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Publication output of the Institute of Geography of Kazimierz Wielki University (1995-2017)

Abstract: The aim of the present study was to evaluate the publishing output of the UKW Institute of Geography from its foundation in 1995 until the end of the year 2017. The structure of publications was assessed on the basis of bibliometric methods, using a dynamic approach. The results include a breakdown by the number of authors, language, and source. The analysis also addresses the thematic structure of the publications, the structure of their spatial scopes, and the most important trends evident in the analyzed period. The place of the UKW Institute of Geography among all geographical centers in Poland was identified based on the analysis of publications by UKW faculty members, and with the use of bibliometric publications assessing other centers of geographic research in Poland, as well as geographical journals.

Keywords: geography, publication, publishing output, Institute of Geography UKW

1. Introduction

Bibliometrics as a set of methods for quantitative examination of documents began to be used in the second half of the twentieth century. Since the beginning of the 21st century, bibliometric research has been developing very intensively, also in Poland. In the last two decades, researchers have identified many reasons for a wider use of bibliometric methods and assessments. These reasons include among others growing numbers of people involved in scientific research, the related growing numbers of publications which need to be evaluated, changes in the functioning of science and its management, increasing opportunities for disseminating information as a result of rapid development of information systems (access to the Internet, electronic databases, etc.), and introduction of parametric evaluation of science centers and researchers (Śleszyński, 2009, 2013a, 2013b; Bański, 2015, 2017).

Along with the growing use of bibliometrics, divided opinions are emerging in the source literature as to whether bibliometrics can afford equal opportunities of assessing the activity of scientists, the impact of research units, scientific journals, etc., in the various fields of sci-

ence. The claim that bibliometric evaluation is more useful for evaluating research in the hard sciences than in the social sciences and the humanities is widespread. This is ostensibly so due to the nature of the social sciences and the humanities (i.e. Minev, 2013; Wilkin, 2013, after Śleszyński, 2013a). According to Śleszyński, “in the case of geography, the situation is very complicated due to the dichotomy of the subject.” (2009, p. 552). Regardless of this, at the present stage of scientific development, “bibliometrics is (...) an indispensable element of work evaluation.” (Bański, 2017, p. 596).

Out of numerous Polish bibliometric publications, only those related to geography were taken into account in the present study. Some of these publications evaluated the positions of Polish journals and geographical series, and their place in the circulation of international information (Racki, 2003; Śleszyński, 2009, 2013a, 2013b; Bański, 2015), and among international geographic journals, taking into account socioeconomic geography (Bański and Ferenc, 2012), as well as connections between geography and other sciences (Stachowiak and Bajerski, 2012). Other publications concerned

assessment of the scientific potential and publication achievements of geographical institutions in Poland based on the achievements of a specific group of scientists (independent researchers) (Bański, 2015, 2017) and the impact of Polish geographic centers (Śleszyński, 2013b; Bański, 2015, 2017). These studies used data from various international and national sources: The Web of Sciences, Google Scholar, other Polish sources of information. Methods of citation analysis and comparative analysis of particular geographical centers in Poland were applied very extensively in them. According to

Śleszyński, citations of scientific works “may, under certain conditions and limitations, be a measure of the impact of scientific achievements (ideas, concepts, results, etc.) on the findings of other researchers, and thus on the evolution of research.” (2013b, p. 601). The present publication shows a study concerning a single science and education center, i.e. the Institute of Geography of UKW. The aim of the study was to evaluate the publishing achievements of the UKW Institute of Geography from its foundation in the 1995 to the end of the year 2017, based on bibliometric methods.

2. Information base and methodological issues

The present paper uses a database created for the purpose of preparing a guide to the publications by employees of the UKW Institute of Geography between 1995 and 2015, published on the occasion of its 20th anniversary (Ilieva, 2016). It gathers lists of publications by all employees published during their employment at the Institute (between 1995 and 2001 these were employees of the Department of Geography of the Bydgoszcz Pedagogical University, and between 2001 and 2005, the Institute of Geography of Kazimierz Wielki Academy of Bydgoszcz). In order to supplement this database, publications by employees issued in the years 2016 and 2017 were added to the above source, on the basis of the of Database of Academic Achievements of Employees at Kazimierz Wielki University in Bydgoszcz (Baza Dorobku Naukowego Pracowników Uniwersytetu Kazimierza Wielkiego w Bydgoszczy, <http://bibliografia.ukw.edu.pl/>).

During the analysis, in order to eliminate errors in calculating the total number of publications, the works of two or more authors employed at the Institute were assigned to the name of only one author. In addition, less significant works (summaries, encyclopedia entries, etc.) were excluded from the study. In this way, a relatively complete database of the Institute’s publications was created for the period from 1995 to 2017, depending on each employee’s duration of employment. Another source of data for this work was *Statystyka i Analiza Bibliometryczna Publikacji Pracowników UKW*, prepared by the Central Library

of UKW (<http://bibliografia.ukw.edu.pl/>). This database uses information on the number of points assigned to individual publications. Moreover, on its basis, the place of the Institute of Geography in the ranking of UKW institutes was determined. The study also used information about the place of the UKW Institute of Geography among fifteen Polish geographical institutions in Poland, based on the bibliometric publications mentioned above (Śleszyński 2009, 2013a, 2013b, Bański 2015, 2017).

The database was divided and analyzed according to several criteria: the number of authors, language, place of publication (source), subject matter, spatial scope of the study (research area). In grouping by language, works in English in journals, books and series published in Poland were included as works in English. Consequently, the classification of works adopted here differs from that of *Statystyka i Analiza Bibliometryczna Publikacji Pracowników UKW* (available at <http://bibliografia.ukw.edu.pl/>), where the works were divided into Polish and foreign works not by their language, but by country of publication. In the case of faculty members of the Institute of Geography who are not Polish, works published in their home countries were treated as foreign works (i.e. published outside of Poland).

The present article contains a classification of places of publication (sources) into several broad categories: Polish journals, foreign journals, Polish books (monographs, chapters, post-conference books, and others), Polish publishing series, foreign books, foreign series,

and maps. The latter group is a category specific to geographical sciences, and includes individual map sheets, and maps published in atlases.

The classification of publications by subject matter poses the greatest methodological difficulty in compiling information in bibliometric assessments of Polish geography (Bański and Ferenc, 2012; Śleszyński, 2013b). On the one hand, varied classifications of geography exist in the source literature, and on the other, there are difficulties in assigning some publications to a single discipline. The present study uses the classification of geography of Bański and Ferenc (2012), with minor modifications (with biogeography added). Among the publications of the UKW Institute of Geography there is also a group, defined in the study as “non-geographical”, which includes publications in geology, physical culture and navigation. These publications were included in the analysis, as the aim was to assess the publishing achievements of the entire Institute as a center of science and education, and these publications are thematically related to the teaching specialization of the Institute. Based on the above assumptions, the publications in this study are grouped according into twenty-seven thematic groups: general physical geography, climatology, hydrology, geomorphology, soil geography, biogeography,

theory and methodology of physical geography and others; general socioeconomic geography, political geography, geography of trade and finance, social geography, geography of tourism, geography of industry, geography of transport and communication, geography of agriculture, geography of population, geography of villages, geography of cities, theory and methodology of socioeconomic geography, others; GIS and cartography, ecology and environmental protection, didactics of geography, other unclassified branches of geography, general geography. Data for the thematic structure were obtained from the titles, abstracts and keywords. Nevertheless, in some cases this classification is conditional in character. In order to determine the spatial scope of a given study (its research area) several groups were distinguished: research on the city of Bydgoszcz, the Voivodeship of Kujawsko-Pomorskie, other voivodeships, Poland, other European countries, the world, as well as research on general topics (a group of publications with no clearly defined areas).

Apart from the general results, the paper also presents the dynamics of the main changes in the adopted indicators throughout the period in question.

3. Results and discussion

An important indicator of the research activity of scientists at research units is the number of publications. Between 1995 and 2017, employees of the UKW Institute of Geography published 982 works.¹ The analysis shows significant differences in the structure of the publications depending on the number of authors in particular periods of the Institute's activity. In the first ten years, the works by a single author prevailed (70 percent). Approximately 75 percent of these were physico-geographical

publications or publications in ecology and environmental protection. In subsequent years, the number of publications of particular groups was similar (Fig. 1), but since 2013 the majority have been works by more than one author, both in physical geography and in socioeconomic geography. As a result of these changes, the overall share of publications by one author (almost 48 percent) is slightly lower than that of publications by two or more authors (about 52 percent).

¹ Publications by faculty members during their employment at the UKW Institute of Geography. Unfortunately, there is no information about the publications of some employees of the Institute in the first years of its existence. In the bibliometric analysis of the Institute prepared by the UKW Main Library, the number of 948 publications was provided (accessed on 13.08.2018 r.).

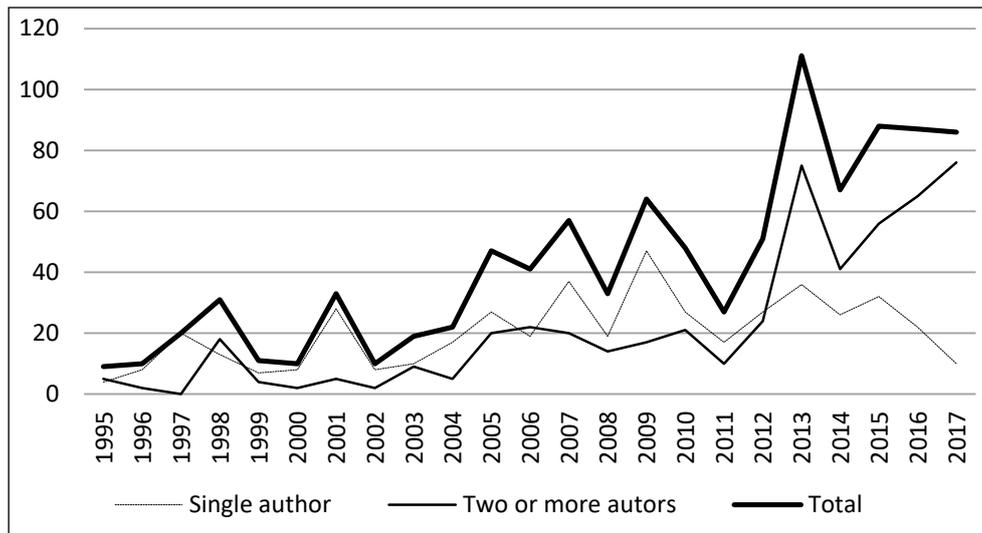


Figure 1. Numbers of publications by the number of authors (1995-2017) (based on Author’s own elaboration)

The language and place of publication (source) are of great importance for the dissemination and citation impact of publications, as “in contemporary scientific literature the most important works are those published in English, in journals with a high Impact Factor index” (Bański 2017, p. 613). Analysis of the structure of the Institute of Geography publications according to the language of the paper indicates a definitive prevalence of works published in Polish (Fig. 2).² According

to Bański’s assessment (2017 p. 613) “the fact that these are works published in Polish limits their reception,” and these constraints are even greater when the publications are more “local” in nature. Bański refers in his remarks to socioeconomic publications of Polish geographers. In the UKW Institute of Geography, these limitations in the reception of publications refer both to socioeconomic publications, and to physico-geographical ones as well.

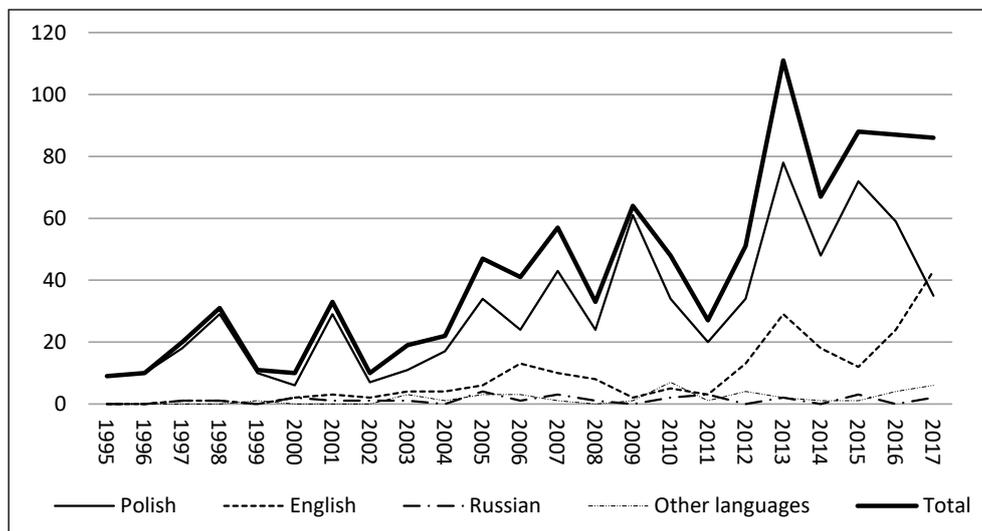


Figure 2. Structure of the publications by language (%) (based on the Author’s own elaboration)

Approximately 20 percent of the Institute’s works are published in English, in Poland or in other countries. The analysis of changes in the share of works by language of publication in the overall number of publications during

the analyzed period shows a gradual decrease in the number of publications in Russian and an increase in the number of publications in English (Fig. 3). This trend is typical of all science and research institutions in the countries of

² Almost 82 percent of the works are marked as publications in Polish according to the bibliometric analysis of UKW.

political and economic transformation in Central and Eastern Europe. This trend is related to the increase in the share of publications in international journals (as compared to domestic publications) and allows increasing the number

of citations of published research results. The share of works published at the UKW Institute of Geography in Russian and other languages (Bulgarian, Ukrainian, Slovak, German, French and others) is the lowest (Fig. 2).

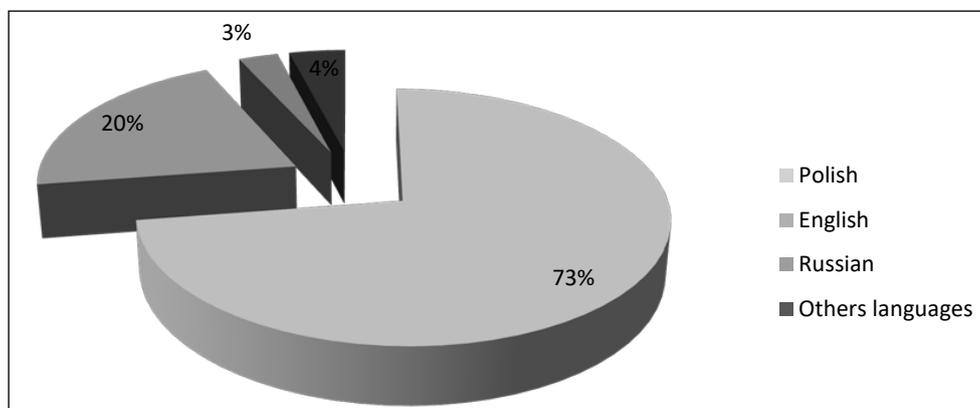


Figure 3. Number of publications by language (1995-2017) (based on Author's own elaboration)

The place of issuing a publication (source) is also very important for the dissemination of results of research. Analysis of the structure of the Institute's publications by source shows that approximately half of them were published in Polish books and series (Fig. 4),³ including series published in various years by the Institute of Geography itself (Ilieva et al., 2017). Monographs, chapters in monographs, articles, and results of application research were published in both Polish and English. As Stachowiak and Bajerski (2012, p. 130) point out, "in the social sciences, monographs play a greater role in communicating research results than in the natural sciences". According to Śleszyński (2013b) and Bański (2017), publishing works in printed books whose content is not available on the Internet, is one of the reasons for the lower citation rates of individual publications. This is also confirmed by the bibliometric analysis of the Institute of Geography concerning the value of the Ministry of Science and Higher Education's scores in particular types of publications prepared by the Main Library of Kazimierz Wielki University. Books in Polish accounted for a total of 794.5 points, books in Polish – 154.0 points, conference papers in Polish – 3.5 points, which gives a total of 43.6% of the total score of

the Ministry of Science and Higher Education for Polish publications (www.bibliografia.ukw.edu.pl/cgi-bin/expertus.exe, accessed on Aug. 16, 2018).

Almost 30 percent of the Institute's scientific papers have been published in Polish journals (Fig. 4). According to research by the authors quoted above, Polish geographical journals are not highly recognizable in the world, which has a negative impact on the citation rates of publications. Access of interested persons to published works is facilitated by publication of Polish journals also in electronic form, and in English. Studies on the citation rates of Polish geographic publications show that during the development of the Internet, works published in journals, especially in highly ranked ones, are quoted more frequently than monographs and other books (Śleszyński, 2013b; Bański, 2017).

In recent years, the number of the Institute's publications in foreign and international magazines has been increasing. Participation of its faculty members in international projects, including EU framework programs (FP6, FP7), research grants financed by the Ministry of Science and Higher Education and the National Science Center, in polar region research, and

³ The classification according to source (place) of publication applied in the present study differs from that of the bibliometric analysis of publications of the UKW Institute of Geography. In this article the books, series and magazines published in Poland are included in Polish works regardless of the language in which they are published – Polish or English. In the bibliometric analysis, publications are divided into Polish and foreign ones.

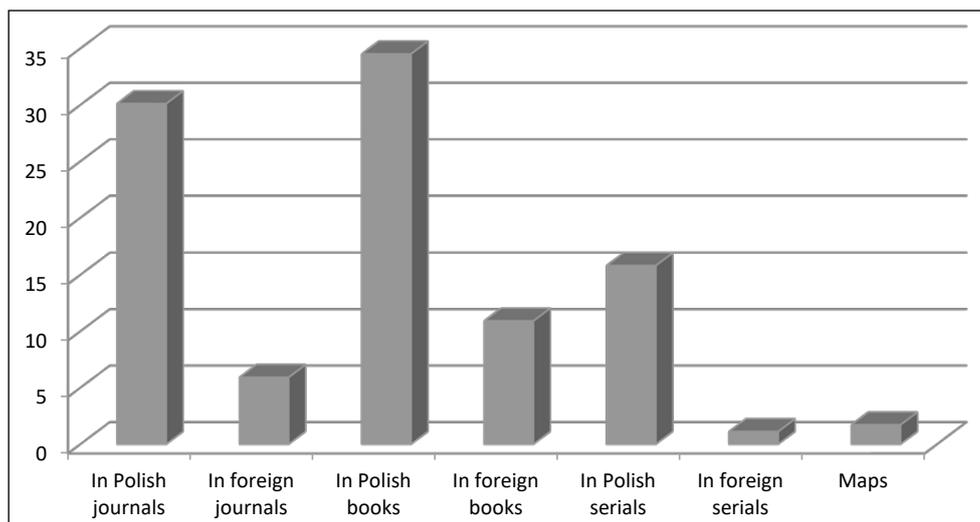


Figure 4. Structure of publications by sources (place of publications) (based on Author's own elaboration)

the expansion of international cooperation have resulted in a growing number of articles published in English (Fig.3) in the recent years, including international journals from the so-called Master Journals (Philadelphia) List.

According to the bibliometric analysis of the Institute of Geography prepared by the Main Library of Kazimierz Wielki University for the period 2011-2018 (July), 25 articles were published in Impact-Factor (IF) journals in this period, including one in a Polish journal and 24 in foreign journals. The total IF value for the period was 0.462 (Polish journals) and 58.029 (foreign journals), respectively. In the years 2016-2017 alone, thirteen articles by employees of the Institute of Geography of UKW were included in the Master Journals List, with the total IF value 30.101. The situation was slightly different when taking into account the scores assigned by the Ministry of Science and Higher Education. More than 75 percent of publications included in the bibliometric analysis were assigned points according to the guidelines of the Ministry of Science and Higher Education (718 out of 949).⁴ The total value of the points amounted to 5164.75, including the point value of Polish publications of 3808.00 and 1356.75 for foreign publications. The largest share in the scores in particular groups were articles in foreign periodicals. They accounted for 61.5 percent of all points for foreign publications, while the share of articles in Polish periodicals amounted to 56.4 percent of all points for Polish

publications. The total IF values and scores of the Ministry of Science and Higher Education in 2017 put the Institute of Geography in the fifth place among 16 institutes in Kazimierz Wielki University (together with the Institute of Political Sciences) (www.bibliografia.ukw.edu.pl/cgi-bin/expertus.exe, accessed on 16.08.2018).

According to Polish bibliometric studies (Śleszyński, 2009; Śleszyński 2013b; Bański 2015, 2017), the assessment and position of the UKW Institute of Geography among geographical units in Poland is not satisfactory. In P. Śleszyński's opinion (2013b), the number of citations of the Institute of Geography is not large. It seems that apart from other factors, this result is influenced by the fact that the UKW Institute of Geography is the youngest and smallest geographical unit in the country, and the period covered by this author spans the period from 1950 to 2011. When the data is converted into citations per person (137 according to Google Scholar search engine, May 2012), this places the UKW Institute of Geography in the 11th place among 15 Polish geographical institutions. Further places were taken by geographical units from universities in Lublin and Wrocław, the Pomeranian Academy in Słupsk and the Pedagogical University in Kraków. According to Śleszyński (2013b) the highest number of citations of publications of the UKW Institute of Geography published in the years 1950 to 2011 concerned works in the field of geocology.

⁴ Accessed on 16.08.2018 r.

Based on data obtained from Google Scholar and The Web of Sciences (March 2017) according to J. Bański's research (2017), the UKW Institute of Geography is among Polish geographical institutions with a "rather modest" number of publications on the so-called Master Journals (Philadelphia) List and fewer citations per one independent researcher compared to other geographical units in Poland.⁵ The average value of the Hirsch index⁶ according to Google Scholar (approx. 7-7.5 for the Institute of Geography)⁷ places the UKW Institute of Geography in the group of twelve Polish geographical institutions in which the index has a value between seven and nine. This value for the Institute of Geography according to the Web of Sciences database is lower, and amounts to 2.8. Two other geographical units have the same value, at Jagiellonian University and Adam Mickiewicz University. In Bański's opinion, (Bański 2017) "centers referred to as pedagogical (teaching-oriented) units until recently (AP Słupsk, JUKE in Kielce, UP Kraków and UKW) have rather modest achievements in terms of publishing the results of employee research. Such centers are characterized not only by a small number of published works, which is probably partly the result of a modest number of independent researchers, but also by low citation figures and other bibliometric indicators related to publication efficiency. It can be generalized that the level of impact of these institutions on the development of geographic research in the country is rather low" (p. 612).

The thematic structure of the publishing achievements of the UKW Institute of Geography shows that over 90 percent of the works are geographical publications and almost ten percent are publications on other, non-geographical topics. The subject matter of the publications defined as non-geographical is related to the Institute's educational offer. It provides education to students in geography, but also in tourism and recreation, revitalization of waterways and crisis management in the environ-

ment (Ilieva et al., 2017). The largest number of works on non-geographical topics are publications on physical culture, which is related to the interdisciplinary nature of the research of some faculty members of the Institute of Geography, dealing with tourism and recreation and cooperating with researchers in the area of physical culture.

Among the geographical works, the largest share is accounted for by publications in two sub-disciplines of geography. Nearly 40 percent of all publications of the Institute are physico-geographical works and about 27 percent are works in the area of socioeconomic geography (Fig. 5). The predominance of physical geography according to the research is characteristic of geography in Poland in general (Śleszyński 2009; Bański 2017). Subsequent places are occupied by ecology and environmental protection (over 10 percent of the Institute's publications) and general geography (more than 7 percent). The share of publications related to teaching geography, GIS and cartography, as well as other unspecified branches of geography falls within the range between 0.9 and 3.5 percent. These characteristics of the Institute's publication achievements in terms of their thematic structure and its changes over more than 20 years of development are a consequence of the specificity of the Institute's evolving educational offer. They are also a consequence of the specializations and interests of the Institute's researchers (Ilieva et al., 2017) and the employment structure (a majority of physical geographers) as well as the nature of the science and application projects carried out.

There are significant differences in the thematic structure of the two dominant sub-disciplines. The analysis of the structure of publications in physical geography indicated that almost 95 percent of the works concern several sub-disciplines. The share of hydrology is the largest (26 percent), followed by a few specialties with a relatively similar share in the structure of publications: general physical geography (18 percent), climatology (almost

⁵ According to additional information provided by this author, the study included achievements of four independent (tenured) employees of the UKW Institute of Geography.

⁶ Used for comprehensive assessment of scientific achievements considering the number of publications and citations.

⁷ The value is established based on Fig. 3 in Bański's article (2017).

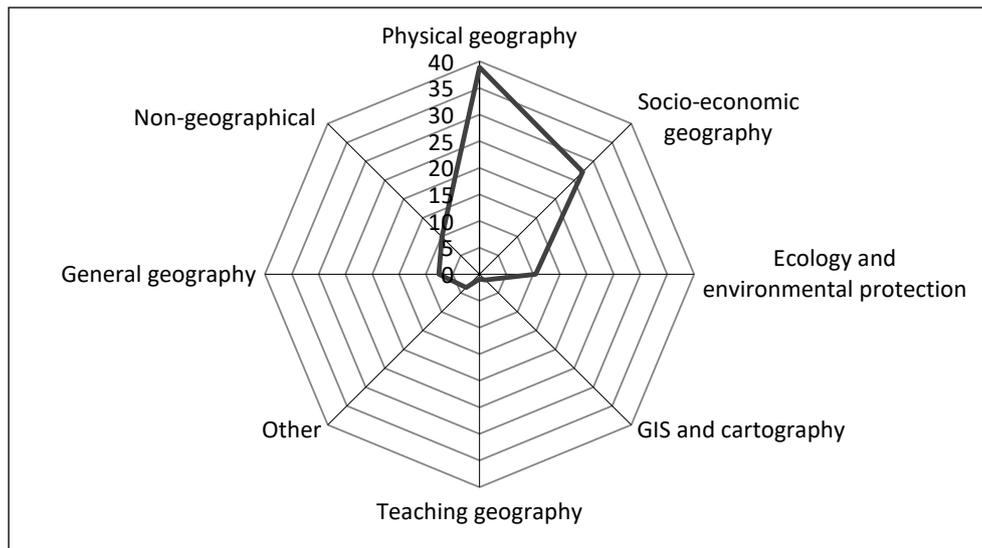


Figure 5. Structure of publications by topics (%) (based on Author's own elaboration)

16 percent), geomorphology (13 percent). Biogeography and other undefined branches of physical geography constitute 10-11 percent of all works. The predominance of geomorphology, climatology and hydrology is a characteristic of the system of classification of physical geography in Poland (Śleszyński, 2009, 2013b; Bański, 2017). The largest share of hydrology in physico-geographic publications is closely related to the character of the teaching offer of the UKW Institute of Geography, where, apart from geography, a unique specialization in Europe is offered – revitalization of waterways, and also to the employment structure – the majority of physical geographers are specialists in hydrology and revitalization of waterways.

As shown by studies carried out on a national scale (Śleszyński, 2009, 2013b; Bański, 2017), in the sub-discipline of socio-economic geography individual specializations are more dispersed. The dominant publications of the UKW Institute of Geography are related to tourism geography (almost 39 percent), while other sub-disciplines have a much lower share (eight to ten percent each): general socioeconomic geography, city geography and other unspecified sub-disciplines within socioeconomic geography, as well as social geography. The rest, approximately 25 percent of publications in socioeconomic geography, is dispersed among all of the above sections, with the exception of geography of trade and finance (no publications).

The analysis of changes in the number of publications in the years 1995-2017 provides an opportunity to assess existing trends. Physical geography in the entire period of the Institute's existence was predominant in terms of the number of publications. It was represented by almost 50 percent of the publications in the first decade of the Institute's existence (1995-2004) and in the second decade (2005-2014) it accounted for 37 percent of the works, despite the more than twofold increase in the number of publications between these periods. This trend has continued in recent years. There have also been changes in the thematic structure of publications in the coming decades. In the years 1995-2004, the largest number of publications in the field of general physical geography, climatology and hydrology were published, and in the following years, hydrology, climatology and general physical geography, as well as geomorphology were predominant. This is related to the introduction in 2013 of a new educational specialization at the Institute – revitalization of waterways. Socioeconomic geography publications account for only about 11 percent in 1995-2004, and for more than 30 percent in 2005-2014, with the predominance of works in the area of tourism geography. It should be noted, however, that, first of all, there have always been fewer socioeconomic geographers employed at the Institute, and secondly, the authors of publications on tourism geography were both socioeconomic geographers and physical geographers.

Analyzing the relations between the groups of publications depending on their spatial scope (research area), it is interesting to compare them with other centers in Poland. J. Bański (2015, p. 292) used as a “representative sample” (M. Ilieva’s term) the collection of all articles published in the journal *Przegląd Geograficzny* between the years 2000 and 2013, assuming that the journal is “of general geographic character and is the most popular periodical in our environment”. A comparison of the spatial structure of the publications by faculty members of the UKW Institute of Geography with the groups presented by J. Bański (2015) shows significant differences between the Bydgoszcz center and other centers in Poland. Almost half of the publications of the UKW Institute of Geography are regional and local in character (46.7 percent, Fig. 6), while the average for the representative sample amounts to 33 percent. Works concerning the Voivodeship of Kujawsko-Pomorskie and its various areas constitute 35

percent of the publications. This regionalization occurs both in physico-geographical and socioeconomic studies. A specific “regionalization” of scientific research in individual centers is typical of Polish geography. Usually, scientific research in a particular center focuses on a certain area (most often the voivodeship in which a particular geographical center is located) and this area takes a special place in the research of each geographical unit.

The second place, 11.5 percent of the works, is occupied by publications concerning objects, processes and natural and socioeconomic changes in the city of Bydgoszcz. The share of publications covering other areas in Poland is much lower (16.2 percent for the Institute with 29 percent in the representative sample) and publications concerning areas outside of Poland (12.4 to 18 percent). Works on general topics, without a specific definition of the research area, constitute 24.7 percent of all publications (20 percent in the representative sample).

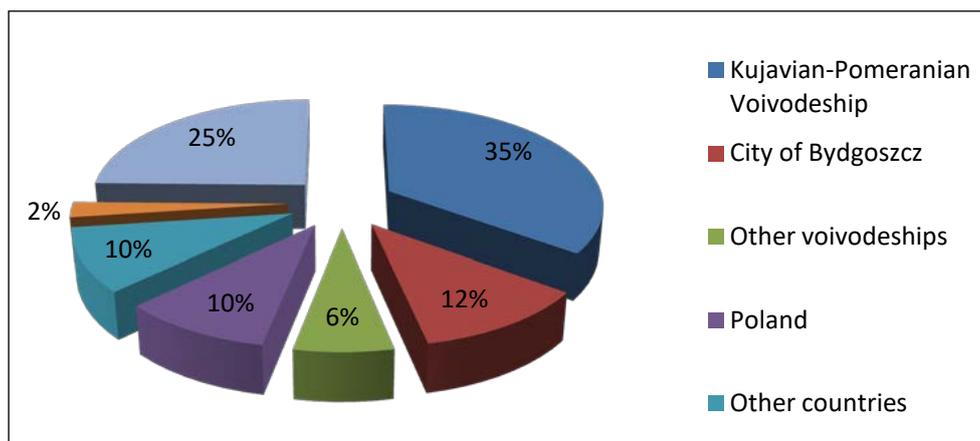


Figure 6. Structure of publications by investigated areas (%) (based on the Author’s own elaboration)

Research on individual countries (Mongolia, European countries, the USA) and remote regions of the world that are interesting from the point of view of geographical research (Antarctica, Spitsbergen, Kamchatka, etc.) can be described as one of the directions of research, which has been developing intensively in recent years. A significant part of the research results concerning areas outside Poland is the result of work in international and national projects, as well as scientific expeditions. The first scientific expedition, to Mongolia, organized at the UKW Institute of Geography took place in 2005 and the research in this area is continued at the Institute to this day. In 2017 the Institute’s

employees started research in polar regions. The largest number of publications about other countries concern Bulgaria; the number of publications about Ukraine is also increasing.

The analysis of changes in the research areas studied by the employees of the Institute of Geography from 1995 to 2017 shows a gradual transition from the regional and local scale to the national and global scale. This fact can be indicated as a positive trend in the development of research carried out by the Institute’s employees. At the same time, other existing trends should be emphasized: increasing number of projects related to scientific research and application alike; changes in the thematic character

of regional and local research; increasing and expanding spatial scopes of the application studies, mainly in the areas of hydrology and environmental protection, from the voivode-

ship of Kujawsko-Pomorskie to other regions of Poland; an increase in the number of publications and their practical significance (Ilieva et al., 2017).

4. Conclusions

The bibliometric analysis of the publication output of employees of the UKW Institute of Geography from 1995 to 2017 showed that the thematic structure of the publications, as in all other centers of geographic research in Poland, is strongly influenced by the number of employees working in particular specializations (with the prevalence of physical geographers, and hydrologists in particular). As in other geographical units in Poland, publications with regional and local spatial ranges had the largest share in the analyzed period. In recent years, an increasing number of works have focused on areas located outside of Poland

or have concerned topics of global significance. Recently, an increase in the number of papers published in English and in foreign journals with IF points assigned has been observed, which is beneficial for the recognizability of the UKW Institute of Geography in the world. The results of this analysis, as well as the research on the scientific potential and publication activity of Polish geographical centers in the years 2000-2012 (Bański, 2017) allow us to conclude that the UKW Institute of Geography shows similar indicators to geographical units at other universities which were formed on the basis of higher pedagogical (teacher training) schools.

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