



POLISH NATIONAL AGENCY
FOR ACADEMIC EXCHANGE

**DEVELOPMENT
STRATEGY**
OF THE POLISH
NATIONAL
AGENCY FOR
ACADEMIC
EXCHANGE FOR
2024-2030

WARSAW, 2023



Polish National Agency for Academic Exchange

Polna 40, 00-643 Warsaw

Telephone number (22) 390 35 00, <https://nawa.gov.pl/en>



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PREFACE

Dear Sir or Madam,

It is our honour and pleasure to present to you the *Development Strategy of the Polish National Agency for Academic Exchange for 2024-2030*. The document is the fruit of the work of the team and the Polish National Agency for Academic Exchange Council. The dynamic political, social and economic changes taking place in Poland and in the world – e.g., the COVID-19 pandemic, Russia's aggression against Ukraine and the word “crisis” used in all cases did not prevent the attempt to take stock of the Agency's activities to date, but above all, actively affect the future of the Polish National Agency for Academic Exchange. The document is a summary of the results of the reflection, and at the same time it is a contribution to the debate on the creation of a much-needed, nationwide strategy for the internationalisation of science and higher education.

Since 2017, the Polish National Agency for Academic Exchange has been working to strengthen the position of Polish science and higher education in the world, initiating and stimulating international research cooperation and academic exchange, and promoting the Polish language and culture of Poland. We want to fulfil our mission even better. We wish not only to support the internationalisation of research institutions and universities, to strengthen their presence and visibility on the world stage, to promote Poland as an attractive country for foreign students and scientists, and to popularize the language and culture of our country. We are also planning to facilitate the international transfer of knowledge and skills to science and the economy. We will also develop as an institution - streamline internal processes, increase the share of EU funds in the structure of the Agency's budget.

All our assumptions and goals for the forthcoming six years are presented in detail in the study. We have adopted an extremely ambitious development strategy, inspired by the motto *ad augusta per angusta - to great achievements through difficulties*. We are aware that despite the obstacles and risks, the Agency should be guided by clearly defined priorities. The Polish National Agency for Academic Exchange team is prepared to take on the challenges with passion, determination and commitment.

We are convinced that the implementation of the intentions expressed in the Strategy will contribute not only to improving the quality and prestige of Polish science and higher education in the world, but also to deepening the discussion about its future.

You, all enthusiasts of the world of modern academia, are invited to familiarize yourself with the *Development Strategy of the Polish National Agency for Academic Exchange for 2024-2030*, and to actively accompany us in the upcoming, challenging time. We remain open to any observations, suggestions and critical comments that will allow us to update the document on an ongoing basis, so that it is not just a redundant, bureaucratic ornament, but a practical tool used by everyone who cares about the internationalisation of our academic and scientific community.

dr Dawid Kostecki

Dawid Kostecki, PhD

Director of the Polish National Agency
for Academic Exchange

Professor Tomasz Pietrzykowski

Chairman of the Polish National Agency
for Academic Exchange Council



INTRODUCTION

In the first years of operation of the Polish National Agency for Academic Exchange (hereinafter: NAWA, the Agency), the document describing its planned development was the Outline of the Strategy for 2018-2025, it became the basis for setting the directional objectives of the Polish National Agency for Academic Exchange activities until 2027 (*Guiding roadmap for the period 2021-2027; further: Guiding roadmap*).

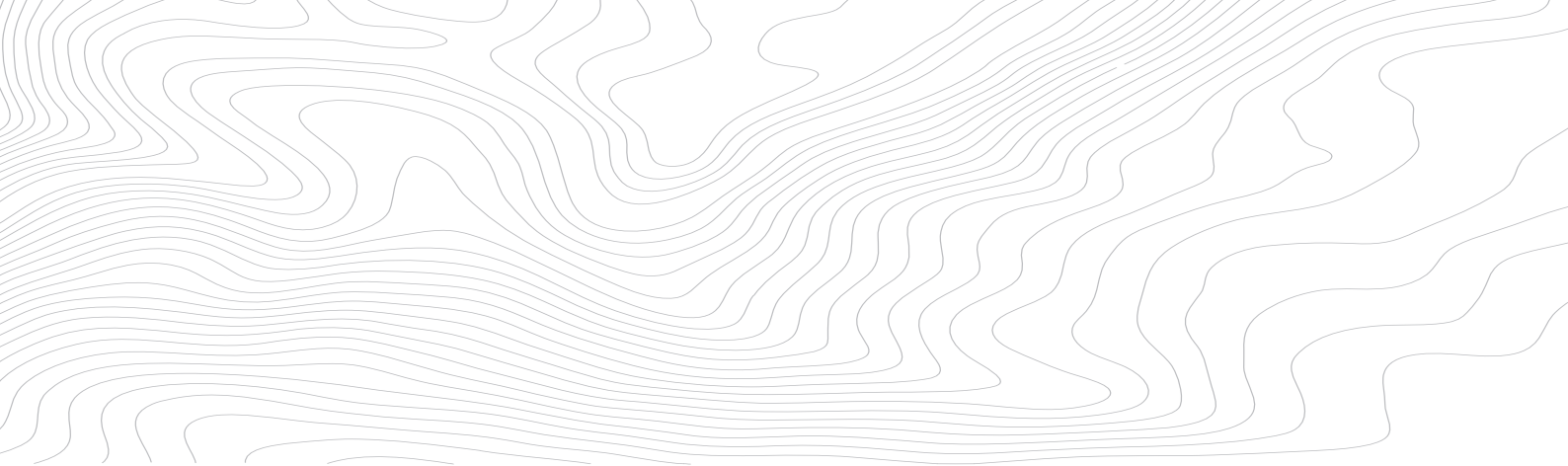
Due to the changing conditions, both national and global, in which the Polish system of higher education and science operates, we decided to update the *Guiding roadmap*. Thanks to the revision, we are able to react early and take countermeasures in connection with dynamic changes affecting the work of the Agency.

The recommendation of the Minister of Education and Science of October 13, 2022 to initiate work on a strategic document defining the vision of the Agency's development until 2030 was an additional impulse to update the *Guiding roadmap*.

The strategic document, in accordance with the rules, contains both a diagnostic part (developed in Q1 and Q2 2023) and a practical part (developed in Q2 and Q3 2023). The whole process begins with a diagnosis of the current situation, both for the institutions of higher education and science in Poland, as well as their environment (Chapter I). The summary of this part is the SWOT analysis on the national level.

In turn, Chapter II is a smooth transition to the institutional level, i.e., the Polish National Agency for Academic Exchange. The reflection is an opening report presenting the effects of the Agency's activities starting from 2018 (quantitative and qualitative).

This two-level analysis became the starting point for three strategic workshops in May 2023, attended by: the Polish National Agency for Academic Exchange management and directors of all departments. As part of meetings moderated by an external expert, we performed a SWOT analysis at the institutional level, and then formulated a vision of the Agency's development until 2030. We also set the Polish National Agency for Academic Exchange strategic goals and linked them with the Agency's programmes and activities (see chapter III and following).



Chapters IV – VII concern the practical issues of implementing the *Development Strategy of the Polish National Agency for Academic Exchange for 2024-2030* (hereinafter: *Development Strategy*). They included:

- **Mission:**

Strengthening Polish science and higher education through international exchange and cooperation.

- Development **vision:**

The Polish National Agency for Academic Exchange is a leading institution serving to strengthen the internationalisation of Polish science and higher education. It is known and appreciated in the Polish and foreign academic community. It inspires science and higher education institutions to act. It sets standards in terms of supporting academic mobility, internationalisation of science and higher education, recognition of education and the promotion of the Polish language and culture in the international academic community.

The Polish National Agency for Academic Exchange flexibly adjusts its activities to the global and local challenges of the academic world. It responds to the needs of the environment and effectively supports the mobility and international cooperation of students, doctoral students and employees of institutions forming the system of science and higher education.

The Polish National Agency for Academic Exchange co-creates optimal conditions for research and educational activities in Poland, contributing to the scientific, cultural and economic development of the country. The Polish National Agency for Academic Exchange creates opportunities for sustainable and transparent use of its offer by the entire academic community, regardless of the disciplines of science, types of institutions and their location, and all kinds of non-substantive considerations.

The Polish National Agency for Academic Exchange is a team of professionals who work with passion and effectively implement the Agency's mission and strategic goals.

- **Objectives** of the action (including their operationalization):

1. Supporting the internationalisation of science and higher education.
2. Popularization of the Polish language and culture abroad.
3. Strengthening the presence of Polish science and higher education on the international arena.
4. Facilitating the international transfer of knowledge and skills to science and the economy.
5. Horizontal objective: institutional development of the Agency.

We consulted all conceptual work on the *Development Strategy* with the Polish National Agency for Academic Exchange Council, which adopted a resolution concerning the document (Polish National Agency for Academic Exchange Council Resolution No. 22 of 6 September 2023).



I. DIAGNOSIS OF THE CURRENT SITUATION OF SCIENCE AND HIGHER EDUCATION INSTITUTIONS IN POLAND

I.1. INTRODUCTION

The internationalisation of higher education and science integrates various areas of activity: from teaching, through research, to administrative processes.

Academic mobility, referring to both students and university staff, is perceived as a means to improve the circulation of knowledge and strengthen the scientific competitiveness of both the European Union as a whole and individual member states (Ackers 2008; Flanagan 2015). The scientific position of a country depends on the scientific strength of individual scientists and institutions that make up a given system. Only the coexistence of factors such as the availability of research grants and the emergence of prestigious publications influencing other scientists and the development of science contributes to the increase in the prestige of the scientific community of a given country (Kwiek 2022).

In the literature on the subject, we find indications of several key mechanisms affecting the internationalisation of higher education and science, they are: rankings, international cooperation and mobility, and reforms of education programmes (Benitez, 2019).

The aim of this part of the study is to diagnose the state of internationalisation of the Polish higher education and science sector by presenting the most important quantitative and qualitative characteristics of the field. Data from both national and international sources was used here, presenting a broad context of internationalisation of entities of the higher education system in Poland.

The study includes numerous references to the analyses presented in the *Guiding roadmap for the period 2021-2027*, an earlier strategic document of the Agency. In the *Guiding roadmap*, the base year was 2020, while in this *Development Strategy* it is 2023. Therefore, wherever possible, information on the dynamics of change in individual quantitative data has been included.

The basic sources of data used in the analysis are: the POL-on Information System on Science and Higher Education, national statistics (Statistics Poland) and international statistics (OECD, UNESCO, EUROSTAT) and bibliometric databases (SCImago, SCOPUS).¹

Obtaining the widest, multi-faceted diagnosis of the analyzed area required the use of many sources and, next to the chronology, the problem was the non-uniform data structure. Therefore, the diagnosis refers to the data presenting the available, closed reporting periods. The remark also applies to data from the POL-on database, where the statements are provided as at 31 December of each year. Therefore, due to the nature of the source of information, the data may differ slightly from those presented in the POL-on database in real time.

¹ Access to the SCOPUS database and the SciVal tool under a national license provided by the Ministry of Education and Science.

I.2. CHARACTERISTICS OF THE HIGHER EDUCATION AND SCIENCE SECTOR IN POLAND

1. The **international** framework shaping the development of Polish science and higher education is, among others: the [Bologna Process](#) launched in 1999, the European Council initiative of 2017 [European Universities and the European Strategy for Universities](#) of 2022.
2. The current **organizational and legal basis** for the functioning of the Polish higher education and science system is the Act of 20 July 2018 *Law on Higher Education and Science* (unified text, Journal of Laws of 2022, item 574, as amended) along with implementing acts. The Act sanctioned, among others, pro-quality solutions, such as: Initiative of Excellence, Research University and doctoral schools.
3. At the **national level**, the main strategic document setting out the goals and directions of development of individual areas of the country, including science and higher education, is the [Strategy for Responsible Development](#) (SOR) adopted in 2017, it includes the following provision: *Internationalisation and opening of Polish universities to innovations (especially in the context of improving the university's position in international rankings), e.g., by establishing the Polish National Agency for Academic Exchange whose task will be to support international scientific and educational exchange and the promotion of Polish higher education, creating a legal environment conducive to innovation and commercialisation of scientific research results by universities and scientific units, creating conditions that will allow the employment of foreign scientists from achievements, encouraging students from outside the European Union to study at Polish universities* (SOR, 2017, p. 278).
4. [The Multiannual Development Cooperation Programme for 2021-2030](#), implemented by the Ministry of Foreign Affairs (MSZ). [Solidarity for Development](#) (hereinafter: *Programme 2021-2030*) indicates:
 - a) priority geographical directions, i.e., selected countries covered by the European Neighbourhood Policy, including Eastern Partnership countries and selected countries from the Middle East, North Africa and Sub-Saharan Africa,
 - b) thematic priorities, i.e.: peace, justice and strong institutions, equal opportunities (education, decent work, entrepreneurship, reducing inequalities, sustainable cities), health, climate and natural resources (clean water and sanitation, forests and biodiversity, renewables energy),
 - c) **Sustainable Development Goals** (SDG)², i.e.: 16. *Peace, justice and strong institutions*, 4. *Quality education*, 8. *Economic growth and decent work*, 10. *Fewer inequalities*, 3. *Good health and quality of life*, 6. *Clean water and sanitation*, 11. *Sustainable cities and communities*, and 13. *Climate action*. *The cross-cutting priorities of the programme will be: climate action and gender equality* (MSZ, 2021, p. 15).
5. [The State Science Policy](#), adopted by the Council of Ministers in July 2022 is the basis for the implementation of strategic and development programmes of the state in the field of science and higher education. The document indicates six actions to exploit the potential of Polish science and higher education, i.e.:
 - a) constant improvement of the quality of education and research,
 - b) prioritization of activities,
 - c) increasing the attractiveness of a career in the higher education and science system,
 - d) transfer of knowledge and technology between science and industry and striving for technological independence by creating Polish know-how,
 - e) supporting the academic community mobility,
 - f) creating and consolidating a positive image of Polish science in the world and strengthening its international impact (State Science Policy, 2022).

² SDG 1 - End Poverty; SDG 2 - Zero Hunger; SDG 3 - Good health and quality of life; SDG 4 - Good quality education; SDG 5 - Gender equality; SDG 6 - Clean water and sanitation; SDG 7 - Clean and accessible energy; SDG 8 - Economic growth and decent work; SDG 9 - Innovation, Industry, Infrastructure; SDG 10 - Less inequality; SDG 11 - Sustainable Cities and Communities; SDG 12 - Responsible consumption and production; SDG 13 - Climate Action; SDG 14 - Life under water; SDG 15 - Life on land; SDG 16 - Peace, Justice and Strong Institutions; SDG 17 - Partnerships for the goals

6. **Basic quantitative data** describing the science and higher education sector in Poland in 2020-2022 is presented in Table 1.

Table 1. Science and higher education in Poland - basic quantitative data (2020-2022)

INDICATOR	Unit of measure	Source of info.	Indicator level (as of 31 December 2020)	Indicator level* (as at 31 December 2022)	Dynamics of change (%) 2020 to 2022
Number of universities	uczelnia	POLon	368	426	16
Number of scientific institutes (scientific institutes of the Polish Academy of Sciences, research institutes, research institutes of the Łukasiewicz Network, international research institutes)	instytut	POLon	191	212	11
Number of doctoral schools	szkoła	POLon	125	147	18
Public spending on higher education (relative to GDP)	%	GUS	1.10	1.3	18
Number of students	osoby	POLon	1 181 144	1 122 019	-5
Number of foreign students	osoby	POLon	82 116	87 745	7
Share of foreign students in the total number of students	%	POLon	6.9	7.8	13
Number of students studying at first-cycle studies	osoby	POLon	741 267	700 569	-5
Share of foreign students studying at first-cycle studies	%	POLon	7.00	7.9	13
Number of students studying at second-cycle studies	osoby	POLon	270 795	234 948	-13
Share of foreign students studying at second-cycle studies	%	POLon	6.7	7.9	18
Number of students studying uniform master's studies	osoby	POLon	169 082	191 967	14
Share of foreign students studying uniform master's studies	%	POLon	7.2	6.3	- 13
Number of PhD students	osoby	POLon	28 779	23 512	-18
Number of foreign doctoral students	osoby	POLon	1 632	1973	21
Share of foreign doctoral students	%	POLon	5.6	8.4	50
Number of academic teachers	osoby	POLon	99 076	100 775	2
Share of foreign academic teachers in the total number of academic teachers	%	POLon	2.3	2.7	17

* Due to the ongoing reporting process of Statistics Poland, the data as at December 31, 2022 may be incomplete, which could not be eliminated at the time of downloading data from POLon (i.e., January 5-12, 2023).

Source: own development based on: POLon, GUS.

- 6.1. **Main conclusions** from the analysis of national comparative data for 2020-2022 (see Table 1):
- there was an increase in the number of academic teachers and all types of higher education and science institutions, with a simultaneous decrease in the number of students and doctoral students,
 - a significant increase in the number of foreigners was observed both in the group of students, doctoral students and academic teachers,
 - analysing the percentage of foreign students studying at particular levels of study, the decrease is visible only in the group of people studying at uniform master's studies.
- 6.2. According to data provided by the [UNESCO Institute for Statistics](#), Poles most often chose European universities, i.e., British (1st place), German (2nd), Danish (4th), French (5th), Austrian (6th) and Ukrainian (7th). Outside Europe, the following universities are an important geographical direction: American (3rd), Australian (9th), Japanese (19th) and Canadian (20th).
- 6.3. Both in the academic year 2017/2018 (the first academic year in which the Polish National Agency for Academic Exchange operated) and 2021/2022, the top ten universities with the largest number of foreigners were the same group of universities (in alphabetical order): Gdanski (UG), Adam Mickiewicz University (UAM), Jagiellonian (UJ), Lodz (UL), Maria Curie-Skłodowska (UMCS), Mikołaj Kopernik (UMK), Opole (UO), Silesian (US), Warsaw (UW), Wrocław (UWr).³ In the analysed years, the largest number of foreigners studied in the following voivodships: Mazowieckie, Małopolskie and Dolnośląskie. The following voivodships were at the opposite pole: Świętokrzyskie, Lubuskie and Warmińsko-Mazurskie.
- 6.4. In the analysed time intervals (academic years 2017/2018 and 2021/2022), the largest group of foreign students were from Ukraine, followed by Belarus, the Russian Federation, India, Turkey, Kazakhstan, China, Zimbabwe, Uzbekistan, Germany and Lithuania. The smallest number of students came to Poland from Croatia, Great Britain, Argentina, Macedonia, Japan, Finland, Mexico, Brazil, South Korea and Hungary.
- 6.5. Foreigners most willingly chose fields of study in which the leading disciplines⁴ were: management sciences, economics and finance, computer science, pedagogy, health sciences, medicine. The least popular were study programmes related to the following leading disciplines: astronomy, forest sciences, biomedical engineering, film and theatre arts, art sciences, music arts.
- 6.6. The foreign language of instruction in which education was most often conducted was English (90.95%). This applies primarily to majors included in the framework of leading disciplines such as: management sciences, medical sciences, chemical sciences, technical computer science, economics and finance. Studies in English were also conducted in disciplines less popular than those mentioned above, e.g.: musical arts, agriculture and horticulture, zootechnics and fishing, philosophy, history.
- 6.7. The group of foreign academic teachers was dominated by Ukrainians, Germans, Italians and Belarusians. Most of them were employed at universities in Warsaw, Krakow, Poznan, Wrocław and Gdansk. They mostly represented the fields of exact and natural sciences, social sciences, and the humanities.

³ The thesis about the concentration of foreign students and scientists in the largest academic centres was confirmed in the evaluation report prepared for the NCBR (NCBR, 2021).

⁴ The fields of study have been consolidated within the leading disciplines.

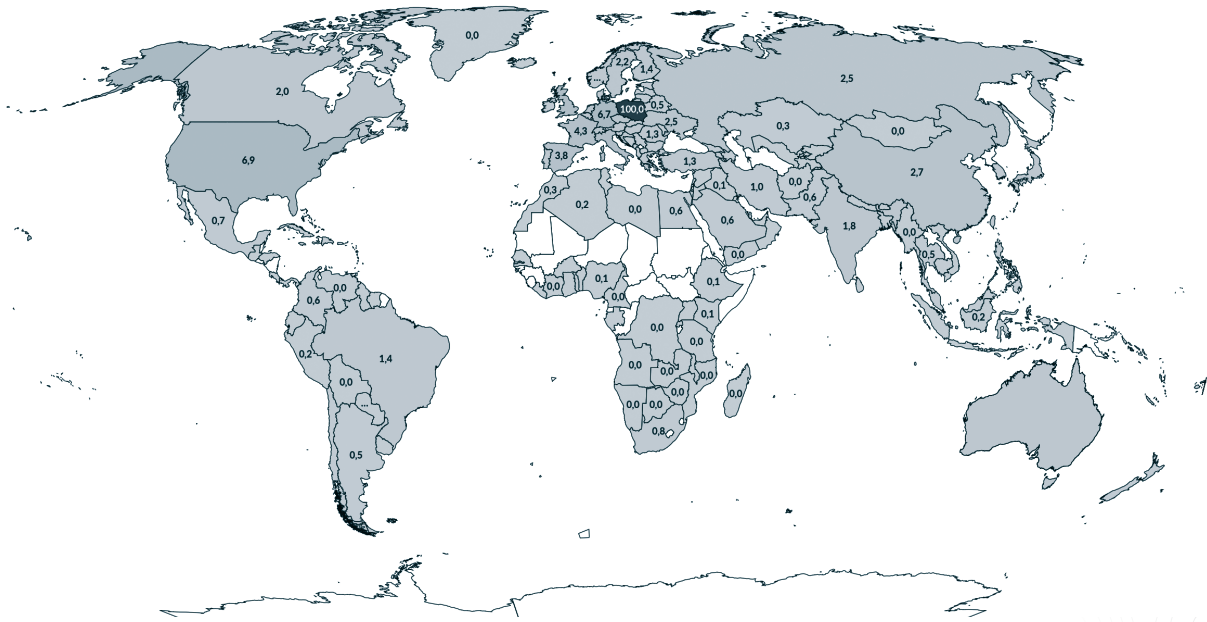
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- 6.8. Gross domestic expenditure on research and development (GERD-*general expenditure on research and development*) has been growing steadily since 2010. It should be noted that in 2020 the target GERD of 1.70% was set, and in fact 1.39% was achieved, which places Poland at the level of Spain (1.41%), Croatia (1.25%) and Ireland (1.23%). GERD outlays above the EU average (2.32%) were observed in Sweden (3.53%) and Belgium (3.48%).
- 6.9. In Poland, the system of science and higher education is financed primarily through two streams: institutional (direct transfer of funds to scientific institutions) and project (competing of scientists and institutions for funds). The project stream includes competitions announced by the National Science Centre, the National Centre for Research and Development, the Ministry of Education and Science and the Polish National Agency for Academic Exchange.
- 6.10. In Poland, the potential of scientific and research equipment increases year by year.⁵ According to the data of Statistics Poland, in 2021, 1,590 entities (21.60% of entities involved in R&D) had scientific and research equipment, which means an increase of 4.40% compared to the previous year (Statistics Poland, 2022).

I.3. BIBLIOMETRIC ANALYSIS OF THE SCIENTIFIC ACHIEVEMENTS OF POLISH SCIENTISTS AND SCIENTIFIC INSTITUTIONS (2017-2021)

1. **Basic bibliometric indicators**⁶ show that between 2017 and 2021, the number of publications indexed in the SCOPUS database, where at least one of the authors indicated a Polish scientific institution as his affiliation, increased by $\frac{1}{4}$. At the time of preparation of the document (Q1 2023), full data for 2022, which was indexed in the first half of 2023, is not yet available. In total, 335,571 publications are indexed in the period 2017-2022.
- 1.1. Polish scientists most often publish with scientists from Europe and North America. The distribution of international cooperation is presented on the map below (the darker colour, the more scientists from a given country cooperate with Polish authors of publications).

⁵ Scientific and research equipment - sets of research, measuring or laboratory devices with a low degree of universality and high technical parameters (usually several orders of accuracy higher than typical equipment used for production or operational purposes). Scientific and research equipment does not include computer hardware and other devices not used directly for the implementation of R&D papers.

⁶ In the case of names of bibliometric indicators, where possible, Polish equivalents were used (original names used in the SCOPUS database are given in parentheses).

Map 1. Countries of origin of publication co-authors (%)

Source: own development based on SCOPUS/SciVal [access: February 16, 2023]

The largest percentage of foreign co-authors is affiliated with American, German, British and Italian institutions. In addition, publishing cooperation also takes place with scientists from Canada, Australia, Brazil and Chile.

- 1.2. Quantitatively, most publications indexed in the SCOPUS database were co-authored by scientists affiliated to (top ten institutions): Polish Academy of Sciences, University of Warsaw, Jagiellonian University, AGH University of Science and Technology, Warsaw University of Technology, Wrocław University of Technology, Medical University of Warsaw, Adam Mickiewicz University, the Silesian University of Technology and the Nicolaus Copernicus University.
- 1.3. Table 2 below presents a comparison of lists of 10 thematic clusters (out of 1,500), which were most often the subject of publications by Polish and world scientists in the years 2017-2022. Of the ten thematic groups, four occur on both sides of the table. They are:
 - a) *Algorithms; Computer Vision; Models;*
 - b) *COVID-19; SARS-CoV-2; Coronavirus;*
 - c) *Graphene; Carbon Nanotubes; Nanotubes;*
 - d) *Photocatalysis; Photocatalysts; Solar Cells.*

The information contained in Table 2 is important as it allows us to determine in which research areas Polish achievements have an impact on the development of world science.

Table 2. Top 10 thematic clusters in Polish and world scientific publications

2017-2021									
WORLD					POLAND				
Topic Cluster	Scholarly Output	Field-Weighted Citation Impact	Prominence percentile	Topic Cluster)	Scholarly Output	Field-Weighted Citation Impact	Prominence percemile		
1	Algorithms; Computer Vision; Models	343022	1.57	99.799	1	Decay; Quarks; Neutrinos	4358	1.97	96.321
2	COVID-19; SARS-CoV-2; Coronavirus	191858	3.45	100	2	Galaxies; Stars; Planets	3438	1.96	97.86
3	Secondary Batteries; Electric Batteries; Lithium Alloys	176648	1.94	99.933	3	COVID-19; SARS-CoV-2; Coronavirus	2657	3.06	100
4	Photocatalysis; Photocatalysts; Solar Cells	159798	1.65	99.866	4	Algorithms; Computer Vision; Models	2281	2.09	99.799
5	Graphene; Carbon Nanotubes; Nanotubes	145255	1.48	99.732	5	Concretes; Compressive Strength; Cements	2001	1.17	98.729
6	Electric Power Transmission Networks; Wind Power; Electric Power Distribution	131298	1.19	99.331	6	Industry; Innovation; Entrepreneurship	1910	1.15	98.997
7	Electric Potential; Electric Inverters; DC-DC Converters	131197	1.03	98.194	7	Photocatalysis; Photocatalysts; Solar Cells	1794	1.23	99.866
8	Semantics; Models; Recommender Systems	118214	1.37	98.395	8	Graphene; Carbon Nanotubes; Nanotubes	1750	1.21	99.732
9	Climate Models; Model; Rainfall	108488	1.1	98.863	9	Microbial Fuel Cells; Anaerobic Digestion; Bioreactors	1707	0.91	98.796
10	T-Lymphocytes; Neoplasms; Immunotherapy	105130	1.56	99.666	10	Electricity; Energy; Economics	1530	1.5	99.465

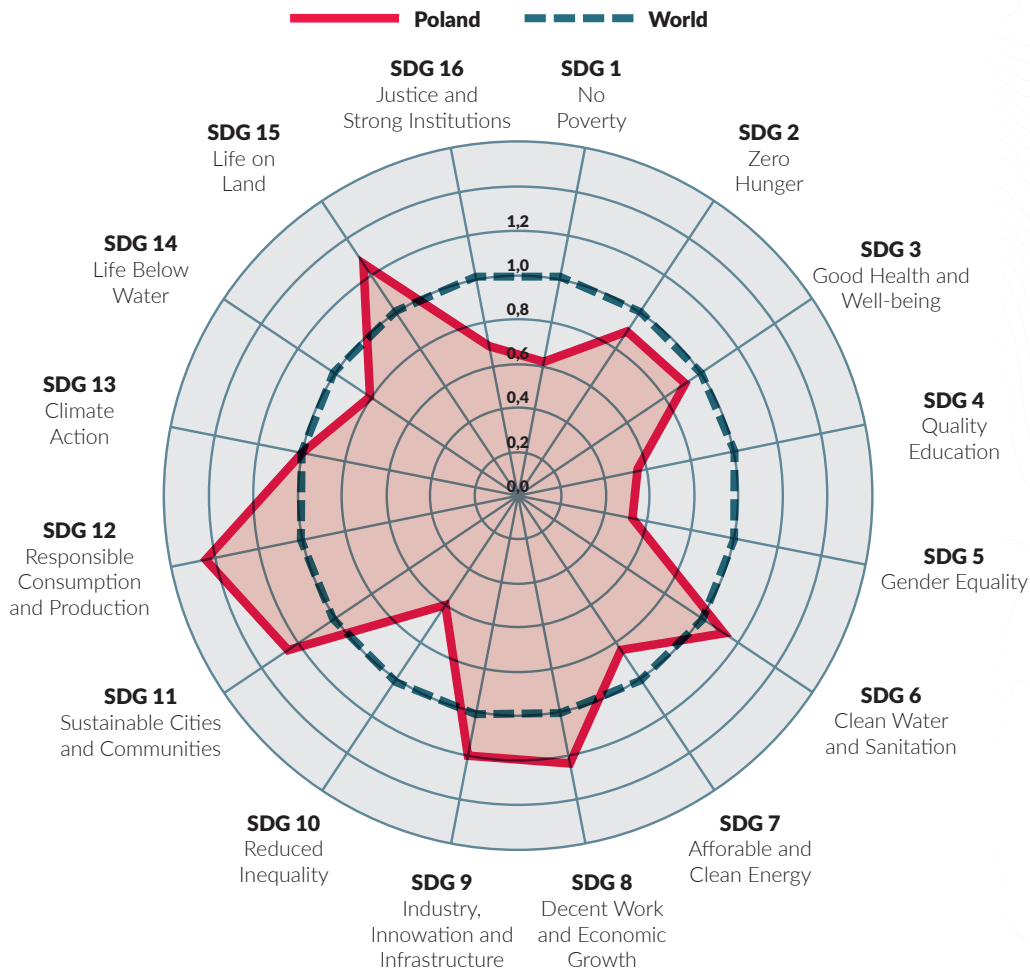
Source: own development based on SCOPUS/SciVal [access: February 16, 2023]

- 1.4. Almost $\frac{3}{4}$ of all publications co-authored by at least one scientist affiliated with a Polish institution are articles (72.60%). The next most numerous types of documents are: conference proceedings (12.90%), reviews (7.20%) and book chapters (3.70%).
- 1.5. Articles are most often published in the following periodicals::
 - a) *Materials*;
 - b) *Energis*;
 - c) *International Journal of Molecular Sciences*;
 - d) *Advances in Intelligent Systems and Computing*;
 - e) *International Journal of Environmental Research and Public Health*;
 - f) *Scientific Reports*;
 - g) *Lecture Notes in Computer Science Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics*;
 - h) *Molecules*;
 - i) *Sustainability Switzerland*;
 - j) *Electrotechnical Inspection*.

Levels of indicators showing the prestige of the journals (*CiteScore*, *SNIP*, *SJR*) are important, which in turn translates into the value of citations. In the analyzed period (2017-2021), some of them are growing (*CiteScore*), while others are remaining unchanged (*SNIP*, *SJR*). This means that the prestige of the periodicals in the international scientific circulation is increasing.

1.6. The *State Science Policy* is one of the documents defining the framework for Poland's development (see point 5). The document emphasizes that *international cooperation should facilitate participation in joint activities, enable mutual access to resources supporting scientific excellence and enable co-creation of sustainable solutions to global challenges*. Two out of 17 Sustainable Development Goals (SDG) were also indicated, which are of particular importance in the field of research and innovation, i.e. SDG 8 responsible for sustainable and inclusive economic growth and SDG 9 - for industry, innovation and infrastructure.

Chart 1. SDGs - Relative Activity Index (RAI).⁷ Poland and the world (2017-2021)



Source: SCOPUS/SciVal [access: February 16, 2023]

Based on the analysis of data available in the SCOPUS database (see Figure 1), the following general conclusions regarding the contribution of Polish science to the implementation of the SDG challenges were formulated:

- Polish research centres and Polish scientists actively joined the implementation of the goals set out in the 2030 Agenda,
- Poland's contribution to the implementation of the SDGs is not evenly distributed between the objectives and institutions,

⁷ The Relative Activity Index (RAI) is defined as the share of publications of an individual (here: a country) in a given field in relation to the global share of publications in the same field. A value of 1.0 indicates that the unit's research activity in a given field corresponds exactly to the global activity in that field; a value greater than 1.0 means more pressure; and a value lower than 1.0 suggests less pressure.

- c) in terms of the number of publications co-authored by Polish scientists, those concerning the SDGs predominate: 3, 7, 9, 10, 16; in each of the above-mentioned purposes, foreign co-authors usually come from the USA, Germany, Great Britain and Italy,
- d) Polish scientists most often cooperate with partners from the USA, Great Britain and Germany; the first three countries of origin of the co-authors deviate from this pattern in terms of SDG 12 and SDG 15, where Czechs and Spaniards appear next to Germans and the British;
- e) among the countries neighbouring Poland, lively cooperation is recorded for scientists from: Germany (among the 16 targets they are in the top three countries of the origin of co-authors, and in one - fourth place), the Czech Republic (in 11 targets in the top three) and Ukraine (in seven targets in top three);
- f) the quantitatively outstanding pool of publications within the objectives does not translate into the level of citation - Polish scientists publishing on a topic related to one of the SDGs are usually affiliated to five leading Polish institutions, being among the most productive in terms of the number of publications in the country (Polish Academy of Sciences, Jagiellonian University, University of Warsaw, AGH University of Science and Technology, Warsaw University of Technology), the exceptions are the Czestochowa University of Technology (31st place in the country) and the Warsaw School of Economics (64th place in the country).

I.4. SWOT ANALYSIS - NATIONAL LEVEL

The SWOT analysis carried out as part of the process of developing strategic documents is a traditional tool for examining the organization's environment and identifying its strengths and weaknesses. To diagnose the significant factors determining the development of the Polish science and higher education system, of which the Polish National Agency for Academic Exchange is a component, the analytical process was carried out at two levels: national (see Table 3) and NAWA's organizational level (see Table 9).

Table 3. SWOT analysis - national level

STRENGTHS	WEAKNESSES
Poland's participation in European initiatives such as the Bologna Process, European Universities, Strategy for strengthening the position of higher education institutions.	Low share of Polish research units and researchers among the beneficiaries of prestigious grants (Horizon Programme).
Full educational offer of Polish higher education and research institutions.	Low diversity of foreign students in terms of country of origin and areas of education.
Developed network of cooperation with foreign organizations.	Lack of a national strategy for the internationalisation of Polish science and higher education.
Wide range of studies conducted in foreign languages.	Gap in administrative data on foreigners, graduates of Polish universities and their fate on the labour market.
Growing recognition of Polish universities in the world.	Concentration of educational and research potential in several institutions (replication of inequalities).
Growing dynamics of change in international cooperation of researchers.	No national internationalisation monitoring system in Polish higher education, especially beneficiaries of scholarship programmes using global and national (administrative) data.
Possession of international accreditations by Polish institutions.	Decrease in the number of foreign students studying uniform master's studies.
Wide range of incoming/outgoing scholarships.	
Strengthening the potential of Polish universities and institutes through inter-institutional cooperation.	
Progressive digitization of Polish scientific units.	Level of gross domestic expenditure on research and development being lower than the EU average.
Increasing the prestige of Polish research results by making new discoveries and winning prizes of global importance.	
Polish scientists publish in periodicals whose prestige in international scientific circulation is increasing.	

OPPORTUNITIES	THREATS
Access to funds and international programmes for science and higher education.	Competition from neighbouring (EU) countries.
Giving a new status to doctoral schools in the national legislation.	Poor integration of the area of science with the area of culture, business and industry.
Use of modern technologies in the teaching and research process.	Insufficient incentives for scientists to improve the quality of research results.
Growing number of foreign students studying in Poland.	Lack of systemic solutions for managing exceptionally talented students (applies to both Poles and foreigners).
High development potential of Polish academic centres.	Lack of systemic mechanisms to prevent brain drain, facilitated by the offer of remote studies in centres of world renown.
Cultural enrichment of the academic environment.	Uneven distribution of the number of foreign students in academic cities.
Opportunity to deepen cooperation with international scientific and industrial centres.	Weakening dynamics of growth in the number of foreign students.
Increase in the university's income from educating foreign students.	Segmentation of foreign students in terms of country of origin and choice of field of study.
Strengthening the importance of the internationalisation component in the university's funding algorithm.	Distribution of insufficient funds with a growing number of scientists and new, cost-intensive research areas.
Increasing share of Polish scientific achievements in international circulation.	Visa barriers for citizens of non-EU countries.
	Uncertain scale of arrivals of foreigners for the purposes of education, conducting scientific and research works and staying in Poland.
Diaspora of graduates and scientists of Polish descent, dispersed around the world, still to be developed.	Falling overall number of students studying at Polish universities.
	Variable system for evaluating the quality of activities of scientific units.

Source: own development

The data from the table above was used as a starting point for the SWOT analysis at the Polish National Agency for Academic Exchange level (see Table 9).



II. THE POLISH NATIONAL AGENCY FOR ACADEMIC EXCHANGE

The Polish National Agency for Academic Exchange is a state legal entity operating pursuant to the Act of 7 July 2017 on *the Polish National Agency for Academic Exchange* (Journal of Laws of 2019, item 1582, unified text of 22/08/2019 - hereinafter: the Act about the Polish National Agency for Academic Exchange).

The establishment of the Polish National Agency for Academic Exchange in 2017 was a response to the key challenges facing Polish science and higher education. From the very beginning, the Polish National Agency for Academic Exchange activities have been included in the national framework for supporting the development of Polish universities and research units. The Agency's first full year of operation was 2018.

The Agency participates in a long-term policy to support academic mobility and pro-quality internationalisation of the offer of Polish universities. It implements the state's strategic policy regarding support for individual academic mobility, aimed at increasing the didactic and scientific potential, as well as supports the process of internationalisation of the university's programme offer and the promotion of Polish higher education, as well as Polish culture and language abroad.

Implementation of the tasks imposed on the Agency by the legislator is financed in accordance with the principles of financial management described in art. 29 et seq. of the Act on the Polish National Agency for Academic Exchange. The Agency's financial plan is developed and implemented on an annual basis, in accordance with the Act of 27 August 2009 on Public Finance (unified text, Journal of Laws of 2022, item 1634, as amended). The revenues of the Agency are subsidies (individual, targeted and investment), funds from the state budget, from European Union funds, from national and international projects and programmes and from funds provided by ministers in charge of government administration departments, they are intended for the implementation of tasks commissioned by the agency. The Polish National Agency for Academic Exchange own revenues come from payments for document authentication.

The Agency's tools for the implementation of the entrusted tasks are programmes established by the Polish National Agency for Academic Exchange director and other activities, i.e.: support for academic exchange resulting from international agreements, dissemination of information about the Polish system of higher education and science, handling matters related to the recognition of higher education and academic degrees, authentication of documents for legal transactions with foreign countries, administrative and financial services for the State Commission for the Certification of Proficiency in Polish as a Foreign Language.

Funds are allocated to beneficiaries⁸ through competition procedures, which may be applied for by: students and doctoral students, participants of preparatory courses to study in Polish, employees of universities or research units, persons with at least a doctoral degree, a doctor of arts degree or an equivalent degree obtained abroad, as well as persons sent abroad to teach Polish as a foreign language, universities and scientific units, non-governmental organizations and units of the public finance sector undertaking activities for the internationalisation of higher education or science.

The experience gained during the first years of the Agency's operation and two years of implementation of the Guiding roadmap prompted the Polish National Agency for Academic Exchange Council and Management to change the existing provisions formulated in strategic documents. Most of all, the scope and time horizon of the Agency's directions of activity required updating, which is consistent with the legislator's expectation of the Council, formulated in Art. 9 sec. 1 point 1) the Act on the Polish National Agency for Academic Exchange.

⁸ Beneficiaries of the Polish National Agency for Academic Exchange activities: individuals (students, scientists, Polish language teachers) and institutional entities - Polish universities, research institutes of the Polish Academy of Sciences, scientific institutes of the Polish Academy of Sciences, Lukaszewicz Centre, institutes of the Lukaszewicz Centre, Polish Academy of Arts and Sciences

In 2022, work began on setting strategic goals for the Polish National Agency for Academic Exchange activities in a long-term perspective.

II.1. CHARACTERISTICS AND ANALYSIS OF ACTIVITY EFFECTS

- When analysing the data showing the Agency's activity, this section compares the first full year of its operation (2018) with the last reporting year (2022).

Table 4. Number of implemented statutory activities of the Polish National Agency for Academic Exchange

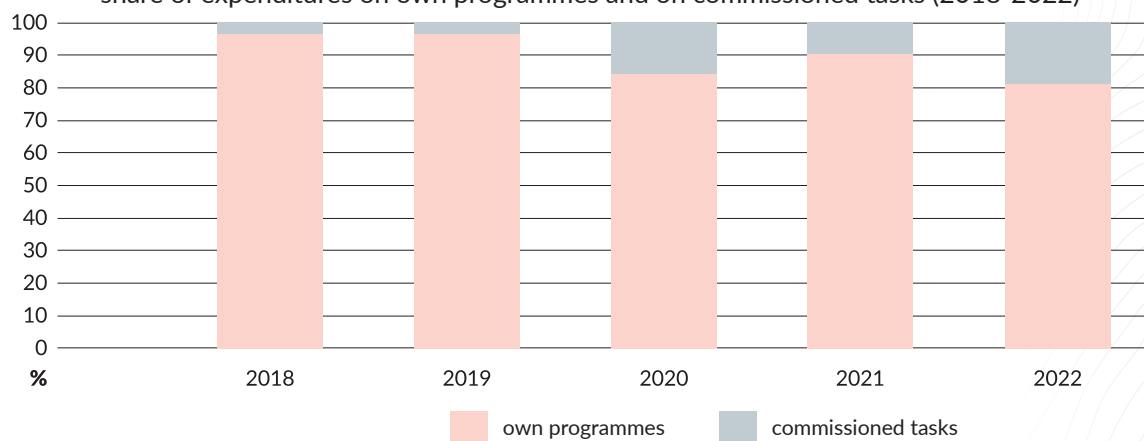
THE POLISH NATIONAL AGENCY FOR ACADEMIC EXCHANGE STATUTORY ACTIVITIES	2018	2019	2020	2021	2022
Number of Polish National Agency for Academic Exchange own programmes	14	19	23	24	27
Number of commissioned tasks	9	10	14	17	20
Number of statutory tasks	5	5	5	5	6
Other	-	-	-	3	5
TOTAL	28	34	42	49	59

Source: Reports on the activities of the Polish National Agency for Academic Exchange for 2018-2022

The total number of activities carried out by the Agency is increasing - between the first full year of operation, i.e. 2018, and 2022, it was an increase of more than 100%. The growing trend is also visible when comparing the remaining numbers of implemented types of activities. In the case of the Agency's own programmes and commissioned activities, we are dealing with a two-fold increase in their number. There are also more statutory tasks and other activities, such as projects financed from Erasmus+ funds or the new perspective of European Funds for Social Development 2021-2027.

- Along with the increase in the number of implemented activities, the structure of the Agency's expenditure is also changing.

Chart 2. The Polish National Agency for Academic Exchange expenditures - broken down by the share of expenditures on own programmes and on commissioned tasks (2018-2022)

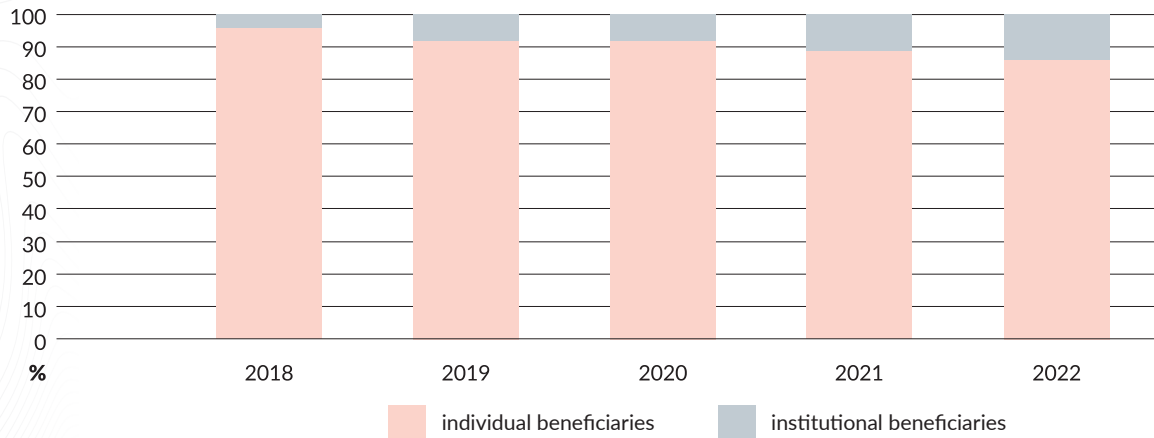


Source: Reports on the activities of the Polish National Agency for Academic Exchange for 2018-2022

The Agency's total expenditure doubled between 2018 and 2022. At the same time, the percentage distribution of the expenses changed significantly - while in 2018 the share of expenditure on commissioned tasks was 3.62%, in 2022 it increased to 18.56%. Nevertheless, each time the pool of expenditure on own programmes significantly exceeded that for commissioned tasks, even though the distance between them slightly decreased in 2022.

3. The amount of expenses incurred is directly affected by the number of financed projects and beneficiaries of the Agency's activities.

Chart 3. Structure of beneficiaries of the Polish National Agency for Academic Exchange activities (2018-2022)

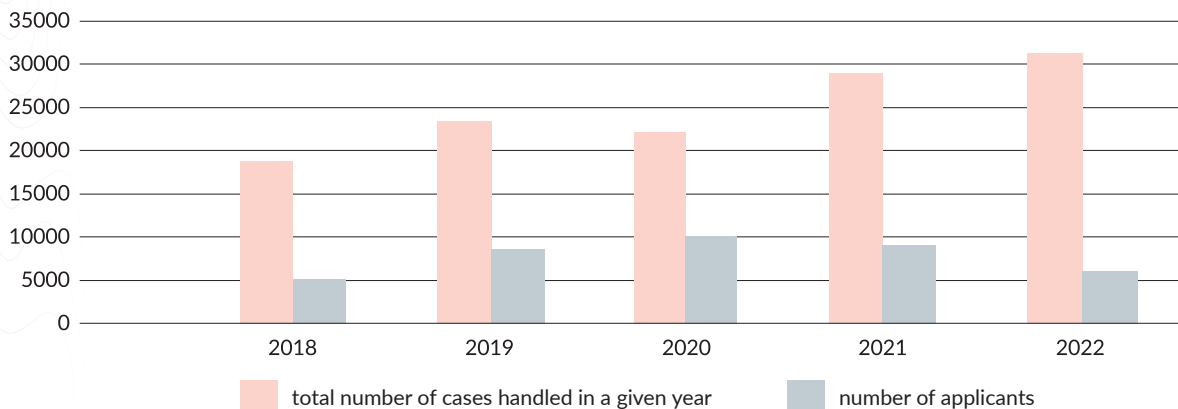


Source: Reports on the activities of the Polish National Agency for Academic Exchange for 2018-2022

In the structure of activities financed by the Polish National Agency for Academic Exchange, individual beneficiaries have a larger share than institutional beneficiaries. The dynamics of change in the group of individual beneficiaries between 2018 and 2022 was 15%. However, in the same period, the number of institutional beneficiaries more than tripled.

4. With each edition of the call for proposals, the number of cases handled by the Polish National Agency for Academic Exchange increases.

Chart 4. Number of cases handled by the Polish National Agency for Academic Exchange vs. number of applicants (2018-2022)



Source: Reports on the activities of the Polish National Agency for Academic Exchange for 2018-2022

The length of project implementation or stay under individual calls for proposals varies and can be up to four years, hence the number of cases handled by the Agency's employees increases faster each year than the number of new beneficiaries.

5. The Polish National Agency for Academic Exchange creates and implements proprietary programmes that support the international career of scientists, strengthen the internationalisation of Polish universities and research units, enable young people from all over the world to study in Poland, and promote Polish culture and language.

5.1. Student programmes:

- Gen. Władysław Anders programme,
- Poland My First Choice programme of the Polish National Agency for Academic Exchange,
- Professor Stefan Banach programme,
- Student exchange: arrivals and departures.

5.2. Programmes for scientists:

- Polish National Agency for Academic Exchange Polish Returns,
- Polish National Agency for Academic Exchange professorship,
- Professor Mieczysław Bekker programme,
- Professor Stanisław Ulam programme,
- Professor Franciszek Walczak programme,
- Polish National Agency for Academic Exchange Intervention Grants,
- Exchange of scientists: arrivals and departures,
- Joint Polish National Agency for Academic Exchange Research Projects.

5.3. Programmes for institutions:

- Polish National Agency for Academic Exchange Strategic Partnerships,
- PROM - international scholarship exchange for doctoral students and staff,
- STER NAWA - internationalisation of doctoral schools,
- KATAMARAN - preparation programme and implementation of joint second-cycle studies,
- Welcome to Poland by the Polish National Agency for Academic Exchange,
- SPINAKER - intensive international education programmes.

5.4. Polish language programmes:

- Polish National Agency for Academic Exchange lecturers,
- Polish National Agency for Academic Exchange summer courses,
- Scholarship programme for students and scientists Polonista by the Polish National Agency for Academic Exchange,
- Promotion of the Polish language by the Polish National Agency for Academic Exchange,
- Preparatory courses for studying in Poland.

6. The Polish National Agency for Academic Exchange is currently implementing six **statutory tasks** described below.

6.1. Scholarship exchange based on international agreements and intergovernmental agreements.

For five years of its activity, the Polish National Agency for Academic Exchange carried out scholarship exchanges based on international agreements and intergovernmental agreements with the following countries: Armenia, Belarus, Bulgaria, China, Czech Republic, Croatia, Egypt, France, Greece, Japan, Yemen, Kazakhstan, North Macedonia, Mexico, Romania, Serbia, Slovakia, Slovenia, Taiwan, Ukraine, Hungary, Vietnam, Italy. The number of countries covered by the recruitment for the academic year

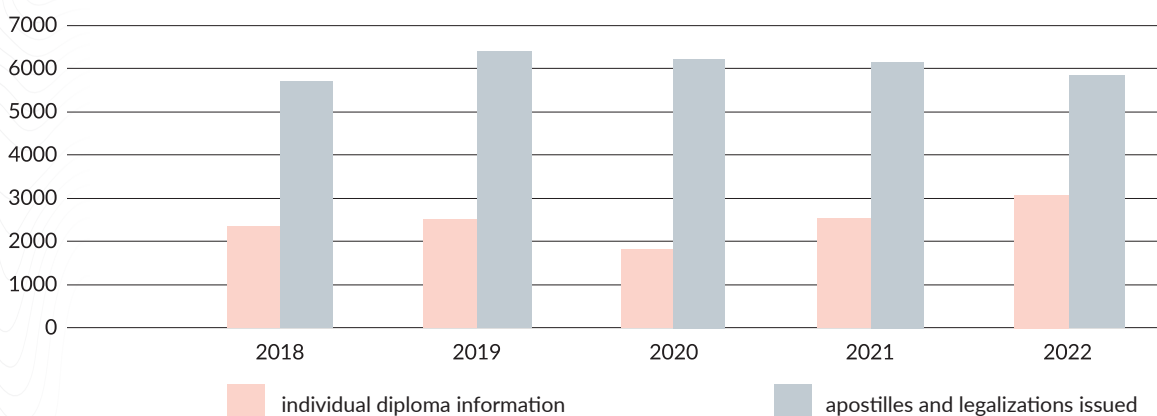
2023/2024 increased to 24 due to the addition of Germany and Tunisia. The financial conditions of stays are specified in the provisions of individual contracts and agreements.

6.2. Dissemination of information about the Polish system of higher education and science, Ready, Study, Go! Poland, Research in Poland.

From the very beginning, the Agency has been running the Ready, Study, Go! Poland. With the support of diplomatic missions, the Agency organized the participation of the Polish delegation in almost 80 events such as fairs, conferences and educational missions around the world until 2022. The Polish National Agency for Academic Exchange promotes studies in Poland, e.g. through social media, including LinkedIn and Twitter. It also prepared short films promoting studying in our country and the Polish National Agency for Academic Exchange scholarships. The Research in Poland campaign aims at presenting the achievements of Polish science and promoting Poland as an attractive country for conducting research and developing a scientific career in an international environment. The campaign presents scientists, research teams, R&D&I projects and research infrastructure.

6.3. Conducting matters related to the authentication of documents referred to in Art. 78 sec. 3 and Art. 180 sec. 1 point 1 of the Law on Higher Education and Science (Journal of Laws of 2020, item 85) and authentication of documents in the cases referred to in Art. 78 sec. 4 of the Act. Since 1 February 2018, the Polish National Agency for Academic Exchange has been handling matters related to the authentication of documents and the apostille affixing to documents confirming the completion of studies in order to introduce the documents into legal circulation abroad. In total, more than 30,000 documents have been authenticated or apostilled by 2022.

Chart 5. Individual diploma information issued vs. number of apostilles and legalizations issued (2018-2022)



Source: Reports on the activities of the Polish National Agency for Academic Exchange for 2018-2022

6.4. Conducting cases in the field of recognition of higher education as well as academic degrees and degrees in the field of art.

By 2022, a total of more than 12,000 applications have been submitted for issuing certificates and information on diplomas/degrees obtained abroad (see Chart 5).

6.5. Providing services to the State Commission for the Certification of Proficiency in Polish as a Foreign Language.

As part of the task of providing financial and administrative services to the State Commission

for the Certification of Proficiency in Polish as a Foreign Language, the Agency organized 17 examination sessions until 2022 (3-4 sessions each year), attended by a total of 47,000 people. In addition, a total of 68.5 thousand documents (together with supplements) confirming knowledge of Polish as a foreign language, were issued.

6.6. Conducting matters related to the cooperations with the Centre of Mediterranean Archaeology of the University of Warsaw.

7. Implementation of **commissioned tasks**

Implementation of commissioned tasks concerns cooperation with: the Central European University Exchange Programme (CEEPUS), the Leaders of Change Foundation as part of the Lane Kirkland Scholarship Programme, the Polish Committee for UNESCO, the International Visegrad Fund, the Kosciuszko Foundation, the Faculty of “Artes Liberales” of the University of Warsaw, the University of Białystok - scholarships for foreigners studying at the branch in Vilnius, the Interdisciplinary Centre for Polish Studies (IOSP) in Haifa, the Institute of Slavic Studies of the University of Vienna.

Commissioned tasks also include: Joint Polish National Agency for Academic Exchange research projects, Solidarity with Belarus - Solidarity with scientists, Walczak Polish National Agency for Academic Exchange, Medyk Polish National Agency for Academic Exchange, Solidarity with Ukraine - European Universities, scholarships for Belarusian citizens of Polish descent, Solidarity with Belarus - Solidarity with students, scholarships for twenty citizens of Russia for the 2021/2022 and 2022/2023 academic years, the cost of organizing and conducting preparatory courses for full-time studies in Polish at universities supervised by the Minister of Health, the cost of scholarships paid to participants of courses preparing for full-time studies in Polish, and students of full-time studies in Polish at universities supervised by the Minister of Health, the cost of organizing and delivering courses preparing for full-time studies at Polish universities supervised by the Minister of Culture and National Heritage, Solidarity with Ukraine - medics, Solidarity with Ukraine - students and PhD students, EXPO Dubai, Solidarity with Belarus - Solidarity with teachers, Support for the organization of the “Polish-Austrian Summer College in Warsaw”.

Since 1 January 2022, the Agency has taken over the role of the National Contact Point for Marie Skłodowska-Curie Actions (MSCA) in *Horizon Europe* and the coordinator of the national *Euraxess* network.

II.2. BIBLIOMETRIC ANALYSIS OF THE ACHIEVEMENTS OF BENEFICIARIES OF THE POLISH NATIONAL AGENCY FOR ACADEMIC EXCHANGE PROGRAMMES

1. Basic **bibliometric indicators** showing the share of publications financed or co-financed by the Polish National Agency for Academic Exchange show their dynamic growth. From 2017 to 2022, a total of 2,224 publications were indexed, where at least one author indicated that the publication was co-financed by the Agency.

Table 5. Number of indexed publications co-financed from the Polish National Agency for Academic Exchange funds (2017-2022)

YEAR	NUMBER OF PUBLICATIONS	YEAR	NUMBER OF PUBLICATIONS
2017	1	2020	469
2018	2	2021	743
2019	73	2022	936
TOTAL 2224			

Source: own development based on SCOPUS/SciVal [access: February 27, 2023]

More than 90% of the publications were authored by the Agency’s scholarship holders affiliated to a Polish institution, and 6% to a foreign institution.

- The co-authors of publications in which the Polish National Agency for Academic Exchange has a financial share, apart from Poland, most often come from the United States, Germany, Great Britain, Italy, France, Spain, Ukraine, China and the Czech Republic. The map below is illustrative, as it includes all the countries of origin of the publication's co-authors (i.e., 58), hence the density of visible connections (the larger the circle, the more intensive the cooperation).

Map 2. Map of the network of connections between the countries of origin of the co-authors of publications co-financed by the Polish National Agency for Academic Exchange

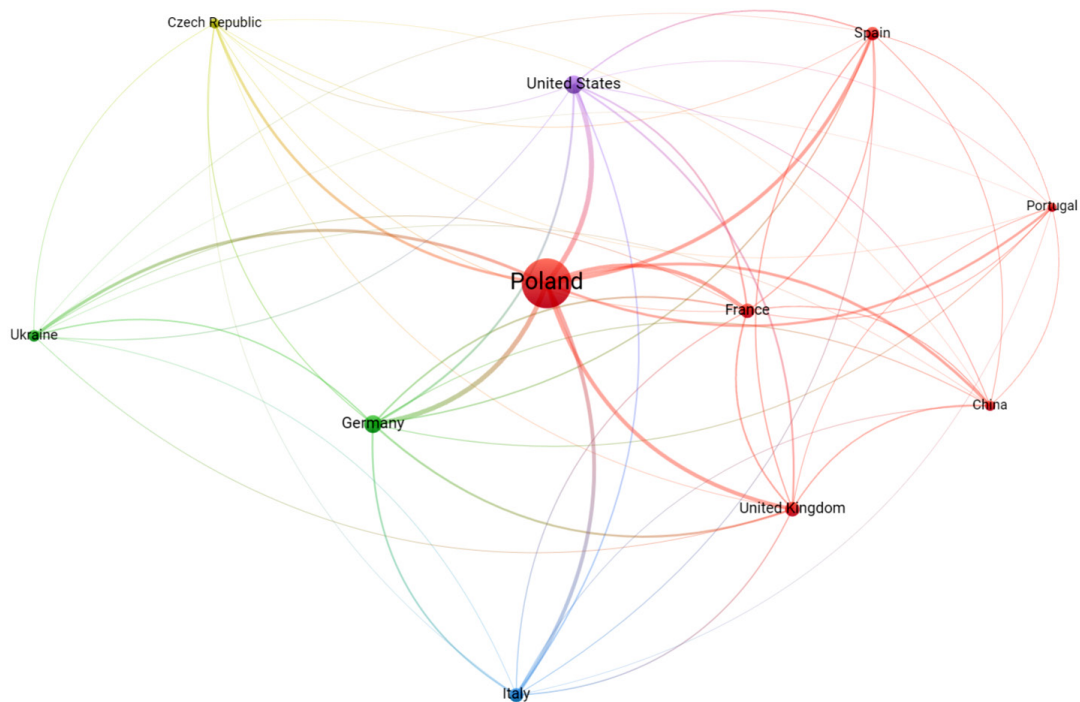


Source: own development based on SCOPUS/SciVal [access: February 27, 2023]; visualization using the VOSviewer tool

Based on the data from the SCOPUS database, the correlation coefficient (r) was calculated, defining the correlation for the variables “documents/number of documents” and “total link strength”, as well as for “citations” and “total link strength” for all observations (i.e., countries). In both cases, a very strong relationship was noted ($r=0.97$ and $r=0.98$, respectively), confirming the thesis of high importance for the visibility of scientific international cooperation among the authors of publications (in this case - publications created with the financial support of the Polish National Agency for Academic Exchange).

- Of all the observations, data showing 10 countries from which the largest number of co-authors of publications co-financed by the Polish National Agency for Academic Exchange come from was extracted, and they were subjected to further analysis aimed at showing the map of the network of bibliometric connections (including their strength).

Map 3. Map of the network of connections between the ten most popular countries of origin of co-authors of publications co-financed by the Polish National Agency for Academic Exchange



Source: own development based on SCOPUS/SciVal [access: February 27, 2023]; visualization using the VOSviewer tool

Map 3 is complemented by Table 6, it clearly shows that the more joint publications, the more scientific links Poland gains with a given country. The exception is China, where a relatively small number of publications translates into a large number of citations, and Italy, where a large number of citations and the number of connections between Poland and Italy were generated by 203 publications.

7. Thematically, among the publications co-financed by the Agency, the largest share (over 10%) is in the field of: *Physics and Astronomy; Engineering; Materials Science*.

Table 7. Thematic areas of publications co-financed by the Polish National Agency for Academic Exchange

SUBJECT AREA	%	SUBJECT AREA	%
Physics and Astronomy	13.15	Earth and Planetary Sciences	2.60
Engineering	10.67	Multidisciplinary	1.60
Materials Science	10.44	Psychology	1.45
Chemistry	7.58	Arts and Humanities	1.37
Environmental Science	6.51	Pharmacology Toxicology and Pharmaceutics	1.34
Biochemistry, Genetics and Molecular Biology	5.87	Neuroscience	1.00
Computer Science	5.66	Immunology and Microbiology	0.90
Mathematics	4.74	Veterinary	0.88
Agricultural and Biological Sciences	4.53	Business, Management and Accounting	0.85
Social Sciences	4.44	Decision Sciences	0.83
Chemical Engineering	4.35	Economics, Econometrics and Finance	0.66
Energy	4.03	Health Professions	0.34
Medicine	3.86	Nursing	0.34

Source: own development based on SCOPUS/SciVal [access: February 27, 2023]

8. By type of document, they are mostly articles (77.8%), post-conference materials (11%) and reviews (8.9%). Book chapters account for less than half a percent (0.4%).
9. Some sources of publications in which articles co-financed by the Polish National Agency for Academic Exchange are published coincide with those in which authors affiliated with Polish institutions publish. Among the 10 periodicals in which articles co-financed by the Polish National Agency for Academic Exchange are most often published, every second coincides with periodicals on a national scale, which, as already indicated in part 1.3. point 1.5., are periodicals of increasing scientific prestige.

Table 8. Publication sources

DOCUMENTS BY SOURCE	
POLAND	NAWA
<i>Materials</i>	<i>Materials</i>
<i>Energis</i>	<i>Energis</i>
<i>International Journal of Molecular Sciences</i>	<i>Scientific Reports</i>
<i>Advances in Intelligent Systems and Computing</i>	<i>Sustainability</i>
<i>International Journal of Environmental Research and Public Health</i>	<i>Physical Review B</i>
<i>Scientific Reports</i>	<i>International Journal of Molecular Sciences</i>
<i>Lecture Notes in Computer Science Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics</i>	<i>Animals</i>
<i>Molecules</i>	<i>Applied Sciences (Switzerland)</i>
<i>Sustainability Switzerland</i>	<i>International Journal of Environmental Research and Public Health</i>
<i>Electrotechnical Review</i>	<i>Physical Review D</i>

Source: own development based on SCOPUS/SciVal [access: February 16, 2023, February 27, 2023]

10. Publications co-financed by the Polish National Agency for Academic Exchange have an above-average Field-Weighted Citation Impact (FWCI) level⁸, it is a measure of their scientific importance and is 1.31.

⁸ FWCI - compares the level of citations received by publications of a given entity and the global average, taking the value of 1 and referring to publications identical in terms of year of publication, type and subject area.

II.3. SWOT ANALYSIS – THE POLISH NATIONAL AGENCY FOR ACADEMIC EXCHANGE LEVEL

The table below contains strengths and weaknesses as well as opportunities and threats identified at the Polish National Agency for Academic Exchange level.

Table 9. SWOT analysis – the Polish National Agency for Academic Exchange level

STRENGTHS	WEAKNESSES
Unique offer and clear specialization.	Ineffective internal communication.
Statutory authorization to act.	Ineffective IT systems.
High efficiency (good effect-to-cost ratio).	Staff shortages, too many tasks in relation to the number of employees.
Efficient adaptation of the programme offer to changes in the environment.	Fragmentation of internal regulations.
Good reputation in the environment.	Difficulties with retention of organizational knowledge.
Commitment, qualifications and experience of the staff.	Employee burnout.
	Insufficient financial resources in relation to the scale of tasks performed.
OPPORTUNITIES	THREATS
European and national policy conducive to the internationalisation of science and higher education.	Competition for funding with other institutions.
Access to European funds.	Risk of reducing the available funding (as a result of political changes, international situation, crisis).
Growing importance of Poland in the region of Central and Eastern Europe, including as a link between the region and the world.	Competition on the labour market hindering the recruitment and retention of employees.
Increased interest in international cooperation in the academic community.	Untimely settlement of projects by beneficiaries.
Increasing the Polish National Agency for Academic Exchange recognition and reputation in the international environment.	Delays on the part of IT service providers.
Development of the educational offer of Polish universities, including majors in foreign languages.	

Source: development based on conclusions from the conducted workshops

The SWOT analysis showed that the strongest interactions occur between strengths and opportunities, there are slightly less intense ones between weaknesses and threats. Hence, the Polish National Agency for Academic Exchange mission, vision and strategic goals were formulated based on the conclusions drawn from the SWOT analysis. It has been assumed that:

- 1) take advantage of development opportunities based on strengths,
- 2) reduce vulnerabilities to reduce exposure to threats (especially in the future).

III. THE POLISH NATIONAL AGENCY FOR ACADEMIC EXCHANGE – MISSION, VISION AND VALUES

The mission:

Strengthening Polish science and higher education through international exchange and cooperation.

The vision:

The Polish National Agency for Academic Exchange is a leading institution serving to strengthen the internationalisation of Polish science and higher education. It is known and appreciated in the Polish and foreign academic community. It inspires science and higher education institutions to act. It sets standards in terms of supporting academic mobility, internationalisation of science and higher education, recognition of education, and the promotion of the Polish language and culture in the international academic community.

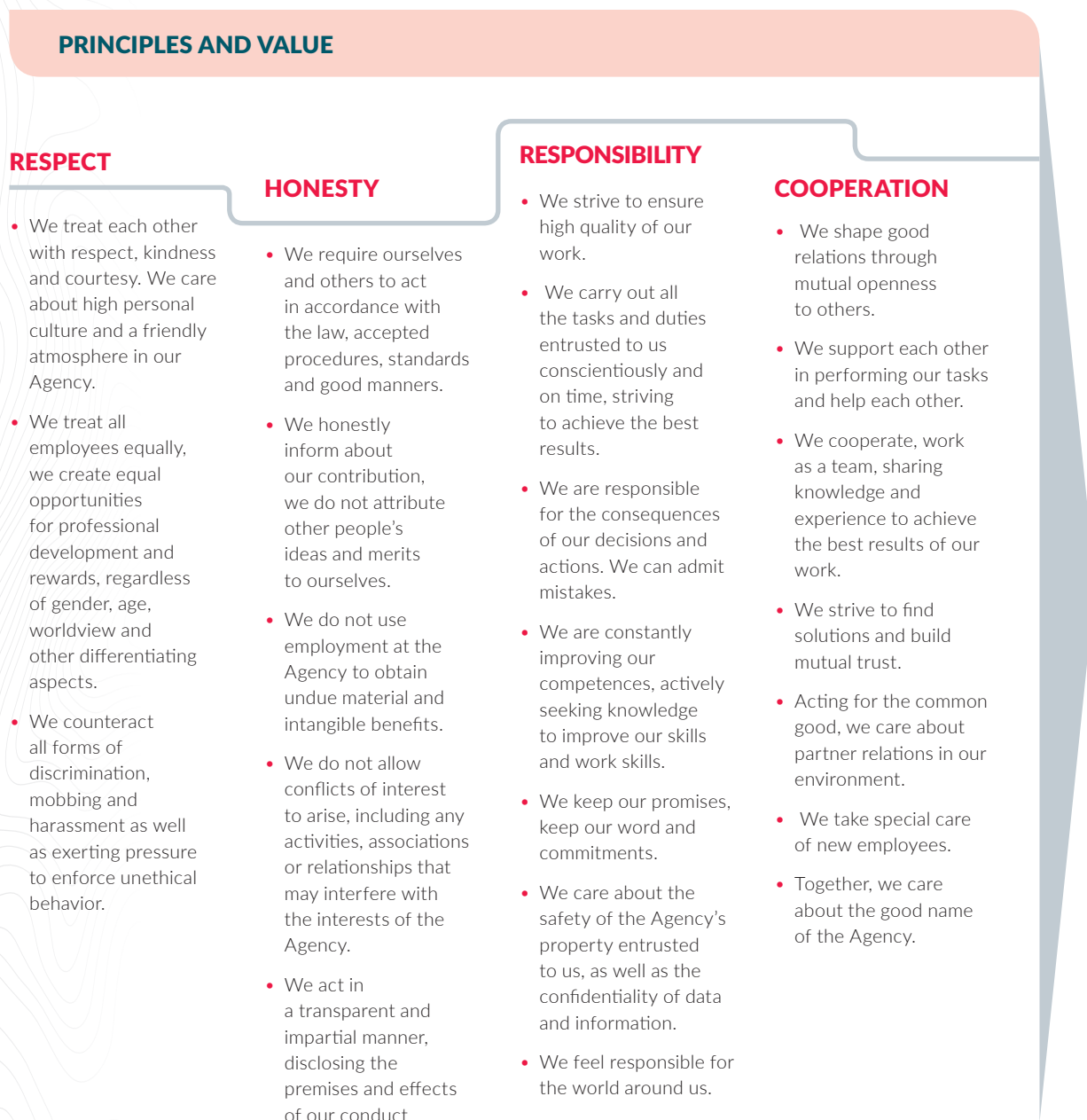
The Polish National Agency for Academic Exchange flexibly adjusts its activities to the global and local challenges of the academic world. It responds to the needs of the environment and effectively supports the mobility and international cooperation of students, doctoral students and employees of institutions forming the system of science and higher education.

The Polish National Agency for Academic Exchange co-creates optimal conditions for research and educational activities in Poland, contributing to the scientific, cultural and economic development of the country. The Polish National Agency for Academic Exchange creates opportunities for sustainable and transparent use of its offer by the entire academic community, regardless of the disciplines of science, types of institutions and their location, and all kinds of non-substantive considerations.

The Polish National Agency for Academic Exchange is a team of professionals who work with passion and effectively implement the Agency's mission and strategic goals.

The Agency's team, in its daily work, is guided by the principles and **values** presented below, introduced into internal circulation by means of the Code of Ethics for *the employees of the Polish National Agency for Academic Exchange* (Director's Order No. 55/2021).

Figure 2. The Polish National Agency for Academic Exchange principles and values



Source: Polish National Agency for Academic Exchange 2021, pp. 2-3.

IV. THE POLISH NATIONAL AGENCY FOR ACADEMIC EXCHANGE STRATEGIC GOALS FOR 2024-2030

As a result of the workshops conducted with the Agency's management team and consultations with the Polish National Agency for Academic Exchange Council, five strategic objectives (including one horizontal) were formulated, as well as operational objectives and activities that are to serve their implementation.

Table 10. The Polish National Agency for Academic Exchange, strategic and operational objectives and actions aimed at their implementation

STRATEGIC GOAL 1

Supporting the internationalisation of science and higher education

OPERATIONAL OBJECTIVES

1. Supporting all higher education and science institutions in their internationalisation
2. Strengthening institutional strategic partnerships
3. Increasing the share of the Polish National Agency for Academic Exchange scholarship holders in the total number of foreigners studying in Poland
4. Creation of a mobility support programme for the administrative staff of higher education and science institutions

MEASURES

1. Implementation of programmes for scientists and doctoral students
2. Implementation of programmes for students
3. Implementation of programmes for institutions

STRATEGIC GOAL 2

Popularization of the Polish language and culture abroad

OPERATIONAL OBJECTIVES

1. Developing the Polish National Agency for Academic Exchange cooperation with academic centres and institutions conducting activities to promote the Polish language abroad
2. Intensification of efforts to introduce electronic handling of processes related to conducting Polish language exams and issuing documents confirming the knowledge of Polish as a foreign language

MEASURES

1. Implementation of programmes in the field of Polish language
2. Certification of knowledge of Polish as a foreign language

STRATEGIC GOAL 3

Strengthening the presence of Polish science and higher education on the international arena

OPERATIONAL OBJECTIVES

1. Opening foreign Polish National Agency for Academic Exchange departments
2. Building an active network of the Polish National Agency for Academic Exchange alumni
3. Creation of a nationwide strategy for the internationalisation of Polish science and higher education

MEASURES

1. Implementation of tasks in the field of international promotion of the Polish system of higher education and science



STRATEGIC GOAL 4

Facilitating the international transfer of knowledge and skills to science and the economy

OPERATIONAL OBJECTIVES

1. Development of IT systems supporting the processes of recognition of foreign education and authentication of Polish documents confirming the completion of studies in Poland
2. Disseminating knowledge on the recognition of education and authentication of documents
3. Establishing and developing the Polish National Agency for Academic Exchange partnerships with other institutions from the area of science and higher education

MEASURES

1. Implementation of tasks related to the recognition of higher education obtained abroad
2. Implementation of tasks related to the authentication of documents issued by Polish universities

STRATEGIC GOAL 5

Agency's institutional development (horizontal objective)

OPERATIONAL OBJECTIVES

1. Increasing the share of EU funds in the Polish National Agency for Academic Exchange budget structure
2. Streamlining the Agency's internal processes
3. Development of IT systems that effectively support the work of the Agency
4. Change of organizational culture to *good governance*

MEASURES

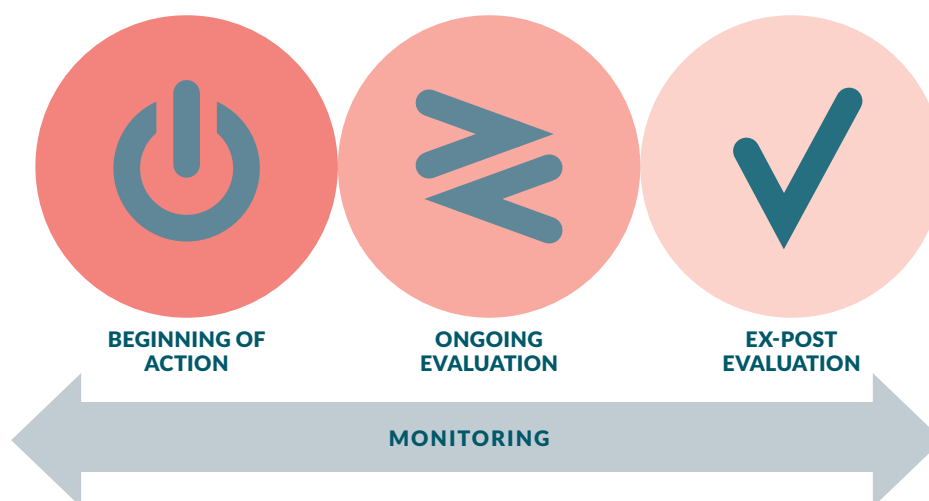
1. Developing the Polish National Agency for Academic Exchange as an attractive and friendly workplace: strengthening the competences and skills of employees, improving internal communication, improving organizational learning and knowledge retention
2. Development of tools and systems facilitating the implementation of strategic goals

Source: own development on the basis of arrangements with Polish National Agency for Academic Exchange departments

V. MONITORING AND EVALUATION OF THE IMPLEMENTATION OF THE DEVELOPMENT STRATEGY

To submit long-term actions to external evaluation (ex-post) at the end is an essential element of implementation. It should be noted that monitoring and evaluation are carried out in the Polish National Agency for Academic Exchange on a continuous basis, and the conclusions of the activities are described in the annual report on the Agency's activities.

Figure 3. Monitoring i ewaluacja realizacji założeń Strategii rozwoju



Source: Górnjak, Mazur, 2012.

Monitoring is assumed to be an activity carried out internally by the institution, and this is also the case with the Agency; ongoing evaluation at the programme level works in a similar way. Both activities are carried out systematically and are designed to determine the dynamics of changes in a given phenomenon. From the point of view of evaluating the implementation of the Development Strategy assumptions, ex-post evaluation is important, i.e., a kind of evaluating evaluation, i.e., *research analysing results of a whole group of previous evaluations on a given topic, sector, problem issue* (Górnjak, Mazur, 2012, p. 246). The stages preceding the ex-post evaluation, as well as the monitoring itself, are described in an internal document entitled the Polish National Agency for Academic Exchange research and analysis system.

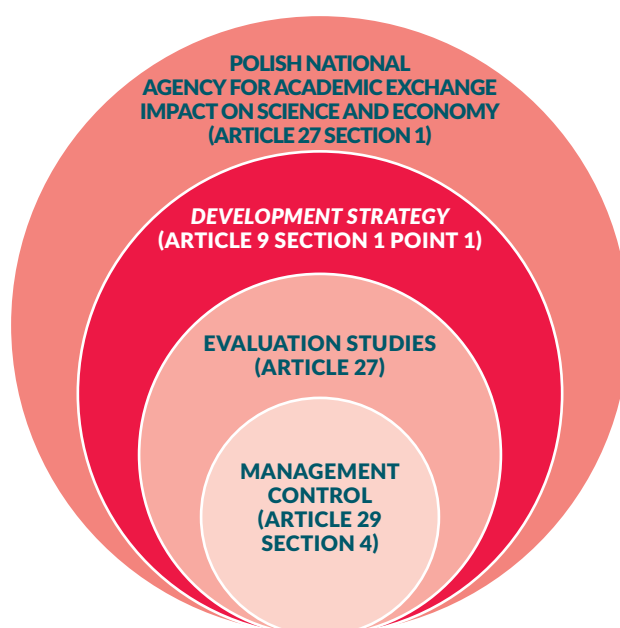
The task of ex-post evaluation is to examine the overall effects of the activities carried out within the assumptions of the strategic document. However, its goal is to constantly strive to improve the effectiveness of the Agency's activities in all areas. It is usually carried out by an independent team of experts one or two years after the end date of the strategy implementation (Górnjak 2012). In the case of the Agency, it will be a maximum of 2032, when the stakeholders will receive information on the assessment of the results and long-term impact of *the Development Strategy*, as well as possible unforeseen effects (positive and negative).

This is an important stage in the development of every organization, because it enables a reliable assessment of processes and their effects. This information gives an opportunity to consciously determine the next directions of action and inform the stakeholders about them (they will include, among others, the Polish National Agency for Academic Exchange management and employees, the Polish National Agency for Academic Exchange Council, the ministry supervising the Polish National Agency for Academic Exchange, entities of the higher education system, students, academic and administrative employees of universities).

VI. DEVELOPMENT STRATEGY UPDATE

Effective and rational use of a strategic study should be based on complementarity with other planning and reporting studies, the obligation to prepare and implement resulting directly from the provisions of the Act on the Polish National Agency for Academic Exchange. Hence, the update of the Development Strategy will be carried out in accordance with both the applicable legislation and the emerging needs and challenges faced by the Polish National Agency for Academic Exchange as well as science and higher education.

Figure 4. Complementarity of Polish National Agency for Academic Exchange planning and reporting studies*



Source: own development based on "The Polish National Agency for Academic Exchange Research and Analysis System"

* References to the provisions of the Act of July 7, 2017 on the Polish National Agency for Academic Exchange (unified text: Journal of Laws of 2019, item 1582) are given in brackets.

As shown in Figure 4, the planning and reporting activities carried out in the Polish National Agency for Academic Exchange are complementary, but cover a different time horizon. The purpose of management control is to monitor the tasks included in the annual action plan. The results of the monitoring are quarterly and annual reports on the Agency's activities. Evaluation studies are also conducted on a continuous basis, and information about the evaluation results appears in the annual report.

The analysis of the *Development Strategy* aims at verifying whether the assumed levels of indicators for the implementation of individual goals have been achieved. It also enables assessing the adequacy of selected Polish National Agency for Academic Exchange activities and programmes to achieve individual goals and the level of data aggregation. The analyses are performed together with the annual report on the Polish National Agency for Academic Exchange activities or at intervals resulting from programme schedules. On the other hand, in some cases (e.g., programmes for scientists), research is planned to be carried out at intervals of several years. It is assumed that both quantitative and qualitative research methods will be used for the analyses using appropriately designed research tools.

A similar scheme of activities is planned for measuring the impact of the Polish National Agency for Academic Exchange activities on the economy and science. The analyses are carried out in order to:

- 1) support the development of the state's scientific policy, obtain knowledge about the relationship between the Agency's activities and their effects (especially long-term effects),
- 2) adapt the Agency's programme offer to the needs of the economy and science,
- 3) examine the impact of the Polish National Agency for Academic Exchange activities and programmes on the economy and science, showing the delayed effects of the Polish National Agency for Academic Exchange activities, going beyond the direct recipients of these activities (e.g., the environment).


Bearing in mind the preservation of complementarity and continuity of activities and the possibility of real assessment of progress in achieving the Agency's objectives, it is necessary to make updates in the first place in documents with a one-year time horizon.

Provisions of *the Development Strategy* will be updated on the basis of partnership and cooperation, through ongoing global monitoring of the socio-economic situation and identification of phenomena that may potentially affect the long-term activities of the Agency.

Figure 5. Process of updating *the Development Strategy*



Source: own development



Two-year intervals will be the most appropriate time for assessing the impact of identified phenomena on the implementation of the provisions of the *Development Strategy*, i.e., after the end of 2024, 2026 and 2028. Within the period, the quantitative and qualitative effects of individual Polish National Agency for Academic Exchange programmes and activities will be aggregated, within specific indicators.

Potential, unsatisfactory levels of indicators achieved in the designated intervals constitute a premise for the Agency's management to formulate a proposal to update the provisions of *the Development Strategy* and submit them to the NAWA Council, and then to the minister responsible for higher education and science.

The submitted proposals for updating the provisions will be in line with the tasks imposed on the Agency by the Legislator.

Source: own development on the basis of arrangements with the Polish National Agency for Academic Exchange Departments



BIBLIOGRAPHY

- Ackers, L. (2008).** Internationalisation, Mobility and Metrics: A New Form of Indirect Discrimination?, *Minerva*, 46(4), 411–435
- Altbach, P. (2014).** What counts for academic productivity in research universities? *University World News*
<https://www.universityworldnews.com/post.php?story=20140715105656393> [04.03.2023].
- Altbach, P., de Wit, H. (2018).** Are We Facing a Fundamental Challenge to Higher Education Internationalisation?. *International Higher Education*, 2(93), 2-4.
<http://dx.doi.org/10.6017/ihe.2018.93.10377> [04.03.2023].
- Altbach, P., Hazelkorn, E. (2017).** Pursuing Rankings in the Age of Massification: For Most—Forget About It. *International Higher Education*, (89), 8-10.
<https://doi.org/10.6017/ihe.2017.89.9834> [04.03.2023].
- Altbach, P., Yudkevich, M. (2017).** Twenty-first Century Mobility: The Role of International Faculty. *International Higher Education*, (90), 8-10.
<https://doi.org/10.6017/ihe.2017.90.9995> [04.03.2023].
- Benitez, M. (2019).** How Is Academic Culture Influenced by Internationalisation?. *International Higher Education*, (97), 10-12. <https://doi.org/10.6017/ihe.2019.97.10940> [04.03.2023].
- British Council, (2013).** Languages for the Future. Which languages the UK needs most and why. <https://www.britishcouncil.org/sites/default/files/languages-for-the-future-report.pdf> [11.03.2023].
- Education at a Glance 2018.** https://www.oecd-ilibrary.org/education/education-at-a-glance-2018/sources-methods-and-technical-notes_eag-2018-36-en [04.03.2020].
- EUROSTAT:** <https://ec.europa.eu/eurostat/data/database> [04.03.2023]
- Flanagan, K., (2015).** *International Mobility of Scientists*, W: Archibugi, D., & Filippetti, A. The handbook of Global Science, Technology and Innovation, Wiley-Glaxwell.
- Górnjak, J., Mazur, S. (2012).** Zarządzanie strategiczne rozwojem. Ministerstwo Rozwoju Regionalnego. Warszawa.
- GUS. (2022).** Działalność badawcza i rozwojowa w Polsce w 2021 r. Warszawa: Główny Urząd Statystyczny.
- GUS. Prognoza ludności na lata 2014-2050.**
<https://stat.gov.pl/obszary-tematyczne/ludnosc/prognoza-ludnosci/prognoza-ludnosci-na-lata-2014-2050-opracowana-2014-r-,1,5.html> [03.03.2023].
- GUS. Rocznik Statystyczny Rzeczypospolitej Polskiej 2019.** <https://stat.gov.pl/obszary-tematyczne/roczniki-statystyczne/roczniki-statystyczne/rocznik-statystyczny-rzeczypospolitej-polskiej-2019,2,19.html> [03.03.2023].
- GUS. Szkoły wyższe i ich finanse w 2017 r.** Warszawa: Główny Urząd Statystyczny.
- Klemencic, M., Fried, J. (2015).** Demographic Challenges and Future of the Higher Education. *International Higher Education*. (47), 12-14
<https://doi.org/10.6017/ihe.2007.47.7956> [04.03.2023].

- Kwiek, M. (2019).** Kim są najbardziej produktywni polscy naukowcy? Produktowność badawcza w niezróżnicowanym i niekonkurencyjnym systemie nauki. *Nauka i Szkolnictwo Wyższe*. 1-2 (53-54), 383-435.
- Kwiek, M. (2021).** Globalizacja nauki: rosnąca siła indywidualnych naukowców. *Nauka i Szkolnictwo Wyższe*. 4, 1-30.
- Kwiek, M. (2022).** Globalna nauka, globalni naukowcy. *Warszawa*.
- Marginson, S. (2017).** Do Rankings Drive Better Performance?. *International Higher Education*, (89), 6-8. <https://doi.org/10.6017/ihe.2017.89.9833> [03.03.2023].
- Ministerstwo Spraw Zagranicznych (MSZ). (2021).** Wieloletni program współpracy rozwojowej na lata 2021–2030. Solidarność dla rozwoju. <https://www.gov.pl/web/polskapomoc/wieloletni-program-wspolpracy-rozwojowej-na-lata-20212030-solidarnosc-dla-rozwoju> [06.03.2023].
- NAWA (2017-2022).** Sprawozdania z działalności Narodowej Agencji Wymiany Akademickiej za lata 2017-22.
- NAWA. (2021).** Kodeks etyki pracowników Narodowej Agencji Wymiany Akademickiej. (Internal material).
- NAWA. (2022).** System badań i analiz NAWA. (Internal material).
- NCBR. (2021).** Raport końcowy z badania ewaluacyjnego pn. „Wypracowanie potencjalnych kierunków interwencji w okresie programowania 2014 – 2020 w oparciu o doświadczenia z wdrażania XIII osi priorytetowej PO IiŚ Infrastruktura szkolnictwa wyższego“. *Warszawa*.
- OECD:** <https://stats.oecd.org/> [22.02.2023].
- ONZ (2015).** Przekształcamy nasz świat: Agenda na rzecz zrównoważonego rozwoju 2030. https://www.unic.un.org.pl/files/164/Agenda%202030_pl_2016_ostateczna.pdf [dostęp: 22.02.2023].
- OPI PIB.** System Informacji o Nauce i Szkolnictwie Wyższym POL-on. <https://polon.nauka.gov.pl> [dostęp: 05-12.01.2023].
- Polityka Naukowa Państwa. (2022), Rada Ministrów.** <https://www.gov.pl/web/edukacja-i-nauka/polityka-naukowa-panstwa-przyjeta-przez-rade-ministrow> [dostęp: 15.02.2023].
- Scopus, SciVal** <https://www.scival.com/home> [dostęp: 16-27.02.2023].
- SOR. (2017).** Strategia na rzecz odpowiedzialnego rozwoju do roku 2020 (z perspektywą do 2030 r.) [dostęp: 15.03.2023 r.].
- Ustawa z dnia 7 lipca 2017 r. o Narodowej Agencji Wymiany Akademickiej** (Dz.U z 2019 r., poz. 1582, t.j. z dnia 22.08.2019 r.).
- Ustawa z dnia 20 lipca 2018 r. Prawo o szkolnictwie wyższym i nauce** (t.j. Dz. U. z 2022 r. poz. 574 z późn. zm.).
- Wahlers, M. (2018).** Internationalisation of Universities: The German Way. *International Higher Education*, (92), 9-11. <https://doi.org/10.6017/ihe.2018.92.10276> [04.03.2023].



LIST OF ABBREVIATIONS AND ACRONYMS

- AGH** – AGH AUniversity of Science and Technology
- B+R** – research and development; research and development activities
- B+R+I** – research, development, infrastructure
- EUROSTAT** – European Statistical Office
- FWCI** – Field-Weighted Citation Impact
- GERD** – General expenditure on research and development
- GUS** – Statistics Poland
- JSM** – uniform master’s studies
- MSZ** – Ministry of Foreign Affairs
- NAWA** – Polish National Agency for Academic Exchange
- NCBR** – National Centre for Research and Development OECD – Organization for Economic Cooperation and Development
- PAN** – Polish Academy of Sciences
- PKB** – gross domestic product
- POL-on** – integrated information system about science and higher education
- PW** – Warsaw University of Technology
- RAI** – Relative Activity Index
- SDG** – Sustainable Development Goals; Sustainable Development Goals
- SJR** – SCImago Journal & Country Rank
- SNIP** – Source Normalized Impact Paper
- SOR** – Responsible Development Strategy
- Development Strategy** – Development strategy of the Polish National Agency for Academic Exchange for 2024-2030
- UAM** – Adam Mickiewicz University in Poznan
- UE** – European Union
- UJ** – Jagiellonian University
- UL** – University of Lodz
- UMCS** – Maria Skłodowska-Curie University
- UMK** – Nicolaus Copernicus University
- UNESCO** – United Nations Educational, Scientific and Cultural Organization
- UO** – University of Opole
- USA** – United States of America
- US** – University of Silesia
- UW** – University of Warsaw
- UWr** – University of Wrocław

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