

INTRODUCING SOCIETAL IMPACT EVALUATION IN POLAND: THE PILOT STUDY REPORT

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ABSTRACT

This paper focuses on assessing the societal impact in Poland that was introduced in 2018. The societal impact used in various assessment systems is often presented as a better way of recognizing the value of science which overcomes the limits of output-oriented approaches. In line with this, Polish policy makers highlight the assessment of societal impact as a new tool for valorizing research effects, especially in the humanities and social sciences. Our paper consists of two parts. In the first part, we describe the Polish research evaluation system from 1999 to 2018 and show how societal impact assessment was introduced in Poland. In the second part, we present the results of a pilot study for the Ministry of Science and Higher Education of a societal impact assessment in three Polish universities in 2019. This pilot study served to improve the official regulations of research evaluation in Poland for the 2022 evaluation exercise.

KEY WORDS

Poland, impact assessment, pilot study, Ministry of Science and Higher Education in Poland, performance-based research funding system

INTRODUCTION

After the Second World War, for more than 40 years, the science system in Poland was modelled on ideas taken from and partly imposed by the USSR. At the beginning of the 1990s, on a wave of transformation encompassing central European countries, transformation of the higher education and science landscape in Poland was ruled by the logic of the New Public Management. In 2016 in Poland were over 100,000 scientists employed in almost 400 higher education institutions and basic/applied research institutes, and 1.35 million students in 2016 (Kwiek & Szadkowski, 2018).

In the last thirty years, the Polish evaluation of science has evolved in several cycles (Kulczycki et al., 2017). The first evaluation – a peer-review based – was designed in 1990–91. The results of the first evaluation were criticized for a lack of transparency and a lack of trust in the experts appointed from the scientific community. Thus, the second and subsequent editions of the Polish system were based on a parametric assessment, to make the evaluation more objective and independent of its peers. In 1999, a new key element was introduced, the Polish Journal Ranking, which has been published for over 20 years annually or bi-annually since then.

The Ministry of Education and Science has been responsible for designing the assessment criteria and conducting the evaluation through its advisory body, the Research Evaluation Commission. The evaluation exercises are performed mostly every four years: the last one took place in 2017 and the next will take place in 2022 (one year later than planned because of the COVID-19 pandemic). The Polish research evaluation system is used for all types of research institutions (scientific units), similar to the Czech (Good et al., 2015) and Norwegian (Sivertsen, 2016) models. This includes basic and applied research institutes, higher education institutions (most often faculties) and institutes of the Polish Academy of Sciences. The financial consequences of the evaluation exercise are related to statutory funding that is distributed annually to the scientific units. As the evaluation is conducted every four years, these allocations are fixed until the next exercise.

The Polish solution is designed to evaluate all disciplines (both scientific and artistic) within one system. There are no major adaptations for social sciences and humanities (SSH), however all SSH disciplines are evaluated within and across the SSH groups only. They are subject to the same criteria and parameters as for the so-called hard sciences.

FROM IMPLEMENTATIONS TO SOCIETAL IMPACT

In 2001, a new criterion, implementations, was introduced into the research evaluation scheme in addition to the previously used and focused on scientific publications and R&D revenues. Implementations were defined as the practical use (outside an evaluated scientific unit) of the scientific research results or the development work conducted in the scientific unit (Dz. U. z 2001 poz. 1642). Moreover, the implementations were understood as new technologies, materials, products, systems, services and methods, implementation of the results of scientific research and development works, patents, licenses, protection rights for utility models, and possession of accredited laboratories. A description of the practical, economic and social effects achieved outside the unit was expected. These descriptions underwent expert-based assessments, yet no official criteria or guidelines had been made available.

In 2010, the Ministry of Science and Higher Education conducted a survey among scientific entities on their expectations regarding the procedure and rules for future evaluations (Kozłowski, 2010). One of the many issues raised in the responses was the addition to the evaluation criteria of a broad definition of the implementations that would cover the many aspects not specified in the narrowly understood implementations, i.e., to the transfer of technology resulting from scientific research for use in industry. The respondents indicated that implementations should include, e.g., development of new medical technologies, the popularization of science, the influence on legislative processes, and manuals. Some voices have been raised concerning quantification of the implementations in a geographical scope: national, regional, local, specific entities. The need to clarify the criteria for assessing non-quantifiable implementation effects has been pointed out.

The effect of these consultations was reflected in the 2012 ministerial decree on evaluation for the 2013 evaluation exercise, which introduced the criterion concerning “other effects of scientific activity” which include, inter alia, applications of the results of research or a development work of high social importance, in particular, in the field of health protection, environmental protection, protection of public order and safety, protection of historical monuments and cultural heritage, protection of workplaces, food quality and safety, and economic, including the field of new technologies and products, implementations, licenses and activities increasing innovativeness. They also introduced exclusively for applied research institutes, an implementation fiche for revenues from products implemented from the research or development work, to be measured just on revenues from sales by the implementing entity of the new product.

In the next evaluation exercise in 2017, the possibility to submit an implementation fiche was extended to all types of scientific units, and additionally a new application fiche was introduced covering non-financial implementations. For this type of achievement a three-tiered scale of impact was defined (taking into account the number of stakeholders or geographical coverage): small/local, medium/national, large/international. This time, the revenues for the scientific unit, rather than the implementing entity, were taken into account for the implementation fiche.

As a result, in the 2017 evaluation exercise, a scientific unit could only submit for assessment a maximum of 10 major achievements of social or economic importance with no more than 900 characters, which were evaluated by an expert panel, and additionally implementation and application fiches, which were evaluated based on revenues or the three-tiered scale.

As part of the reform of law on the sciences in Poland, the evaluation system was again reformed in 2018. As part of this reform, drawing on nearly 30 years of experience in evaluation exercises in Poland, the principles were changed, where the number of less important achievements to be reported was reduced. Six of the most substantial systemic advancements are related to: (1) the unit of analysis, (2) transformation of the official list of disciplines used in Poland; (3) limiting the number of publications submitted by a single academic staff member, (4) societal impact assessment, (5) linking the results of research evaluation with authorizations for awarding academic degrees and running Ph.D. programs, and (6) introduction of the Publisher list—inspired by the Norwegian solution (Kulczycki & Korytkowski, 2018)—corresponding to the Polish Journal Ranking. For the very first time since the beginning of the Polish evaluation, a scientific unit (e.g., faculty) is not a unit of assessment. For the 2022 evaluation, a unit of assessment is defined as a discipline within the institution, university or research institute. Moreover, the list of disciplines was reduced from over 100 to less than 50. The OECD (Organisation for Economic Co-Operation and Development, 2007) classification of Fields of Science and Technology inspired the new classification in Poland. Thus, the new unit of assessment cuts across the old units. Until 2018, each scientific unit could basically submit $3N$ publications, where N was the arithmetic mean of the full-time equivalent of academic staff members. In the new model, the number of publications submitted by a unit of assessment (e.g., all biologists from a given university regardless of the faculty in which they work) is also limited to $3N$, and – in a completely new regulation in the Polish context – a single researcher can submit a maximum of four publications (fractional counting).

Moreover, the Polish government decided to redesign previous criteria related to major achievements of social or economic importance and to introduce an assessment based on case studies, as in procedures implemented in Australia and the UK. The government has decided that from 2022, only faculties and research institutes which are highly ranked will be allowed to run PhD programs and be authorized to award doctoral and habilitation degrees. This change, in connection with the change in the unit of assessment, have made the “discipline” a crucial concept in discussions on evaluation, funding, and transformation of higher education and research fields in Poland. The new evaluation model will be used in 2022 to assess the quality of scientific activity in the period 2017–2021.

Within this reform, as a development of the idea of implementation of scientific research results which has been functioning for 20 years, societal impact has been introduced as one of the three major criteria. According to the official definition, societal impact should be understood as a development in the idea of implementation of scientific research results, as the necessity to indicate the effects for end users of the implementation of scientific research results. In the 2019 Regulation (Dz.U. 2019 poz. 392), societal impact is defined as: “assessment of the impact of scientific activity on the functioning of the society and economy is carried out on the basis of descriptions of the relationship between the results of scientific research or development works or scientific activity in the field of artistic creation and economy, functioning of public administration, health protection, culture

and art, environmental protection, security and defence of the state or other factors influencing civilizational development of the society, hereinafter referred to as „impact narratives”, drawn up on the basis of evidence of this impact, having in particular the form of reports, scientific publications and quotations in other documents or publications.”

For the societal impact assessment, each discipline in a scientific institution has to prepare from two to five case studies (the number depends on the full-time equivalent [FTE] of employees assigned to this discipline). Disciplines from the social sciences and humanities can present up to three additional special case studies based on the impact of research presented in prominent monographs. Disciplines from engineering can present up to two additional special case studies based on architectural planning or urban planning. Additionally, up to two special case studies can be presented based on commercialization via spin-outs and spin-offs.

PILOT STUDY OF SOCIETAL IMPACT EVALUATION IN POLAND

To test the new legal arrangements for social impact designed for the 2022 evaluation exercise, a pilot study of social impact assessment procedures was undertaken. This pilot study was planned and carried out by the authors of this paper from June 2019 to June 2020 in the framework of a ministerial grant program. The pilot study objectives were to develop procedures for collecting societal impact case studies and to develop the expert assessment procedures. From the beginning it was assumed that the results of the pilot study will be communicated to the Ministry of Education and Science and the Research Evaluation Commission.

Three Polish universities took part in the pilot study: Nicolaus Copernicus University in Toruń, West Pomeranian University of Technology in Szczecin, and the Academy of Art in Szczecin. These three universities were chosen because they have different sizes: big, medium and small institutions and—what is even more important—they cover the majority of scientific and artistic disciplines. In these three universities, academics are assigned to 41 out of the 47 different disciplines classified in the Polish system.

In the 2022 evaluation exercise, depending on the FTE, each discipline would provide between two and five societal impact case studies. In the pilot study, it was assumed that regardless of the number of researchers assigned to a discipline, each discipline has to prepare one societal impact case study and voluntarily one additional special case study. In order to ensure conditions close to a real evaluation exercise, the principle was adopted that case studies would not be made available to the public after finishing the pilot study. This rule was written into the agreement between the universities participating in the pilot study, in order to ensure the confidentiality of the material produced for the first time by the university and as such probably requiring further work.

Based on the Regulation of 6 March 2019 (Dz.U. 2019 poz. 392), the form for the social impact case study was prepared (see Table 1). The proposed structure was an interpretation by the pilot study authors and additions to the provisions of the formal regulation. The limits for the number of characters and the number of evidences were ideas developed for the purpose of the pilot study.

Another solution adopted in the pilot study was collecting —by the institutions on servers maintained by them— the documents that are evidences of scientific contribution and evidences of societal impact entities. The evidences of scientific contribution and the evidences of societal impact were used by the experts to verify that the statements in the case studies were factually correct.

For the purposes of the pilot study, a web system to streamline the process of gathering and later assessment of the narratives were prepared. Moreover, two handbooks, one for evaluated entities and one for evaluators, were prepared. They explain the principles of the pilot study and the relevant legal regulations.

Table 1. Social impact narrative structure prepared for the pilot study

Scientific Unit:

Discipline:

1. Title of the societal impact case study (max. 150 characters with spaces)

2. Scientific contribution (max. 3,500 characters with spaces)

3. Evidence of scientific contribution (max. 5 references to documents/publications from 1996–2020 with information of which authors were employees of the scientific unit which submitted the societal impact case study, and the period of conducting the research from which the results are indicated as evidence of the contribution)

4. Characteristics of the societal impact (max. 6,000 characters with spaces)

5. Evidence of the impact (max. 5 references to documents/publication from 2017–2020) with the date of evidence creation with the summary, only for non-English evidence of societal impact, (max. 2,000 characters with spaces)

According to the Regulation of 6 March 2019, each societal impact case study was assessed independently by two experts. In the pilot study, the experts were 27 members of the Research Evaluation Commission, excluding members who were employees of the universities participating in the pilot study or were members of the team implementing the pilot study. Where possible, the experts assessed societal impact case studies from their (or close) research disciplines. In some cases, experts assessed the case studies submitted by disciplines quite distant from that represented by the expert. Thanks to this partly enforced allocation of experts, it was possible to check whether a strict adherence to disciplines during the allocation of experts had an impact on the work of the experts and the final assessment of the case study.

Each expert could award 0, 20, 40 70 or 100 points, simultaneously assessing the significance and reach of the social impact. The expert could increase the score by 20 points in the case of interdisciplinary research of ground-breaking importance for the advancement of science. The score had to be supported by a justification of at least 800 characters.

All participating researchers from the three universities participated in on-line surveys. The purpose of the surveys was to find out the opinions of the case study authors on the preparation of the social impact case studies, as well as their attitudes towards the planned evaluation procedure and the results of the pilot evaluation. The first survey was addressed to 102 authors of case studies, while the second survey comprised 91 authors who had completed the first survey.

The aim of the first survey was to investigate creating the impact description and the authors' attitudes towards social impact assessment, as well as the procedure for carrying it out. The survey was conducted between 3 and 16 February 2020, after preparation and submission of the social impact case studies to the pilot coordinators.

The second survey was used to examine the authors' attitudes towards the results of the social impact assessment carried out as part of the pilot. The survey was conducted from 17 March to 1 April 2020, after the authors had received the results of the evaluation of the social impact case studies they had prepared. Due to the purposeful selection and sample size, the generalizability of the results is limited.

In June 2020, a report summarizing the pilot study was published (Korytkowski & Kulczycki, 2020). The report presents the research results as well as 14 recommendations for changes in the law and procedures for carrying out the assessment. In this paper, we will focus only on the most important conclusions and recommendations.

The pilot study showed that all the disciplines were able to identify and prove the social impact of their research using the form provided. 17% of the evidences of scientific contribution had been published more than 10 years previously, and 46% before 2017. It took on average less than 40 hours to prepare a narrative by a team of 2–4 people usually. That work was spread over several months due to the process of identifying and documenting societal impact.

In analysing the pilot study as a whole and how the evaluation was conducted, we argue that the evidences of scientific contribution and the evidences of societal impact can only be assessed properly if the experts have access to the materials which are presented as evidence (e.g., scientific publications in PDF format, podcasts as MP3 file, or video news in MP4 file).

193 evidences of impact were provided. We found 30 types of different evidence of which references (i.e. testimonials or certificates issued at the request of the applying entity), websites, press articles and releases, scientific publications, video materials and reports were most often presented.

DISCUSSION

The evaluation of societal impact was positively received by the pilot study participants. They overwhelmingly agreed with the statement that societal impact is a long-term effect of scientific activity. The use of societal impact case studies as a way of presenting the relationship between the results of scientific activity and the society and economy worked well. All disciplines from the participating universities were able to identify and demonstrate societal impact using case studies.

The pilot study showed that, irrespective of the discipline, on average it took less than 40 hours to prepare a case study, allocated to an entire 2-4-person team usually. The work was spread over several months, mostly because of the process of identifying and documenting social impact. The form for structuring the impact description proposed in the pilot study worked well and was positively evaluated by the participants.

Evidence of scientific contribution and evidence of social impact can only be properly assessed if the experts have access to the indicated materials (e.g., scientific publications in PDF files or audio-video recordings in e.g., MP4 format). The pilot demonstrated the necessity of access to these materials. At the same time, however, it turned out that such materials cannot be made available from the level of the evaluated institutions due to the existence of too many different technical solutions, which generates numerous problems, even on the scale of the three universities involved in the pilot, related to e.g., sharing of logins and passwords or different ways of accessing files.

The model of individual expert assessment (i.e., each expert prepares the final grade and its justification without contacting another expert) did not work. The pilot study showed that assessing case studies according to two criteria, i.e., significance and reach, expressed on a single scale is problematic for experts. The experts' assessments differed quite strongly and justifications were partly contradictory. Experts from the same discipline as the authors of the case study paid much more importance to the description of the scientific activities than did the experts who represented other disciplines. We have found that one of the biggest challenges is the experts' training, which is required when a new criterion is implemented. Experts are used to evaluating scientific contribution, rather than evaluating social impact.

By the report, we recommended to the ministry, the following key issues:

1. The ministry should launch a broad information campaign.
2. All evidences should be in a central system provided by the Ministry.
3. A unified bibliographic style (for ex. APA7) should be applied for evidences.
4. Experts should represent broad backgrounds, including non-academic.
5. The Ministry and the Commission should provide training to experts.

6. The Commission should ensure a balanced pool of experts.
7. Experts should evaluate the same types of impact areas (e.g. environmental protection).
8. The Ministry should introduce expert panels and procedure for agreeing on the ratings and justification.
9. The Ministry should change the scale of assessment and oblige the experts to justify the assessment in a multidimensional way.
10. The Ministry should resign from additional societal impact narratives.
11. The Ministry should reduce the importance of the social impact criterion from 15%-20% down to 10%.

The pilot study carried out in 2019–2020 at three Polish public universities, confirmed that social impact assessment on the basis of existing legal acts is possible, however, it requires clarification of both procedures from the legislative and IT side, as well as practices to be used by the Research Evaluation Commission. The majority of recommendations have been taken into account in amended regulations published in July 2020 (Dz.U. z 2020 r. poz. 1352) and December 2020 (Dz. U. z 2021 poz. 71).

The new regulations changed the rules for assessing case studies. Separate scales have been introduced for reach (geographical scope) and significance for the group of beneficiaries. The final score (be the sum of the points obtained from these two criteria) and justification will be agreed by the expert panel.

Each criterion may be awarded a score ranging from 0 to 50 points, so that social impact that has limited significance but is international in scope, as well as social impact that is ground-breaking but local in scope, may be valued equally. Appreciating the impact of scientific entities on their immediate socio-economic and cultural environment should be an important goal of science policy.

A societal impact case study form modelled on the solution proposed in the pilot was introduced. An obligation to provide up to five evidences of impact has been introduced, which will be collected by a central information system provided by the Ministry.

CONCLUSIONS

The evaluation of societal impact makes it possible to demonstrate that scientific activity conducted at universities and research institutes affects not only the academic world, but also the wider socio-economic environment, and helps in the understanding of our culture and history.

The purpose of assessing the social impact as part of evaluating the quality of scientific activity is to emphasize the importance of and appreciate the application of scientific knowledge in both the local and global socio-economic environment.

Societal impact can be viewed in the same way as citations, which are testimony to the fact that the results of a scientific study were inspiring to other scientists, who then used what had been developed in their subsequent research. Documented societal impact indicates that the scientific activity carried out has been used to improve the world around us and our understanding of reality. This is important not only for the society, but also for the academy itself, as it helps to demonstrate the need for investment and increased investment in science.

Utilizing the effects of scientific activity is a complex interactive social process involving diverse relationships between scientists, decision-makers, and the recipients of these effects. Scientific activity increasingly seeks to not only produce knowledge but also to implement the results obtained, with a strong emphasis on the social impact context of research and public engagement. Implementation of research results is often a source of satisfaction for scientists, and an effective tool for scientific institutions to demonstrate to society that science does contribute to social and economic development.

The new element in science evaluation, in the form of social impact assessment, could allow an appreciation of scientific institutions and the scientists working in them, who attach great importance to interactions with society and implementation of the results of their activities. At the same time, this type of evaluation would allow for appreciation of scientific activity, which often and only in the long run demonstrates great significance for society in solving important social and economic problems.

Conflict of interests

The authors have been members of the Research Evaluation Commission, an advisory body to the Ministry of Education and Science of Poland.

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Ministerial regulations to which we refer in the paper

- Dz. U. z 2001 poz. 1642: Rozporządzenie Przewodniczącego Komitetu Badań Naukowych z dnia 30 listopada 2001 r. w sprawie kryteriów i trybu przyznawania i rozliczania środków finansowych ustalanych w budżecie państwa na naukę.
- Dz.U. z 2020 r. poz. 1352: Rozporządzenie Ministra Nauki i Szkolnictwa Wyższego z dnia 31 lipca 2020 r. zmieniające rozporządzenie w sprawie ewaluacji jakości działalności naukowej.
- Dz. U. z 2021 poz. 71: Rozporządzenie Ministra Edukacji i Nauki z dnia 22 grudnia 2020 r. zmieniające rozporządzenie w sprawie danych przetwarzanych w Zintegrowanym Systemie Informacji o Szkolnictwie Wyższym i Nauce POL-on.