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The Usefulness of Cleaner Production Projects as an Element of the Initial Assessment of the Circularity of SMEs in the Context of Obtaining Funds Supporting the Implementation of the Circular Economy

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Abstract: The authors of the article decided to verify the requirements for companies looking for sources of financing for projects that will enable them to transform the circular economy. Clarifying the requirements will allow companies to initially verify their ideas. For this purpose, an analysis was carried out of the requirements set for enterprises by committees assessing circular economy projects and allocating funds for their implementation. The analysis allowed us to identify several features that indicate whether a given project fits into the circular economy model. The article proposes a system model that can be used to prepare the company for changes towards the Green Deal (GD) by implementing the Cleaner Production (CP) strategy in the company. The implementation of a Cleaner Production strategy initiates further changes, gradually developing the company's potential towards implementing the circular economy assumptions. This solution is much cheaper than the expensive services of consulting companies and much simpler than trying to prepare a competition application on your own, the authors asked themselves a research question: can the implementation of a Cleaner Production project be an initial action supporting SMEs in obtaining external funds (domestic and foreign) intended for the implementation of circular economy solutions?

Keywords: circular economy; cleaner production; business model; innovation

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1. Introduction

Nowadays, environmental protection is an essential element of the functioning of an organization. This involves, among other things, the need to generate less waste as well as to save on the use of raw materials. In a broader sense, we can talk about the need to adopt a sustainable development strategy in the organization's activities. It is worth emphasizing that this is not a requirement dictated only by legal regulations, but also by the expectations of customers, contractors, and investors, as well as the social responsibility of the organization itself and economic calculations.

The answer to the above in terms of sustainable production and consumption is to be the circular economy (CE). A necessary element for every company facing the challenge of transformation towards a circular economy is obtaining funds to finance the changes. Companies, especially small and medium enterprises (SMEs), often do not have their funds and require support. Obtaining external financing involves preparing a project, or at least its concept, consistent with the circular economy transformation model. This is an extremely difficult task in terms of content, especially when the organization is only in the initial phase of change. The main problem Polish companies face is to develop and then implement a

new business model in line with the principles of circular economy, enabling, firstly, the achievement of the goals of the 2030 Agenda and, secondly, the requirements of the Green Deal. Typically, companies only meet the minimum required by law to avoid penalties.

Poland is the fifth country in the EU with the highest number of enterprises after Italy (3.61 million), France (2.97 million), Spain (2.69 million), and Germany (2.59 million) (data for 2019 [1]). The SME sector in Poland includes almost 2.2 million micro companies (97.0%) and approximately 50 thousand (2.2%) small enterprises and approx. 10 thousand (0.6%) medium-sized ones. Together, they constituted 99.8% of all active companies in Poland in 2020 [1]. The COVID-19 pandemic, followed by Russia's attack on Ukraine and the global crisis caused by these two huge tragedies, led to energy prices and prices in general more than doubling. In this situation, companies focused their activities on surviving in the market at all costs. Almost all of the surveyed companies (95%) responded to the increase in energy prices by increasing the prices of products and services for consumers. One article, "The impact of high energy prices on doing business in the SME segment", used the results of a quantitative study and the CATI method in their study involving 300 companies of GFK Polonia commissioned by ING Bank Śląski in August 2022. About 77% of companies responded by looking for cheaper materials and services from suppliers, and 60% by cutting costs that they had previously incurred on advertising or the social fund for employees. As many as 41% of companies have suspended investments aimed at company development. At the same time, the same research shows that every third small or medium-sized company intends to invest in solutions that will help reduce energy costs in the future and protect against the risk of energy shortages. As an increase in interest in the so-called "green investments" (36% of respondents), 19% have started or are planning investments in the area of thermal modernization, insulation of buildings, or improving their energy efficiency, 17% have started or are planning investments in their renewable energy sources (e.g., photovoltaic panels), and 15% have started or plans to start investing in the reconstruction or modernization of production lines towards energy efficiency. Every third company planning or investing in renewable energy already has such a solution but will continue to expand or is already expanding investments in this area [2]. The events of recent years have significantly increased awareness of increasing energy efficiency and introducing our energy sources. In many cases, such solutions are perceived as elements of ensuring safety and reducing costs. The current energy crisis may, therefore, become an impulse to accelerate the energy transformation. Sustainable development practices and circular practices are perceived as catalysts for transformation not only by Polish enterprises. The same conclusions have been indicated by numerous studies conducted in companies in various European Union countries, e.g., in Greece [3], or in Portugal [4], both among small and medium-sized enterprises and corporations [5,6]. Promoting SMEs' transition towards CE can accelerate the global green transition due to SMEs' proximity to the local environment and workforce, as Gennari points out in his detailed research [7].

Companies indicate the lack of funds to finance them as the reason for the lack of "green investments". Every third company that is not planning or currently investing in renewable energy is waiting for the availability of funds for this purpose, and the same number of entities are counting on better solutions at the state level (e.g., unlocking the possibility of building windmills, increasing the profitability of installing photovoltaic panels). Over 40% of companies that do not currently invest in renewable energy declare that they do not rule out doing so in the future. More than half of industrial companies are ready to modernize production lines if they receive funding for it. In turn, 30% are waiting for funds from, e.g., EU sources. The economic obstacles for companies in implementing "green solutions", especially circular ones, in all economic sectors, and the industries of the European Union have also been indicated through a very thorough analysis of case studies and literature conducted, for example, by De Pascale, Di Vita, Gianetto, Loppolo, Lanfranchi, and Limosani based on available data from 2015 to 2023 [8], or the by Holly, Kolar, Berger, Fink, Ogonowski, also Schlund [9], who also pointed out that

the biggest barrier to transformation is insufficient financial support for companies from the government [2].

The pressure for companies to use energy-saving and low-emission solutions is low, as only one in five companies feels it. Larger enterprises and industrial plants feel more pressure. This results mainly from regulations introduced in connection with national and EU policies, and, secondly, from pressure from local governments and the local community. Only every fourth respondent sees pressure from contractors or consumers, and every tenth from banks. There appears to be less pressure to act on the climate crisis in the SME sector than in large companies [2].

Most enterprises expect loans on preferential terms (70%) and broadly understood consultancy, including obtaining EU funds, public financing, and bank loans. They also expect technical advice on the practical implementation of transformation in the company (31%). At the same time, as many as 63% of companies declare that the anti-inflation shield helps them overcome the effects of the crisis only to a small extent, and 15% do not feel such help at all [2].

As part of the competitions announced in 2023 (e.g., INNOSTART, FENG program—European Funds for a Modern Economy, FEPW European Funds for Eastern Poland program, SMART), huge financial resources were mobilized [10], and special attention was paid to the innovation of the planned implementations. Unlike previous editions, the latest one rewards the profitability of implemented projects so that they bring measurable benefits to the economy. The more innovative the project and the more profitable the implementation, the larger the subsidy [11].

Between 2007 and 2022, Poland advanced in innovation by 18 positions, from 56th to 38th place in the Global Innovation Index. Sweden takes third place, the United States is in second place and Switzerland is at the top [12]. Poland also occupied the highest position, i.e., 38th place, in 2017 and 2020.

Just like innovation, R&D activity is highly appreciated—both are a gateway to EU funds for those who already have appropriate experience. Unfortunately, in the case of SMEs that are just looking for ideas for R&D and innovation, the lack of such know-how is a significant barrier to the use of European subsidies.

In connection with the above, the authors propose the following research question: can the implementation of a Cleaner Production project be an initial action supporting SMEs in obtaining external funds (domestic and foreign) intended for the implementation of circular economy solutions?

2. Literature Review

Implementing the circular economy in a company is a complex and difficult process. The goal is to develop a business model that will, on the one hand, enable circularity and, thus, the company's compliance with the Fit for 55 requirements [13], and, on the other hand, eliminate any waste and improve its economic efficiency, justifying the changes. Ultimately, any transformation must demonstrate benefits for the three stakeholder groups in a given project: the company, the environment, and society.

Tools facilitating transformation towards a circular economy are designed to enable analysis of the company's initial state, the determination of transformation stages, and then the reporting of effects and monitoring of further activities. At every stage of change, the so-called good practices developed by other companies, being based on benchmarks, constitute a basis for organizations taking up the challenge. The literature extensively describes internal environmental factors, such as the attitude of managers, employees, and financial benefits, as key motivators for organizations to apply sustainable development practices in their business activities [14].

Despite numerous publications and websites containing instructions and tips on the transformation towards a circular economy [8,15–18], it is a huge challenge, especially for those companies that have so far only fulfilled the obligations of the so-called minimum, i.e., compliance with regulations. The lack of knowledge in the field of circular economy often

means that preparing the company for transformation seems to be a task beyond strength. If companies want to use external consulting, they must have appropriate resources. They signal their willingness to obtain funds but are unable to prepare the required competition documents because, paradoxically, when verifying competition applications, a fairly high degree of advancement in preparing the company for the transformation towards the circular economy and involvement in the change process is required.

A comprehensive empirical analysis of the data, conducted by Arranz, Arroyabe, and de Arroyabe [19] confirmed the presence of feasibility and resource barriers that affect the implementation of the circular economy. They also emphasize the importance of various pro-ecological activities on the path to transformation, and, in particular, on the role of engaging and motivating employees through cost-free activities using the small-step method.

In the area of sustainable development, the Sustainable Development Solutions Network (SDSN) has identified six investment priorities. These are areas where serious social "transformations" are needed to achieve sustainable development goals [20]. One of these areas is "Zero-emission energy and circular economy for decarbonization and reducing pollution" (Agenda 2030, Sustainable Development Goals No.: 7, 12, 13 [21]).

In the implementation of the Agenda's tasks, from 2016 to 2022, Poland advanced in the summaries from position 38 (out of 149 countries) to place 15 (out of 195 countries). The degree of the implementation of the goals is monitored using the "Sustainable Development Goals Index", or SDG Index, and the global value of the SDG Index for Poland improved over the years 2016–2022 by 10.7 points, from 69.9 to 80.5 (out of 100 possible) [22].

One hundred and sixty-nine tasks have been assigned to the Sustainable Development Goals, which are implemented and monitored in "5P" areas: people, planet, prosperity, peace, and partnership), and the year 2030 was assumed as the time horizon for implementing the tasks. Monitoring the implementation of the 2030 Agenda and reporting progress by individual countries is possible through 231 indicators. A special set of indicators, monitored by Eurostat was prepared by the European Union. The Central Statistical Office is responsible for measuring Poland's progress in implementing the Agenda's assumptions. It additionally monitors national indicators that Poland added due to national specificity [23].

The 2022 global circularity report revealed [24] that we are only 8.6% globally circular and this is a worse result than two years earlier when it was 9.1%. The report shows that material consumption is not only increasing but is accelerating beyond population growth. For example, since 1970, America's population has grown by approximately 60%, accompanied by a disproportionate 400% increase in consumer spending.

Spectacular effects in implementing the assumptions of the Green Deal are achieved by combining activities in the implementation of the assumptions of the 2030 Agenda and the Circular Economy. Circular economy is a tool enabling the implementation of the Agenda's assumptions. According to Alarcon et al. (2020) [25], a circular economy is part of the solution enabling the achievement of sustainable development goals.

Companies include them in their strategies and work on their implementation at the operational level, focusing their efforts mainly on the following areas: design (durable and flexible functionalities, reusable materials), production (low consumption of raw materials and energy, regeneration, renewal, recycling), maintenance (repair, reuse), and logistics (return logistics, disposal decision).

The coordination of activities in these four areas will, therefore, clearly affect both the level of implementation of sustainable development in the company and the functioning of the circular economy; however, the importance or impact of each of them may vary depending on factors such as the type of product or production process, materials used, or even the industry to which the company belongs.

The identity of the Cleaner Production strategy with the idea of a circular economy results from the main principle of CP: "The ideal of cleaner production is waste-free production". Waste-free means that the strategy is designed to reduce waste at its source.

The CP strategy appeared as a response to the ineffective strategy of eliminating the effects of enterprises' activities [26]. The impact of Cleaner Production projects in many countries has been indicated previously, e.g., [27–29] and also more recently, e.g., [30]. Already in 1995, Baas drew attention to the need to change thinking about production—the need to prevent pollution, and not just eliminate its effects [27]. In turn, Fresner indicated in 1998 that the activities of companies in the area of Cleaner Production harmonize well with the areas required in the ISO 14001 standard [28]. This topic is still relevant in the context of the very popular idea of Industry 4.0. [31]. However, no research was found on the links between Cleaner Production projects and the possibilities of supporting the acquisition of funds for further implementations aimed at reducing the negative impact on the environment and the circular economy.

Used on a large scale thanks to Norwegian funds in the last decade of the 20th century, it has been accompanying Polish entrepreneurs for over 30 years as a proposal to support the voluntary implementation of pro-environmental innovations [32]. This modern environmental management strategy involves "achieving optimal environmental performance at every stage of the product's life, (. . .) the basic goal of which is to manage natural resources in such a way that both governments and entrepreneurs achieve higher efficiency in the use of natural resources while increasing the use of secondary raw materials or the recovery of raw materials allows for the gradual reduction in unfavorable environmental impacts per each unit of production. The introduction of this idea to industry and trade serves to implement the principles of sustainable development" [33,34]. The Cleaner Production Strategy brings many benefits for the environment and the economy, but also for the company's social environment and its marketing. It is a strategy that brings positive effects both to nature and to the organization and society that uses it [33].

The priority of implementing the CP strategy is to prevent waste generation (CP implementation diagram—Figure 1).

Removing the already existing effects of environmental pollution using special installations (sewage treatment plants, filters, etc.) is necessary; however, by preventing it at the source, the amount of pollutants and their concentration can be reduced or eliminated. The introduction to a change in this direction is the use of a hierarchy of actions like the one presented in Figure 2.

Enterprises that implement activities that minimize the negative impact on the environment by the principles of the Cleaner Production strategy, i.e., prevent pollution or waste of resources at the source of their creation, can obtain a CP Certificate after graduating from the Cleaner Production Academy (formerly: CP School). They then submit an ecological report in which they demonstrate their achievements to date and establish a plan for further pro-ecological changes in their activities. Winners of CP Certificates are entered into the Register of Cleaner Production Certificates, which is verified every year. Winners of CP Certificates usually do not stop at one shift, and the best ones have an open way to apply for the more prestigious Polish Register of Cleaner Production and Responsible Entrepreneurship (PRCPiOP) [35]. This register operates under the leadership of a representative of the ministry responsible for climate and environment. Possession of both the Cleaner Production Certificate and entry in the Polish CPiOP Register are among the quality criteria for the assessment of investment projects, both in the industrial sector and in services—in the Regulation of the Council of Ministers on public aid granted to certain entrepreneurs for the implementation of new investments [36]. This approach of the state authorities is an incentive for entrepreneurs to take further pro-environmental activities. The CP Certificate Register, together with the Polish CPiOP Register, form the so-called System of Voluntary Ecological Commitments [35]. The area of operation of the CP strategy is presented in Figure 3.

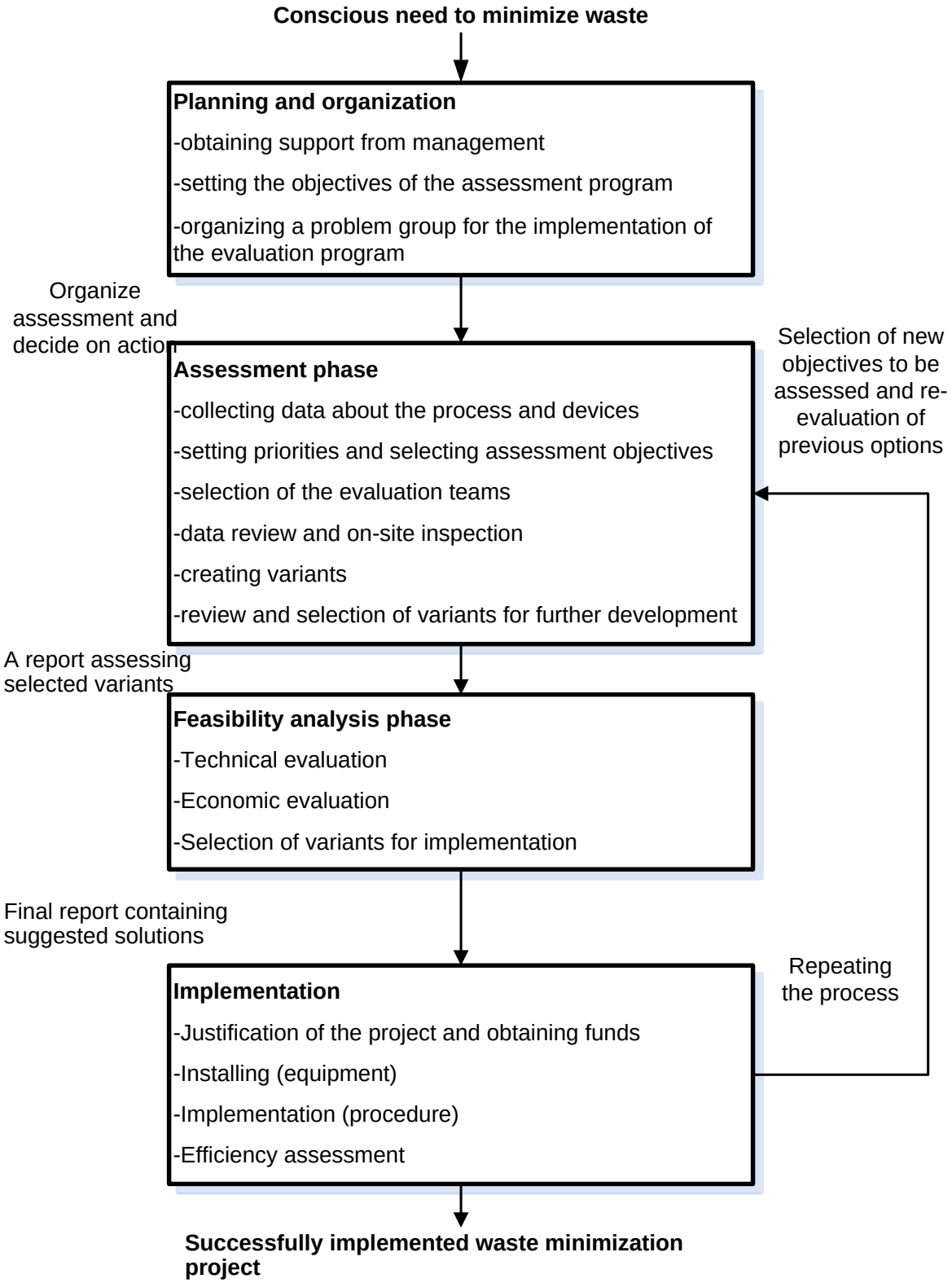


Figure 1. Procedure scheme used to assess the possibilities of waste minimization in the Cleaner Production Strategy. Source: based on [34].

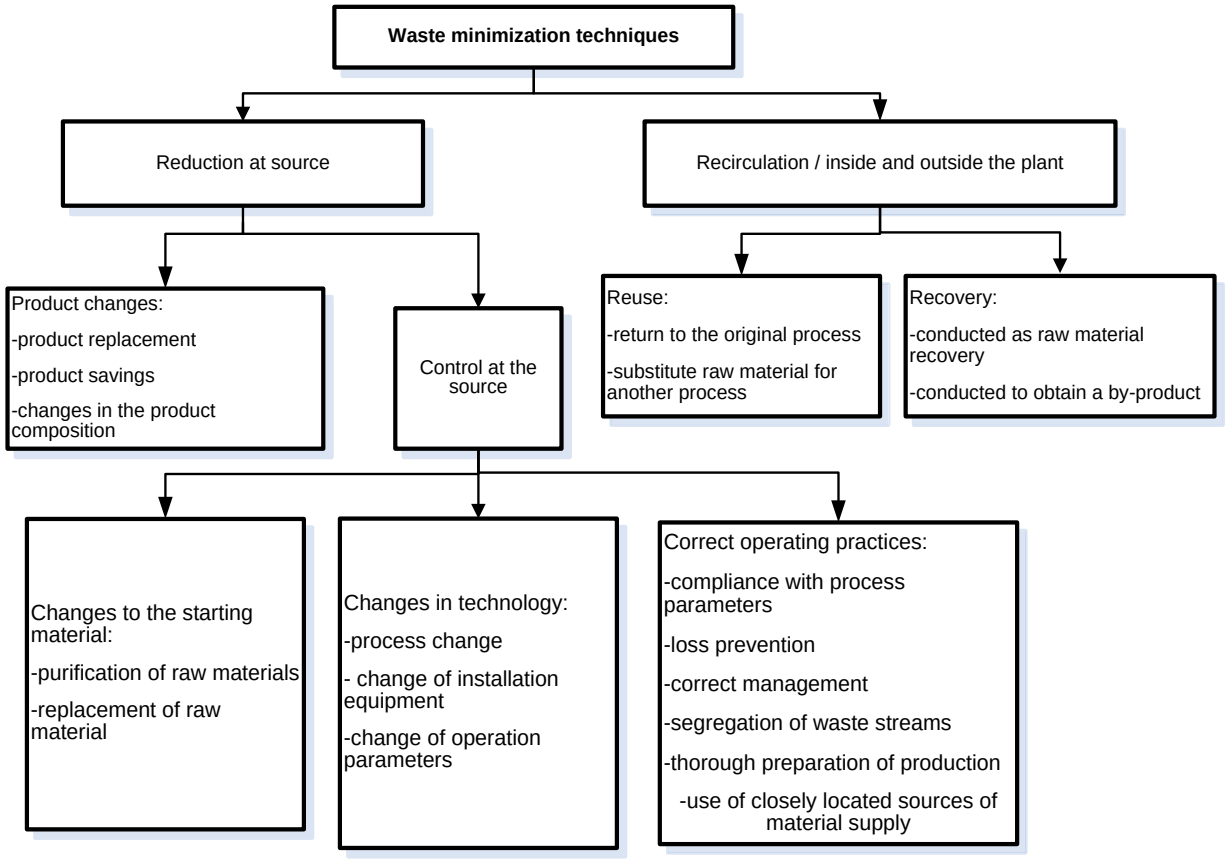


Figure 2. Classification of waste minimization techniques used for Cleaner Production strategy. Source: based on [34,37].

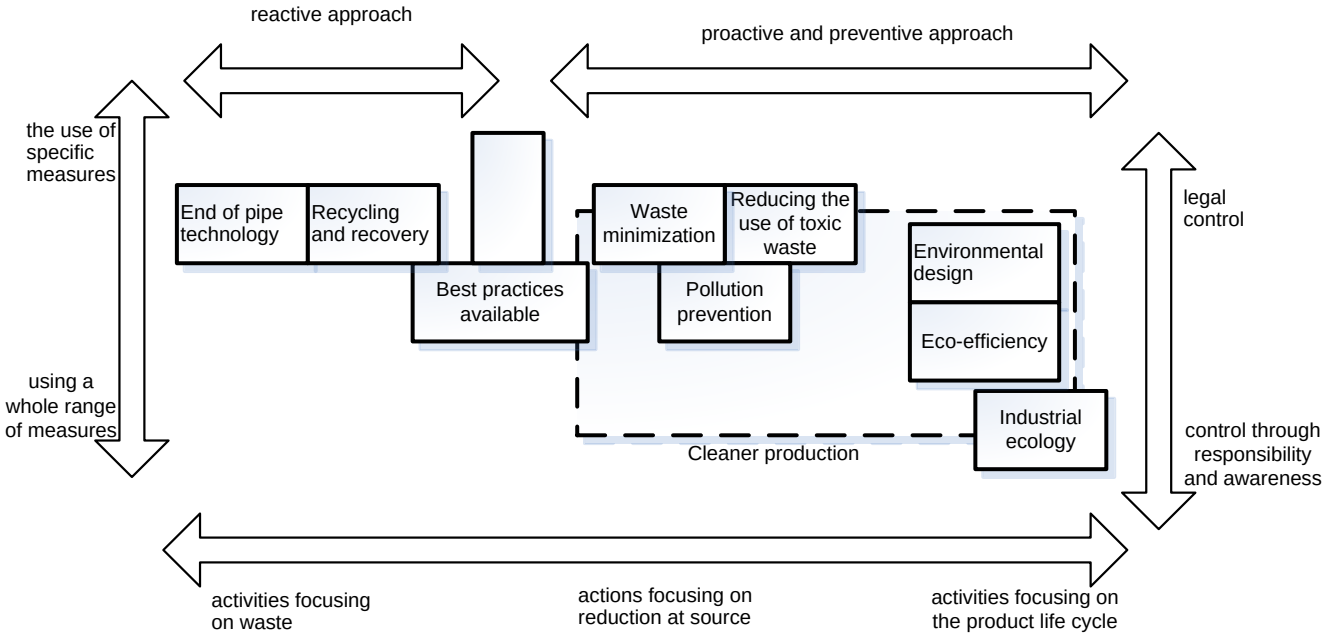


Figure 3. Scope of the operation of the Cleaner Production Strategy. Source: based on: [37,38].

3. Materials and Methods

It provides a concise and precise description of the criteria that were set for candidates in two different competitions/programs that were analyzed during the first-degree substantive evaluation:

1. Program: Environment, Energy, and Climate Change of the EEA FM 2014–2021, "Strengthening the implementation of the circular economy" [39].
2. Program European Funds for Eastern Poland 2021–2027. Priority I Entrepreneurship and Innovation. Measure 1.3 Circular economy in SMEs [40].

During the comparative analysis, those criteria that are irrelevant from the point of view of the research objective were omitted, the names of which relate to the answer to the research question: can the implementation of a Cleaner Production project be the main one supported by an SME in obtaining external constraints (national and consequences) from its application when applied to the scope of a closed system? Therefore, does the CP project prepare the company to change its business model?

Then, using the qualification survey prepared by PARP Polish Agency for Enterprise Development [41], the effects of selected projects implemented in accordance with the Cleaner Production procedure by manufacturing companies from the SME group were analyzed. In this way, it was determined how many projects were implemented in accordance with the CP strategy and to what extent the assumptions of the transformation lead towards a circular economy.

Ad. 1. Program: Environment, Energy and Climate Change of the EEA FM 2014–2021, "Strengthening the implementation of the circular economy".

The first criterion taken into account by the team assessing the projects in the first stage, under the "Substantive evaluation card of the design concept" (first stage assessment), was to determine whether the project was consistent with the assumptions of the circular economy.

The compliance of the project with the assumptions of the circular economy was determined based on the compliance of the project's content with the definition of the circular economy included in the document "Road map of transformation towards a circular economy": "The circular economy is a model of economic development in which the following basic conditions are met while maintaining the efficiency condition. Assumptions:

- the added value of raw materials/resources, materials, and products is maximized or
- the amount of waste generated is minimized and the waste generated is managed by the hierarchy of waste management methods (waste prevention, preparation for reuse, recycling, other recovery methods, disposal)" [42].

As well as with EU strategic documents, such as the circular economy package, i.e., closing the loop—an EU action plan for the circular economy [43], a report on the implementation of the Circular Economy Action Plan [44], etc.

Then, the feasibility of the project (general project logic) was assessed. It was checked whether a needs diagnosis was carried out based on current data and whether the diagnosis results indicated the existence of a problem; whether the purpose of the project and alternative possible ways of solving the problem were defined, whether a description of the main purpose of the project was presented and a realistic method/methods were selected, adequately justifying how to achieve the assumed goal. The project was also assessed in terms of the validity of the proposed activities; experts had to assess whether the proposed activities formed a logical and coherent whole and whether they were appropriate for achieving the results and the assumed ecological effect. The budget and schedule of the project were also analyzed, primarily in terms of realistic estimates and the real possibilities of implementation within the proposed budget and proposed time frame.

The evaluation card also suggests the adoption of indicators that will enable the numerical expression of the planned effects but does not suggest their selection, limiting the indications to the selection of those that will be justified from the point of view of the

material scope of the project and the achievement of target values. An important criterion for the evaluators was the potential scale of the project's impact. It was assumed that the activities and solutions used in the project would be disseminated among the identified target group.

A particularly important verification was the impact of the project on raw materials, and, more specifically, the reduction in the consumption of raw materials through the implemented solution. It was important during the verification to determine whether the solution would contribute to increasing the amount of raw materials that can be reused, reducing the amount of raw materials used by the entity in processes directly related to its operations, or reducing the amount of raw material remaining from processes related to the entity's operations.

The last criterion was the selection of educational activities in the project. Information and educational activities were assessed in terms of identifying the target group, planning activities adequate to the needs of this group, ensuring effective access to it, and checking whether the implemented activity is related to other activities included in the project.

Ad. 2. Program: European Funds for Eastern Poland 2021–2027.

In this competition, the evaluation could use indicators prepared as part of the GOSPOSTRATEG "Oto-GOZ" project: "Development of a system of measurement indicators enabling the assessment of progress in the transformation towards a circular economy and the impact of the circular economy on socio-economic development at the mesoeconomic (regional) and macroeconomic (national economy) levels", co-financed by the National Center for Research and Development [44]. These were not yet available when the projects submitted by enterprises in the first competition analyzed here were created. The widespread availability of indicators meant that both quantitative and qualitative assessments were carried out in the PARP competition, taking into account the scale of environmental impact and the profitability of the proposed solutions.

It was obligatory to meet two conditions at once, as part of the adequacy of the solution criterion: the solution had to respond to a defined problem in the circular economy area and contribute to the transformation of the company's activities towards a circular economy and fit into the circular economy model. When both of these conditions were met, the innovativeness of the solution was checked (under the "Oslo Manual"—OECD manual [45]).

The effects caused by the project on other entities were also taken into account. On the one hand, the dissemination of solutions used in the project, e.g., by the number of circular economy patents obtained [pcs.], and, on the other, cooperation within the circular economy with external entities, e.g., on the principle of symbiosis (the number of symbiotic connections with business partners is taken into account based on "my waste is your product"). Impact on the environment also requires verification of educational and dissemination components (development of good practices). This is directly related to determining the extent to which the solution will contribute to development and what the benefits of implementation will be in business and social contexts.

It was important to determine whether the applicant had properly identified the area of the company's activity that requires transformation towards a circular economy and whether, in the area of activity indicated by the applicant, it was justified to carry out transformation activities towards a circular economy from at least two of the scopes indicated in Table 1.

Table 1. Assessment of circular economy projects—a set of indicators enabling the assessment of the project in terms of compliance with the scope of activity—additional criteria for stage I of PARP.

Range	Indicator [Unit]
Reducing the use of primary raw materials	decrease in the consumption of primary raw materials about the amount of revenues [Mg/PLN *]
Increasing the use of secondary raw materials, by-products, and bio-raw materials	increase in the consumption of secondary raw materials about the amount of revenues [Mg/PLN]
Reducing the consumption of critical raw materials	decrease in the consumption of critical raw materials about the amount of revenues [Mg/PLN]
Reducing the amount of waste generated	decrease in the amount of waste generated [Mg]
Increasing the use of waste in production processes	amount of waste reused [Mg], amount of waste recycled [Mg], amount of waste subjected to other recovery processes [Mg]
Reducing the amount of water used	reduction in water consumption concerning the amount of revenues [l/PLN]
Reduction in the amount of wastewater produced	decrease in the amount of wastewater produced [Mg]
Reduction in the amount of primary electrical and/or thermal energy consumed	decrease in the amount of primarily electrical and/or thermal energy consumed [%]
Increasing the share of renewable energy sources in the energy consumption structure	increase in the share of energy from renewable sources in total energy consumption [%]
Reduction in CO_2 and other greenhouse gas emissions from own sources	decrease in emissions of CO_2 and other greenhouse gases from own sources [%]
Reduction in dust and gas emissions	decrease in the amount of primarily electrical and/or thermal energy consumed [%]
Increasing product durability through repair or reuse	extending the life of products through repairs or reuse [%]
Introduction of new environmentally friendly materials or solutions that reduce the consumption of materials, energy, or emissions by recipients (consumers)	reducing the consumption of materials, energy, or emissions by recipients (consumers) [%]

* 1 Mg = 1 t; PLN—Polish zloty. Source: [46]

4. Results

The authors analyzed 30 CP projects using a survey designed for the competition: circular economy in SMEs, Stage I—development of a circular economy-transformation business model to check the initial potential of the enterprises in terms of introducing solutions in the field of circular economy [40]. Completing the survey allowed us to assess to what extent the company is prepared to operate in a circular economy.

CP projects obtained total results ranging from 14 to 18 points, which is equivalent to the assessment of circularity at a sufficient level (min. 10 points were defined as a point sample); moreover, in most cases, they obtained the following recommendations:

1. The need to take action to reduce emissions of CO_2, other greenhouse gases, and dust from own sources through effective management, planning, and optimization of transport services; with the change of power supply to production plants from conventional sources to renewable ones; with the implementation of techniques for eliminating installation leaks or with the elimination of fugitive emission sources at the production plant;
2. The need to intensify activities increasing the share of renewable energy sources in the energy consumption structure by implementing, for example, the use of energy from cogeneration and energy storage, the installation of solar collectors, heat pumps, and photovoltaic panels;
3. The need to take actions related to introducing new products prepared with eco-design into account.
4. The need to take actions related to the creation of industrial symbioses.

The oto-GOZ project developed a system of measurement indicators enabling the assessment of the progress of the transformation towards a circular economy and the impact of the circular economy on socio-economic development at the mesoeconomic (regional) and macroeconomic (national economy) levels. This project was co-financed by the National Center for Research and Development as part of the first competition for open projects under a strategic program of scientific research and development work, "Social and economic development of Poland in the conditions of globalizing markets—GOSPOSTRATEG". Contextual indicators that deserve attention here include the number of patents obtained in the area of the circular economy [pieces] and the number of industrial symbioses [pieces], as well as the issue of the company having a circular economy strategy, confirmed by an audit, the number of trained people [number of people], and the value ratio of the so-called green public procurement to total procurement [%]. None of these metrics are monitored for CP projects. However, the main and auxiliary indicators are monitored (identical to those developed in the oto-GOZ project—indicators given in Table 1), which are the most common implementation topics within CP projects.

For comparison, a summary of the effects of pro-environmental implementations carried out by 21 SME companies as part of CP projects from 2021 to 2022 is presented (Table 2).

Table 2. The list of the effects of pro-environmental implementations carried out by 21 companies as part of three editions of the CP Academy carried out from 2020 to 2022.

No.	Reduction in Electrical Energy Consumption [%]	Waste Reduction [%]	Water Consumption Reduction [%]	CO_2 Emission Reduction [%]	Cost of Changes [PLN]	Economic Effect. per Year [PLN]
1	44	66	-	44	660	3800
2	-	-	23	-	12,390	12,390
3	-	-	-	16	590,000	−393,333
4	-	83	-	-	11,230	−5615
5	-	100	-	-	261,000	261,000
6	-	80	-	67	18,840	20,000
7	-	-	90	-	19,550	29,350
8	-	76	-	-	8311	49,869
9	72	50	-	-	13,500	3000
10	-	95	-	-	732	2270
11	-	50	-	-	0	9000
12	-	-	60	-	33,000	49,000
13	0.8	1	2.6	-	200,000	100,000
14	-	80	-	-	0	10,000
15	-	-	30	-	15,000	64,285
16	-	37	-	-	300,000	80,000
17	50	-	-	50	208,000	208,000
18	20	99	-	59	4,275,000	2,850,000
19	16.5	56	18	-	50,000	7700
20	25.5	-	-	-	739,080	164,240
21	-	60	-	-	1300	1690
All:	32.7	66.6	37.3	47.2	118,218.7	32,221.25

Source: own study for the based materials from The Polish Cleaner Production Movement Association.

The topics of the projects were selected individually by the companies based on a feasibility analysis, i.e., a technical and economic assessment of the planned investments.

Based on the collected data (Table 2), it was found that 7 out of 21 companies achieved a total reduction of over 32% in electricity consumption, 14 out of 21 companies achieved an average reduction in waste of over 66%, 6 out of 21 achieved a reduction in water consumption of over 37%. Moreover, 5 out of 21 achieved over 47% reduction in CO_2 emissions. The average cost of the changes was PLN 118,218, and the economic effect per year was over PLN 32,220.

Companies that complete the Cleaner Production Academy and submit an ecological report in which they demonstrate their achievements to date and outline a pro-ecological action plan for the coming years receive the Cleaner Production Certificate. Possession of a CP Certificate (as well as an entry in the Polish Register of CP and OP for those reporting annually) are among the qualitative criteria for the assessment of investment projects, both in the industrial sector and in services—in the regulation of the Council of Ministers on public aid granted to certain entrepreneurs for the implementation of new investment [47] (this is an implementing act to the Act of 10 May 2018 on supporting new investments [48]).

The change implemented by the CP project must clearly prevent the generation of waste at the source, which is an important element identical to the guidelines for the transformation towards a circular economy. A reduction in the area of media consumption and CO_2 emissions and, above all, the prerequisites for the project implementation—support of the management and active participation in the CP Academy, which is a training package enabling the initiation of change in the company—constitute the preparation of the company for full transformation in the coming years. They also determine the success of companies in competitions/programs that enable obtaining external funds (domestic and foreign) for the implementation of circular economy solutions. They are ready for changes and, after analyzing the requirements in two competitions (see: Section 3. Materials and Method: ad. 1 and ad. 2), they meet the required qualification criteria.

5. Discussion

Small and medium-sized enterprises play an important role in most economies. At the global level, they constitute the majority of enterprises that not only make a significant contribution to job creation but also generate global economic development. Numerically, it is estimated that they represent approximately 90% of enterprises and provide over 50% of employment worldwide. According to the World Bank, SMEs generate up to 40% of national income (GDP—Gross Domestic Product) in emerging economies. Due to economic changes and global development, it is estimated that 600 million jobs will be needed by 2030, which is why the development of SMEs is a high priority for many governments. Even though SMEs are so important from an economic point of view, it should be noted that their functioning is associated with many problems. One of them is access to financing. It is indicated that this is the main barrier to the development of SMEs (especially since the company's assets are often the owner's assets). Lack of access to the appropriate level of financing is the second most frequently mentioned obstacle indicated by SME entrepreneurs in developing their businesses in emerging markets and developing countries [49].

In Poland—based on the Report on the State of the Small and Medium-sized Enterprise Sector in Poland 2020 prepared by the Polish Agency for Enterprise Development (PARP)—it is estimated that as many as 99.8% of Polish companies belong to SMEs (including micro-enterprises) [50]. They generate 72% of the national GDP, which shows how important they are for the Polish economy. Moreover, as pointed out by the OECD, there is an urgent need for changes in the field of investments (e.g., regarding the implementation of the circular economy), support in international trade, as well as increasing the contribution of SMEs in the area of ecological and digital transformation. Appreciating the role of SMEs results in emerging opportunities to finance and co-finance activities for this group of enterprises. The goal is to enable them to receive the most benefit from the transformation they are going through. At the same time, non-financial aspects should be emphasized, such as spreading knowledge and developing innovative solutions through dedicated teams within the organization (in SMEs, the owner is often also the main decision-maker). The increase in knowledge and improved awareness contribute not only to increasing the competitiveness of the enterprise but also to increasing the awareness of interested parties and the sense of agency [51,52].

Drawing attention to the opportunities that the implementation of the CP Project offers SMEs on their way to the Green Deal may be a valuable tip on how they can start the

transformation process without incurring high costs of change, both financial and mental, and achieving spectacular results in a brief time.

6. Conclusions

The analysis conducted allows us to conclude that CP projects may be the first step towards changing the business model towards the circular economy transformation. The environmental protection model proposed by CP is based on the continuous, integrated prevention of pollution at the source and the elimination of waste generation through changes in the management of areas such as human resources, materials, and energy. The justification for treating the Cleaner Production project as an introduction to deeper changes related to the transition to a circular economy is presented in Table 3, which illustrates the compatibility of elements important for both models.

Table 3. Comparison of compatibility models: dynamic Cleaner Production and circular economy (CE).

System Elements	Dynamic Cleaner Production Model	Circular Economy Model	Compliance of Activities *
Participants	- consumer - producer - services - local government, economic, and administrative institutions	- producer - distributor - consumer - services - local government, economic, and administrative institutions	+
Educational activities	- CP Academy - educational projects - cooperation with educational centers	- in-house training - external training (postgraduate studies, etc.) - educational projects - -social campaigns	+
Continuous improvement	- about waste management methods, - production and service cycle - on the path: producer-service-consumer	At every stage of the model's functioning	+
Reduction in pollution	- at the source - reduction in discharges into the environment - obtaining raw materials from renewable sources and secondary raw materials	By the principles of Zero Waste and ReSOLVE (a model of 6 activities in the circular economy developed by the Ellen MacArthur Foundation)	+
The main area of intensification of activities	Intensification in every area of operation of enterprises and organizations	Intensification in every area of operation of enterprises and organizations	+
Obtaining information for system improvement	- manufacturing process - feedback on the producer-service-consumer route	- manufacturing process - feedback along the route: producer–service–consumer	+

* actions compliant; + Source: own study.

A preliminary comparison of the two models leads to clear conclusions: the dynamic Cleaner Production model [33] is identical to the circular economy model. By implementing the Cleaner Production project, companies are gradually implementing the recommendations in line with the transformation towards circularity. The research should be deepened and presented using the example of specific pro-ecological innovations in a sample company, emphasizing the economic calculation of the actions taken, which the authors are working on. It would also be worth indicating the time frame for the projects implemented

in the company implementing the CP strategy compared to the changes implemented in companies that made such an effort using a different approach.

The report "Monitoring the Innovation of Polish Enterprises" characterizes two types of enterprises: a group of so-called "ineffective innovators" and a group of "innovative companies". The first is a group of innovatively active companies that interrupted, abandoned, or did not complete their innovative projects. The second group consists of enterprises that, in the analyzed period, introduced (at least one) product innovation in the field of products or services or business process innovation (methods of producing production, providing services, logistics, deliveries, information processing, communication, and the division of tasks within the enterprise or marketing). The study concluded that the fewer employees in a company are involved in implementing innovations, the lower the chance of project success. Thus, over 41% of the innovative companies that took part in the study employed one employee responsible for developing/implementing innovative solutions, and, for comparison, in the case of companies called "ineffective innovators", this percentage was 56.7% [53].

After analyzing the requirements for two competitions aimed at financial support for the implementation of circular economy projects, the basic indicators taken into account during the evaluation were selected. Then, a general diagram of the process of implementing a pro-ecological project in the company was presented using the Cleaner Production procedure, analyzing the entire process of innovation creation, including management consent, team formation, expert audit, information and data collection, brainstorming, technical and economic assessment of the project, and innovation implementation process (from costless to requiring high financial outlays), until obtaining and analyzing the effects. Then, the selected Cleaner Production projects of SME companies were verified using the PARP survey, designed as an auxiliary tool that enables an initial verification of companies submitting competition applications.

The above projects show the level of advancement of enterprises in Poland in the implementation of a circular economy, as well as the possibilities of financing various types of projects in this area. It is worth emphasizing that organizations often focus on a clearly defined goal of minimizing resource consumption throughout the value chain, rather than changing business and organizational models. Such activities should be emphasized; however, at the same time, attention should be paid to the role and connection of the circular economy with the concept of decoupling, i.e., separating economic growth from the use of limited resources, including breakthrough technologies [41]. This allows us to draw attention to activities aimed at maximizing positive environmental, economic, and social effects. Therefore, further research is planned to provide a holistic approach to an organization's activities and the value chain, as well as an analysis of the extended responsibility of the producer and the role of the consumer. Activation will also be necessary regarding Polish enterprises in the field of eco-design, creating industrial symbioses, and launching green public procurement. The authors asked themselves a research question: can the implementation of a Cleaner Production project be an initial action supporting SMEs in obtaining external funds (domestic and foreign) intended for the implementation of circular economy solutions?

Companies implementing Cleaner Production projects gain an additional point when submitting individual pro-ecological activities. In addition, there are preliminary preparations to introduce quick changes, especially those without costs, thanks to the work of experts and preparation in progress that allows shaping the teaching of business model changes towards pro-environmental changes.

From a theoretical perspective, the analysis allowed for obtaining a number of comparative data of SME companies, which constitute starting material for the authors for further considerations in the researched area. In practice, the analyses made it possible to generate recommendations for companies increasing the intensity of activities toward circularity. The applications will benefit SMEs that are faced with the need to take action to change their business model and, at the same time, are afraid of reducing profits due

to the need to focus on changing the business model. In particular, the recommendations constitute valuable material for further analysis both in theoretical and practical terms, which should be developed and detailed by creating a recommended action schedule, universal for companies from various industries, divided into production, production service, and service companies. It may also constitute an incentive to use various sources of financing and acquire knowledge about the circular economy, which may support not only high-cost solutions but also low-cost ones and housekeeping activities recommended by the Cleaner Production strategy.

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