

**T. Fesenko**, Doctor of Engineering Sciences (DSc), Professor (*KNURE, Kharkiv*)

## **STAKEHOLDER MANAGEMENT IN SUSTAINABILITY CONSTRUCTION PROJECTS: A PRELIMINARY LITERATURE REVIEW**

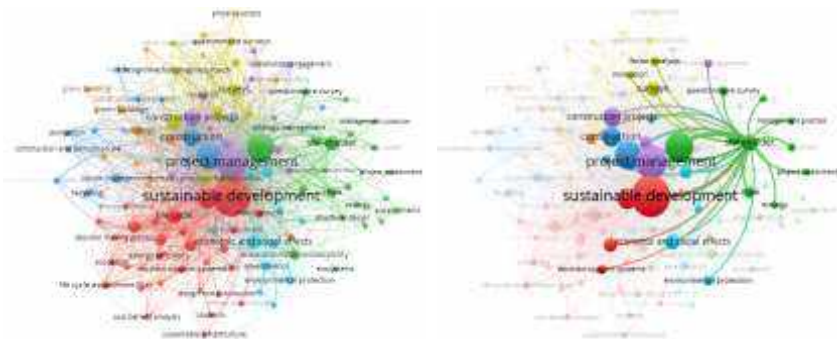
The practice of sustainable construction involves taking into account environmental, social and economic factors that affect stakeholders and the building space. In order to ensure compliance of the construction object with the Sustainable Development Goals (SDGs), standards of sustainability of buildings and structures (ISO 21929-1, ISO 15392, ISO/TR 21932) and evaluation of their environmental performance (BREEAM, LEED, LBC) have been introduced. Research on sustainability-oriented construction project management is based on international knowledge systems, such as: PMBOK Construction, P2M, PRINCE2, GPM P5, PRiSM etc. In the study [1] a comprehensive matrix of the integration of SDGs into ISO standards for sustainability in building construction, which allows identifying gaps and points in the development of sustainable-oriented construction project management methodology, is presented. In articles [2; 3] proposed solutions for the sustainable management of construction projects through the prism of gender logic systems. In articles [4; 5] the results of experimental studies are presented, where contractors/developers demonstrate a customer-oriented approach to management. Models of integration of stakeholder requirements into architectural and technical solutions of construction objects are proposed. At the same time, the issue of stakeholder management requires the development of new and improvement of existing tools for sustainability construction projects.

This study aims to conduct a high-level analysis of publications on the topic of “stakeholder management in sustainability construction projects”. This will make it possible, firstly, to identify existing research emphases in Poland and Ukraine. Secondly, it will allow outlining directions for further scientific and practical investigations.

The Scopus scientific-metric database was selected for searching publications. The search query included the following terms: “project management”, “construction project”, “sustainability”, “sustainable development” and “stakeholder”. In addition, the search query was limited to areas of knowledge: Engineering; Environmental Science; Business,

Management and Accounting; Energy; Social Sciences; Earth and Planetary Sciences; Computer Science; Decision Sciences; Materials Science; Mathematics; Economics, Econometrics and Finance; Multidisciplinary. As a result, 251 documents published for the period 2002-2022 were found. Further processing of bibliographic data was carried out using the VOSviewer program. A scientometric map was created based on the keywords of the selected 251 publications (Figure 1, a). The VOSviewer program selected 115 terms and grouped them into seven clusters. Each cluster is marked with a different color. It was found that in the titles of publications, their abstracts and keywords, the terms of the first (red) cluster are most often found – “sustainable development”, “architectural design”, “building information model” etc. Also, the VOSviewer program for each term established relationships with the terms in the middle of the cluster and with the terms of other clusters. For example, 70 relationships with 33 terms are defined for the term “stakeholder”. (Figure 1, b). In general, the map (Figure 1, a) shows 2307 links and 6277 total link strength.

Sometimes the “Affiliation” and “Country/Territory” of the authors of the documents may have an important component of the analysis of bibliometric data.



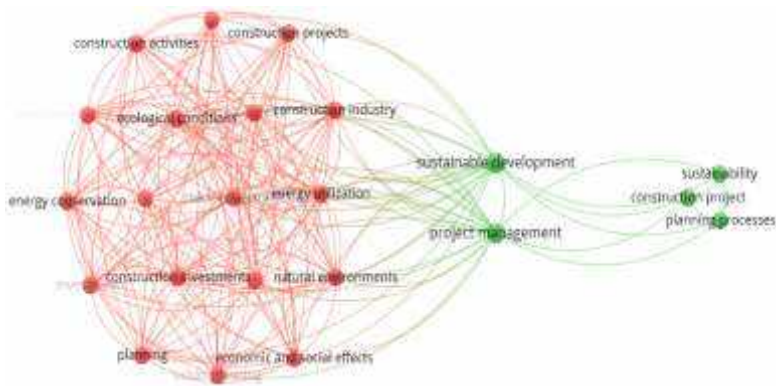
a – Scientometric map by 115 terms from 251 selected publications

b – Map of relationships for the term “stakeholder”

**Fig. 1. Infographic of bibliometric data of a preliminary literature review of stakeholder management in sustainability construction projects**

The leaders in terms of the number of publications on the subject of “stakeholder management in sustainability construction projects” are authors from the United Kingdom – 52 documents (21 %); Australia – 36 documents (14 %); United States – 32 documents (13 %); China –

30 documents (12 %); Hong Kong – 21 documents (8 %). It should be noted that the authors of the same publication can be researchers from different countries. The authors from Poland [6] and Ukraine [7] each have one document. A scientometric map containing 23 terms was built for these publications (Figure 2).



**Fig. 2. Scientometric map by 23 terms from Poland [6] and Ukraine [7] publications**

As a result of terminological mapping (Figure 2) it was found that the authors [6; 7] cover various aspects. The study [6] the results of the survey carried out among construction entrepreneurs at the turn of 2015–2016 about the fuel and energy consumption in the logistics processes of construction projects are presented. The terms of this research (“energy conservation”, “construction investments”, “economic and social effects” etc.) form the first (red) cluster. In the study [7] a comprehensive methodology for quantitative assessment of sustainable construction project management in the initiation and planning processes under conditions of uncertainty is proposed using PMBOK Construction and GPM P5. The keyword of this document are marked in green on the map (Figure 2). At the same time, the “points of intersection” of these two studies [6; 7] are “sustainable development” and “project management”.

In conclusion, the use of the VOSviewer program for the analysis of bibliographic research data allows you to visualize the system of key terms for the selected topic. The program groups all terms into clusters. It also determines the significance of each term, the structure of links between clusters. The results of such an analysis can be an “entry point” for the development of a research plan. In addition, the results of the analysis of

bibliometric data can help in the search for foreign researchers for the implementation of joint international scientific projects, in particular between Poland and Ukraine. The conduct of a bibliographic analysis of documents based on a similar search query in the Web of Science scientific-metric database, can serve as a promising direction for relevant scientific research.

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#### **Information sources:**

1. Fesenko T. Conceptualizing of sustainable-oriented construction project management methodology. Dortmund International Research Conference «EURO PIM 2022» (1-2 July 2022). 2022. P. 75–80.

2. Fesenko T., Shahov A., Fesenko G., Bibik N., Tupchenko V. Modeling of customer-oriented construction project management using the gender logic systems. *Eastern-European Journal of Interiorise Technologies*. 2018. № 1/3(91). P. 50–59. <https://doi.org/10.15587/1729-4061.2018.123124>.

3. Fesenko T., Fesenko G., Bibik N. The safe city: developing of GIS tools for gender-oriented monitoring (on the example Kharkiv city, Ukraine). *Eastern-European Journal of Interiorise Technologies*. 2017. № 3/2(87). P. 25–33. <https://doi.org/10.15587/1729-4061.2017.103054>.

4. Фесенко Т. Г., Мінаєв Д. М. Клієнтоцентризм в управлінні комунікаціями проєктів (на прикладі житлового будівництва). *Восточно-европейский журнал передовых технологий*. 2014. № 5/3(71). С. 4–10. <https://doi.org/10.15587/1729-4061.2014.28032>.

5. Фесенко Т. Г., Мінаєв Д. М. Интеграция интересов бенефициаров жилищного строительства в систему ценностей проекта. *Управління розвитком складних систем*. 2015. № 21. С. 81–86. <http://urss.knuba.edu.ua/files/zbirnyk-21/16.pdf>.

6. Bizon-Gorecka J., Gorecki J. Risk Management in Construction Project: Taking Sustainability into Account. *IOP Conference Series: Materials Science and Engineering*. 2019. 471(11). 112069. <https://doi.org/10.1088/1757-899X/471/11/112069>.

7. Fesenko T. Improving models for sustainability evaluation of construction projects in the initiation and planning processes. *Eastern-European Journal of Enterprise Technologies*. 2022. № 4(3(118)), P. 51–66. <https://doi.org/10.15587/1729-4061.2022.263668>.