



NARODOWA AGENCJA
WYMIANY AKADEMICKIEJ

ACADEMIC COOPERATION
BETWEEN POLAND AND CANADA



opracowanie

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TABLE OF CONTENTS

INTRODUCTION	3
1 Poland and Canada – basic data.....	4
2 Polish-Canadian scientific cooperation (2019–2021).....	7
3 NAWA’s contribution to Polish-Canadian scientific collaboration	11
4 Conclusions.....	13

INTRODUCTION

The aim of this study is to present a picture of academic cooperation between Poland and Canada and the intensity of student exchange.

The study is exploratory as well as practical and answers the following questions:

- What is the volume of publications by Polish and Canadian co-authors?
- What thematic fields prevail in this regard?
- How intense has this cooperation been over the years?
- What higher education institutions in Poland cooperate with their Canadian counterparts most intensely?
- Which Polish universities host the greatest number of students from Canada?

The study is addressed to the broadly understood academic community and the environment of higher education and scientific institutions as well as to Poland's policy-makers with regard to international academic cooperation.

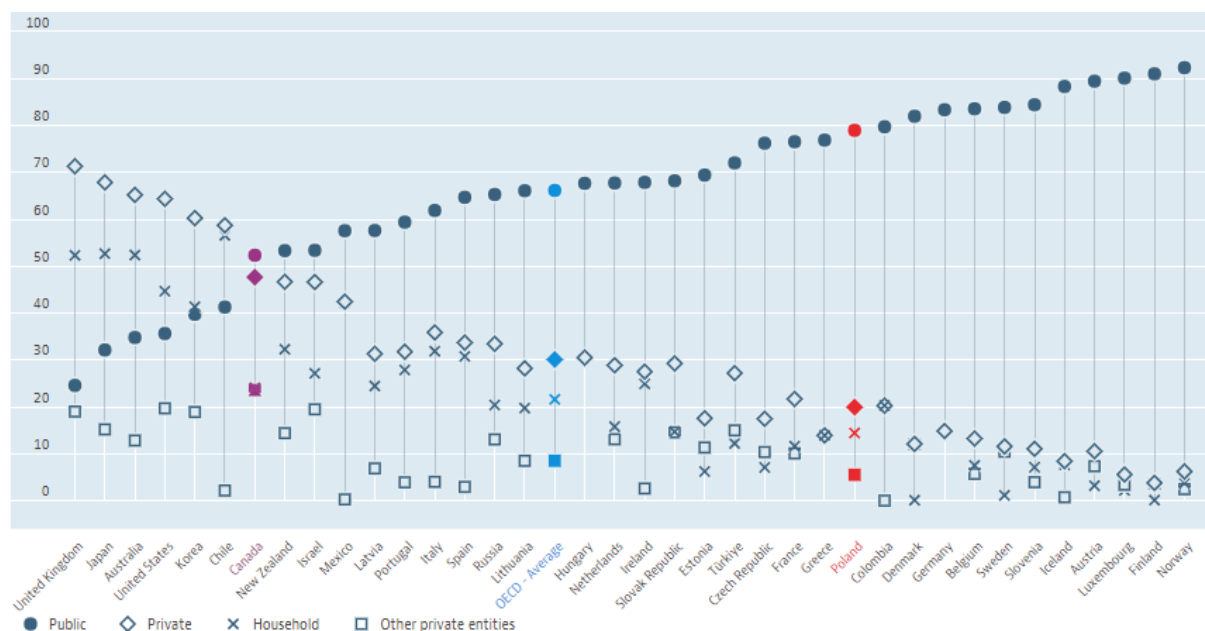
Data from the following databases was used in writing this study: SCOPUS¹, OECD, and POLon.

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

1 POLAND AND CANADA – BASIC DATA

Below are graphs demonstrating the percentage distribution of higher education expenditure categories and the share of persons with higher education by age group, across OECD countries.

Graph 1: Higher education expenditure (public, private, household, and other) as a % total higher education expenditure (2018)

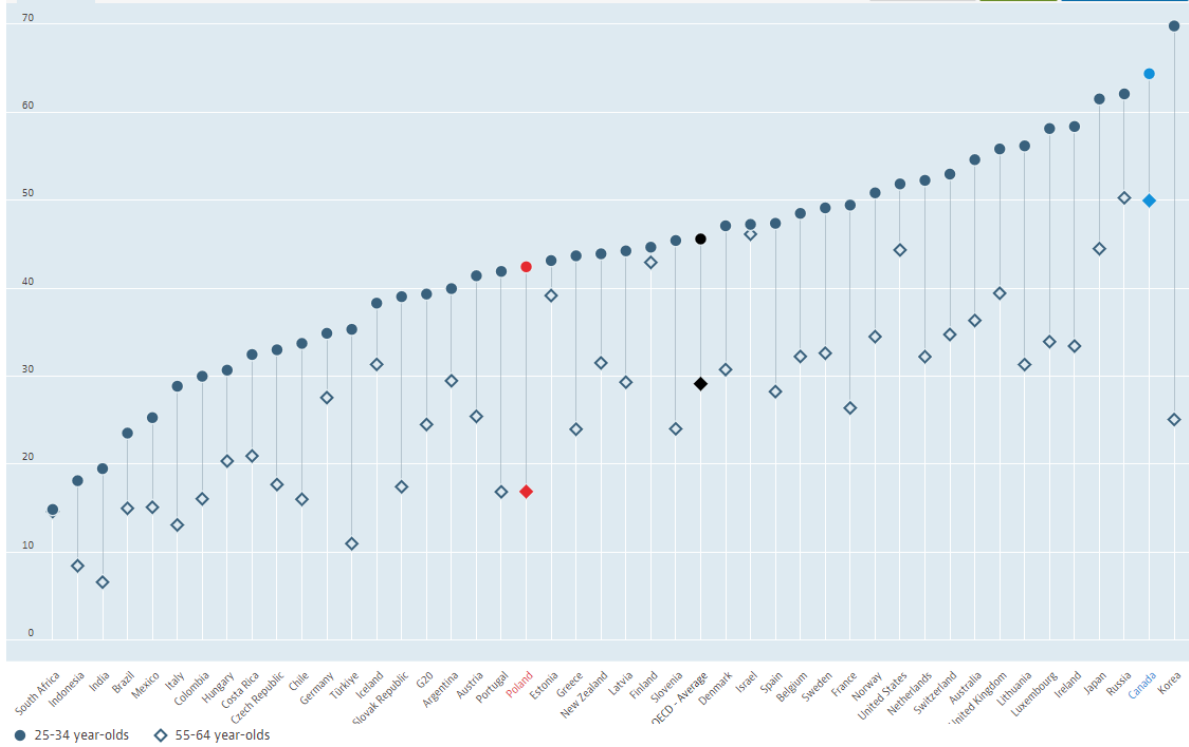


Source: OECD (2022), *Spending on tertiary education (indicator)*. doi: 10.1787/a3523185-en (Accessed on 27 June 2022)

It is quite clear that in OECD countries, the higher the percentage of public spending on higher education, the lower the share of private funds. This is particularly evident in the Scandinavian countries (Norway and Finland). The countries on the opposite end of the extreme are the United Kingdom, Japan, and Australia. When it comes to Canada, the shares of public and private expenditure on higher education are similar. The percentage of public expenditure is similar as in e.g. New Zealand or Israel.

There is a notable disparity between Poland and Canada in the percentage of expenditure from public funds, respectively: 80% and 50%, and expenditure from private funds, respectively: 20% and 49%.

Graph 2: Percentage of people with higher education by age group (2020)



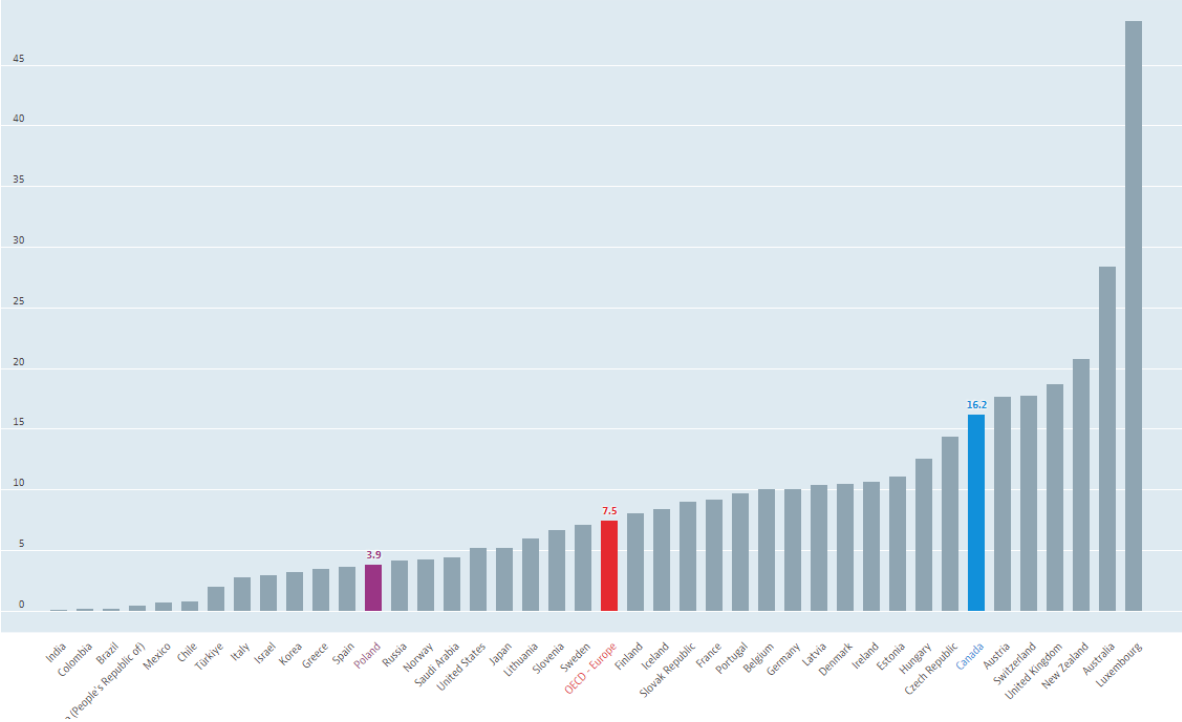
Source: OECD (2022), Population with tertiary education (indicator). doi: 10.1787/0b8f90e9-en (Accessed on 28 June 2022)

The population with higher education degree is defined by the OECD as those who have completed the highest level of education in the relevant age groups. Included are both theoretical programmes leading to advanced research or high-skilled occupations such as medicine, as well as more vocational programmes, upon completion of which a graduate goes straight into employment. The OECD takes the view that, as globalisation and technological developments continue, the needs of labour markets around the world are changing and there is an increasing demand for people with both broad knowledge and specialised skills.

Across all OECD countries, the number of people with higher education is clearly higher among the population aged 25–34 in comparison to the group aged 55–64. The distances between the percentage levels vary, of course, but of note is the virtually equal level of higher education in the younger and older groups in Finland, Israel, and Estonia. South Africa is an exception, with equal shares of people with higher education in both age groups, albeit the country has the lowest total percentage of people with higher education among OECD countries.

As for Canada, the proportion of people with tertiary education in both age groups is one of the highest in the OECD (it exceeds 60% in the 25–34 age group and 50% in the 55–64 age group). In Poland, the proportion of people with higher education is clearly lower in both age groups and the gap between younger and older people is greater than in Canada.

Graph 3: Student mobility indicator (2019)



Source: OECD (2022), "International student mobility" (indicator), <https://doi.org/10.1787/4bcf6fc3-en> (accessed on 27 June 2022).

The international student mobility indicator used in OECD reports shows the number of hosted international university students as a percentage of all university students hosted in the destination (host) country. Foreign students are those who previously gained education in another country and are not resident in the country where they are currently studying.

The highest proportion of foreign students is in Luxembourg (more than 45% of all students in this country are foreigners). The average for OECD countries is 7.5%. The percentage of foreign students in Poland is below this average (3.9%). Canada, on the other hand, is among the top ten countries most often chosen by foreigners as a place to study.

According to the [Canadian Bureau for International Education](#), the largest group of foreigners studying in Canada in 2021 were citizens of the following countries (in order from largest group to smallest): India, China, France, Iran, Vietnam, South Korea, the Philippines, the US, Nigeria, and Mexico. According to the same source, the prospective educational markets that will feed into Canadian universities are: Mexico, Colombia, Brazil, Vietnam, the Philippines, Indonesia, Thailand, Morocco, Turkey, France, and Ukraine.

According to data from the POLon system, 225 Canadians studied in Poland in the academic year 2021/22. They studied mainly in large academic centres, at universities with various educational profiles. Most of the 225 foreigners were enrolled at medical universities in Poznań, Kraków, and Wrocław.

In total, the fields of study most frequently chosen by Canadians were:

- medicine (154 persons),

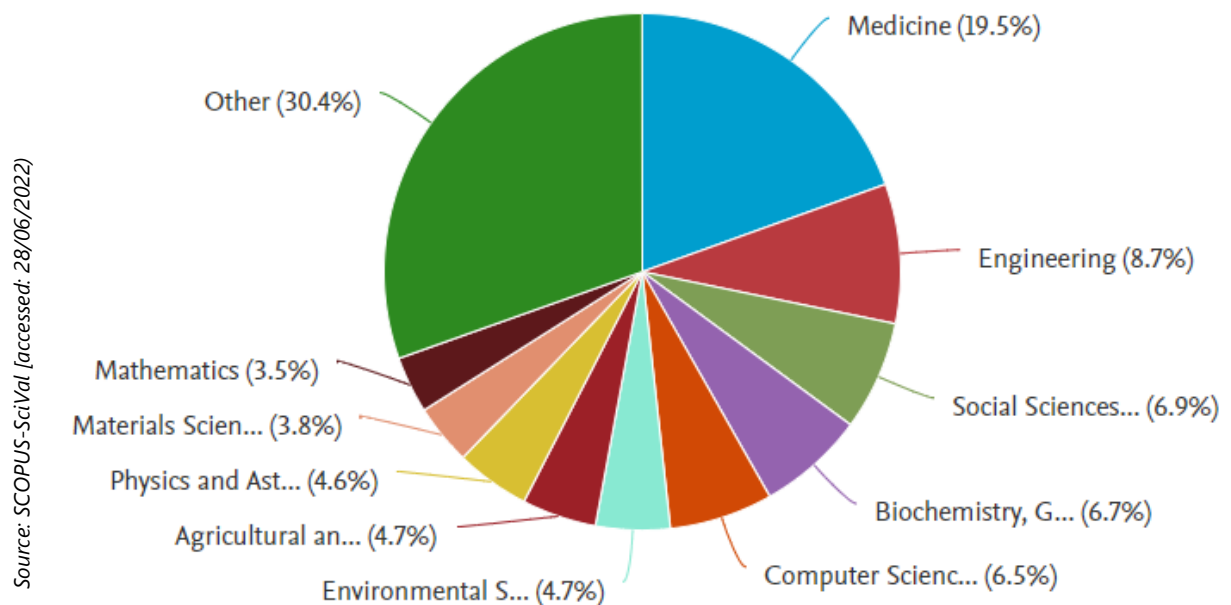
— dental medicine (40).

In the 2021/22 academic year, 18 academic teachers were employed at Polish universities. They worked mainly at the universities of Kraków, Gdańsk, and Poznań and represented the fields of social sciences as well as exact and natural sciences.

2 POLISH-CANADIAN SCIENTIFIC COOPERATION (2019–2021)

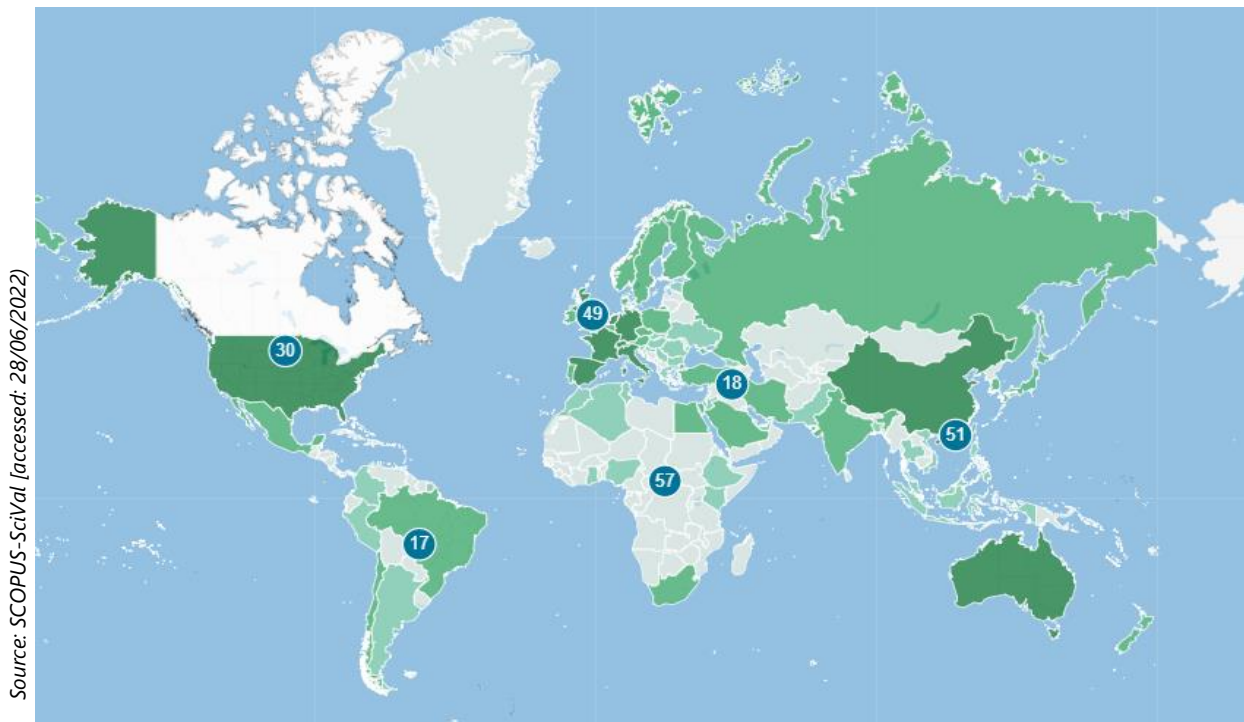
The highest percentage of publications in indexed sources in the SCOPUS database in OECD countries was in the field of natural science (53.4%), and one in four in engineering and technologies (25.1%).

Graph 4: Publications by Canadian scientists by field of knowledge



Canadian researchers publish the most in the fields of medicine, engineering, and social science. The three most productive universities are: the University of Toronto, the University of British Columbia, and the University of Alberta.

Map 1: Regions of residence of co-authors of publications by Canadian scientists



The largest number of publication co-authors come from the Asia-Pacific region (mainly from China, Australia, and Japan), Africa (Egypt, South Africa, and Morocco), and Europe (UK, Germany, and France).

As far as Poland is concerned, almost 178 institutions collaborated with Canadian science and higher education institutions on publications between 2019 and 2021. Joint publications were most often in the fields of medicine, physics and astronomy, and biochemistry, genetics and molecular biology.

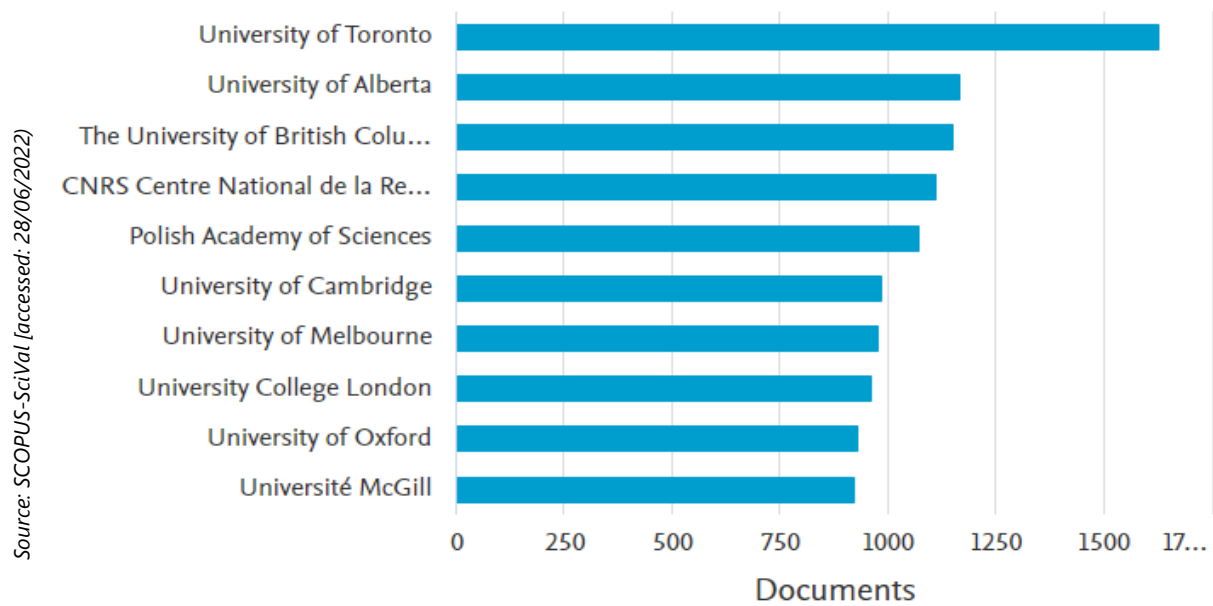
Table 1: Polish-Canadian publications in the SCOPUS database

Publication year	Number of publications
2022	684
2021	1,440
2020	1,366
2019	1,175
2018	1,142
2017	1,033
Total:	6,840

Source: SCOPUS-SciVal [accessed: 28/06/2022]

Between 2017 and 2023 (some journals publish their issues in advance), almost 7,000 joint publications appeared where at least one author was affiliated simultaneously with a Polish and a Canadian institution.

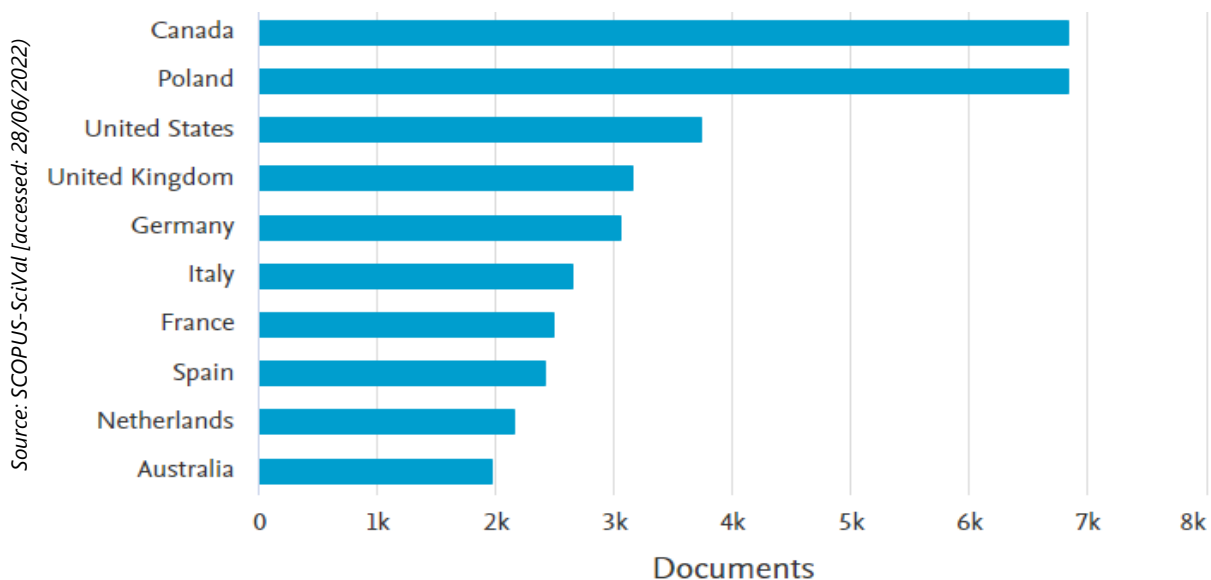
Graph 5: Authors' affiliations



The institutions with most affiliated co-authors are:

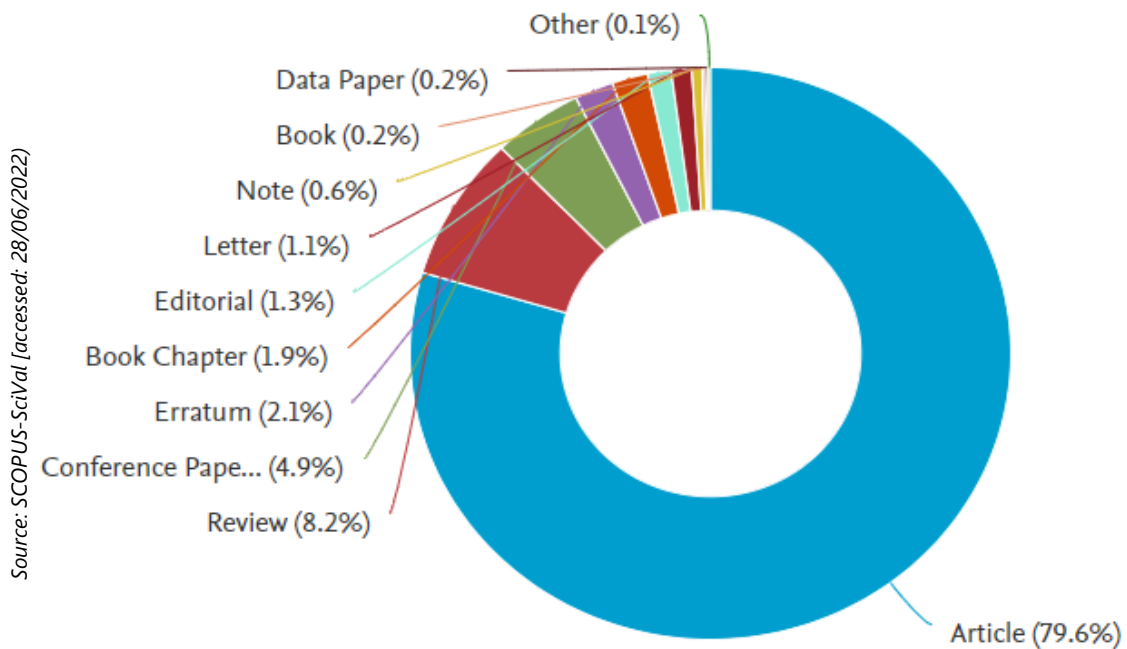
- University of Toronto (1,626 publications),
- University of Alberta (1,167),
- University of British Columbia (1,150),
- CNRS Centre National de la Recherche Scientifique (1,111),
- Polish Academy of Sciences (1074).

Graph 6: Countries of origin of co-authors of publications



In addition to Poles and Canadians, the publications are co-authored by Americans, British, Germans, and Italians. In addition to the 15 countries shown in the chart, there are some states that are more exotic from the Polish perspective, e.g. Tanzania, Rwanda, or Fiji.

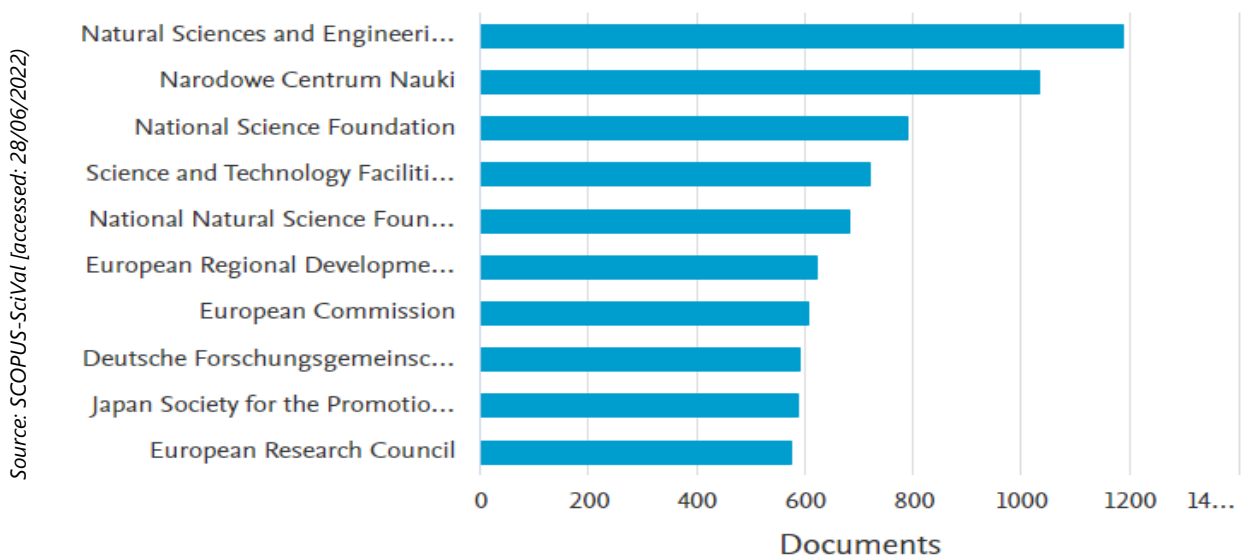
Graph 7: Publications by type of document



The main types of joint publications are articles (79.6%), reviews (8.2%), and conference proceedings (64.9%). There were 11 joint books, representing 0.2% of all publications. The most common fields were:

- Arts and Humanities,
- Engineering,
- Computer Science.

Graph 8: Publications by funding institution



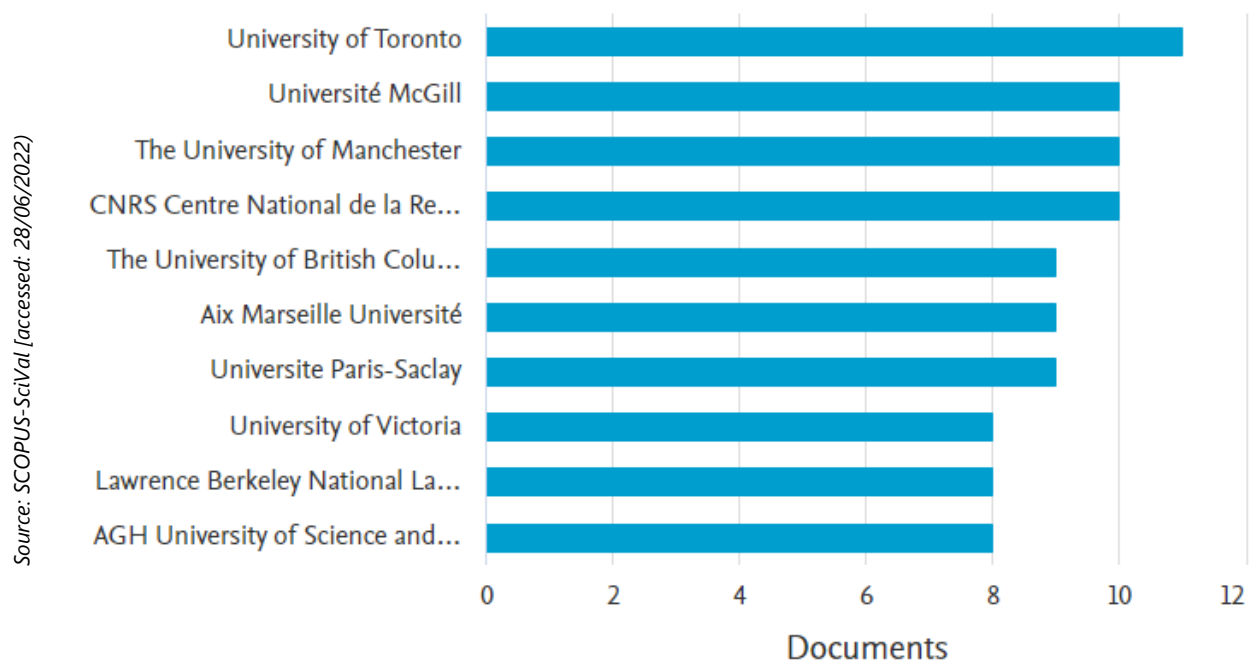
From the point of view of a funding agency offering student and research grants such as NAWA, it is interesting to see what other sources of co-funding for publications were indicated by the authors. The most common were:

- Natural Sciences and Engineering Research Council of Canada (1046 publikacji),
- National Science Centre (1033),
- National Science Foundation (791),
- Science and Technology Facilities Council (720),
- National Natural Science Foundation of China (683),
- European Regional Development Fund (623),
- European Commission (607).

3 NAWA'S CONTRIBUTION TO POLISH-CANADIAN SCIENTIFIC COLLABORATION

The Polish National Agency for Academic Exchange has contributed to the funding of 39 publications since its inception (including: 15 publications in 2022, 15 in 2021, 7 in 2020, and 2 in 2019).

Graph 9: Affiliations of authors of publications co-financed by NAWA

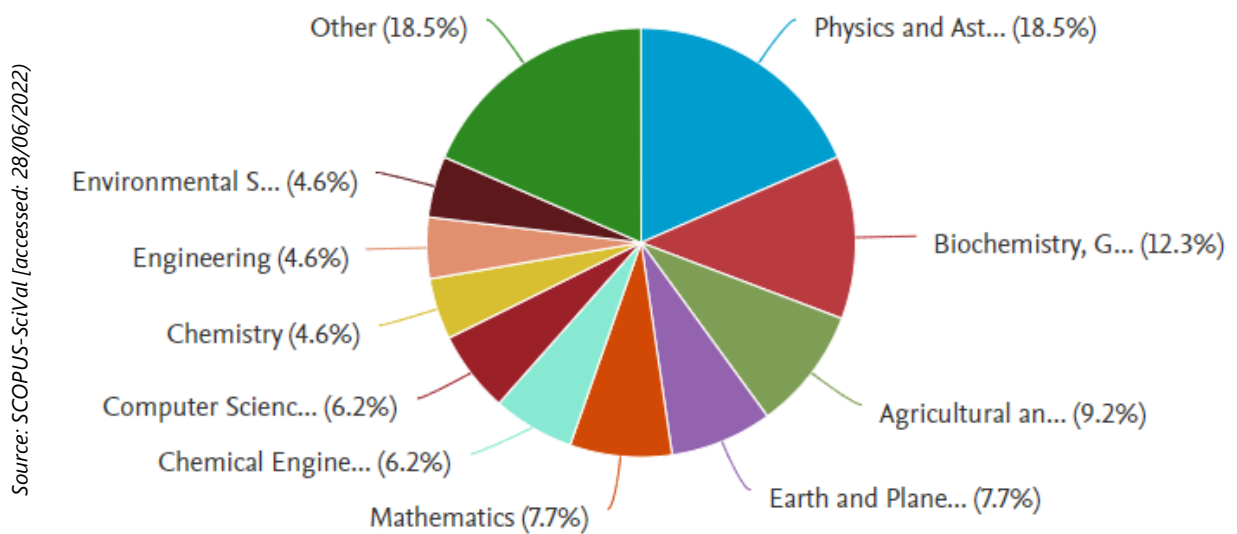


The co-authors of these publications most often indicated as their affiliation:

- University of Toronto (11 publications),
- Université McGill (10),
- University of Manchester (10),
- CNRS Centre National de la Recherche Scientifique (10),
- University of British Columbia (9),

- Aix Marseille Université (9),
- Université Paris-Saclay (9),
- University of Victoria (8),
- Lawrence Berkeley National Laboratory (8),
- AGH University of Science and Technology (8),
- Indiana University Bloomington (8),
- Jagiellonian University in Kraków (8).

Graph 10: Publications co-financed by NAWA by subject field



Publications co-financed by NAWA concerned the following fields:

- Physics and Astronomy (12 publications),
- Biochemistry, Genetics and Molecular Biology (8),
- Agricultural and Biological Sciences (6),
- Earth and Planetary Sciences (5),
- Mathematics (5),
- Chemical Engineering (4),
- Computer Science (4),
- Chemistry (3),
- Engineering (3),
- Environmental Science (3),
- Materials Science (3),
- Multidisciplinary (3),
- Immunology and Microbiology (2),
- Medicine (2),
- Pharmacology, Toxicology and Pharmaceutics (2).

4 CONCLUSIONS

1. In Canada, the largest groups of foreign nationals among students are the citizens of: India, China, France, Iran, Vietnam, South Korea, the Philippines, the US, Nigeria, and Mexico.
2. Prospective educational markets for Canadian universities are: Mexico, Colombia, Brazil, Vietnam, the Philippines, Indonesia, Thailand, Morocco, Turkey, France, and Ukraine.
3. In Poland, the largest number of Canadians study in large academic centres, in medical faculties.
4. Most Canadian researchers are employed in Poland at universities in Kraków, Gdańsk, and Poznań.
5. Canadian researchers in Poland most often represent the fields of social sciences and the exact and natural sciences.
6. Canadian researchers most often publish in the areas of medical sciences, engineering, and social sciences.
7. Polish-Canadian co-authorships most often result in publications in the fields of medicine and physics and astronomy.
8. Polish authors are most often affiliated with the Polish Academy of Sciences, while Canadian authors are affiliated with the University of Toronto.
9. Polish co-authors whose publications have been co-financed by NAWA are most often affiliated with the AGH UST and the Jagiellonian University.

Study prepared by:

Jolanta Buczek, Ph.D. (NAWA)

Publisher:

Polish National Agency for Academic Exchange

ul. Polna 40

00-643 Warszawa

phone no. (0048) (22) 390 35 00

<https://nawa.gov.pl/en/>

Translated by:

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