POLISH NATIONAL AGENCY FOR ACADEMIC EXCHANGE

GUIDING ROADMAP FOR THE PERIOD 2021–2027

Warsaw 2021

POLISH NATIONAL AGENCY FOR ACADEMIC EXCHANGE

Table of contents

INTRODUCTION

The Polish National Agency for Academic Exchange (the Agency, NAWA) is a state legal entity operating under the Act of 7 July 2017 on the Polish National Agency for Academic Exchange (Journal of Laws of 2019, item 1582, consolidated text of 22/08/2019; the NAWA Act).

NAWA was established in 2017 in response to the key challenges facing Polish science and higher education. Since its inception, NAWA's activities have been an element of the national framework supporting the development of Polish universities and scientific institutions.

The Agency is involved in conducting a long-term policy to support academic mobility and pro-quality internationalisation of the offer of the Polish HEIs. It implements Poland's strategic policy concerning support for individual academic mobility aimed at the growth of teaching and scientific potential as well as facilitates the process of internationalisation of the programme offer of universities and the promotion of Polish higher education and the Polish language abroad.

Pursuant to the provisions of the NAWA Act, the Agency's tasks are defined as follows:

Article 2. [Tasks of the Polish National Agency for Academic Exchange]

1. The Agency shall carry out tasks in internationalisation of tertiary education and science.
2. The Agency's tasks shall include the following:
   1) initiating and carrying out activities supporting an international academic exchange as well as the process of internationalisation of Polish tertiary education institutions and scientific units referred to in Article 7(1) of the Act of 20 July 2018 on higher education and science (Journal of Laws item 1668, as amended);
   2) disseminating information about the Polish system of tertiary education and science;
   3) spreading the Polish language outside the Republic of Poland.

The performance of the tasks specified in the NAWA Act is financed in accordance with the principles of financial management set out in Articles 29 et seq. of the NAWA Act. The Agency's financial plan is drawn up and implemented annually pursuant to the Act of 27 August 2009 on public finance. The Agency's revenues come from subsidies (entity-specified subsidy, designated subsidy, and investment subsidy), from financial resources from the state budget, from the budget of the European Union, from national and international projects and programmes, and from resources provided by ministers in charge of government administration for the performance of tasks delegated by them to the Agency. The Agency derives its own revenue from fees for document authentication.

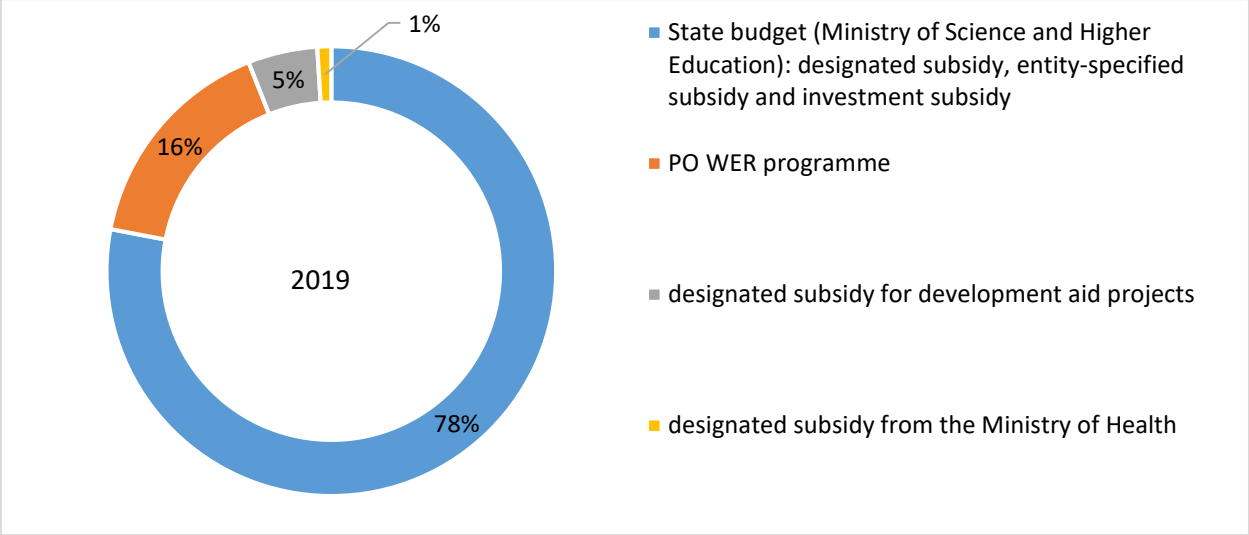
The instruments used by the Agency to perform its tasks are programmes established by the Agency Director as well as other activities, i.e.: handling academic exchange under international agreements, disseminating information about the Polish system of tertiary education and science, handling matters of recognition of tertiary education and academic degrees, authenticating documents intended for legal transactions with foreign countries, and ensuring administrative and financial support for the Polish Committee for the Certification of Proficiency in Polish as a Foreign Language.

The largest portion of funds for the performance of the Agency's tasks in 2019 was derived from section 28 of the Ministry of Science and Higher Education's state budget[1] (78%). The second highest

[1] In the present document, depending on the chronological context, both names of the ministry competent for the matters of higher education and science are used – see: Regulation of the Prime Minister of 20 October 2020 *on the detailed scope of activities of the Minister for Education and Science* (Journal of Laws, item 1848, as amended) and the Regulation of the Council of Ministers of 17 December 2020 *on the establishment of the Ministry of Education and Science and the abolition of the Ministry of National Education and the Ministry of Science and Higher Education* (Journal of Laws, item 2334).

source of financing was the PO WER programme, which is funded from state budget in conjunction with the European funds budget (16%).

Graph 1. Percentage of funds from a particular source in total funds used in 2019



Source: Sprawozdanie z działalności Narodowej Agencji Wymiany Akademickiej za rok 2019 [Report on the Activity of the Polish National Agency for Academic Exchange in 2019].

Funds are awarded to beneficiaries in contest procedures, i.e. to: students and doctoral candidates, participants of preparatory courses for studies in Polish, employees of universities or scientific institutions, persons who hold at least a doctoral degree, a doctoral degree in Arts or an equivalent degree obtained abroad. In addition, financial support from NAWA may be applied for by persons sent abroad to teach Polish as a foreign language and by universities and scientific institutions, non-governmental organisations as well as public finance sector units undertaking activities for the internationalisation of tertiary education or science.

The experience gained in the course of the first years of the Agency's activity led the Council and the NAWA Board of Directors to revise the existing provisions expressed in the 'Strategy Outline 2018–2025'. The element that most of all needed to be updated were the scope and timeframe of the Agency's activities, which concurs with the expectations of the Council set forth in Article 9(1)(1) of the NAWA Act:

Article 9. [Tasks of the Council; meetings and resolutions of the Council of the Polish National Agency for Academic Exchange]

1. The Board's tasks shall include the following:
   1) formulating proposals for directions of the Agency's operation and development, including in a multi-annual perspective, and putting them forward to the Director.

Works aiming to set NAWA's guiding objectives in a multi-annual perspective began in 2020. They were funded exclusively from the Agency's own resources – they were carried out by not only members of the Council, but also NAWA staff members.

A significant stage of work on determining the guiding objectives, which was completed in March 2020, was to draw up a diagnosis of the state of internationalisation of higher education and science in Poland, which included not only a qualitative and a quantitative, but also a SWOT analysis of the sector. In addition, the main challenges for the internationalisation of higher education and science in Poland were analysed (see part I).

The result of the conceptual part of the work was to determine five directions of the Agency's activities and development for the period 2021–2027 (see part II), i.e.:

1. Enhancement of international cooperation of scientists from Polish science and higher education institutions.
2. Enhancement of international cooperation of Polish universities and scientific institutions.
3. Increase in the number of outstanding foreign students at Polish universities.
4. Dissemination of information about the Polish system of tertiary education and science.
5. Expansion of the international community of people familiar with the Polish language and culture.

Each of the directional objectives was assigned an indicator for measuring its implementation. In total, 17 indicators – 11 quantitative and 6 qualitative ones – were determined (see tables 24–28). In order to accurately interpret the achieved levels of indicators for each of the directional objectives in a given year, it is necessary also to monitor the overall situation of the higher education and science sector in the country(see Appendix 1). This was the starting point to define a set of 23 contextual indicators, whose aim is chiefly to demonstrate the main tendencies of change on the national level.

Since both the national and the global conditions in which the Polish system of higher education and science is functioning are prone to dynamic change, the present document is going to be subject to updates. Thus, it will be possible to promptly implement remedial solutions in response to changes that could affect the results of the Agency's work (including epidemic hazards).

The conclusion of the conceptual work coincided with consultations on the draft National Science Policy, which indicates the directions of Poland's activities as well as its priorities with regard to science and higher education. In the document, the role of the Agency in the area of internationalisation is emphasised as a factor that substantially increases the quality of teaching and research at Polish higher education and scientific institutions.

The introduction and part I were drawn up by Dr. Jolanta Buczek. Part II is the product of team work of the Agency's management. The works were consulted with the members of NAWA Council at each stage.

The final version of the 'Guiding Roadmap for the Period 2021–2027' was adopted by NAWA Council resolution of 19 February 2021.

I. DIAGNOSIS OF THE STATE OF INTERNATIONALISATION OF HIGHER EDUCATION AND SCIENCE IN POLAND

1.1. INTRODUCTION

Ever more often, the internationalisation of higher education and science integrates various areas of activity: from teaching, through research, to administrative processes. The internationalisation processes currently have an undisputed impact on how new knowledge is created and disseminated.

Several key mechanisms that affect the internationalisation of higher education and science are mentioned in subject literature. Those are: rankings, international cooperation and mobility, and curriculum reforms (Benitez, 2019).

The purpose of the present study is to diagnose the state of internationalisation of the Polish sector of higher education and science by means of presenting the essential qualitative and quantitative characteristics with regard to this area. The data used in this study was collected from both national and international sources that show a broad context of the Polish sector's internationalisation.

The diagnosis is aimed to help draft a multi-annual guiding plan of the activities of the Polish National Agency for Academic Exchange.

The main sources of data for the present analysis are: the Integrated System of Information on Science and Higher Education POL-on, national statistics (Statistics Poland – GUS), international statistics (OECD, Eurostat), and bibliometric databases (Scopus, SJR).

The data referred to in this diagnosis present available, closed reporting periods (hence references to various dates). This remark applies also to the data from the POL-on database, which is provided as of 31 December of each year under analysis. Therefore, due to the nature of this system, the data may differ slightly from that presented in the system in real time.

In order to obtain a broadest possible, multi-aspect diagnosis of the analysed subject, it was necessary to use a wide range of data sources. As it turned out, problems involved not only chronology, but also the non-uniform data structure.

1.2. GENERAL CHARACTERISTICS OF THE POLISH SECTOR OF HIGHER EDUCATION AND SCIENCE

1. The current organisational and legal basis underlying the Polish system of higher education and science is the Act of 20 July 2018 on higher education and science (Journal of Laws from 2020, item 85, consolidated text from 20/01/2020) along with the implementing acts.[2]
2. According to the Statistics Poland (GUS), state budget spending on higher education amounted to 0.8% GDP and on science – 1.7% GDP in 2018.
3. Gross domestic expenditure on research and development (GERD) in 2018 amounted to 1.2% GDP (the target value set for 2020 is 1.7%).
4. Intramural expenditures (i.e. current expenditures and investment outlays) on R&D activity by scientific entities in 2017 amounted to almost PLN 9.9 bn. In particular, public universities spent PLN 4.8 bn, research institutes – PLN 2.1 bn, remaining institutes – PLN 1.2 bn, institutes of the Polish Academy of Sciences – PLN 1.2 bn, and non-public universities – PLN 277 m.

[2] The analysed data refers mainly to the period in which previous legislation was in force, i.e. the Act of 27 July 2005 on higher education (Journal of Laws from 2007, item 2183, i.e. from 28/11/2017).

5. In the period 2012–2019, Polish scientists won 31 grants funded by the European Research Council.
6. Poland concluded in total 196 bilateral agreements on international cooperation in the area of science and higher education with 94 countries (as of 2019).
7. In the period 2012–2018, a total of PLN 335 million were spent on co-funded projects (1,162 undertakings).
8. A total of 229 projects were financed with PLN 3.8 m. in the period 2016–2018 under the Granty na Granty programme (*Grants for Grants*).
9. Scientific institutions spent PLN 3.5 bn for their statutory activity in 2018 (with entity-specified subsidy amounting to more than PLN 3 bn and designated subsidy – to PLN 427 m.).
10. In the academic year 2017/2018, the gross enrolment ratio was 46.9% and the net enrolment ratio was 36.2%.
11. Poland joined international organisations and consortia gathering together the major world institutions dealing with scientific and research cooperation (e.g. CERN, Big Science, and ESO).
12. In the academic year 2018/2019, 392 universities operated in Poland. The majority were non-public universities (248). In the course of the last years, the number of higher education institutions fluctuated (a downward trend has been observed since 2012), but in principle only among non-public universities. At the beginning of the academic year 2018/2019, 133 public and 11 church universities operated in Poland.
13. In the academic year 2017/2018, public universities offered 5,214 degree programmes, non-public universities – 1,529 degree programmes, and church universities – 51 degree programmes.
14. A crucial component of the scientific sector in Poland are research institutes. This group comprises the following types of entities: scientific institutes of the Polish Academy of Sciences (77), research institutes (76), Łukasiewicz Research Network institutes (36), international research institutes (2), and other scientific institutions (54).
15. In the academic year 2018/2019, PhD was awarded to 5,945 persons, the post-doctoral degree – to 1,894, and the title of professor – to 481 persons.
16. There were on average 13 students per academic teacher in the academic year 2018/2019. This average was specifically 11 students per academic teacher at public universities and 32 students per academic teacher at non-public universities.
17. The last parametric evaluation of scientific entities was carried out in 2017 and covered 999 institutions. As a result, 11% of the entities were granted category C, 44% – category B, 39% – category A, and 6% – category A+.
18. The Polish Patent Office granted 2,906 patents and 769 protection rights in 2018. The most successful universities were Lublin University of Technology (139 applications for patents and utility models) and the West Pomeranian University of Technology in Szczecin (106 patents and utility model protection rights).
19. The European Patent Office granted Polish scientific and research institutions 231 patents in 2019 (out of 469 applications, which amounts to 12.2 applications per 1 million inhabitants). The largest number of applications were submitted by: Ryvu Therapeutics S.A. (8), the Jagiellonian University (8), 3D Gence SZ POO (7), the Silesian University of Technology (7), and Adamed Pharma S.A (5). Most applications were made in the fields of pharmacy, transportation, thermal processes and equipment, and medical technology.

1.3. FOREIGN STUDENTS AT POLISH UNIVERSITIES

In 2016, 6% of all students in the OECD countries studied in a country other than their homeland. The proportion was higher for the European Union and amounted to 9%.[3]

In the academic year 2018/2019, 78,249 foreigners studied in Poland, which makes up for 6.4% of the total number of students in Poland. The number of foreign students studying in Poland ceased to grow rapidly in recent years, as evidently demonstrated by the data presented in table 1.

Table 1. Students and foreign students at Polish universities – in total

academic year	students in total	foreign students	change %	percentage of foreign students among all students
2014/2015	1,469,386	46,101	28	3.1
2015/2016	1,405,133	57,119	24	4.1
2016/2017	1,348,822	65,793	15	4.9
2017/2018	1,291,870	72,743	11	5.6
2018/2019	1,230,254	78,249	8	6.4
2019/2020	1,203,998	82,194	5	6.8

Source: GUS. Szkoły wyższe i ich finanse 2014–2019 [Universities and Their Finances 2014–2019].

Comparing all Polish cities, the largest number of foreigners study in Warsaw (30.9%). The capital city clearly outdistances the cities next on the list (Cracow – 9.8%, Wrocław – 9.3%, Lublin – 7.9%).

Table 2. Ten Polish academic cities with the largest number of foreign students (2018/2019)

Academic city	Number of students	Percentage of foreign students in the city
Warsaw	24,142	30.9
Cracow	7,696	9.8
Wrocław	7,241	9.3
Lublin	6,174	7.9
Poznań	5,611	7.2
Łódź	3,646	4.7
Gdańsk	2,629	3.4
Bydgoszcz	2,095	2.7
Rzeszów	2,081	2.7
Opole	1,595	2.0

Source: own study based on POL-on [accessed: 06/03/2020]

The largest percentage of foreigners in Poland study Management (18% of the total number of foreign students at Polish universities). The second most popular field of study is Medicine (9.3%). The top ten of the most popular programmes concludes with Psychology (1.8%).

[3] https://www.oecd-ilibrary.org/education/education-at-a-glance-2018/sources-methods-and-technical-notes_eag-2018-36-en [accessed: 04/03/2020]

Table 3. Fields of study most popular among foreigners – the top ten (2018/2019)

Field of study	Number of students	Percentage of foreign students
Management	14,116	18.0
Medicine	7,250	9.3
IT	5,279	6.7
Tourism and Recreation	4,502	5.8
Economics	3,303	4.2
International Relations	3,209	4.1
Logistics	2,485	3.2
Philology	2,222	2.8
Finance and Accounting	1,750	2.2
Psychology	1,397	1.8

Source: own study based on POL-on [accessed: 06/03/2020]

In terms of percentage, the largest group of foreign students are Ukrainians (52% of all foreigners). The tenth most numerous group are students from Kazakhstan (1.4%). Foreign students from the top ten countries of origin make up for 61 thousand people, i.e. 78.6% of all foreigners in Poland.

Table 4. Ten countries from which foreigners most often come to study in Poland

Source: own study based on POL-on [accessed: 06/03/2020]

Country of origin (academic year 2018/2019)	Number of students	Percentage of foreigners studying in Poland
Ukraine	40,698	52.0
Belarus	7,460	9.5
India	3,748	4.8
Turkey	1,691	2.2
The Czech Republic	1,627	2.1
Norway	1,489	1.9
Germany	1,268	1.6
Russian Federation	1,242	1.6
China	1,209	1.5
Kazakhstan	1,103	1.4

When analysing the individual groups of foreign students in Poland, it becomes apparent that the part of the world from which they come seems to determine their choice of the field of study. Most candidates choose less cost-intensive programmes, i.e. with lower tuition fees (the domains of social sciences or the humanities). This is the case for Ukrainians and Belarusians, who usually study Management, Tourism and Recreation, and IT. Germans and Norwegians, on the other hand, commonly enrol in experimental programmes, which are consequently cost-intensive (nationals of both countries choose Medicine and Medicine and Dentistry; additionally, the third most popular field among Norwegians is Veterinary Medicine).

Table 5. Foreign students according to country of origin and most popular field of study (2018/2019) – ten most popular countries and fields of study

Ukraine	Belarus	India	Turkey	The Czech Republic
Management	Management	Management	IT	Education
Tourism and Recreation	Tourism and Recreation	IT	Psychology	Management
IT	IT	Medicine	Management	Special Education
International Relations	Logistics	Mechanical Engineering	Management and Leadership	Psychology
Logistics	International Relations	Tourism and Recreation	International Relations	Administration
Economics	Economics	Management and Production Engineering	Architecture	Law
Philology	Finance and Accounting	Finance and Accounting	Philology	Physiotherapy
Journalism and Social Communication	Philology	Administration	Economics	International Relations
Finance and Accounting	Medicine	Economics	Agriculture	Instrumental Studies
Cosmetology	Graphic Design	Aeronautics and Astronautics	Finance and Accounting	Veterinary Medicine
Norway	**Germany**	**Russian Federation**	**China**	**Kazakhstan**
Medicine	Medicine	Management	Management	Management
Dental Medicine	Dental Medicine	Philology	Instrumental Studies	Economics
Veterinary Medicine	Management	IT	Economics	IT
Psychology	Philology	Tourism and Recreation	Finance, Investment and Accounting	International Relations
Management	Forestry	Finance and Accounting	Management and Leadership	Finance and Accounting
Film and Television Production and Photography	Psychology	International Relations	Philology	Philology
Finance	Finance	Economics	Vocal Studies	Tourism and Recreation
Finance and Accounting	Veterinary Medicine	Architecture	Finance and Accounting	Logistics
Physiotherapy	IT	Graphic Design	Civil Engineering	Graphic Design
International Relations and Area Studies	Education	Psychology	Undergraduate Programme in International Relations	Nursing

Source: own study based on POL-on [accessed: 06/03/2020]

In the academic year 2018/2019, 1,837 doctoral students enrolled in third-degree studies i.e. 4.7% of all doctoral students in Poland, were foreigners.

Table 6. Foreign doctoral students by country of origin (2018/2019) – top ten most popular countries of origin

Country of origin	Number	Percentage of foreign doctoral students among all doctoral students
Ukraine	417	22.7
India	183	10.0
Belarus	136	7.4
China	96	5.2
Italy	72	3.9
Russia	65	3.5
Iran	64	3.5
Germany	50	2.7
Vietnam	45	2.5
Iraq	42	2.3

Source: own study based on POL-on [accessed: 06/03/2020]

1.4. PROGRAMMES OFFERED IN A LANGUAGE OTHER THAN POLISH

The most internationalised fields of study in the OECD countries are those in the area of information and communication technologies (ICT) – they attract 10% of all foreign students. In the European Union, in turn, apart from ICT programmes, most popular fields of study among foreigners are those that belong to the following domains:

- arts and humanities,
- social sciences, journalism and information,
- business, administration and law,
- engineering, production and construction.

A report by the British Council, in which factors such as culture, education, economic and diplomatic priorities and universal use of a language online were taken into account, provides a list of ten languages deemed most expansive in Britain. Those languages are (starting with the most expansive): Spanish, Arabic, French, Mandarin, German, Portuguese, Italian, Russian, Turkish, and Japanese (British Council, 2013).

Many Polish universities realise that an international study offer (in foreign languages) gives a competitive edge on the global (i.e. increasingly open) education market. More than 1,000 programmes in foreign languages are offered in Poland (apart from the largest group of language studies, programmes in other domains are offered, too). The most popular foreign language of instruction was English (almost 70% of the foreign language offer).

Table 7. Top ten fields of study offered by Polish universities in English (2017/2018)

Language of instruction: English	Number of programmes
Philology	110
Management	80
IT	41
Economics	39
Medicine	30
Finance and Accounting	21
Nursing	18
Physiotherapy	17
Education	16
Dental Medicine	14

Source: own study based on POL-on [accessed: 06/03/2020]

Apart from English, other foreign languages of instruction in the academic year 2017/2018 were, among others: German (71 programmes), Russian (64), French (36), and Spanish (34).

1.5. FOREIGN ACADEMIC TEACHERS WORKING AT POLISH UNIVERSITIES

In the age of globalisation, the number of scientists who work outside their homeland keeps growing, as well. They are the driving force behind the universities' international awareness. Moreover, they are often the best researchers in their respective disciplines (Altbach, Yudkevich, 2017). Altbach and Yudkevich (2017) propose the following classification of internationalised scientific institutions and the researchers they employ:

1) a small yet visible group of international teachers who cooperate with the best research universities around the world, especially in English (Australia, Canada, the US, and to some extent the UK). These scientists are world-famous stars, sometimes Nobel prize winners;
2) scientists employed at universities in countries that have produced a limited number of powerful scientific institutions which attract top class researchers (Hong Kong, Singapore, and Switzerland);
3) scientists employed at universities in countries which suffer from a shortage of local staff (Saudi Arabia and other countries of the Persian Gulf as well as some African countries). Those universities often employ foreign academic staff to teach in lower level courses (the teachers often come from Egypt or South Asia);
4) the fourth category of scientists coincides with the first one, as it consists of scientists of shared origin who have emigrated and obtained citizenship and found a home in the country of their current stay – thus, an institution that employs mostly staff members that have settled in the country can hardly be deemed equally internationalised as in the case of other categories;
5) the last class consists of foreigner scientists who obtained their doctor's degrees or completed their postdoctoral fellowships in the institutions in which they are currently employed.

In the academic year 2018/2019, 95,339 academic teachers were employed at Polish universities, with 3.1% being foreigners (full-time and part-time workers). Among academic teachers, otherwise than in the student group, we can observe a growing pace of change in the percentage of foreigners (while of course the two groups vary considerably in terms of the number of members).

Table 8. Academic teachers and foreign academic teachers employed at Polish universities – in total

academic year	academic teachers in total	foreign academic teachers	percentage of foreign academic teachers among all academic teachers
2015/2016	95,900	2,000	2.1
2016/2017	95,400	2,000	2.1
2017/2018	95,000	2,100	2.2
2018/2019	95,339	2,926	3.1

Source: GUS

In the academic year 2018/2019, the largest groups of foreigners among academic staff were Ukrainians, with Slovaks, Germans, Belarusians, and Italians coming next.

Table 9. Foreign academic teachers by country of origin (2018/2019) – top ten countries of origin

Country of origin	Number	Percentage of foreign teachers among all teachers
Ukraine	747	31
Slovakia	151	6
Germany	149	6
Belarus	118	5
Italy	118	5
Russia	104	4
the Czech Republic	95	4
the United Kingdom	91	4
Spain	80	3
the United States	69	3

Source: own study based on POL-on [accessed: 06/03/2020]

The highest number of foreign academic teachers were employed at the following universities:

1) University of Warsaw (208 persons),
2) Adam Mickiewicz University in Poznań (150 persons),
3) Jagiellonian University (140 persons),
4) Polonia University in Czestochowa (86 persons),
5) University of Wrocław (62 persons),
6) University of Gdańsk (61 persons),
7) College of Integrated Competences in Poznań (51 persons),
8) John Paul II Catholic University in Lublin (41 persons),
9) University of Lodz (41 persons),
10) Nicolaus Copernicus University in Toruń (40 persons).[4]

1.6. GLOBAL RANKINGS OF HIGHER EDUCATION INSTITUTIONS

Global rankings affect not only the education choices of many young people, but also the professional decisions of scientists at various stages of their academic careers.

World standards in education and research are determined by the strongest scientific institutions.

At present, the most authoritative global rankings are deemed to be: the Shanghai Ranking (ARWU), QS World University Rankings (QS), and Times Higher Education (THE). Yet all rankings are struggling

[4] Source: POL-on *[accessed: 06/03/2020]*.

with methodological problems (in terms of the choice of indicators included in the ranking or the subjective appraisals of universities that enter the ranking). The top hundred universities constitute merely 0.5% of all higher education institutions and educate 0.4% of all students worldwide (Altbach, Hazelkorn, 2017). Undoubtedly, the greatest challenge facing universities is to maintain their position in the ranking and to take up effective activities to improve it.

The analysed rankings classify the same Polish higher education institutions. The top three are, in varying order, the University of Warsaw, the Jagiellonian University, and AGH University of Science and Technology, alternating with Warsaw University of Technology and Adam Mickiewicz University in Poznań.

Table 10. Polish universities among the first thousand HEIs in global rankings

ARWU 2019	QS 2020	THE 2020	Institution
301-400	=300	601-800	Jagiellonian University
401-500	=349	601-800	University of Warsaw
601-700	801-1000		AGH University of Science and Technology
701-800	801-1000	801-1000	Adam Mickiewicz University
701-800			Medical University Warsaw
801-900	521-530		Warsaw University of Technology
901-1000			Medical University of Silesia
901-1000	801-1000		Nicolaus Copernicus University
901-1000			Wroclaw University of Technology
	801-1000		Cracow University of Technology
	801-1000	801-1000	Gdański University of Technology
	801-1000		Lodz University of Technology
	801-1000		Poznań University of Technology
	801-1000		University of Gdańsk
	801-1000		University of Lodz
	801-1000		University of Silesia
	801-1000		University of Wrocław
	801-1000		Warsaw University of Life Science
	801-1000		Wrocław University of Science and Technology

Source: http://www.shanghairanking.com/arwu2019.html [accessed: 09/03/2020]
https://www.topuniversities.com/university-rankings/world-university-rankings/2020 [accessed: 09/03/2020]
https://www.timeshighereducation.com/world-university-rankings [accessed: 09/03/2020]

1.7. VISIBILITY OF POLISH SCIENCE IN THE INTERNATIONAL SCIENTIFIC COMMUNITY

Publishing in prestigious journals has become one of the chief criteria in academic status evaluation (Altbach, 2014). The stake is the position of the researcher and their scientific institution in global rankings, and consequently – the distribution of public funds for universities and the institution's attractiveness for new foreign students and scientists. It is no easy task to measure academic productivity, at least because not each criterion is appropriate for each scientific domain. Research universities focus mainly on carrying out scientific research, as this is usually their main mission. The assessment of the quality of research seems to be easier than that of other fields of academic activity, such as teaching and social involvement, which are difficult to quantify. Resultantly, the research

activity of scientific institutions appears to be least problematic to evaluate (Altbach, 2014). National rankings, in turn, take into account also obtained research grants and awards of local importance.

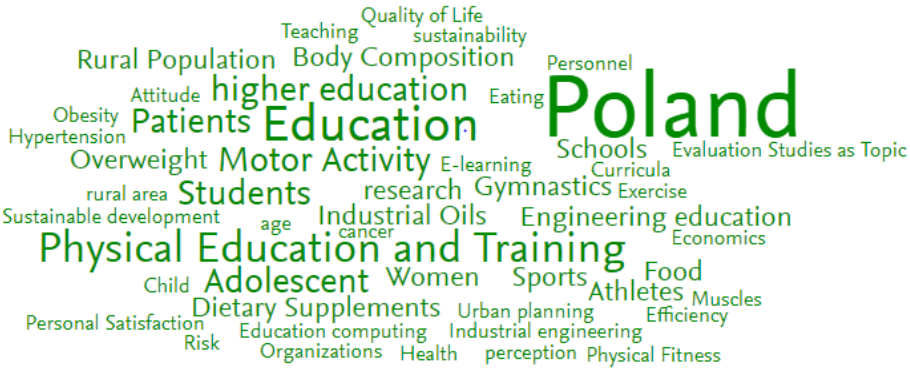
The presentation of Poland's position in the international academic community is based on information from the Scopus database, maintained by Elsevier. Scopus was chosen for the analysis rather than the Web of Science database by Clarivate, as the latter fails to take into account a large number of publications in the domains of social sciences and the humanities. Those are reliably indexed in Scopus.

Poland takes the 18th rank worldwide in terms of the number of scientific publications classified in Scopus and the 24th rank with regard to the number of citations (for the years 2012–2018). The world's top three (in both categories) are: the US, China, and the UK. Publications authored by at least one scientist with a Polish affiliation were cited 1.8 m. times (American publications – 46 m., Chinese – 21 m., British – 14 m.).

Using the Elsevier Fingerprint Engine, the SciVal tool, it is possible to identify the key phrases that are most frequent in a specific country's research. This tool makes it possible to create a weighted list of key phrases for publications that may be assigned to various levels (i.e. researcher, institution, or country). In the journals indexed in Scopus, the most frequent key words are: Engineering, Medicine, Physics and Astronomy, Materials Science, and Computer Science.

Below is the Polish list of the 50 most popular key phrases (since 1996). The font size reflects the frequency of a specific key phrase.

Figure 1. Top 50 key phrases in Polish publications by relevance, based on 228 publications



Source: SciVal (Scopus) [accessed: 06/03/2020]

In the period 2014–2019, the most often cited Polish journals were: "*Medicine*", "*Biochemistry, Genetics and Molecular Biology*", "*Nursing*", "*Physics and Astronomy*", and "*Neuroscience*".

Table 11. Citation per Publication – Poland – 2014–2019

Subject Area	Citation per Publication
Medicine	361.5
Biochemistry, Genetics and Molecular Biology	143.6
Nursing	117.8
Physics and Astronomy	101.5
Neuroscience	95.4
Environmental Science	92.3
Earth and Planetary Sciences	86.9
Engineering	84.9
Chemical Engineering	72.9
Social Sciences	71.0
Agricultural and Biological Sciences	69.2
Immunology and Microbiology	67.5
Chemistry	66.6
Health Professions	62.6
Materials Science	58.1
Computer Science	57.3
Mathematics	55.8
Psychology	50.8
Pharmacology, Toxicology and Pharmaceutics	49.3
Energy	39.6
Business, Management and Accounting	36.8
Dentistry	26.6
Veterinary	25.5
Multidisciplinary	24.2
Decision Sciences	23.0
Arts and Humanities	20.6
Economics, Econometrics and Finance	12.3

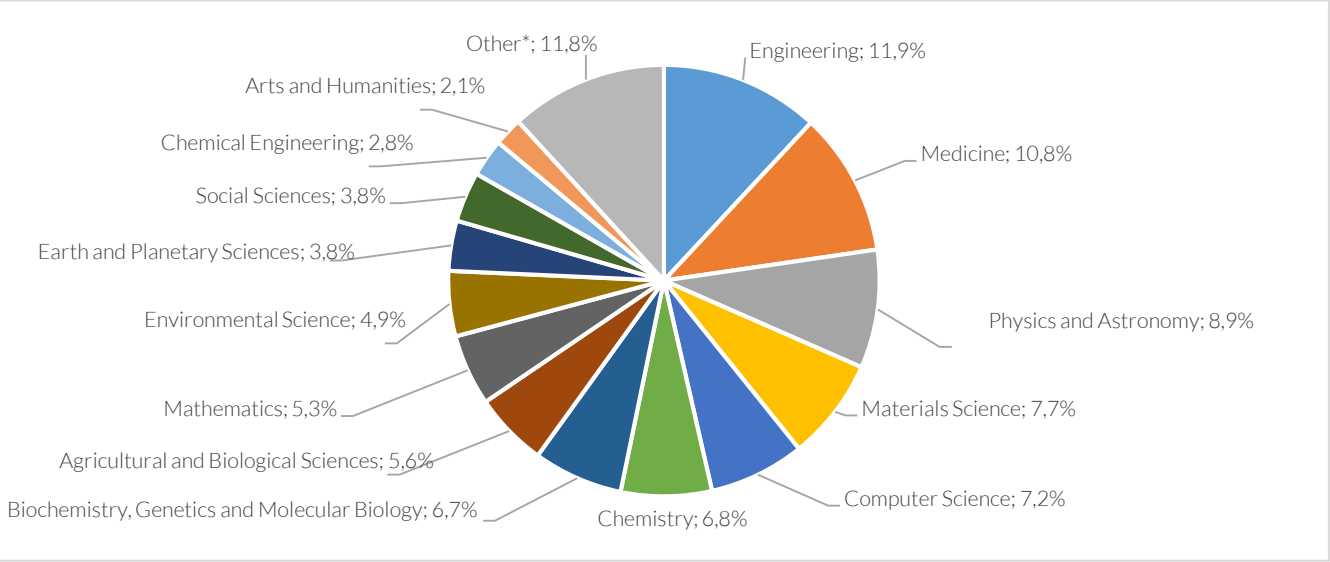
Source: own study based on SciVal (Scopus) [accessed: 06/03/2020]

Globally, between 2014 and 2019, the highest scientific productivity was observed in the following areas: life sciences, medical sciences, social sciences, and engineering and technology.

The highest number of Polish publications in that period appeared in the following disciplines:

- engineering,
- medicine,
- physics and astronomy,
- materials science,
- IT.

Graph 2. Polish Publications by Subject Area (Scholarly Output) 2014–2019



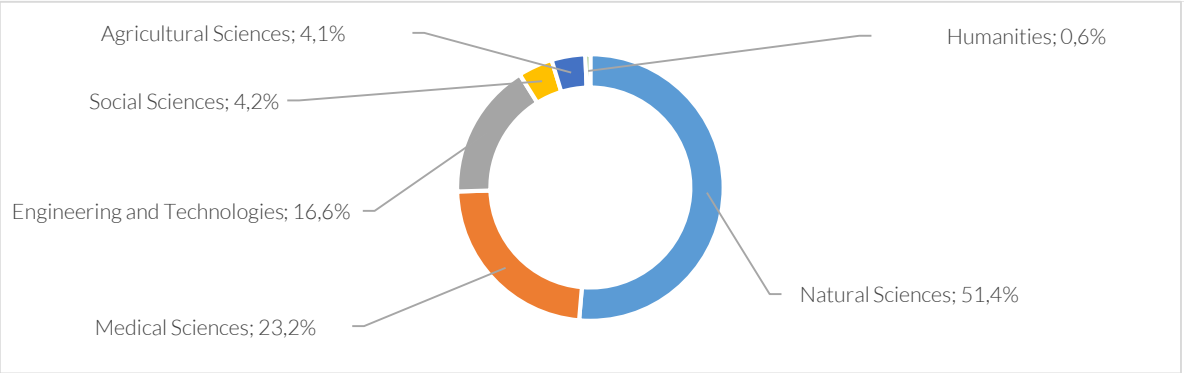
Source: own study based on SciVal (Scopus) [accessed: 06/03/2020]

*Other: Energy 1.8 %,Pharmacology 1.8%, Toxicology and Pharmaceutics 1.8%, Business, Management and Accounting 1.3%, Immunology and Microbiology 1.2%, Neuroscience 0.9%, Economics, Econometrics and Finance 0.9%, Psychology 0.8%, Multidisciplinary 0.7%, Veterinary 0.7%, Decision Sciences 0.6%, Health Professions 0.4%, Nursing 0.4%, Dentistry 0.2%

Between 2014 and 2018, Polish publications with the highest number of citations (within the first percentile) were those in the domains of:

- natural sciences (here, the most cited are publications in the biological, physical, and chemical sciences),
- medical sciences (clinical medicine, general medicine, and health science),
- engineering and technology (materials engineering, chemical engineering, remaining engineering, and technology),
- social sciences (psychology and cognitive science, economics and business, and political science).

Graph 3. Publications in Poland that fall within the top 10% journals by SJR – by Subject Area 2014–2019



Source: own study based on SciVal (Scopus) [accessed: 11/03/2020]

The above coincides with the results obtained by Marek Kwiek, which show that the most productive Polish scientists represent physical and mathematical sciences (domain: natural sciences). Compared to other researchers, they work an extra 12 hours per week, which amounts to 69 additional full working days per year. Furthermore, they devote to research on average 13 hours more per week (i.e. an extra 75 days) (Kwiek, 2019).

The below table contains a comparative analysis of the scientific output of Polish scientific institutions. The data reflect the scientific effectiveness of Polish scientific institutions.

Table 12. Top 10 Polish institutions, by Scholarly Output (2016–2019)

Scopus rank	Institution	Scholarly Output	Scholarly Output (growth %)	Citations	Authors	Authors (growth %)	Citations per Publication	Field-Weighted Citation Impact
1	Polish Academy of Sciences	39,418	14	350,397	13,143	12.7	8.9	1.2
2	Jagiellonian University in Kraków	20,030	27.9	186,388	8,976	22.2	9.3	1.44
3	University of Warsaw	16,520	28.6	156,315	7,097	38.4	9.5	1.3
4	AGH University of Science and Technology	15,071	18.5	98,272	5,011	12.7	6.5	1.13
5	Warsaw University of Technology	14,098	24.8	85,718	5,417	26.1	6.1	1.1
6	Wrocław University of Science and Technology	11,138	20.7	55,658	4,127	25.7	5	0.91
7	Silesian University of Technology	9,952	21	41,928	3,247	18.2	4.2	1.08
8	Adam Mickiewicz University in Poznań	9,353	32.4	65,646	3,784	32	7	1.04
9	Medical University of Warsaw	8,753	36.7	63,477	4,907	28.3	7.3	1.13
10	Jagiellonian University Medical College	7,132	46.9	74,174	3,623	28.2	10.4	1.8

Source: own study based on SciVal (Scopus) [accessed: 06/03/2020]

Based on the same data source as above, we analysed the profiles of universities – winners of ministry competitions supporting institutions that aspire to the position of research universities under the Excellence Initiative – Research University (IDUB) or the Regional Excellence Initiative (RID).

When it comes to the results of the IDUB competition, the universities that were ranked highest by the selection committee have their academic output highly ranked in the Scopus database. There are no non-public universities among the winning institutions.

Table 13. Universities – winners in the Excellence Initiative – Research University (IDUB) contest vs. their scientific effectiveness in comparison to other Polish institutions based on Scopus (2016–2019) by Scholarly Output

Scopus rank	Institution	Scholarly Output	Citation	Citations per Publication	Field-Weighted Citation Impact	IDUB max 40 points*
2	Jagiellonian University in Kraków	20,030	186,388	9.3	1.44	34
3	University of Warsaw	16,520	156,315	9.5	1.3	36.5
4	AGH University of Science and Technology	15,071	98,272	6.5	1.13	34
5	Warsaw University of Technology	14,098	85,718	6.1	1.1	34
7	Silesian University of Technology	9,952	41,928	4.2	1.08	33
8	Adam Mickiewicz University in Poznań	9,353	65,646	7	1.04	34
12	Gdańsk University of Technology	6,791	40,812	6	1.08	35
13	Nicolaus Copernicus University in Toruń	6,784	43,075	6.3	0.94	32.5
14	University of Wrocław	6,697	45,346	6.8	1.01	31.5
25	Medical University of Gdańsk	4,898	48,022	9.8	1.44	33.5

Source: own study based on SciVal (Scopus) [accessed: 06/03/2020] and Ministry of Science and Higher Education [accessed: 06/03/2020]*

It should be noted that the second ten of winners of the IDUB competition included two universities with high scores in the Scopus ranking, namely medical universities from Białystok and Łódź.

Table 14. Universities – winners (second ten) in the Excellence Initiative – Research University (IDUB) contest vs. their scientific effectiveness in comparison to other Polish institutions based on Scopus (2016–2019) by Scholarly Output

Scopus rank	Institution	Scholarly Output	Citation	Citations per Publication	Field-Weighted Citation Impact	IDUB >40 points*
6	Wrocław University of Science and Technology	11,138	55,658	5	0.91	21.5
16	Medical University of Lodz (Medical University of Łódź)	6,401	58,860	9.2	1.38	23.5
15	Lodz University of Technology	6,559	34,295	5.2	0.92	20.5
17	Poznan University of Medical Sciences (University of Medical Sciences Poznan)	6,108	42,298	6.9	0.98	20.5
19	University of Silesia in Katowice	5,787	36,305	6.3	0.89	25
20	University of Lodz	5,612	32,078	5.7	0.83	24
24	University of Gdańsk	4,905	29,063	5.9	0.89	23
36	Wrocław University of Environmental and Life Sciences (Wroclaw University of Environmental and Life Sciences)	3,180	17,510	5.5	0.92	27.5
37	Medical University of Bialystok (Medical University of Białystok)	3,021	22,876	7.6	1.08	30.5
52	Pedagogical University of Krakow (Pedagogical University of Cracow)	1,703	6,299	3.7	0.72	20.5

Source: own study based on SciVal (Scopus) [accessed: 06/03/2020] and Ministry of Science and Higher Education [accessed: 06/03/2020]*

Thirty institutions were selected in the second contest, i.e. Regional Excellence Initiative (RID) (here, the assessment of applications consisted in their substantive verification and recommendation as to

the legitimacy of granting support in the amount applied for; hence, it is not possible to rank the winners). Four of the selected institutions are ranked outside the top hundred in the Scopus database.

Table 15. Universities – winners in the Regional Excellence Initiative (RID) contest vs. their scientific effectiveness in comparison to other Polish institutions based on Scopus (2016–2019) by Scholarly Output

Scopus rank	Institution	Scholarly Output	Citation	Citations per Publication	Field-Weighted Citation Impact
9	Medical University of Warsaw	8,753	63,477	7.3	1.13
18	University of Warmia and Mazury in Olsztyn	5,909	27,135	4.6	0.85
21	Wroclaw Medical University (Wrocław Medical University)	5,564	62,882	11.3	1.76
30	Czestochowa University of Technology (Częstochowa University of Technology)	3,909	19,580	5	1.26
32	Poznań University of Life Sciences	3,707	21,963	5.9	0.94
33	Military University of Technology in Warsaw (Military University of Technology Warsaw)	3,522	14,201	4	0.92
34	University of Life Sciences in Lublin	3,459	14,842	4.3	0.76
35	Lublin University of Technology	3,235	14,037	4.3	1.12
38	Bialystok University of Technology (Białystok University of Technology)	3,007	9,798	3.3	0.79
40	University of Rzeszów	2,988	17,325	5.8	0.93
41	Rzeszow University of Technology (Rzeszów University of Technology)	2,897	11,185	3.9	0.97
43	University of Zielona Góra (University of Zielona Gora)	2,658	31,916	12	1.74
44	Pomeranian Medical University in Szczecin	2,567	25,134	9.8	1.38
47	Jan Kochanowski University of Kielce (Jan Kochanowski University in Kielce)	2,071	11,925	5.8	0.78
49	University of Szczecin	1,784	8,198	4.6	0.88
50	Opole University of Technology	1,755	7,882	4.5	1.01
51	University of Bialystok	1,753	18,788	10.7	1.42
53	Kielce University of Technology	1,676	5,097	3	1.09
58	SWPS University of Social Sciences and Humanities	1,424	7,259	5.1	1
59	Kazimierz Wielki University	1,333	5,621	4.2	0.82
61	John Paul II Catholic University of Lublin	1,206	4,229	3.5	0.75
75	Gdynia Maritime University	1,009	3,839	3.8	1.02
84	Wroclaw University of Economics and Business	891	2,927	3.3	0.66
88	Poznań University of Economics and Business (Poznan University of Economics and Business)	832	3,272	3.9	0.94
103	Cracow University of Economics (Kraków University of Economics)	640	2,000	3.1	0.74
109	Academy of Physical Education in Katowice (The J. Kukuczka Academy of Physical Education in Katowice)	581	2,361	4.1	0.84
122	University of Physical Education in Krakow	505	1,620	3.2	0.48
192	WSB University*	86	428	5	1.51
	Feliks Nowowiejski Academy of Music in Bydgoszcz				
	Lodz Film School				

Source: own study based on SciVal (Scopus) [accessed: 06/03/2020] and Ministry of Science and Higher Education [accessed: 06/03/2020]

** Until 15 April 2018, the institution was called Wyższa Szkoła Biznesu w Dąbrowie Górniczej. In the Scopus database, the top 100 includes a university with the name: WSB University. Hence, it is not possible to clearly ascertain whether this is the winner of the RID competition (i.e. Wyższa Szkoła Biznesu w Dąbowie Górniczej – Akademia WSB).*

1.8. IMPACT OF DEMOGRAPHIC PROCESSES ON THE LEVEL OF INTERNATIONALISATION OF HIGHER EDUCATION AND SCIENCE

The demographic perspective adds a new dimension to the deliberation on the internationalisation of the higher education and science sector. The observed demographic trends have significant consequences in this area. Particularly important here is the geographically uneven distribution of birth rates on the one hand, and the ageing populations in Western countries on the other.

Population processes will be one of the main factors influencing the structure of the groups of both students and academic teachers.

In Poland, likewise, one of the most important issues affecting the development of higher education institutions is the demographic situation of society. At the turn of the twentieth and twenty-first centuries, the young baby boomers reached the age of students, which, combined with a strong influence of free market principles on the higher education sector, resulted in the massification of higher education. In response to the increased demand for education services, new non-public universities were established. Public universities, in turn, increased the number of places in paid part-time programmes. Higher education institutions created conditions in which they could absorb the growing group of young people with high aspirations as to the choice of their education path, supplying new places for students.

The projected demographic changes within the population aged 20–34 pose a challenge to the system of higher education, since those are the addressees of the universities' offer. The scale of arrivals of foreigners at Polish universities remains a factor of uncertainty. Demographic projections until 2050 suggest that the downward trend in the country's population will continue, while life expectancy will increase.

Table 16. Life expectancy and population projections for Poland (2020-2050)

year	2020	2030	2040	2050
projected life expectancy	75 years	77 years	79 years	81 years
total number of inhabitants	38,137,804	37,185,073	35,668,232	33,950,569
number of inhabitants aged 20–24	1,973,119	2,050,281	1,725,302	1,491,441
number of inhabitants aged 25–29	2,407,030	1,788,819	1,857,086	1,633,818
number of inhabitants aged 30–34	2,823,754	1,969,783	2,052,954	1,737,527

Source: GUS. Prognoza ludności na lata 2014–2050 [Population Projection for the period 2014–2050]

1.9. SWOT ANALYSIS IN THE CONTEXT OF INTERNATIONALISATION OF HIGHER EDUCATION AND SCIENCE IN POLAND

STRENGTHS	WEAKNESSES
Wide education offer of Polish higher education and scientific and research institutions	Low visibility of Polish science in global bibliometric databases
Developed network of cooperation with foreign organisations	Low share of Polish scientific entities and researchers among beneficiaries of prestigious grants (ERC)
Wide offer of study programmes taught in foreign languages	Low attractivity of Polish scientific and research centres for foreigners
Growing recognisability of Polish universities	Insufficient monitoring of emerging new research areas
Communication accessibility of Polish academic centres (also so-called peripheral ones)	Distant places of Polish scientific entities in global rankings
Poland's participation in the Bologna process	Visible differences in teaching and research quality between public and non-public universities
Rapid changes with regard to international exchange of scientific staff	Low diversity of foreign students in terms of country of origin
Possession of international accreditation by Polish institutions	Lack of data on the fate of foreign graduates
Wide incoming/outgoing scholarship and fellowship offer	Gaps in access to statistical data (e.g. information on joint studies, heterogeneity of data)
OPPORTUNITIES	**THREATS**
Access to international funds and programmes dedicated to science and higher education	Society's demographic structure
Legislation granting an exceptional status to doctoral schools	Competition from neighbouring (EU) countries
Use of new technologies in teaching and research	Low level of integration of science with culture, business, and industry
Growing number of foreign students in Poland	Lack of retention mechanisms for talented researchers and young scientists – national and international
High development potential of Polish academic centres	Insufficient incentives for scientists to raise the quality of scientific research results
High potential of education markets in Asia and South America	Lack of systemic solutions for the management of exceptionally talented students and scientists (both Poles and foreigners)
Cultural enrichment of the academic community	Disproportionate remuneration of Polish academic staff in relation to European staff
Opportunity to deepen cooperation with international scientific and industrial centres	Uneven distribution of foreign students in university cities
Increase in the income of universities from teaching foreign students	Slower increase in the number of foreign students
Greater weight of the internationalisation component in the university funding algorithm	Segmentation of foreign students by country of origin and field of study
Appearance of Polish scientific achievements in the international academic community	Distribution of insufficient funds paired with the growing number of scientists and with new, cost-intensive research areas
Increasing the prestige of Polish research results through new discoveries and winning awards of global importance	Visa barriers for non-EU citizens
Diaspora of graduates and scientists of Polish origin dispersed around the world to be managed	Uncertain scale of foreigners' visits for purposes of education and scientific and research work

Source: own study

1.10. CHALLENGES

The past three decades significantly altered the landscape of higher education internationalisation around the world. According to some researchers of this subject (Altbach, De Wit 2018), an era of new challenges is approaching. Some of those challenges apply to Polish reality, as well:

- expansion of English as the language of science and education is reaching its critical point;
- restrictions on academic freedom in countries that are a major reservoir of potential student candidates (China);

- concerns about the real possibility of maintaining high levels of ethics, academic freedom, and quality in higher education while increasing quantitative indicators of internationalisation;
- dishonesty of students – cheating in exams, providing false data in order to extort financial support by foreign students;
- high visa fees for foreign students (set by some European countries, such as Norway and two states in Germany), or treating the admission of foreign students as a subsidy for the domestic higher education system (Australia).

The following challenges should be added to the above:

- making educational policy-makers and the academic community itself aware that internationalisation is not an end in itself, but can be a medium for increasing the quality of research and education;
- demographic challenges;
- uneven distribution of foreign students in Polish academic cities (Warsaw remains the main place of concentration);
- greater diversity of countries of origin of students and academic teachers at Polish universities;
- the possibility of losing sight of the local needs of the community in which the scientific institution operates;
- attaching more importance to obtaining international accreditation than to national accreditation, to a place in global rankings than to the needs of the local community;
- a deficit of activities on the part of institutions aspiring to increase the level of internationalisation of their activities in the area of building their own, internal academic culture, understood as a set of beliefs, standards, habits and values;
- strengthening evaluation activities and consciously using the results of evaluations to create improvement programmes for Polish scientific and research institutions;
- broad understanding of the definition of internationalisation of higher education and science as coordinated activities in the international, intercultural, and interdisciplinary dimension.

II. OBJECTIVES AND DIRECTIONS OF ACTIVITIES IN THE PERIOD 2021–2027

2.1. NAWA's TASKS

In 2020, in agreement with the NAWA Council, the 'Guiding Roadmap for the Period 2021–2027' was drawn up. It reflects the Agency's tasks specified in relevant legislation:

THE AGENCY'S TASKS Article 2(2) of the NAWA Act	OBJECTIVES AND DIRECTIONS OF NAWA'S ACTIVITIES in the period 2021–2027
1) initiating and carrying out activities supporting an international academic exchange as well as the process of internationalisation of Polish tertiary education institutions and scientific units;	1. Enhancing international cooperation of scientists within the Polish system of science and higher education
	2. Enhancing international cooperation of Polish universities and scientific institutions
	3. Increasing the number of outstanding foreign students at Polish universities
2) disseminating information about the Polish system of tertiary education and science	4. Disseminating information about the Polish system of tertiary education and science
3) spreading the Polish language outside the Republic of Poland	5. Expanding the international community of people familiar with the Polish language and culture

In accordance with the above, the Agency is going to focus its activities until 2027 on the below described five objectives and directions (by means of NAWA programmes and actions[5]).

2.2. ENHANCEMENT OF INTERNATIONAL COOPERATION OF SCIENTISTS FROM POLISH SCIENCE AND HIGHER EDUCATION INSTITUTIONS

The Agency will finance fellowship stays at scientific institutions of both Polish and foreign scientists. It will provide financial assistance to academics at various stages of their scientific careers, so that they can support science with their potential and increase the prestige of Polish universities by, among other things, publishing in renowned publishing houses and winning significant international awards and distinctions.

The above objective will be achieved, among others, through the following actions:

- Polish Returns NAWA, including the continuation of projects carried out under the Polish Returns programme – COVID-19 edition (programme objective: to enable Polish scientists employed abroad to return to Poland and take up work at Polish higher education and scientific institutions);

[5] The character of NAWA programmes and actions may be subject to change, including consolidation. Yet it is assumed that the addressees and the eligible activities will be in line with the above objectives.

- Bekker NAWA. The Bekker Programme – a fellowship programme for doctoral candidates and scientists involving medium and long-term stays abroad (programme objective: to increase the international mobility of doctoral students, scientists, and academic teachers);
- Ulam NAWA. The Ulam Programme – a fellowship programme for scientists involving medium and long-term stays in Poland, including continuation of projects carried out under the Ulam Seal of Excellence programme (programme objective: to increase the internationalisation of higher education and science institutions by means of visits of foreign scientists and academic teachers as well as scientists of Polish origin permanently employed abroad to Poland);
- NAWA Chair – a programme for scientists from abroad involving long-term stays (programme objective: to support the highest quality scientific and research as well as teaching activities carried out by Polish academic and scientific units by including in these activities world-class foreign scientists and scientists of Polish origin permanently (at least for the last five years) employed at foreign scientific institutions);
- NAWA Urgency Grants (programme objective: to support scientists who work at Polish research centres in taking up research in response to important, unforeseen social, civilisation, and natural events with global or regional implications);
- NAWA 'Preludium Bis' – mobility component (in cooperation with the National Science Centre) (programme objective: to support international mobility of doctoral candidates enrolled in doctoral schools by enabling them to complete fellowships at prestigious research centres around the world);
- NAWA Joint Research Projects (action objective: to support the mobility of scientific teams when carrying out research projects agreed on and conducted jointly by partners from two countries);
- NAWA Medic – Support for HEIs that Offer Medical Studies (action objective: to enhance the teaching and practical potential of higher education institutions that offer education in medical professions by means of inviting medical researchers, medical practitioners (including dentists), nurses, and midwives from the European Union or the United Kingdom who hold a relevant professional licence and are competent to teach students/doctoral student);
- Walczak NAWA. The Walczak Programme (programme objective: to strengthen the potential of Polish scientific institutions and medical entities by supporting the international mobility of doctoral students and researchers in the fields of civilisation diseases).

2.3. ENHANCEMENT OF INTERNATIONAL COOPERATION OF POLISH UNIVERSITIES AND SCIENTIFIC INSTITUTIONS

The Agency's support in the form of institutional programmes is supposed to enable universities and scientific institutes of the Polish Academy of Sciences as well as research institutes to pursue their objectives in the fields of internationalisation, implementation of joint educational programmes with foreign partners, and strengthening the teaching and scientific potential of doctoral students and academic staff employed in those institutions.

The above objective will be achieved, among others, through the following actions:

- STER NAWA – Internationalisation of Doctoral Schools (programme objective: to provide systemic support for doctoral schools by improving the quality of education in doctoral schools and the quality of research carried out by doctoral students, to transfer international experiences to Polish universities, to increase the international mobility of doctoral students and staff, to support long-term international cooperation of doctoral schools, and to attract doctoral students and thesis supervisors from abroad);
- Welcome to Poland NAWA (programme objective: to develop the potential of the Applicants with regard to internationalisation and to receive and serve foreign students, doctoral students as well as teaching and scientific staff, and to promote the Applicants abroad, in particular by means of cooperation with foreign graduates);
- SPINAKER NAWA – Intensive International Curricula (programme objective: to support Polish universities and institutes in increasing their internationalisation by funding intensive international curricula for students, doctoral students, and academic staff);
- NAWA Strategic Partnerships (programme objective: to develop permanent solutions with regard to scientific, teaching, and implementation cooperation carried out in international academic partnerships; the programme should result in long-lasting strategic cooperation of the partners; the projects carried out under the programme have to be part of long-term development policy of the applicant and its partners);
- PROM Programme – International scholarship exchange of PhD candidates and academic staff (programme objective: to refine the competences of doctoral students and staff from Poland and abroad by means of international scholarship exchange and participation in short-term forms of raising competences);
- Personal exchange of students and scientists – outgoing and incoming (programme objective: to increase the degree of internationalisation in higher education and to create opportunities to take up or deepen existing academic cooperation between Polish and foreign higher education and scientific institutions).

2.4. INCREASING THE NUMBER OF OUTSTANDING FOREIGN STUDENTS AT POLISH UNIVERSITIES

Each year, NAWA is going to grant financial support to foreigners who wish to receive their higher education in Poland. Particular attention is going to be paid to the most talented young people from various parts of the world as well as to members of the Polish diaspora.

The above objective will be achieved, among others, through the following actions:

- Anders NAWA – the Gen. Anders Programme for the Polish diaspora (programme objective: to raise the level of qualification and proficiency in Polish among young people of Polish origin by means of providing scholarships for first- and second-degree studies as well as uniform Master's degree studies in Poland);
- Banach NAWA – the Banach Scholarship Programme (programme objective: to promote socio-economic progress of developing countries in the form of scholarships for second-degree studies at Polish universities);
- Poland My First Choice NAWA (programme objective: to encourage young talented people from developed countries to pursue second-degree studies at the best Polish HEIs by offering scholarships);

- Accreditation NAWA – an institutional programme (programme objective: to select institutions that will be authorised to organise and carry out courses offered by the Agency; an action supporting the process of selecting universities for the Preparatory Courses for Studies in Poland Programme and the NAWA Summer Courses);
- Preparatory Courses for Studies in Poland Programme – an institutional programme (programme objective: to select from among accredited institutions those who will organise and carry out a preparatory course for studies in Poland for the scholarship holders of specific student programmes offered by the Agency as well as by the Ministry of Health and the Ministry of Culture and National Heritage).

2.5. DISSEMINATING INFORMATION ABOUT THE POLISH SYSTEM OF TERTIARY EDUCATION AND SCIENCE

NAWA's activities are going to be centred on coordinating the promotion of science and higher education around the world. Through participation in education fairs, cooperation with Polish diplomacy and consular services, as well as activity in social media, NAWA is going to present Poland as a country offering good-quality higher education and broad possibilities of scientific development.

The objective *Disseminating information about the Polish system of tertiary education and science* will be achieved by means of all of the Agency's actions.

Furthermore, NAWA is going to fulfil the following statutory tasks:

- Disseminating information about the Polish system of tertiary education and science abroad;
- Recognition of education completed abroad;
- Authentication of diplomas.

2.6. EXPANDING THE INTERNATIONAL COMMUNITY OF PEOPLE FAMILIAR WITH THE POLISH LANGUAGE AND CULTURE

Spreading the Polish language outside the Republic of Poland is a task fulfilled by means of promoting Polish as a foreign language, supporting actions aimed at the professionalisation of teaching, constant contact with academic centres and institutions that deal with teaching Polish as a foreign language, as well as taking care to raise the rank of Polish in the world.

The above objective will be achieved, among others, through the following actions:

- NAWA Teachers (programme objective: to teach and promote Polish language and culture abroad by sending lecturers of Polish as a foreign language to academic centres abroad to teach NAWA's Polish courses in the academic year 2021/2022);
- NAWA Summer Courses – Polish language and culture courses for foreign students and teachers (programme objective: to promote Polish language and culture by providing the opportunity to participate in intensive courses of the Polish language and culture to foreign students – those who study and those who plan to start learning Polish as a foreign language, as well as foreign teachers of Polish as a foreign language at universities abroad);
- Polonista NAWA – a scholarship and fellowship programme for students and scientists (programme objective: to enable foreigners enrolled in Polish studies abroad as well as doctoral students to complete a part of their studies (one or two semesters) or a full programme (second-degree studies) in Poland, and winners and finalists of the Polish Literature and Language Contest organised outside of Poland – to complete first-degree

studies in Poland; foreign researchers in the area of Polish studies in turn will be able to carry out research projects at Polish universities and scientific institutions);

- Promotion of the Polish Language NAWA – a programme for institutions (programme objective: to promote the Polish language combined with elements of Poland's history and culture by means of financing undertakings which increase the quality of teaching and raise the prestige of Polish as a foreign language and which permanently improve Poland's global image);
- Certification of Polish as a foreign language – at present, NAWA provides administrative and financial support to the Polish Committee for the Certification of Proficiency in Polish as a Foreign Language (PKdsPZJPjO), whose tasks include: organising certification exams, setting the schedule of examination sessions, supervising the development of examination tests, examining the correctness of examination evaluation, conducting training for examiners, and issuing certificates.

In view of the growing interest in official certification of language proficiency in Polish, and the resulting growing number of people wishing to take the Polish as a foreign language exam, it is necessary to ensure the widest possible access to certification. Hence the concept of creating a system that will also be a tool for handling institutions' applications for the authorisation to organise examinations, as well as a space enabling remote completion of procedures connected with certification.

Apart from the above-mentioned multi-annual objectives, NAWA, as an executive agency in relation to the Minister responsible for science and other ministers authorised to commission tasks to the Agency, remains ready to carry out commission resulting from the current state policy in the areas defined in the Act on NAWA.

In support of the stated objectives and lines of action, the Agency cooperates with other institutions that carry out the mission of supporting scientific activity and transferring research results to the economy, including: the National Science Centre, the National Centre for Research and Development, the Foundation for Polish Science, the National Contact Point for Research Programmes of the EU, the Medical Research Agency, and the Foundation for the Development of the Education System.

In addition, the Agency's activities are supported by continual interaction with representative institutions of the higher education and scientific community, including in particular: the Conference of Rectors of Academic Schools in Poland (CRASP), the Conference of Rectors of Vocational Schools in Poland (KRZaSP), the Conference of Rectors of Technical Universities in Poland (KRPUT), the Polish Representation of Doctoral Candidates (KRD), the Students' Parliament of the Republic of Poland (PSRP), International Relations Offices Forum (IROs Forum), and the Young Scientists Council.

In the area of recognition of education, the Agency cooperates with centres for recognition of education in the Europe Region that are part of the ENIC-NARIC network as well as with centres for recognition in the area of Asia and the Pacific associated in the APPNIC network. The centres associated in those networks operate on four continents (Europe, Asia, Australia, and North America). Moreover, NAWA cooperates with the Association for International Credential Evaluation Professionals (TAICEP).

A vital element of the Agency's cooperation with the institutional environment of higher education and science is permanent cooperation with international partners, such as: NAWA's German counterpart – Deutscher Akademischer Austauschdienst (DAAD), Academic Cooperation Association (ACA), or the American Institute of International Education (IIE).

In the area of promotion of Polish science and higher education abroad, the developing cooperation with Polish diplomatic missions and Polish Institutes is fundamental. Other crucial partners are the Polonium Foundation, which creates a network of contacts with Polish scientists abroad, as well as Kosciuszko Foundation, with which NAWA cooperates as part of its activities supporting Polish studies and the study of Polish at American universities.

Table 17. Objective 1 Sheet

OBJECTIVE 1: ENHANCEMENT OF INTERNATIONAL COOPERATION OF SCIENTISTS FROM POLISH SCIENCE AND HIGHER EDUCATION INSTITUTIONS		
INDICATOR TYPE	INDICATOR NAME	INDICATOR DESCRIPTION
quantitative	Number of scientists from Poland supported by NAWA funds*	Number of medium and long-term scholarship and fellowship stays for doctoral students and scientists from Poland
quantitative	Number of scientists from abroad supported by NAWA funds*	Number of medium and long-term scholarship and fellowship stays in Poland for doctoral students and scientists from abroad
quantitative	Institutions receiving NAWA funding for the first time	Number of Polish institutions receiving financial support from NAWA for the first time in a given year
qualitative	Publications written as part of programmes for scientists from Poland	Total of publications indexed in bibliometric databases (e.g. Scopus) authored or co-authored by NAWA programme beneficiaries
qualitative	Publications written as part of programmes for scientists from abroad	Total of publications indexed in bibliometric databases (e.g. Scopus) authored or co-authored by NAWA programme beneficiaries

* It is assumed that the number of financed stays will increase by at least X% year-on-year (depending on the level of financial allocation for this purpose)

Table 18. Objective 2 Sheet

OBJECTIVE 2: ENHANCEMENT OF INTERNATIONAL COOPERATION OF POLISH UNIVERSITIES AND SCIENTIFIC INSTITUTIONS		
INDICATOR TYPE	INDICATOR NAME	INDICATOR DESCRIPTION
quantitative	Number of NAWA-funded projects implemented by higher education and scientific institutions*	Number of all activities (projects) implemented by higher education and scientific institutions in the areas of international cooperation, increase in the quality of services for foreigners, and academic exchange
quantitative	Institutions receiving NAWA funding for the first time	Number of Polish institutions receiving financial support from NAWA for the first time in a given year
qualitative	New activities in the area of internationalisation	Number of new activities carried out by institutions that received funding under NAWA programmes supporting internationalisation (e.g. international cooperation, improvement of educational offer and quality of service for foreigners, academic exchange, and promotion abroad)

* It is assumed that the number of financed activities will increase by at least X% year-on-year (depending on the level of financial allocation for this purpose)

Table 19. Objective 3 Sheet

OBJECTIVE 3: INCREASING THE NUMBER OF OUTSTANDING FOREIGN STUDENTS AT POLISH UNIVERSITIES		
INDICATOR TYPE	INDICATOR NAME	INDICATOR DESCRIPTION
quantitative	Number of foreign students studying full-time*	Total of all foreign students covered by NAWA funding, studying full-time at Polish higher education institutions
qualitative	Percentage of beneficiaries who defended their theses within the time limit	Percentage share of NAWA beneficiaries studying full-time who defended their theses within the time limit resulting from the course of study in the total number of NAWA beneficiaries whose stays were financed under the indicated programmes

* It is assumed that the number of beneficiaries will increase by at least X% year-on-year (depending on the level of financial allocation for this purpose)

Table 20. Objective 4 Sheet

OBJECTIVE 4: DISSEMINATING INFORMATION ABOUT THE POLISH SYSTEM OF TERTIARY EDUCATION AND SCIENCE		
INDICATOR TYPE	INDICATOR NAME	INDICATOR DESCRIPTION
quantitative	Number of page views of websites operated by NAWA*	Total of page views of websites operated by NAWA
quantitative	Institutions cooperating with NAWA for the first time	Number of Polish institutions cooperating with NAWA for the first time in a given year
qualitative	Percentage of positive feedback from users of websites operated by NAWA	Percentage of positive feedback from users of websites operated by NAWA – broken down by: Poles, foreigners, and Polish diaspora – who highly or very highly evaluated the usefulness of information available there, in the total number of evaluations

* It is assumed that the number of page views will increase by at least X% year-on-year (depending on the level of financial allocation for this purpose)

Table 21. Objective 5 Sheet

Objective 5: EXPANDING THE INTERNATIONAL COMMUNITY OF PEOPLE FAMILIAR WITH THE POLISH LANGUAGE AND CULTURE		
INDICATOR TYPE	INDICATOR NAME	INDICATOR DESCRIPTION
quantitative	Number of foreigners attending Polish courses*	Total of foreigners who participated in organised courses in Polish language and culture in Poland and abroad or were on stays in Poland that included studies in Polish or scientific research in the field of the Polish language
quantitative	Institutions receiving NAWA funding for the first time	Number of Polish institutions receiving financial support from NAWA for the first time in a given year
quantitative	Percentage of foreigners who obtained a certificate of proficiency in Polish as a foreign language	Percentage of foreigners who obtained a certificate of proficiency in Polish as a foreign language in relation to all persons taking part in the examination session
qualitative	Level of satisfaction with the completed form of education	Percentage of participants of courses in Polish language and culture as well as NAWA scholarship holders completing studies in Polish or research stays in the field of the Polish language who declare high or very high level of satisfaction with the completed form of education

* It is assumed that the number of foreigners taking part in Polish language courses will increase by at least X% year-on-year (depending on the level of financial allocation for this purpose)

Appendix 1: CONTEXTUAL INDICATORS (as at 31 December)

no.	INDICATOR	UNIT OF MEASURE	VALUE /LEVEL OF THE INDICATOR (as at 31 December)	SOURCE OF INFORMATION ABOUT THE INDICATOR	INDICATOR DESCRIPTION
1.	Number of universities	university		POLon	Specifies the number of universities operating pursuant to the Act of 20 July 2018 on higher education and science (Journal of Laws from 2020, item 85, consolidated text from 20/01/2020) – hereinafter: the PoSWiN Act
2.	Number of scientific institutes	institute		POLon	Specifies the number of scientific institutes operating pursuant to the Act of 30 April 2010 on the Polish Academy of Sciences (Journal of Laws of 2018, item 1475) and the Act of 30 April 2010 on research institutes (Journal of Laws of 2018, item 736), i.e. research institutes, institutes of the Polish Academy of Sciences, and international research institutes
3.	Number of institutes associated in ŁUKASIEWICZ Research Network	institute		POLon	Specifies the number of research institutes associated in ŁUKASIEWICZ Research Network operating under the Act of 21 February 2019 on Łukasiewicz Research Network (Journal of Laws from 2019, item 534)
4.	Number of doctoral schools	school		POLon	Specifies the number of active doctoral schools established under the PoSWiN Act
5.	Level of public expenditure on R&D in relation to GDP	%		GUS	Specifies the share of research and development (R&D) expenditure in the value of gross domestic product (GDP). Research and development activity are systematic creative efforts undertaken to increase the stock of knowledge, including knowledge of the human being, culture and society, and to find new applications for this knowledge. R&D is distinguished from other activities by a discernible element of novelty and by the elimination of scientific or technical uncertainty, that is a solution of a problem that does not arise obviously from the existing state of knowledge. Expenditure on research and development (R&D) activity includes: - intramural expenditures, i.e. expenditures on research and development work of a given institution performed by its own research facilities, irrespective of the sources of their financing; intramural expenditures include current expenditures on basic, applied, and industrial research and development work as well as capital expenditures on fixed assets related to R&D activity; - extramural expenditures, i.e. expenditures on R&D works in a given institution acquired from other (domestic and foreign) institutions. Capital expenditures on fixed assets comprise expenditures on purchase or manufacture of research equipment necessary for performing particular R&D projects which meets the criteria for inclusion in fixed assets, but not included in fixed assets register until the project is completed. Gross domestic product is the final result of production activity of resident production units. *(based on definitions provided by GUS)*
6.	Number of students	persons		POLon	Indicates the total number of students in Poland

no.	INDICATOR	UNIT OF MEASURE	VALUE /LEVEL OF THE INDICATOR (as at 31 December)	SOURCE OF INFORMATION ABOUT THE INDICATOR	INDICATOR DESCRIPTION
7.	Number of foreign students	persons		POLon	Indicates the total number of students in Poland
8.	Percentage of foreign students in the total number of students	%		POLon	Indicates the ratio of the number of foreign students studying in Poland to the total number of students in Poland
9.	Number of students enrolled in first-degree studies	persons		POLon	Indicates the number of foreign students in Poland enrolled in first-degree studies
10.	Percentage of foreign students enrolled in first-degree studies	%		POLon	Indicates the ratio of the number of foreign students enrolled in first-degree studies in Poland to the total number of students in Poland
11.	Number of students enrolled in second-degree studies	persons		POLon	Indicates the number of foreign students in Poland enrolled in second-degree studies
12.	Percentage of foreign students enrolled in second-degree studies	%		POLon	Indicates the ratio of the number of foreign students enrolled in second-degree studies in Poland to the total number of students in Poland
13.	Number of students enrolled in uniform Master's degree studies	persons		POLon	Indicates the number of foreign students in Poland enrolled in uniform Master's degree studies
14.	Percentage of foreign students enrolled in uniform Master's degree studies	%		POLon	Indicates the ratio of the number of foreign students enrolled in uniform Master's degree studies in Poland to the total number of students in Poland
15.	Number of doctoral students	persons		POLon	Indicates the total number of doctoral students in Poland
16.	Number of foreign doctoral students	persons		POLon	Indicates the ratio of the number of foreign doctoral students studying in Poland to the total number of doctoral students in Poland
17.	Percentage of foreign doctoral students	%		POLon	Indicates the ratio of the number of foreign doctoral students studying in Poland to the total number of doctoral students in Poland

no.	INDICATOR	UNIT OF MEASURE	VALUE /LEVEL OF THE INDICATOR (as at 31 December)	SOURCE OF INFORMATION ABOUT THE INDICATOR	INDICATOR DESCRIPTION
18.	Number of research staff	persons		POLon	Indicates the total number of research staff employed at scientific institutions in Poland
19.	Number of awarded doctor's degrees	persons		GUS	Indicates the total number of doctor's degrees awarded in Poland
20.	Number of awarded post-doctoral degrees (*doktor habilitowany*)	persons		GUS	Indicates the total number of post-doctoral degrees (*doktor habilitowany*) awarded in Poland
21.	Number of awarded professor's titles	persons		GUS	Indicates the total number of professor's titles awarded in Poland
22.	Percentage of foreign research staff in the total number of research staff	%		POLon	Indicates the ratio of the number of foreign research staff employed at Polish scientific institutions to the total number of research staff
23.	Participation of staff of Polish scientific institutions in the national and international scientific community	Poland's place in the ranking		Scopus SCIMAGO https://www.scimagojr.com/countrysearch.php?country=pl	Indicates SCIMAGO in relation to other countries; shows the following data: - total number of published documents - number of cited documents - number of citations - average number of citations per article

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