

The growth was mainly due to the huge jump in investment flows to Ukraine, which in 2018 amounted to \$ 801 million, compared with \$ 46 million in 2017. At the same time, there remains a high potential for growth in investment, since over the past decade, European countries that are not members of the European Union received only 6% of the total net energy capital invested in emerging markets.

Among European countries, Ukraine is the most attractive market. This is the result of a number of factors - both objective and subjective. A high green tariff, a delayed transition to competitive pricing at auctions, macroeconomic stability in 2017-2019, simple and understandable legislation, where there is practically no place for corruption - these are the reasons for such a rapid rise of the industry. [2]

This is the maximum that Ukraine is capable of today - indicators in 2020 will be much more modest, and this is due to a number of restrictive measures on the part of the

government regarding this industry. The transition to auctions, the introduction of responsibility for “imbalances” and the possible aggravation of the deficit problem of the Guaranteed Buyer State Enterprise will substantially correct Ukraine’s positioning as a promising market in the emerging markets category.

Currently Ukraine has score - 2.47, but considering the methodology of Climatescope:

- Fundamentals - 50% and score 3.24;
- Opportunities - 25% and score 1.24;
- Experience - 25% and score 2.17.

### **3.2 Implementation of sustainable development goals by companies in Ukraine.**

The level of implementation of the Sustainable Development Goals (SDGs) by Ukrainian companies has been evaluated on the basis of the analysis of the non-financial statements of 19 companies. The vast majority of the reports covered the company's activities for 2016-2017.

The analysis of the reports was conducted by the following characteristics:

- Sustainable development goals implemented by Ukrainian companies;
- the implementation of sustainable development goals at the strategic and operational levels;
- key performance indicators for companies and their compliance with the SDG;
- partnerships of companies with other organizations to achieve the identified SDGs;
- the relevance of CSR (corporate social responsibility) strategies, priorities and programs to the national Sustainable Development Goals.

#### **Results of the research.**

Most of the companies (13 out of 19 companies), when completing the UN Global Compact Form for Progress Reporting, indicated what kind of sustainable development goals they support. Only 2 companies - Nestle and ArcelorMittal - have made it clear that they support the MDGs and, on this basis, are developing their sustainability goals, setting examples.

The analysis of the reports gives the possibility to formulate the assumption that the companies mostly outline the goals that they consider to be their CSR practices.

Example: ArcelorMittal.

ArcelorMittal is committed to contributing to a more sustainable future. The 8 Sustainable Development Goals are at the heart of ArcelorMittal's Sustainable Development Concept and their efforts are focused on delivering on our long-term commitment to all stakeholders.

Purposes:

- Safety, quality of life for people.
- Products that promote a sustainable lifestyle.
- Infrastructure.
- Efficient use of resources with a high degree of waste treatment.
- Responsible user of air, land, water.
- Energy that helps reduce carbon content.
- Active participation in the life of local communities.
- Impact assessment. Our contribution to the development of society.

Everything is based on transparent effective management.

The analysis of the reports made it possible to form a priority for SDG for Ukrainian companies. For the most part, Ukrainian companies build their strategy and practice and CSR policies in accordance with the four SDGs, namely:

- decent work and economic growth;
- industry innovation and infrastructure;
- climate action;
- life on land.

The above priority is due to the fact that environmental issues and employment are the most common CSR practices of most Ukrainian companies for quite some time.

The fewest Ukrainian companies mentioned such goals as:

- life below water;
- reduced inequalities.

Only 3 companies have integrated SDG (one or more) at the strategic level.

These are Nestle, ArcelorMittal and Mironovsky bread.

It should be noted that some of the Ukrainian companies whose reports are analyzed have a fairly effective sustainable development strategy and policy, which includes some provisions that are consistent with SDG indicators (Galnaftogaz, Obolon, FUIB, Carlsberg Ukraine).

Preferably, SDGs are implemented at the operational level (at the project and share level).

Example. Nestle Goals:

- Promote a healthy and happy life, that is, help 50 million children lead a healthy lifestyle.
- Protect natural resources for generations to come.
- Help build communities for their prosperity. Improve the lives of the communities of approximately 30 million farms that are directly related to our activities.

Fewer than half of CSR companies focus on developing partnerships (SDG 17). Partners of companies in the implementation of social responsibility are local communities, non-governmental organizations, local authorities, educational institutions, business associations, non-governmental organizations.

An analysis of the compliance of strategies, priorities and programs has shown that they have a sufficiently high level of compliance. The vast majority of companies have directed and continue to direct their resources to address acute socio-economic problems.

Recommendations:

1. Businesses need to determine how their business can contribute to SDGs, and identify the SDGs they are involved in.
2. To increase the level of SDG implementation, Ukrainian companies can raise it from operational to strategic level. Businesses need to integrate SDG's national objectives into company development strategies and corporate sustainability strategies.
3. It would be advisable for companies to include the requirement to support the achievement of SDGs and to develop corporate sustainability goals across the supply chain.
4. Companies can become an active advocate for the SDG by holding a stakeholder dialogue when developing a sustainable development strategy or presenting non-

financial reports. For companies, it is advisable to add educational elements about SDGs to the stakeholder program.

## CONCLUSIONS

In the diploma was done:

1. Consideration of the basic theoretical principles of sustainable development.
2. Interaction with various stakeholder groups.
3. Consideration of some of the main indices of sustainable development:
  - Sustainable Development Report Index;
  - Emerging Markets Outlook (Climatescope);
  - Global Green Economy Index (GGEI).
4. Making their analysis and calculation methodology.
5. Country-specific analysis based on selected indicators. Analysis of business companies that affect sustainable development indicators.
6. Specifically, an analysis was performed on 20 companies from non-financial reports and a recommendation was made for further development (some examples of companies are given).

**Results.** Ukrainian companies build their strategy and CSR policies in line with the:

1. SDG 8. Decent Work and Economic Growth,
2. SDG 9. Industry, Innovation and Infrastructure,
3. SDG 13. Mitigating the effects of climate change,
4. SDG 15. Protecting and restoring land ecosystems.

The level of compliance of the strategy, priorities and programs for CSR national objectives are quite high, which indicates that the business is developing its sustainable development policy in accordance with the needs of the society.



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