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Gender equality and innovation – towards sustainable development and social innovation using the example of activities undertaken by the European Union

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Abstract

The main aim of the article is to analyse the importance of gender equality in the context of implementing social innovations and the principles of sustainable development. These processes will be shown in the context of activities undertaken at the European level and by European institutions. The main research problem of the article is to present arguments relating to the growing importance of the concept of sustainable development and social innovation, for which social order and gender equality are of key importance. Such identification of the concept of sustainable socio-economic development with social order and gender equality in the creation of contemporary innovations can be analysed in a scientific perspective with the functional theory of social change by A.R. Redcliffe-Brown and B. Malinowski. On the other hand, in practical terms it is entwined with all types of activities, strategies or programmes undertaken and implemented in the pragmatics of European Union activities (eg. *Commission Work Programme 2020: A Union that strives for more*, the Ljubljana Declaration, the Programme *Horizon Europe*, including *Women TechEU*). The author uses both traditional research methods as a middle-order system analysis and institutional-legal method, as well as new methods, including sociological neoinstitutionalism and network analysis. The research techniques used in the analysis are mainly quantitative techniques, i.e. desk research or analysis of existing data from databases *She Figures*, GEM, Statista.com.

Keywords: sustainable development, social innovation, European Union, gender equality

Równość płci a innowacyjność – w kierunku zrównoważonego rozwoju i innowacji społecznych na przykładzie działań podejmowanych przez Unię Europejską

Streszczenie

Głównym celem artykułu jest analiza znaczenia równości płci w kontekście wdrażania innowacji społecznych i zasad zrównoważonego rozwoju. Owe procesy zostaną ukazane w kontekście działań podejmowanych na poziomie europejskim oraz przez instytucje europejskie. Głównym problemem badawczym artykułu jest przedstawienie argumentów odnoszących się do wzrastającego znaczenia koncepcji zrównoważonego rozwoju i innowacji społecznych, dla których to ład społeczny i równość płci mają kluczowe znaczenie. Takie utożsamienie koncepcji zrównoważonego rozwoju społeczno-gospodarczego z ładem społecznym i równością płci w kreowaniu współczesnych innowacji można zbadać w ujęciu naukowym na podstawie funkcjonalnej teorii zmiany społecznej A.R. Redcliffe-Browna i B. Malinowskiego. Natomiast w ujęciu praktycznym – z wszelkiego typu działaniami, strategiami czy programami podejmowanymi i realizowanymi w pragmatyce działań Unii Europejskiej (np. Program roboczy KE pt. *Unia, która mierzy wyżej*, Deklaracja z Lublany, Program *Horizont Europa*, w tym *Women TechEU*). W odniesieniu do metod badawczych, w artykule wykorzystano tradycyjne metody badawcze (jak analiza systemowa średniego rzędu oraz metoda instytucjonalno-prawna), a także nowe metody, w tym neoinstytucjonalizm socjologiczny oraz analiza sieci. Technikami badawczymi, jakimi posłużono się w analizie, są głównie techniki ilościowe, tj. analiza typu *desk research* czy analiza danych zastanych, zawartych w bazach *She Figures*, GEM, Statista.com.

Słowa kluczowe: zrównoważony rozwój, innowacje społeczne, Unia Europejska, równość płci

A review of the innovation literature suggests that research on gender issues has increased significantly over the past few years. These studies address issues such as women on corporate boards, which can affect a company's financial performance and social impact (Campbell, Mínguez-Vera 2008; Carter et al. 2010; Boulouta 2013; Solakoglu 2013), gender and corporate governance (Carter et al. 2003; Francoeur et al. 2008; Adams, Ferreira 2009), gender identification as a company asset (Hillman et al. 2000), networking (Westphal, Milton 2000; Arfken et al. 2004; Hillman et al. 2007), types and dimensions of innovation (Turner 2009; Díaz-García et al. 2013). In many articles, authors argue that gender as the new determinant of the modern description of innovation has not been sufficiently studied (Blake, Hanson 2005; Fagerberg 2005; Alsos et al. 2016; Smith 2020; Trauth 2023).

Three perspectives of innovation concerning gender can be distinguished in the analysed literature. The first is the so-called "person-centred" or "gender-centred" (Horner 1972; Terborg 1977; Riger, Galligan 1980; Adler, Israeli 1988). This perspective has been used since the 1970s, when women gained access to master's degrees, meaning they were involved in organisational management of companies focusing on innovation. This approach attributes the limited representation of women in senior positions to factors that are internal to women (behavioural aspects), e.g., their ill-suited characteristics, beliefs, attitudes and behaviours (Fagenson 1990).

The second perspective, called the "situational or structural approach" (Kanter 1988; Freeman 1990), asserts that the behaviour of people is strongly related to the positions they hold in organisational hierarchies and the structures of the studied organisations. In other words, instead of behavioural (gender-related) factors, organisational structure shapes and determines women's behaviour in the workplace as well as in career progression (Fagenson 1990). Taking this fact into account, the limited percentage of women in innovative organisations is not only due to gender, but, above all, to organisational structures. Moreover, both of these factors interact with culture and shape women's behaviour in the workplace.

The third approach, the "Gender–Organisation–System" (GOS), argues that women's behaviour and the difficulties they encounter in innovation processes cannot be attributed solely to gender, because individuals differ from each other not only in terms of gender (Fagenson 1990, 1993), but also in terms of their national, social and institutional system locations, and the cultural context as a whole (Biscione et al. 2022). Moreover, it is noted that specific classifications and concepts relating to innovation, such as the knowledge-based economy, the *Oslo Manual* (see: OECD/Eurostat 2018), and the STEM approach, are widely accepted as the standard for innovation and are implemented in industries and sectors led mainly by men. Therefore, gender in relation to innovation processes has been and continues to be relevant (Blake, Hanson 2005; Beede et al. 2011; Belghiti-Mahut et al. 2016). It is assumed that the GOS approach is systemic, in the sense that it accounts for the interactions between individuals, organisations and society.

This article fits into the latter area of analysis related to the GOS approach. The author intends to present innovation and gender in the context of sustainable socio-economic development paradigm. The main aim of the article is to analyse the importance of gender in the context of implementing social innovations and the principles of sustainable development. These processes will be shown in the context of activities undertaken at the European level and by European institutions.

The essence of sustainable development is anthropocentrism, which is centred on values, and can be considered in relation to the categories of justice, or equality, of access to diverse environmental, social, and economic resources, etc. Such understanding of sustainable development is carried out through the integrity and implementation of five orders (arenas): social, institutional-political, environmental, spatial and economic. In this article, the scope of social order and the inherent gender equality associated with it will be analysed in detail.

Such identification of sustainable socio-economic development concept with social order and gender equality in creating contemporary innovations can be scientifically analysed by the application of Radcliffe-Brown's and Malinowski's theory of structural functionalism (see: Radcliffe-Brown 1940; Malinowski 1945). However, in practical terms it is entwined with all types of activities, strategies or programmes undertaken and implemented pragmatically by the European Union's activities, for example: *Commission Work Programme 2020: A Union that strives for more* (see: European Commission 2020a), *Ljubljana Declaration on Gender Equality in Research and Innovation* (see: Ljubljana Dec-

laration 2021), the *Framework Programme for Research and Innovation "Horizon Europe"* (see: Regulation (EU) 2021/695), including *Women TechEU* – the EU's scheme supporting deep-tech start-ups led by women. This is practical dimension, and the analysis of actions undertaken at the EU level for gender equality in research, development and innovation (R&D&I), is the goal of the article. Therefore, the article will discuss the theoretical and cognitive contexts of the concepts of sustainable development and social innovations, which are closely linked to gender equality. This will allow the analysis of the R&D&I structures of/in the EU Member States and the actions undertaken by the European Commission to strengthen the position and role of women in real participation in contemporary development processes. The most important structural conditions analysed in the article include degree subjects and graduates, the market and working conditions in the R&D&I sector, presence in decision-making positions in the R&D&I sector, the results of research and development activities, and the start-up market conditions.

The presented data demonstrate the increased activity of the EU institutions in terms of strengthening the participation of women in the R&D&I sector, which is based precisely on the paradigm of sustainable socio-economic development. It should be noted, however, that deficits related to the participation of women in R&D&I sector are still visible. As a result, it can be argued that we are dealing with a short-term emergence level, which is the third of the five stages that lead to permanent social change described in the model of social emergence (Praszkier, Nowak 2012; Sztompka 2007).

In terms of research methods, the article uses both traditional research methods such as medium-order systemic analysis and institutional-legal method, as well as new methods, including sociological neo-institutionalism, as well as network analysis (Lowndes 2006). Using the medium-order system analysis method, the author aims to demonstrate how social innovations affect existing innovation systems and policies. To this end, the institutional and legal method will also be helpful, because it enables the analysis of the key formal and legal solutions adopted at the supranational level in the EU. Sociological neo-institutionalism and network analysis, in turn, help to determine the impact of social innovations on the effects, and scale, of social changes. Thus, to determine to what extent the introduced programmes, and tools, contribute to permanent transformations of the targeted audience of such activities. The research techniques used in the analysis are quantitative, i.e., desk research or secondary analysis of databases, such as *She Figures* (see: European Commission 2021a), GEM, and Statista.com (see: Statista.com WWW).

Gender and the notions of sustainable socio-economic development and social innovation

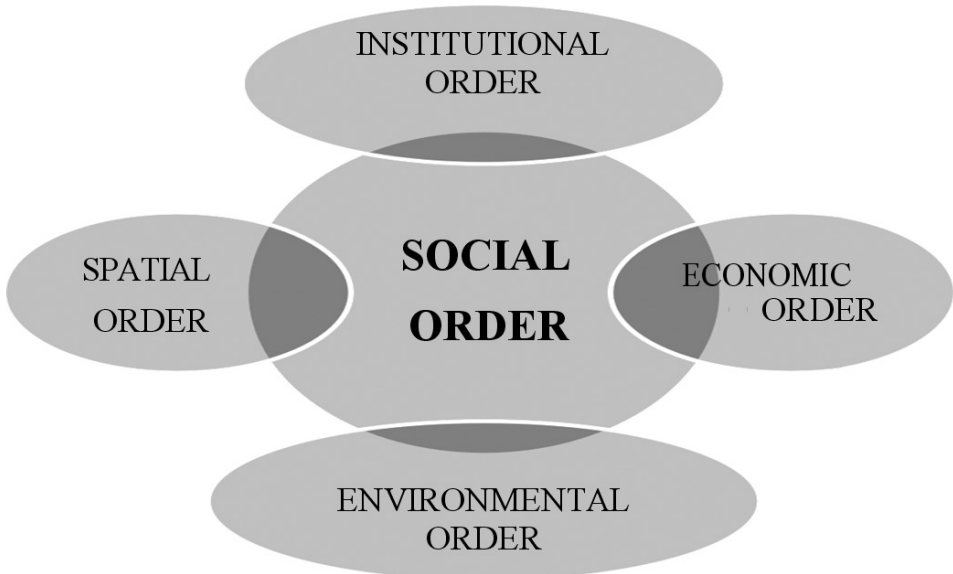
Scientific and technological development, as well as innovation, are processes that since the beginning of the twentieth century have become dynamic and are associated with new challenges. The concept of sustainable socio-economic development has become a common denominator for the development of competitiveness and innovation, in micro-, meso- and macro- structural terms. This is based on the notion of a knowledge-

based economy, the measures of which are presented in the *Oslo Manual* (see: OECD/Eurostat 2018) or *Frascati Manual* (see: OECD 2015). However, these classifications refer to the so-called traditional innovations such as product, process, marketing and market innovations. They barely take into account new types of innovation, such as social innovation, which enables a more precise grasp of the issue of real social changes and related values, such as justice or equality.

This new approach to understanding development and innovation concepts allows us not only to consider the context of gender more broadly and precisely, but offers an alternative to the negative consequences of technological development (Gawor 2006). In this sense, the concept of sustainable socio-economic development and social differences enable a wide inclusion both in terms of subjectivity (gender, social change) and objectivity (technological and non-technological innovations) and should lead to the legitimisation of activities and expenditure on scientific, research and development or innovative policies.

The core of sustainable development is fulfilling the aim of establishing a state of integrated order, which arises from the combination of social, institutional-political, economic, environmental and spatial orders.

Figure 1: Five-element structure of integrated order.¹



Source: author's own work, on the basis of the publication: Borys 2011: p. 78.

¹ At the centre of the flowchart is social order, which is the most capacious category. It consists of the remaining four equivalent orders – institutional, spatial, environmental and economic, which have a more functional (sectoral) meaning.