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## **GREEN PUBLIC PROCUREMENT AND INNOVATION OF POLISH ENTERPRISES IN THE LIGHT OF EMPIRICAL RESEARCH**

The article aims to identify obstacles faced by Polish companies in relation to green public procurement and to identify the causes and problems resulting from their limited use as a tool to create innovative solutions. Therefore, a survey directed at independent contractors was designed that would help to diagnose the utilization of green procedures in public procurement, to identify barriers to their use, their economic effects and the factors influencing their development. The study covered a group of 165 contractors, who had already participated in public procurement. Purposeful sampling was used primarily to receive professional and genuine replies, as individuals not participating in public procurement procedures often remain undereducated regarding the public procurement system.

**Keywords:** ecology, public procurement, innovation

### **1. INTRODUCTION**

Green public procurement (GPP) is a process by which public authorities seek to acquire supplies, services and construction works whose environmental impact is reduced throughout their life cycle. Due to such advantages, they facilitate the creation of eco-innovations for businesses. Their actions concentrate on improving existing solutions, which in the vast majority remain outdated and are simultaneously characterized by their adverse impact on the environment. Unfortunately, green public procurement has not been properly harnessed in Poland in the context of creating innovative solutions for enterprises.

This is evidenced by statistics obtained from the Public Procurement Office, which has analyzed the contents of tender notices, and established that in 2006 the

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proportion of green public procurement amounted to 4% and in 2009 – 10%. Moreover, according to own studies in 2013 that figure amounted to 7% [2, p.142].

Therefore, the article attempts to address the question regarding the reasons for the faint interest of Polish authorities in environmentally friendly public procurement. It also serves as an attempt to diagnose barriers to innovative solutions faced by entities participating in public tenders. In order to address these questions, 165 contractors who participated in at least one tender have been examined. Purposeful sampling was implemented primarily to receive professional and genuine replies, as entities not participating in public procurement procedures are often ignorant of the public procurement system.

Services and construction sector companies dominated among the 165 surveyed entities. Besides these, the study included the following branches: automotive manufacturers, industry, organic farms, education and IT companies. Particularly interesting results were obtained from a sample of 60 organic farms involved in the production of so-called healthy food.

## **2. ECO-INNOVATION IN THE SUBJECT LITERATURE**

P. James is believed to be the creator of the concept of eco-innovation. He defined it as a new product or process that provides value to customers and businesses and at the same time significantly reduces the negative impact on the environment. According to different definitions, the concept of eco-innovation should include every product and process that contributes to sustainable development or which is a form of commercial application of knowledge, in order to obtain direct or indirect environmental improvements. Finally, eco-innovations are designed to reduce expenditures, resources and energy and at the same time raise the quality of products or services [4, p. 149].

In general, eco-innovations vary from standard innovations in the following two aspects:

Regardless of their intended or unintended impact they result in a reduced negative environmental impact, and their scope reaches beyond the borders of organizations and covers a broader social system, causing a series of socio-cultural and institutional changes.

Eco-innovations can be divided into the following:

- Product and process innovations – new or significantly changed product or service prepared in a way to minimize the negative impact on the environment, also taking into account the so-called environmental services (recycling, waste water treatment, consultation).
- Organizational innovations – can be associated with the implementation of environmental management systems.

Another division of eco-innovation by Arundel and Kemp [1, p. 8] distinguishes between the following: environmental technologies, organizational innovations, product innovations and service innovations (all carrying environmental benefits) and process innovations. The examples of eco-innovations in environmental technologies may include technologies related to the treatment of pollutants released into the environment, cleaner production, waste management, water supply or the control of noise and vibration. Organizational innovations involve cooperation between businesses in order to achieve closed-loop material circulation and avoid the processes of environmental degradation in accordance with the concept of value chain or pollution prevention plans. Product innovations include green financial products and services (e.g. a "green" credit card produced by limiting greenhouse gas emissions, and "green" loans, where the interest rate is lowered provided the borrower fulfills certain environmental conditions) and services that produce less environmental pollution and a more rational use of raw materials. Process innovations, on the other hand, include alternative, environmentally friendly systems of production and consumption compared to the previously known ones (e.g. renewable energy sources).

### **3. DOCUMENTS SUPPORTING THE DEVELOPMENT OF INNOVATIVE GREEN PUBLIC PROCUREMENT**

The European Union Directive 2004/17 / EC and 2004/18 / EC constitutes the legal basis for the provision of green public procurement. Both documents place great emphasis on the use of environmental considerations in public procurement and stress that the requirements related to the protection of the environment should be taken into account during tendering procedures to implement the principles of sustainable development, and to facilitate contracts with the best value for money.

The ecological aspects of public procurement are referred to in the preamble to the aforementioned Directives. In terms of technical specifications, they point to the possibility of establishing eco-labels<sup>1</sup>, and in the record concerning the conditions of the contract, they encourage environmental protection. Both preambles also point to the issues of environmental management systems. The issue of obligation to information related to environmental protection is referred to in Art. 27 of Directive 2004/18 / EC and Art. 39 of Directive 2004/17 / EC.

Another document on the development of innovative green public procurement is a handbook published by the European Commission, titled *Buying green*<sup>2</sup>. It

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<sup>1</sup> Ecolabels – labelling products with ecological registered trademarks, and thus influencing the market. By indicating products that meet environmental requirements, ecolabels assist in purchasing decisions in stores.

<sup>2</sup> *Buying green!* A handbook on green public procurement, European Commission.

discusses green public tenders carried out within the European Union, explains the concept of green public procurement and summarizes the main principles of EU and national policies in this area. The handbook provides examples of the effects and benefits of green procurement on the basis of actions implemented throughout the Community. It also includes the legal aspects of carrying out tender procedures on the basis of ecological criteria as well as advice on the best use of funds in this regard.

Another document, which refers to the issue of eco-innovation generated by the public procurement system, is the Strategy for Sustainable Development of the European Union and Europe 2020 Strategy. Both documents state that the Member States of the Community should promote all activities necessary from the point of view of external environmental costs, as well as in terms of economic growth based on the principles of environmental protection, with particular emphasis on the situation of small and medium-sized enterprises [16].

The National Reform Programme for 2005-2008 also indicates the need for pro-environmental criteria in public procurement. The document is also devoted to activities facilitating the use of eco-technology. Even then the problem was raised of not using the provisions of the Act on public-private partnerships in order to realize the demands contained in the Strategy.

Another document also mentions an important role of green public procurement. It is the strategy of changing production and consumption patterns<sup>3</sup>. It literally mentions that in terms of purchases made by the government and self-government, these products and services, which are more environmentally friendly, should be preferred.

The National Plan of Action<sup>4</sup> set out in detail the tasks intended for the system of public procurement to serve a broader consideration of environmental criteria in tender procedures. The main objectives in this regard are the following: increasing the participation of aspects related to environmental protection in public procurement; market development of environmentally friendly products; and promoting sustainable patterns of production and consumption. The aforementioned Plan also proposes indicators necessary for monitoring changes in the field of green public procurement. These include, amongst others, the following: the percentage of orders taking into account environmental aspects, the number of Polish products labeled with a Polish Ecolabel, the number of certified environmental technologies and the number of people participating in training courses and conferences directly or indirectly related to green public procurement.

Under the existing regulations in Poland (PPL Act), the following provisions refer to green public procurement: in art. 30, paragraph 6, the legislator admits the possibility of cancellation by the customer of the terms of reference through Polish,

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<sup>3</sup> Strategy changes in production and consumption patterns to favor the implementation of the principles of sustainable development, Ministry of Economy.

<sup>4</sup> The National Action Plan on sustainable procurement for the years 2013-2016.

European or international standards if they provide a precise description of the contract by indicating the functional requirements. These requirements may include a description of environmental impact. However, art. 91, paragraph 2 defines requirements for the assessment criteria of tenders participating in a public contract. Among other identified criteria (beyond the mandatory price criterion), the law authorizes the use of the best available technologies in terms of environmental impact.

#### **4. GREEN PUBLIC PROCUREMENT AND INNOVATION OF POLISH ENTERPRISES IN THE LIGHT OF EMPIRICAL RESEARCH**

As an intelligent customer, the public administration should be mainly interested in products and services of innovative nature, as well as environmentally friendly ones. In reality, however, it seems that there is still a very low level of awareness in Poland regarding the benefits associated with the use of green public procurement in comparison to highly developed countries. Therefore, a survey involving contractors was designed help diagnose the utilization of green procedures in public procurement, to identify barriers to their use, their economic effects and the factors influencing their development.

The study involved 165 contractors, who had previously participated in public procurement. Purposeful sampling was implemented for the reasons mentioned above. In order to verify the test results and determine the relation a chi-square independence test was used.

Among the 165 surveyed companies, those representing services and construction sectors were dominant. Besides these, the study included the following branches: automotive manufacturers, industry, organic farms, education and IT companies. Particularly interesting results were obtained from a sample of 60 organic farms involved in the production of so-called healthy food.

Only 7% of respondents had had any kind of contact with green public procurement procedures. This result confirms the percentage of positive responses obtained on this issue among the public institutions and official statistics, and affirms the conviction that procedures involving ecological criteria are very rarely used.

Interestingly, almost 37% of the surveyed enterprises claim that they offer green products or services. These mainly include organic food, computers that meet environmental requirements, ecological construction materials, or vehicles that meet noise and emission standards. Among the pro-ecological products, the contractors indicated on average 55% of those that meet the criteria of innovation. This result indicates a large and untapped potential of public administration for creating demand for innovation through the use of green public procurement.

The participants of the survey were also asked whether they encountered a situation when an environmentally friendly product they were offering proved to be an insufficient incentive for officials who organized procurements. Among the companies that offered ecological supplies, services or construction works, only 3% managed to succeed in tender procedures. As reasons for such a failure the companies mentioned mostly the problem of a higher price of their product or service and the preference for conventional and well-known solutions on the market. This condition confirms earlier findings regarding the authorities and proves that the criterion of the lowest price is responsible for the failure of environmentally friendly products.

Interesting results were provided by an analogous question on the impact of green public procurement on creating demand for innovation. The results of the study in this area are shown in Figure 1.

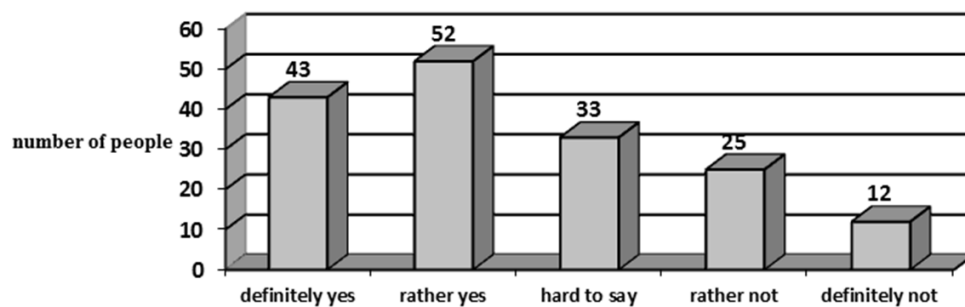


Fig. 1. The impact of green public procurement on creating demand for innovation in the opinion of contractors (own study based on test results)

According to the statement in Figure 1, the vast majority of contractors believe that green procurement can create innovative solutions. Despite the fact that they are unable to recall strategic documents in the field of green procurement, they are able to notice great relationship between the use of environmentally friendly procedures and creating demand for innovation by public administration. Noteworthy is the fact that only about 22% of contractors see no such correlation.

The surveyed entrepreneurs indicated product innovations as those that have the greatest chance of development through the use of green public procurement procedures (68% of responses). They believe that organizational innovations are least likely to be implemented on the market through the use of such solutions.

Only 13% of the surveyed entrepreneurs believe that the introduction of ecological standards in public procurement can positively affect the image of public administration in the eyes of society. At the same time the respondents often indicate that it is the public administration that should provide an example and shape the patterns of behavior among citizens. The resulting percentage of positive responses

allows concluding that contractors rather harshly evaluate the functioning of public institutions not only in the context of the use of environmentally friendly procedures, but also regarding their ongoing activity.

As in the case of ordering parties, interesting results were obtained regarding the barriers to the participation of the surveyed entities in ecological public procurement. The respondents most often pointed out to very high requirements posted by authorities regarding appropriate certificates, approvals and test results. Full results of the study into the obstacles faced by green public procurement are shown in Figure 2.

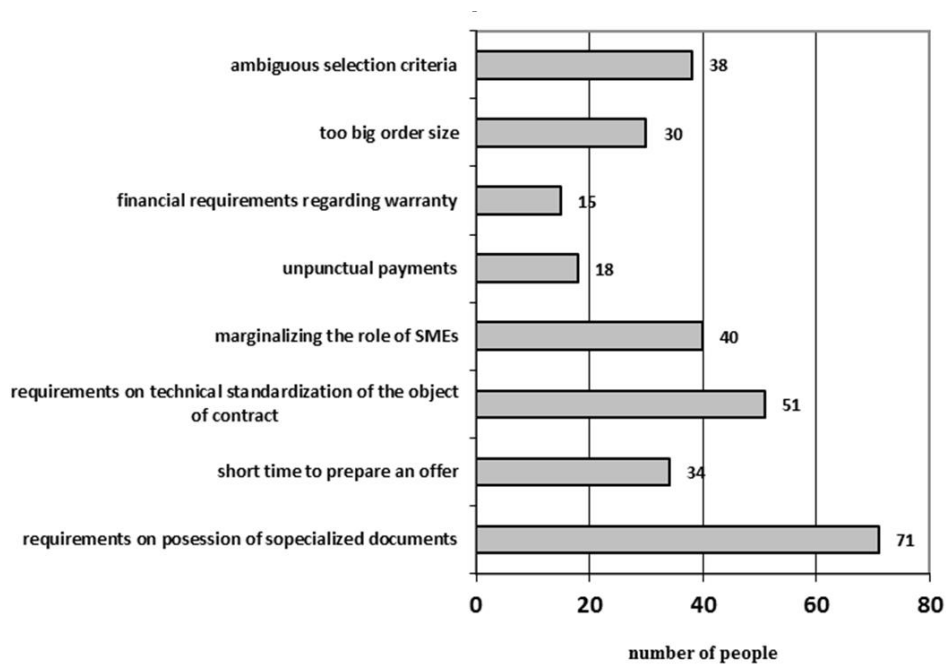


Fig. 2. Barriers faced by green public procurement in the opinion of contractors (own study based on test results)

Figure 2 demonstrates numerous reasons for limited access to green public procurement among the companies participating in public tenders. The most significant is the need to submit specialized documents in the form of quality certificates and those confirming compliance with environmental standards. Many contractors argue, that obtaining such documents is very costly and in fact rarely affects the quality of manufactured products and services. Interestingly, two more barriers are also linked to the authorities. Ambiguous selection criteria and the requirements for technical standardization of the subject of contract also remain in the hands of public entities.

Analyzing the obstacles to green public procurement, one cannot ignore the fact that many of the identified barriers coincide with those present in the subject literature [19]. Also there entrepreneurs complained about delayed payments, excessive size of orders and the marginalization of the role of the smallest entities in tendering procedures. Therefore, the study confirms the unfavorability of public tender procedures, especially in relation to the SME sector.

The analysis of these barriers, however, demonstrates that present legal provisions provide opportunities to overcome and minimize them. This should primarily be done by promoting the smallest entities in terms of their participation in public procurement; reducing unnecessary financial burden for the contractors, as well as increasing the transparency of proceedings and offering equal opportunities to all bidders.

Thoughtful and consistent actions of public authorities to promote green public procurement may result in potential benefits for the enterprise sector participating in such tenders. The respondents point mainly to the economic aspects of their wider participation in the public procurement market. However, the inclusion of environmental criteria into tender procedures enforces environmental conservation and improves the image of public administration to act in favor of environmental protection. Another argument in favor of the implementation of green public procurement procedures is the development of ecological products and services. The relationship with environmental protection also influences the creation of innovative solutions in the field of technology for both industry and the environmental services sector, which are closely related.

Green public procurement can also influence consumer trends. Policies of the European Union support such trends. The benefits of green public procurement can also be applied at the macro-economic level, pointing to general economic advantages stemming from their use. They build the, so-called, ecological economies, leading to increased competitiveness of the whole European industry and creating numerous innovative solutions.

These advantages are linked to yet another one, namely, managing the issues of economic efficiency while evaluating ecological product or service assessment criteria. This efficiency must finally be seen through the prism of the product life cycle costs, and not through the prism of the lowest price offered by contractors, which often has nothing to do with saving budgetary resources and usually generates additional costs in a short period of time.

In light of the above, it is worth looking at the results of research carried out among contractors that covers benefits related to a wider use of green public procurement. These are presented in Figure 3.

Entrepreneurs see the benefits associated with the use of green public procurement mainly on their side. However, one of the most popular responses regards an ability to raise the awareness of environmental protection. Such a situation may indicate that those companies are trying to carry out their activities based on the principles of sustainable development and are socially responsible [3].



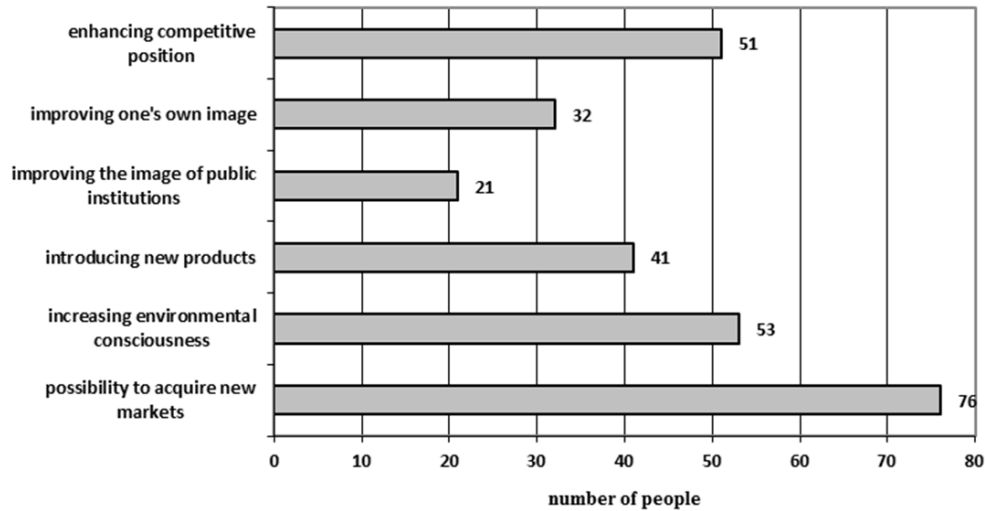


Fig. 3. The benefits mentioned by contractors related to a wider use of green public procurement (own study based on test results)

Moreover, the results of a study carried out among contractors regarding the use of EU structural funds in order to achieve the preference of ecological criteria in public tender procedures are also interesting. Most entrepreneurs (53%) stated that these measures significantly influence the use of environmental criteria in tendering procedures. They stressed that such measures are often granted for specific solutions of an ecological and innovative character and offer greater prospects in the area of creating environment-friendly products and services.

The solutions to be made in connection with a wider use of environmental criteria in public procurement included primarily the simplification of procedures (45%) and policymakers' support involving changes in regulations (32%).

Particularly interesting results were obtained from entrepreneurs who run organic farms. Organic farming is based on the production of natural and fresh food, while respecting the laws of nature and the maximum reduction of human and chemical impact on the environment. The term "organic" requires the owner of such a farm to implement the following basic principles:

- An absolute ban on the use of genetically modified organisms (GMOs), chemical fertilizers and pesticides and antibiotics and growth hormones for animals,
- The use of own resources (e.g. manure),
- Animals must have access to a free-range area and be fed with organically grown feed,
- Combating diseases and pests is conducted using natural methods, or by the use of natural plant resistance.

The label of food products produced by organic farms shall bear the name and/or number of the so-called certification body, which decides whether the product is actually organic.

Some very interesting results were obtained from the group of organic farms. It appeared that, despite the supply associated primarily with organic food and participation in public tenders, these farms generally lose in the proceedings. According to the owners, it is mainly caused by the contract's description where certain contractors are favored and the obligation to indicate a specific number of calories per meal, and the previously described criterion of the lowest price used for selecting contractors. Higher prices of organic food products result from much smaller crops, as well as the disproportionately more labor intensive activities in comparison to growing non-organic products. In addition, according to the respondents, their products are visually not as impressive as those of their competitors, as no chemical agents are used to enhance growth. The study also demonstrates high expectations of the group of producers regarding aid from policymakers. Such assistance, in their opinion, should primarily focus on reducing the barriers to green public procurement, as well as financial aid. Respondents also pointed to the need for training and organizational support. They could not, however, specify how such aid should look like. Approximately 67% of households would expect some kind of an advisory assistance.

## 5. CONCLUSION

Taking into account the results of the study and the experience of highly developed countries in the application of ecological criteria in public tenders, it is worth formulating recommendations for the public procurement system in Poland, in order to obtain more innovative solutions.

First of all - policymakers should intensify their efforts to promote green public procurement by encouraging public authorities to a more widespread use of environmental criteria in proceedings covering supplies, services and construction works. Such actions seem necessary from the point of view of the guidelines formulated by the European Commission on setting targets for the implementation of green public procurement by all countries participating in the Community. Public institutions should cooperate with the private sector to establish such environmental criteria, which would in turn lead to innovative products and services.

Secondly, it is advisable to create a directory or a database of environmental criteria for specific product groups and keep them updated. Electronic dissemination of such data should also be taken into consideration. Public institutions should also cooperate in the field of consulting environmental criteria for new product groups and services (e.g. within the framework of the European system of eco-labeling).

Thirdly, an outright prerequisite for promoting green public procurement is to get more involved in promoting such activities of the Ministry of Environment and the Polish Centre for Testing and Certification, which represent Poland in the work of the Committee on Community eco-labeling. Only such actions can strengthen the work of officials responsible for the preparation and conduct of tendering procedures. It is also essential to involve socio-economic partners and relevant ministries in this process.

Fourth, a guide on comprehensive information about the procedures, policies, benefits and difficulties associated with providing green public procurement should be considered. In such a guide the Public Procurement Office would be able to provide guidance on the possibility and extent of the use of environmental criteria in procurement procedures with particular emphasis on issues related to ecological farms.

Fifth, the ordering parties' lack of knowledge of green products and services suggests a need to develop such a guide, which would present the green issues and facilitate better orientation on such a market. The Public Procurement Office should also intensify its efforts to organize training courses on the aspects of green procurement. Such training should result in an increased awareness of the need to change the price criterion in tenders for the life cycle cost analysis (LCC). They should also keep their website on green public procurement updated. The office should also focus on promoting good practices and environmental specifications present in other Member States.

Sixth, private institutions should also participate in the process of awarding green public procurement. Their suggestions in negotiation modes can act as a very important source of information in the process of formulating tender criteria and can contribute to the acquisition of innovative technological solutions. The possibility of the private sector's participation in training and enhancing knowledge in the field of green public procurement and obtaining information on the entire system and its rules also remains significant. It is worth considering the possibility of organizing at least several national conferences to allow contractors to exchange opinions and the best practices in order to comply with environmental criteria.

Seventh, new methodology for gathering information on green public procurement should be considered. An annual survey of the public procurement market with the use of ecological criteria should be carried out. It would also help to identify current obstacles for the development of the public procurement market.

An extensive use of green public procurement requires undertaking a number of the aforementioned actions, of which the most important one is to realize the scale of the needs of key stakeholders related to environmental protection, as well as the impact they have on the creation of demand for innovative products and services. It should be remembered that the Polish public procurement system is decentralized. This means that **every public institution dealing with the purchases of supplies,**

**services and works has the opportunity to choose products that meet high environmental standards.** At each stage it is possible to introduce such terms that their implementation would result in the best ecological effect while maintaining the economic criteria in both the short and long term.

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## **ZIELONE ZAMÓWIENIA PUBLICZNE A INNOWACYJNOŚĆ POLSKICH PRZEDSIĘBIORSTW W ŚWIETLE BADAŃ EMPIRYCZNYCH**

### **Streszczenie**

Zielone zamówienia publiczne (GPP) to proces, w którym władze publiczne starają się pozyskiwać dostawy, usługi i roboty budowlane, które wykazują się zredukowanym wpływem na środowisko naturalne w całym cyklu ich życia. Dzięki tym walorom mają one możliwość współuczestniczyć w kreowaniu innowacji po stronie przedsiębiorstw polegających przede wszystkim na udoskonalaniu istniejących rozwiązań, które w zdecydowanej większości są przestarzałe i jednocześnie cechują się niekorzystnym wpływem na środowisko. Niestety zielone zamówienia publiczne nie są jednak w Polsce należycie wykorzystane w kontekście kreowania innowacyjnych rozwiązań przez przedsiębiorstwa.

Celem artykułu jest próba wskazania barier dostępu polskich przedsiębiorstw do zielonych zamówień publicznych oraz wskazanie przyczyn i problemów związanych z niewykorzystaniem ich, jako narzędzia do kreowania innowacyjnych rozwiązań.

W związku z tym zaprojektowano badania własne przeprowadzone w odniesieniu do wykonawców, które pozwoliły zdiagnozować stopień wykorzystania zielonych procedur w postępowaniach przetargowych, zidentyfikować bariery ich stosowania, efekty ekonomiczne oraz czynniki wpływające na ich rozwój.

Badania przeprowadzono na 165 wykonawcach, mających na swoim koncie udział w zamówieniach publicznych. Celowy dobór próby służył przede wszystkim otrzymaniu fachowych i realnych odpowiedzi, gdyż jednostki nie biorące udziału w postępowaniach przetargowych bardzo często wykazują się nieznajomością systemu zamówień publicznych.

Szerokie zastosowanie zielonych zamówień publicznych wymaga podjęcia szeregu działań, z których najważniejszym jest uświadomienie przez głównych interesariuszy skali potrzeb związanych z ochroną środowiska naturalnego, a także wpływu, jaki mają te zamówienia na kreowanie popytu w zakresie innowacyjnych produktów i usług.

**Słowa kluczowe:** ekologia, zamówienia publiczne, innowacje

