Indicators for assessing sustainable development goals in education and their monitoring in Kazakhstan

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Abstract
Within the framework of the concept and goals of sustainable development, significant attention is paid to education for sustainable development. However, due to the diversity of national education systems, both in structure and in the content of educational programs, it is difficult to correctly compare the achievements of different countries and monitor their progress in achieving sustainable development goals at the national and international levels without appropriate comparison. In this article, the authors analyzed the leading national models of education, which are the most "mature" and developed, with an emphasis on sustainable development. The authors pay special attention to the education system of Kazakhstan, its features in comparison with these models, as well as consideration of initiatives aimed at achieving sustainable development goals in education, which are integrated into national projects and other strategic and program documents of Kazakhstan.
Keywords: education for sustainable development, sustainable development, education systems, classification of education systems.

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Introduction

The principles of sustainable development have received international recognition thanks to decisions of the United Nations. Their formation was

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based on the most important documents that became the foundation of the modern global agenda until 2030. Such documents include the UN Stockholm Declaration on the environment, the report of the World Commission on Environment and Development entitled "Our Common Future", the Rio Declaration and Agenda 21, the Program of Action for the further implementation of this agenda, the UN Millennium Declaration, the Johannesburg Declaration, and the "The Future We Want" resolution.

In 2015, the UN General Assembly approved the resolution "Transforming our world: the 2030 Agenda for Sustainable Development." As part of this resolution, 17 sustainable development goals and 169 related targets were identified. These goals are comprehensive and indivisible, which allows for the integration of economic, social and environmental aspects of sustainable development. In particular, paragraph 25 of the 2030 Agenda emphasizes the importance of ensuring quality, inclusive and equitable education at all levels, from pre-school to higher and technical, including vocational training. Goal 4 focuses on achieving inclusive, equitable and quality education, and creating lifelong learning opportunities for all people.

In 2015, the UN established the Inter-Agency and Expert Group on Indicators for Sustainable Development Goals (IAEG-SDGs), which included representatives of 28 national statistical offices [1, 2, 4, 7].
The main objectives of this international expert group include:

- Development of a global system of indicators;
- Providing technical support;
- Regular review of methodological developments, indicators and their metadata;
- Analysis of capacity building activities.

The UN identifies several levels for spatial analysis: global (humanity), regional (geographical region), subregional (part of the states in the region), national (state) and subnational (territory within a state that does not have international status).

In 2017, a system of global indicators was approved to assess the achievement of the goals and objectives of sustainable development enshrined in the 2030 Agenda for the period up to 2030. This system was developed by IAEG-SDGs and approved by the UN Statistical Commission.

It was also decided that the original set of global indicators would undergo annual adjustments and comprehensive reviews in 2020 and 2025. This process aims to complement indicators developed at regional and national levels by UN Member States to more accurately and accurately monitor progress towards achieving the Sustainable Development Goals.

General requirements for indicators related to sustainable development goals were established. To simplify the implementation of global indicators, a classification has been developed that includes three levels depending on the degree of methodological development and availability of data at the global level [8, 9]:

- I level: The indicator has a clear conceptual definition, is supported by international methodologies and standards, and data is collected regularly in at least 50% of countries and regions for which the indicator is relevant.
- Level II: The indicator also has a clear conceptual definition and international methodologies and standards, but data is not routinely collected at the global level.
- Level III: There is no internationally accepted methodology or standards for the indicator yet, but they are in the process of being developed or will be developed and tested.

Measuring and monitoring indicators related to education for sustainable development are critical to understanding progress towards educational goals. These indicators measure access, quality and equity in education, which are fundamental to sustainable development at the global level. Global education-related indicators are complemented by national and regional indicators adapted to local conditions.

Education for sustainable development plays a key role in achieving all sustainable development goals, as it contributes to the knowledge, skills and values needed to address global challenges. However, due to differences in educational systems across countries, including funding levels, pedagogical approaches and curriculum content, it is clear that there is no one-size-fits-all approach to implementing sustainable development goals in education.

Using the example of Kazakhstan, several important aspects can be highlighted that may be useful for other countries when adapting their educational systems to achieve sustainable development goals:

1. Integrating sustainable development principles into educational programs. Kazakhstan is actively working to include sustainable development topics in national educational standards. This helps students understand the importance of environmental, social and economic sustainability from an early age.
2. Support and development of teachers.Successful integration of sustainable development goals into education requires training educators who have the necessary knowledge and skills to teach these topics. Kazakhstan is developing professional development programs for teachers so that they can effectively introduce the principles of sustainable development into the educational process.

3. National initiatives and projects.National projects are being implemented in Kazakhstan, such as “Green Economy” and “Digital Kazakhstan”, which are aimed at sustainable development and have an educational component. These initiatives help raise awareness and involvement of young people in sustainable development issues.
4. Monitoring and evaluation.Continuous monitoring and evaluation of educational programs is important to ensure progress towards achieving sustainable development goals. Kazakhstan has developed mechanisms for assessing the effectiveness of implementing the principles of sustainable development in education, which allows timely adjustment of strategic directions.

The example of Kazakhstan demonstrates that the integration of the principles of sustainable development into the educational system requires an integrated approach, including both the adaptation of educational programs and the training of teachers and the development of national initiatives. To successfully achieve sustainable development goals, it is important to take into account the national characteristics of each country and develop strategies that correspond to these characteristics. Comparative analysis of education models focused on sustainable development allows us to identify best practices and adapt them to local conditions, which contributes to global progress in implementing the 2030 Agenda.

Methodology

The purpose of this study is to analyze and comparatively study various educational models existing in the world, with an emphasis on European, American and Asian models. The study is aimed at identifying the key features of each model and their impact on the formation of graduates, their worldview, life goals and readiness to participate in modern society.

Research objectives:

1) Compare the main educational models using the example of Kazakhstan, the USA, Great Britain, Germany, France, China and Japan.
2) Analyze the features of each model in terms of its orientation towards the exact sciences or humanities, emphasis on theoretical or practical training, and preference for detailed study of existing or creation of new ones.
3) Investigate the influence of educational models on the training of specialists for various sectors of the economy.

4) Use the International Standard Classification of Education (ISCED) to compare and analyze the educational achievements of Kazakhstan in comparison with other countries studied.

The study was conducted in the form of a comparative analysis using qualitative and quantitative methods.

An in-depth analysis of existing literature on the topic of educational models was conducted, including scientific articles, UNESCO reports, government documents, and other relevant sources.

To systematize the results of the study, the International Standard Classification of Education (ISCED) was used.

The study examined cases of specific educational institutions and educational programs that reflect the features of each of the models.

Result

Kazakhstan's development goals directly resonate with the Sustainable Development Goals, including the goals of preserving the population, improving the health and well-being of people, as well as ensuring decent work and successful entrepreneurship.

Currently, measures aimed at achieving the SDGs in Kazakhstan are integrated into 10 national projects and strategic documents, such as the "Kazakhstan-2050" Strategy, the National Plan - 100 specific steps to implement five institutional reforms, "Quality Education "Educated Nation", "Technological breakthrough through digitalization, science and innovation", "Sustainable economic growth aimed at improving the well-being of Kazakhstanis", "Green Kazakhstan", national project for the development of the agro-industrial complex, "Concept of environmental safety of the Republic of Kazakhstan for 2021-2030", " State program for the development of education for 2020-2025" and "National plan for the implementation of the concept of "Digital Kazakhstan".

These documents cover more than 80% of the objectives identified in the UN document and contain specific action plans to achieve the corresponding goals. Strong alignment of existing national priorities and policies with sustainable development goals suggests that effective monitoring in this area will contribute to the achievement of national and global policy goals.

The Bureau of National Statistics ASPR RK, together with members of 5 Interdepartmental Working Groups created within the Coordination Council on the Sustainable Development Goals, reviewed 278 global and national SDG indicators, of which 16 global indicators were recognized as irrelevant for Kazakhstan.

Today, the system of national indicators for monitoring the SDGs in Kazakhstan includes 262 indicators:

- 146 global indicators were adopted without changes;
- 44 global indicators include minor changes;
- 30 alternative/proxy indicators were proposed;
- 42 national indicators are additionally included.

The Bureau of National Statistics ASPR RK has also developed a national SDG reporting platform.

In Kazakhstan, a key role in monitoring and implementing sustainable development goals is played by such departments as the Ministry of National Economy, the Ministry of Ecology, Geology and Natural Resources, the Ministry of Labor and Social Protection of the Population, and the Bureau of National Statistics of the Republic of Kazakhstan. These departments, together with the expert community, developed and implemented coordination and monitoring mechanisms, including interdepartmental working groups and specialized committees.

In 2021, Kazakhstan introduced a national SDG monitoring system, which includes more than 230 indicators adapted for Kazakhstani conditions. Under this system, the Ministry of National Economy publishes quarterly progress reports on key indicators such as poverty reduction, improved access to quality education, and expansion of infrastructure in rural areas.

Kazakhstan is also actively participating in international data sharing initiatives. In 2019, the digital analytical platform SDMX (Statistical Data and Metadata eXchange) was developed and implemented, which allowed Kazakhstan to integrate its statistical data with global databases. The platform includes about 120 key SDG indicators, available for analysis and reporting at the international level. The Office for National Statistics is coordinating work with the Department for Digital, Innovation and Aerospace to update and support the platform.

As of 2023, Kazakhstan has made significant progress in education, increasing the enrollment of preschool children to 90%, as well as ensuring full access to secondary education for 99% of schoolchildren. In the area of environment and sustainable development, the country has reduced carbon dioxide emissions by 12% compared to 2015 levels, as reflected in national reporting on the implementation of the Paris Agreement.

Another challenge is the lack of planned statistics on 88 indicators in a number of countries (second-level indicators) and the lack of a global methodology for calculating data on 34 indicators (third-level indicators).

Significant progress has been made at the global level in developing and testing new methodologies with the participation of international organizations and other stakeholders. In this context, the important role of

national statistical authorities is emphasized. The Bureau of Statistics of the Republic of Kazakhstan has already taken a number of steps and has accumulated significant experience that can be useful for global efforts. These measures include: (a) pilot studies on gender issues and violence against women and children; (b) incorporating the recommendations of the Washington Group on Disability into the census questionnaire.

Thus, Kazakhstan demonstrates significant commitment to achieving sustainable development goals by actively implementing international standards, developing its own initiatives and regularly monitoring and assessing progress.

Sustainable development plays a key role in education, since without it the transition to sustainable development is impossible.

The concept of "Education for Sustainable Development" (ESD) was formed as a reaction to the recognition of the global crisis in human interaction with the environment. The basic principles of ESD include:

- Formation of goals and vision of a better future.
- Critical thinking and evaluation of generally accepted ideas.
- Systems thinking and finding synergistic connections.
- Establishing partnerships and ability to work in a team.
- Decision making and delegation of authority.

The term "Education for Sustainable Development" is considered by the UN as an approach that includes:

- Acquiring skills and knowledge for sustainable development.
- Learning at all levels and in all areas of society.
- Formation of socially responsible citizens.
- Continuous education throughout life.
- Harmonious development of personality.

The main objectives of UNESCO and its members in the field of ESD include:

1. Improving the quality of basic education.
2. Reorientation of curricula.
3. Raising public awareness.
4. Training of specialists.

ESD covers planning, policy development, program implementation and teaching. In theory, ESD is divided into two approaches: teaching the concepts of sustainable development and developing the skills to achieve it, including systems and critical thinking, establishing partnerships and participating in decision-making.

A key element in the successful implementation of the ESD concept is the training of teachers, since they bear the main responsibility for shaping the worldview of the new generation. Teachers must address four main goals:

helping students understand the importance of the Sustainable Development Goals, engaging them in discussions about these issues, teaching them to consider contemporary issues in a multifaceted way, and encouraging discussion of these topics outside of formal education [21].

There is no universal model of education for sustainable development; Each country must define its priorities and action programs. Particular attention should be paid to training people who already have a diploma. Educational programs that can teach SD skills and inform about the latest trends in this field are important.

To encourage the implementation of sustainable development programs, global and national rankings of educational institutions are being developed. In 2019, the British publication Times Higher Education presented a global ranking of universities assessing their contribution to achieving the SDGs [4, 19, 20].

The ranking methodology is based on an analysis of three areas of university activity: research (creating knowledge to solve world problems), socially oriented programs (impact on society) and management (resource management and contribution to education).

The calculations use data provided by universities, as well as bibliometric data from Elsevier, in particular:

– research – publications related to the achievement of the specified SDG for a certain period are analyzed;
– "continuous" indicators – numerical indicators that vary over a wide range (for example, the number of university graduates in the field of health);
– indicators requiring confirmation - quality indicators, such as initiatives, practices and activities of universities in various areas, which require confirmation and are assessed based on certain criteria.

The final overall ranking score is calculated by combining the score for SDG 17 and the top three scores for the other SDGs. The score weight for SDG 17 is 22%, and the weight for each of the remaining three SDGs is 26%. In the ranking, universities can be assessed according to various SDGs depending on the priorities of their development strategy.

Education within the framework of sustainable development: systems analysis.

The existing "classical" educational models can be conditionally divided into European and American, although in recent decades the Asian model of education has been actively introduced into world practice. Each of these models has its own characteristics and corresponds to certain conditions for the development of society. Features mean, first of all, an orientation towards the exact sciences or humanities, an emphasis on theoretical or practical

training, as well as a preference for a detailed study of existing things or the creation of new ones. The use of one or another educational model leads to the formation of graduates in various educational institutions with different worldviews, goals and degrees of readiness to live and create in modern society [10, 11, 12].

American model of education

The modern education system in the United States, formed under the influence of historical, economic and social factors, is characterized by a number of features that distinguish it from Western European standards.

The education system is a multi-level structure based on age and includes 4 levels: preschool, primary school, secondary school and higher specialized vocational education. Preschool education is divided into two stages: nursery and kindergarten.

School education includes two levels: primary and secondary.Primary school education covers the first stage, primary school and primary elementary school. Secondary school education in the United States is divided into two stages – junior and senior school, each of which covers three years of study.

School education in general includes 12 academic classes from first to twelfth, each of which lasts 1 academic year.

Secondary schools can be of different types: academic, vocational and multidisciplinary. In multidisciplinary schools, starting from grade 9, various areas of study (profiles) are offered. The most common areas are academic, general, commercial, industrial and agricultural. There are many school programs in the United States, but there is no uniform curriculum as each state has its own autonomy.

Higher education in the USA can be obtained at colleges, universities and academies. Graduates are awarded bachelor's and master's degrees and doctors.

Modular training had a number of positive effects. Firstly, it increased students' independence in studying the subject. Secondly, the role of the teacher shifted from lecturing to consulting, which gave students the opportunity to actively discuss the material. Thirdly, the intermediate control system made it possible to assess the assimilation of the material after each module. Fourthly, step-by-step study of the modules made it easier to master the entire course.

This system became widespread in American educational institutions and was subsequently adopted in Western European universities and colleges.

European model of education [3, 5, 3, 14, 15, 16, 17]. The UK education system is divided into three subsystems: 1) England and Wales, 2) Northern Ireland, 3) Scotland. The education systems of England, Wales and Northern Ireland have a similar structure, while the Scottish system has its own unique traditions. The modern UK educational system includes early childhood education, primary and secondary education, further education and higher education.

The central authority for education in England is the Department of Education and Research, which develops the overall strategy for the development of education at all levels and influences educational institutions, including universities, through financial transactions. However, the department does not directly control the activities of educational institutions – this task is entrusted to the Royal Inspectorate and local education authorities. The Royal Inspectorate exercises general supervision over all types of education except university education, although the possibility of including universities under its area of responsibility is being discussed.

Control over schools and further education institutions is carried out by local education authorities. In England, the public sector dominates the education system. The process of "nationalization" began here later than in other Western European countries. Over the past decades, state influence on education has increased significantly due to the need to finance it: the state now covers 80% of operating and 90% of capital expenses of universities.

The UK Department for Education sets national standards, makes recommendations, inspects educational institutions and subsidizes up to 60% of school budgets. Moreover, each school independently determines its curriculum, based on the recommendations of the Ministry.

The Education Reform Act of 1988 significantly changed the entire education system.

Major reforms included:

- Introduction of a state curriculum with a compulsory set of subjects and courses for all schools.
- Transformation of the Standard Assessment Tests (SATS) system into the National Curriculum Assessment, with four-threshold exams at ages 7, 11, 14 and 16. An assessment at the 4th threshold (16 years) corresponds to the GCSE examination.
- Introduction of the League tables information subsystem, presenting school performance indicators. These data are regularly published in newspapers and updated on the government website.
- Developing a funding formula whereby schools with larger numbers of students receive more funding.

– Reinstate Open Enrolment, giving parents the ability to choose schools and control the enrollment process.

In Germany, the regulations governing the education system are the Higher Education Act (das Hochschulrahmengesetz) and the Federal Education Act (das Bundesausbildungsgesetz), they regulate educational policy in Germany. Education management is the responsibility of the state governments, but overall coordination is carried out at the federal level: the Ministry of Education develops the concept of educational policy and allocates funds for the development of universities.

The policies of the federal authorities and states are harmonized on issues such as duration of study, holidays, study programs and mutual recognition of diplomas. Each federal state has its own education law, developed on the basis of federal legislation. Curricula and textbooks are approved by state governments, and teachers can choose from several approved textbooks, ensuring a diversity of opinions and approaches.

The German education system uses multi-level, differentiated, individual and subject-personal approaches. The multi-level approach takes into account different levels of complexity of the program material. A differentiated approach involves identifying groups of students according to knowledge and abilities. The individualized approach places students in homogeneous groups. The subjective-personal approach considers each student as a unique individual.

The classical education system in France is divided into four stages:

– preschool education (up to 6 years),
– school (from 6 to 11 years old),
– secondary (from 11 to 18 years),
– higher education (from 18 years old).

In France, public educational institutions exist alongside private schools, reflecting the principle of freedom of teaching enshrined in law. However, diplomas obtained from private schools are often not recognized at the state level. The exams are regulated nationally, ensuring the same standards for all students.

The main trends in the development of education in France include:

- Partnership between the state and business in the organization and implementation of primary vocational education. This is manifested in joint work to update professional certificates, curricula, teacher training, training financing and quality control.
- Diversification of forms of training and access to working qualifications. Includes public and private vocational schools, rotating education for youth 16-25 years old, correspondence and evening education, as well as various forms of continuing education.

- Increasing the level of training in the education system, including strengthening the status of vocational schools, increasing requirements for teachers and compulsory basic general education training for access to qualified training.
- The transition from the training of skilled workers in vocational schools to primary technical education, where the focus is on theoretical and general technical training. There has also been an increase in the use of research-based teaching methods and an increase in the number of teachers with higher technical education.
- Strengthening the scientific approach to teaching, including the use of modern scientific achievements in methods and didactics, as well as expanding the research base through the country's scientific centers.

Asian model of education

In 1986, the Compulsory Education Law of the People's Republic of China established compulsory primary education in most regions of the country. In large cities and economically developed areas, compulsory first-level secondary education has been introduced.

One of the key features of education reform in China is to ensure access to education for the entire population. Today, almost 99% of children in urban China attend school, although before 1949 education was unaffordable for most, and illiteracy rates reached 80%.

In Japan, the education system is controlled by the Ministry of Education, Science and Culture Mombusho, prefectural and municipal education councils.

Technologies and approaches in education:
- universality of quality basic education;
- regular reforms ensuring the evolution of the school system;
- a strong structure outside of state compensatory training;
- studying and using world experience in education and upbringing;
- reliance on the best national pedagogical traditions.

The table 1 presents a summary analysis of the considered education models.

Table 1 – Analysis of education models of some countries

National models	Peculiarities
USA	Individualization of consciousness and adaptation of the individual to the global market economy, preparing a person to function in competitive market conditions.
United Kingdom	Focus on preserving traditions, modernization and introduction into the global educational space.
Germany	Vocational and technical specialties with an emphasis on early vocational guidance, which helps a person understand his future life goals and plans
France	Freedom in the organization and distribution of the teaching process is one of the forms of freedom of expression
China	Training of personnel for real sectors of the economy and careful monitoring of developers of target programs.
Japan	The fixed main goal of education, aimed at developing positive personality traits, as well as compulsory higher education

Thus, a number of features have been identified that are also developmental limitations.

Education system in Kazakhstan

The education system in Kazakhstan includes educational institutions, governing bodies and educational programs that regulate the educational process. The education system is managed at three levels: state, regional and municipal. In cities, local administrations control the educational process.

Educational institutions include:

1. Preschool institutions: nurseries, kindergartens, preschool development centers help families in raising children from 1 to 6 years old and preparing for school.
2. General educational institutions: schools, gymnasiums and lyceums provide basic knowledge and comprehensive personal development. Education includes three levels: primary (4 years), basic general (9 years) and secondary (11 years). Basic general education is compulsory.
3. Professional institutions: lyceums, colleges, institutes and universities prepare specialists. Vocational education is divided into primary, secondary and higher education.
4. Postgraduate education: doctoral studies to deepen scientific knowledge and obtain scientific degrees.
5. Institutions of additional education for adults: courses for advanced training and retraining of specialists.
6. Special (correctional) institutions: schools and boarding schools for children with developmental disabilities.

7. Institutions of additional education: music and art schools, creativity centers aimed at developing children's talents.
8. Institutions for orphans and children without parental care: orphanages providing education, treatment and upbringing.

The International Standard Classification of Education (ISCED) allows the educational achievements of different countries to be compared and their progress tracked. ISCED, adopted at the 36th session of UNESCO, helps to collect and present statistical data at the national and international levels. The 2011 edition added new categories of educational levels, which makes it possible to better track the development of educational systems. The ISCED classification includes nine levels, each of which is coded for ease of analysis.

Table 2 – Levels of education

Level of education		Number of years	ISCED level
Preschool education		4	0
Primary general education		4	1
Basic general education		5	2
Secondary general education	Vocational education	2 / 3-4	3, 4, 5
Higher education	Higher education	4-5 / 3-4	6
Master's degree		2	7
Doctoral studies		3	8

Monitoring and a system of indicators and indicators of the Sustainable Development Goals (SDGs) in education in Kazakhstan are carried out through a number of mechanisms aimed at achieving global and national goals. As part of the UN 2030 Agenda, Kazakhstan has committed itself to achieving 17 goals, including 169 targets and more than 200 global indicators, of which 10 targets and 12 indicators directly affect the education sector.

Kazakhstan has developed a national SDG monitoring system adapted to local conditions. This makes it possible to take into account the specifics of national education and set additional indicators that correspond to national priorities. The system carries out regular reviews and develops recommendations for improving performance at the regional and national levels. Data on the education system of Kazakhstan:

1. Enrollment of children in preschool education:
   - In 2023, the enrollment rate of children in preschool education reached 98%, which corresponds to one of the key indicators of SDG 4.2.1.

- Within the framework of the Balapan state program, more than 3,000 preschool organizations were created, which significantly increased access to education for children aged 3 to 6 years.

2. Student performance:
   - According to the Committee on Statistics, in 2023 the average literacy rate among children aged 10-14 years was 99.7%, which is close to the SDG target 4.6.1.
   - As part of the Digital School program, more than 5,000 interactive classes were introduced, which improved the quality of education and student performance.
3. Higher education:

- Kazakhstan strives to increase the share of graduates receiving higher education. In 2022, this figure was 59%, which is comparable to the level of advanced countries and corresponds to SDG indicator 4.3.1.
- Measures have been taken to expand access to higher education for socially vulnerable segments of the population, including through the provision of more than 30,000 grants annually.

4. Inclusive education:
   - In 2023, more than 50% of schools in Kazakhstan were adapted for children with special educational needs, which is part of the implementation of SDG 4.a.1. These schools have special conditions, including a barrier-free environment, the use of assistive technologies and teacher training to work with children with special educational needs.

Despite significant successes, challenges remain in the field of monitoring SDGs in education in Kazakhstan. One of them is the lack of sufficient statistics on some indicators of the "second" and "third" levels, as well as the need to adapt global methodologies to local conditions.

At the same time, Kazakhstan actively participates in international initiatives, such as testing new methodologies and participating in pilot projects aimed at improving statistics and monitoring in the field of education. The Statistics Committee of the Republic of Kazakhstan continues to work to expand the set of indicators and improve the monitoring system, which will make it possible to more accurately assess progress in achieving the SDGs in the field of education.

Conclusions

In terms of official reporting, national governments have primary responsibility for monitoring SDG indicators. National data should be used

to inform countries' official reports on progress towards the SDGs, and then fed into the UN SDG database, which is used to analyze regional and global progress. Along with this, it is necessary that constant work be carried out to improve statistical methodological work on collecting data on all SDG indicators, including ESD.

The existing challenges regarding relevant and real information on data and necessary policy measures for the SDGs is the lack of data on most indicators.

Education indicators for sustainable development to track SDG progress have great potential for assessing and monitoring the SDGs, improving data quality is necessary for assessing and quantifying data.

As conclusions and recommendations for indicators for assessing sustainable development goals in education in Kazakhstan and their monitoring, several key aspects can be identified:

1. High coverage of primary and basic education.
   Kazakhstan has a wide network of preschool and general education institutions, which ensures access to education for most children. Basic general education is compulsory, which is in line with SDG 4.
2. Problems with quality and access to additional education. Although the system of vocational and additional education is developed, there is a need to improve the quality of programs and the availability of advanced training and retraining courses.
3. Uneven access to education in rural and urban areas. Differences in the level and quality of educational services between urban and rural areas can create barriers to equality in education, which is contrary to the principles of SDG 4.
4. Insufficient consideration of individual characteristics of students. There is a lack of adapted programs for children with special needs in the educational system, which can impede access to quality education for all categories of the population.
5. Incomplete compliance of educational programs with international standards.

ISCED is an important tool for international comparison and monitoring, but requires deeper implementation into the educational practice of Kazakhstan.

Recommendations for improving monitoring of the assessment of education for sustainable development indicators:

1. Introduction of regular monitoring of the quality of education using ISCED.
   Tools: Use ISCED to regularly evaluate and compare educational programs in Kazakhstan with international standards.

Target: Increasing the competitiveness of Kazakhstani educational institutions at the global level and achieving SDG 4.

2. Improving access to quality education in rural areas.
   Tools: Development of professional development programs for teachers in rural schools, improvement of the infrastructure of educational institutions in remote areas.
   Target: Ensuring equal access to quality education for all children, regardless of where they live.
3. Development and implementation of adapted educational programs for children with special needs.
   Tools: Introduction of specialized programs and teaching methods, advanced training of teachers to work with children with special needs.
   Target: Ensuring inclusive education and equal opportunities for all categories of students.
4. Strengthening interaction with international educational organizations.
   Tools: Development of joint educational projects with international organizations, participation in global educational initiatives.
   Target: Increasing the level of educational services and ensuring compliance with international standards.
5. Development of a system for assessing and monitoring the sustainability of education:
   Tools: Introduction of indicators for sustainable development of education, regular updating of data and their analysis,harmonized data collection and exchange. Raising awareness and sharing experience on the activities of the education system both in primary school and in higher education to achieve the SDGs, including with an emphasis on SDG 4, through the integration of the experience of the educational community into the SDG monitoring processes.
   Target: Achieving SDG 4 targets, including ensuring inclusive, equitable and quality education.
   Indicators for assessing and monitoring SDGs in education.

1. Coverage and accessibility of education:
   - Proportion of children enrolled in preschool, primary and secondary education.
   - Proportion of students receiving vocational education in urban and rural areas.
2. Quality of education:
   - Average student results in key subjects (mathematics, science, language).
   - Level of qualifications of teachers and availability of professional development programs.

3. Inclusion and equality:
   - Number of children with special needs enrolled in inclusive educational programs.
   - Proportion of educational institutions adapted for children with special needs.
4. Infrastructure and material and technical base:
   - The number of educational institutions equipped with modern equipment and available for the use of information and communication technologies.
5. Compliance with international standards:
   - Evaluation of educational programs according to the ISCED scale.
   - The share of educational programs that meet international requirements and standards.
   - Defining criteria to ensure data quality and procedures for collecting quality data.

These measures and indicators will help Kazakhstan not only achieve sustainable development goals in education, but also create a system that promotes sustainable and equitable development of the entire society.

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