

SPECIAL ECONOMIC ZONES (SEZS) AS AN ELEMENT OF SUSTAINABLE DEVELOPMENT IN EMERGING COUNTRIES: A CASE OF POLAND

Katarzyna ŁUKANISZYN-DOMASZEWSKA¹, Katarzyna MAZUR-WŁODARCZYK^{2*},
Elżbieta KARAS³

¹ Opole University of Technology, Faculty of Economics and Management;
k.lukaniszyn-domaszewska@po.edu.pl, ORCID: 0000-0002-2165-5095

² Opole University of Technology, Faculty of Economics and Management; k.mazur-wlodarczyk@po.edu.pl,
ORCID: 0000-0002-4822-9328

³ Opole University of Technology, Faculty of Economics and Management; e.karas@po.edu.pl,
ORCID: 0000-0002-2211-6173

* Correspondence author

Purpose: The article aims to provide readers with insight into the economic benefits stemming from the existence of SEZ and to indicate how these zones impact regional development. Through the analysis of these aspects, the article aims to highlight the significance and potential of SEZs as a tool supporting economic and regional development. The primary accomplishment of this paper lies in demonstrating how special economic zones can serve as zones for the establishment of clusters.

Design/methodology/approach: Analysis of the economic benefits arising from the presence of SEZs.

Findings: The main objective of this article is to examine and present the benefits arising from the existence of SEZs, as well as to analyze the effects that SEZs have on regional development in emerging countries, including Poland. The article also shows the specificity of cooperation within clusters in the particular economic zones in Poland. The paper focuses on identifying the positive aspects associated with the functioning of SEZs and analyzing the impact of these zones on a specific region. Paper includes examples of specific regions/ territories that have benefited from the existence of SEZs and have achieved successes in terms of economic and regional development. The research hypothesis postulates that SEZs play a constructive role in advancing regional development, specifically by facilitating increased foreign investments and reducing unemployment.

Originality/value: The presented cases can serve as case studies that illustrate the real effects of SEZs in specific areas. The primary achievement of this paper is in illustrating the role of SEZs as core facilitators for the formation of clusters.

Keywords: special economic zones (SEZs), clusters, regional development, sustainable development, FDI, Poland.

Category of the paper: Research paper.

1. Introduction

Clusters and Special Economic Zones (SEZs) are both strategic economic development initiatives that aim to foster economic growth and enhance competitiveness. The establishment of SEZ is a lengthy, expensive and long-term oriented undertaking. The suitable selection of Special Economic Zones is essential to achieve the goals of export-led growth and value creation. Incorporating sustainability issues into such planning within the Zone 3.0 paradigm is critical to achieving the Sustainable Development Goals (SDGs) by 2030. One of the key objectives of creating special economic zones is stimulating entrepreneurship and attracting new investors. There has been noticed a significant impact of special economic zones on socio-economic growth included higher investment and job creation, overall regional development, external trade, foreign direct investments (FDI) inflow, as well as aspects linked with the labour market.

The launch of SEZs is high on the agenda of governments and policymakers to encourage and enhance the process of industrialization, attract FDI for export-oriented manufacturing and lay the foundation for robust economic growth. Governments have focused on developing facilitation centers, dedicated areas and investor-friendly policies to encourage export and encourage capital appreciation. The most successful and widespread policy is the establishment of SEZs, which not only boost industries but also transform the industrial process to eliminate the concept of the space economy.

There is no doubt, that the creation of SEZ is a lengthy, expensive and long-term oriented undertaking. In fact, proper selection of SEZs is essential to achieve the goals of export-led growth and value creation. Incorporating sustainability issues into such planning within the Zone 3.0 paradigm is critical to achieving the Sustainable Development Goals (SDGs) by 2030.

Nonetheless, establishing SEZs is a costly and precarious undertaking that demands meticulous planning. These zones are created to fulfill a range of policy goals. The initial objective is to attract foreign direct investment (FDI) (Łukaniszyn-Domaszewska et al., 2023) and boost exports through industrialization or upgrading of existing industries. A secondary aim is to address unemployment in remote and marginalized regions (Dorożyński et al., 2016). Another goal involves leveraging economic policies or capitalizing on bilateral economic engagements between nations (Pakdeenurit et al., 2017). Additionally, SEZs may serve as experimental spaces for testing specific strategies and policies (Jankowska, 2016). Lastly, they can contribute to the enhancement of overall quality of life.

Several key factors such as location, connections, workforce, suitability of industries, incentives and facilities, and market orientation are important in the decision-making process to set up SEZs. In addition, environmental conditions and resource availability need to be considered in the planning and policy making processes to maintain symmetry in the natural environment and ecosystem of the areas considered for SEZ.

Generally, SEZs are characterized by (1) being a physically defined region, (2) being under a unified administration, (3) offering tax advantages, (4) streamlining procedures and customs, and (5) having a more lenient policy and legal framework compared to the broader nation. (Zeng, 2016). Such zones help in catapulting new technologies, catalyze economic development by export orientation, and upgrade and optimally utilize the existing infrastructure of a particular region (Ambroziak, Hartwell, 2018) that otherwise normally faces hindrances in doing so (Barbieri et al., 2019).

The aim of the article is to show the essence of SEZs from the point of view sustainable development in emerging countries, including Poland. The article also highlights the distinct nature of collaboration within clusters within SEZs in Poland. The focus of the article is on identifying the positive facets linked to the operations of SEZs and scrutinizing their influence on a particular region. The paper incorporates instances of specific regions or territories that have reaped benefits from the presence of SEZs, attaining successes in terms of both economic and regional advancement. These presented cases can serve as illustrative case studies showcasing the tangible effects of SEZs in distinct locales. Consequently, the article aims to offer readers insight into the economic advantages stemming from the existence of SEZs and to underscore how these zones contribute to regional development. By dissecting these aspects, the article strives to underscore the importance and potential of SEZs as a tool for bolstering both economic and regional progress. The research hypothesis asserts that SEZs have a positive impact on regional development, particularly concerning the attraction of foreign investments and the reduction of unemployment.

The principal achievement of this paper is in demonstrating how SEZs can function as hubs for the establishment of clusters. The applied research approach involves examining literature and accessible information to explore the economic advantages that emerge from the existence of Special Economic Zones (SEZs).

2. Literature review

After World War II, countries that had previously been under colonial rule experimented with various models of economic growth. Some focused on import substitution, while others adopted a pro-export approach. Particularly, the latter approach was associated with the need to attract foreign capital and advanced technology. SEZs played a role in promoting this, as they facilitated job creation, increased trade, and exports, as well as the attraction of foreign investment. SEZs are defined as small geographical areas that integrate principles of a free market to attract additional foreign investment. They are managed locally and are associated with distinct preferential policies, including customs and administrative procedures (Crane et al., 2018). The created favorable investment environment acts as a magnet in them,

encouraging investment and settlement Chen et al., 2022). Establishing SEZs falls under initiatives characterized as long-lasting, costly, and long-term (Ahmed et al., 2020), yet also profitable. As a tool for fostering economic growth, SEZs are particularly appreciated in the context of the People's Republic of China. Analyzing articles dedicated to SEZs indexed within the Web of Science (WoS) and Scopus databases, it can be observed that texts concerning Chinese SEZs account for nearly half of all articles dedicated to SEZs (242 records out of 520 in the WoS database and 59 out of 120 records in the Scopus database, respectively). China is one of the prime examples of SEZ being seen as a successful venture, as well as an important tool to attract foreign investment and stimulate economic growth (Rodrigues, Steenhagen, 2022).

Economies' needs have evolved over time, including an increasing demand for acquiring foreign technologies. Similarly, the objectives of SEZs have also evolved. SEZs vary in scope, operating principles, and focus on specific areas (such as SME development, foreign trade, economic diversification, regional growth (Naeem et al., 2020)), by their location (along the coastline/in the interior of the country), type of investments (domestic/foreign), etc. (Joshi, Bhatia, 2016). In 1959, there was only one SEZ in Ireland. By 1975, there were already 79 SEZs in operation, and in 2019, there were 5400 existing SEZs with 500 more in the process of being established (Naeem et al., 2020). Establishing SEZs, especially since the early 1990s, along with FDI (Łukaniszyn-Domaszewska et al., 2023), has been a crucial instrument for stimulating the economic growth of emerging economies (Romyen et al., 2019). In the case of the People's Republic of China, the introduction of SEZs enabled the transition from a centrally planned system to a market economy (Crane et al., 2018). SEZs rely on the external context, and alterations in this environment affect the roles these zones serve (Liu et al., 2018). Creating SEZs can stimulate economic expansion both within and beyond the zone (Romyen et al., 2019), including within neighboring counties (Lu, 2022).

Recently, there have been many studies on the impact of SEZs on regional development, including sustainable development (Ambroziak, Dziemianowicz, 2021; Stojčić et al., 2022; Dugiel, 2022; Ma et al., 2022; Arbolino et al., 2022; Dziemianowicz et al., 2019). Nevertheless, despite a massive recent proliferation of SEZs, there is virtually no quantitative research on what drives their dynamism (Frick et al., 2019).

Research conducted by Susanne A. Frick, Andrés Rodríguez-Pose and Michael D. Wong (2019) indicate that the context of the country largely determines the performance of SEZs. Companies are looking for cheap locations, but close to big cities. The proximity of large markets as well as pre-existing industrialization also increase the performance of SEZs. In contrast, incentives and other program-specific variables are highly context-dependent and not structurally correlated with SEZ scores.

Research on SEZ emphasizes that these zones contribute to the creation of regional disparities - economic differences between regions with SEZs and regions without SEZs. China is an example, with a division between the more developed eastern part of the country and the rest of the regions, especially in the western part (Crane et al., 2018). However, SEZs can also be used to reduce these disparities, for example, by strategically locating SEZs related to advanced technologies, thereby shortening the period of economic development gap between less developed and more developed areas (Wang et al., 2022).

The attributes of SEZs also encompass the aspect that they (as outlined by Vats et al., 2018):

- Provide financial incentives to companies and individuals alongside improved regulatory and administrative frameworks.
- Draw in skilled individuals and rapidly expanding businesses.
- Foster independence and establish an appealing environment for both living and conducting business.
- Supply necessary infrastructure and services catering to industrial, commercial, and residential functions.

There are many types of SEZs based on their objectivity and operations. Table 1 provides the types and details of their characteristics.

Table 1.
Types of SEZs

No.	Type of SEZ	Characteristics
1.	Free Trade Zones (FTZ)	FTZs duty-free fenced in designated areas providing storage, and distribution facilities for trade, transshipment, and re-export operations.
2.	Export Processing Zones (EPZ)	EPZs are industrial areas specializing in 1 industry or a combination primarily focusing at foreign markets.
3.	Comprehensive Special Economic Zones (SEZs)	Comprehensive or Multifunction SEZs are large industrial amalgamations having industrial, service and urban-amenity operations.
4.	Industrial Parks (IP)	Industrial Parks are at large manufacturing or R&D based sites that work at a smaller scale as compare to comprehensive SEZs.
5.	Enterprise specific—single factory zones	Provide incentives to individual enterprises regardless of where their location is, and they are not required to be located in any specific geographical location.
6.	Bonded areas	These are secured territories, in which goods stored, manipulated, or can undergo manufacturing operations without payment of duties. The major difference is that a “bonded area” is subject to customs laws and regulations whereas an FTZ is exempted.
7.	High tech zones	These are aimed at promoting R&D activities and advancement in technology or industries based on science, e.g., pharmaceutical.
8.	Eco-industrial zones or parks	These SEZs focus on sustainability concerning waste reduction and improving the environmental performance of companies.

Source: Ahmed et al., 2020.

Another typology considers the division of SEZs into generations from I to V. The first-generation SEZs placed a strong emphasis on FDI and the facilitation of exports. Subsequent second-generation SEZs adopted a more diversified and versatile approach spanning multiple sectors. The evolution into third-generation SEZs highlighted a dual focus on enhancing competitiveness while also prioritizing environmental sustainability. The fourth-generation SEZs were characterized by their incorporation of contemporary services and a business-friendly orientation. In contrast, the fifth-generation SEZs, known as intelligent cities built upon digital technologies, exhibit a heightened commitment to sustainable developmental endeavors (Zeng, 2021a).

Some conducted studies point out that within SEZs, a significant amount of energy resources is consumed and a substantial amount of CO₂ is emitted (You et al., 2021). Similarly, in this regard, the academic community seems to be divided, and within SEZs, more environmentally-friendly solutions conducive to sustainable development are also being implemented, including the reduction of CO₂ emission (Chen et al., 2022), implementing monitoring and control (Grant et al., 2020), or serving as incubators for green economy (Mohiuddin et al., 2014). For example, Beata Ślusarczyk and Katarzyna Grondys (2018) have noted that in Poland, municipalities belonging to SEZ develop in line with the concept of sustainable development (compared to municipalities outside of SEZ) in areas such as:

- Economic aspects: higher levels of entrepreneurship and lower unemployment.
- Social aspects: higher population density and population in the working age group, lower internal migration.
- Environmental aspects: higher share of green areas, lower levels of PM_{2.5} and PM₁₀ emissions (compared to the most polluted cities).

In addition to aspects related to sustainable development, SEZs are also associated with industrial enclaves, within which the creation of innovative solutions (patents obtained) is intensified, and their individual zones serve as nodes of knowledge connections (Li et al., 2022).

3. Research methodology

An analysis process of the economic benefits arising from the presence of SEZs is presented below (Figure 1). It is related to the hypothesis that SEZs have a positive impact on regional development. It particularly concerns the attraction of foreign investments and the reduction of unemployment.

	Search (desk research)	
Materials devoted to the general topic of SEZ		Materials devoted to the topic of Polish SEZ
	Appraisal	
Economic benefits stemming from the existence of SEZs	Impact of SEZs on regional development	SEZ as zones for the establishment of clusters
	Synthesis and Analysis	
SEZ in Poland		SEZs as hubs for creating clusters
Results	Discussion	Conclusion
	Real effects of SEZs in specific areas	

Figure 1. Analysis process.

Source: own preparation.

4. Results

4.1. SEZs in Poland

A special economic zone is a separate, uninhabited part of the country's territory where business activity may be conducted under preferential conditions defined in the Act on SEZs of 20 October 1994 (Journal of Laws of 2007, no. 42, item 274; Journal of Laws of 2008, no. 118, item 746). SEZs were created, in particular, to:

- accelerate the economic development of regions,
- manage post-industrial property and infrastructure,
- create new jobs,
- attract foreign investors to Poland.

The idea of SEZs as separate areas of a country's territory where the law defined better conditions for economic activity originated in Roman times (with the beginnings of free ports), and was further developed in the Middle Ages (Hanseatic League). The duty-free zone in Puerto Rico, established in 1951, is considered to be the first economic zone in today's understanding of the term (Žaguń et al., 2009).

SEZs in Poland were established explicitly to enhance regional development, crafting a series of investment incentives designed to boost investment attractiveness in particular regions (Ambroziak, Hartwell, 2018). The analysis conducted by Adam A. Ambroziak and Christopher A. Hartwell showed that SEZs have had a strongly positive impact upon the

development of the least-developed regions in Poland, while in relatively richer ones the effect was weak or even negative.

Generally, SEZs in Poland have been designed as an instrument used to support local and regional labour markets in areas particularly shackled with problems inflicted by economic transformation (Dziemianowicz et al., 2000; Peszat, Szlachta, 2017). With regards to this, Polish SEZs are not very different from many other economic zones around the world (Park, 1997; Yeung et al., 2013; Zeng, 2015; Moberg, 2015; Farole, 2011; Leong, 2013; Wang, 2013).

The first SEZ in Poland was established in Mielec in 1995 and since then their number has grown rapidly. Poland's newest economic zone is the Kraków SEZ, which opened in 1998. All Poland's existing SEZs were established in the 1990s. Initially, the Council of Ministers created 17 zones but in practice only 15 were launched, and 14 still function today.

The idea of SEZ in Poland was hotly debated by the Polish government and the European Commission because of the financial support offered to business investors in SEZ. At that time, the main problem consisted of adjusting the tax incentives offered to investors in SEZs to regional investment state aid rules (Ambroziak, 2009; 2014).

Poland has emerged as a significant attraction for investors, both domestically and internationally, primarily due to the incentives and special economic zone (SEZ) benefits it provides to investors. In the years 2006 and 2007, approximately PLN 10 billion per year was invested in Poland's SEZs, resulting in notable growth. In 2007 alone, employment within these zones increased by 25%, creating 36,000 new jobs. Informal data for the first half of 2008 indicated record-breaking investments, totaling around PLN 7 billion. As a result, this period marked a peak performance for many of these zones. It is estimated that the cumulative investment across all 14 SEZs reached about PLN 50 billion in 2008 (Żaguń et al., 2009).

Nonetheless, SEZs go beyond mere financial investments and job creation – they also play a pivotal role in enhancing the overall competitiveness of the nation's economy. This includes technology and know-how transfer, as well as fostering collaboration in regions covered by the zones.

The effects of SEZs in Poland have been extensively studied, with various attempts to evaluate their impact on different aspects. These include: a) the relationship between SEZs and local authorities (explored by Dziemianowicz in 2016), b) the influence of zones on socio-economic growth, encompassing increased investments and job creation (studied by Ernst & Young in 2011, Jensen in 2018), c) the broader regional development (analyzed by Laskowski in 2013, Ambroziak & Hartwell in 2018), d) external trade (investigated by Nazarczuk & Umiński in 2019), e) the inflow of foreign direct investment (examined by Dziemianowicz et al. in 2019), and f) labor market-related aspects (explored by Kryńska in 2000). These conclusions regarding the impact of SEZs on unemployment are clear-cut, as they stem from analyses that encompass zone operations across all regions of the country at various levels of regional classification.

Basically, SEZs in Poland are designated areas where economic activities occur under special preferential conditions. One defining characteristic of SEZs is their territoriality, which means that the benefits are confined to specific geographic areas within the country. However, it is noteworthy that entrepreneurs have the option to request an "extension of SEZ", enabling the establishment of a zone within an existing enterprise.

A pivotal incentive offered as public support to investors locating their projects within SEZs is the exemption from income tax. Public support takes the form of reimbursing costs related to a new investment project. Consequently, the investment expenditure (or the expense associated with newly hired employees) pertaining to such a project serves as the basis for calculating the extent of tax relief granted to the entrepreneur.

However, in practical terms, simply undertaking an investment project is not enough to qualify for income tax relief. The zone entity must also generate taxable income at an appropriate level to be eligible for this incentive. Consequently, this feature makes the instrument highly susceptible to economic fluctuations and decreases in project profitability. As a result, it genuinely operates as an investment incentive under specific market conditions.

SEZs can function as tools to stimulate investments. Despite the aforementioned limitation of tax relief as an investment incentive, SEZs have significantly contributed to Poland's economic growth over the last two decades and have attracted numerous investments. This success can be attributed to various factors, including those that are sometimes overshadowed by the focus on tax benefits. Some of these often underestimated benefits include:

- Improved infrastructure (SEZs were typically established in highly industrialized regions, often reusing infrastructure from declining traditional industries); these zones also encompassed strategically advantageous investment areas.
- Access to a skilled workforce (particularly in regions with a strong industrial heritage).
- Streamlined procedures (a business-friendly approach from the outset, with Zone Management playing a significant role in fostering collaboration with local government entities).
- Investment promotion efforts - investors frequently begin their search for plots within these designated zones.

Currently, there are 14 SEZs in Poland. Each SEZ comprises several to several dozen subzones located throughout Poland. The infrastructure of areas belonging to the SEZ is well-developed, making them highly attractive for both Polish and foreign investors. Since their inception, SEZ have attracted investments worth nearly 112 billion Polish zlotys, and companies operating within the SEZ have created 312,000 jobs. According to the current regulations, SEZs will operate until December 31, 2026 (Deloitte, n.d.).

Table 2 presents Polish SEZs under the jurisdiction of the minister responsible for economic affairs (Ministerstwo Rozwoju i Technologii, n.d.).

Table 2.
Area and location of Polish SEZs

No.	SEZ	Voivodeship	Area in hectares
1.	The Kamienna Góra Special Economic Zone	Lower Silesian Greater Poland	373,83
2.	The Katowice Special Economic Zone	Silesian Lesser Poland Opole	2347,34
3.	The Kostrzyn-Słubice Special Economic Zone	Lubusz West Pomeranian Greater Poland	1868,05
4.	The Kraków Special Economic Zone	Lesser Poland Subcarpathian	707,78
5.	The Legnica Special Economic Zone	Lower Silesian	1763,77
6.	The Łódź Special Economic Zone	Łódź Greater Poland Masovian	1339,17
7.	The Special Economic Zone Euro-Park Mielec	Pomeranian Kuyavian-Pomeranian West Pomeranian Greater Poland	2039,99
8.	The Pomeranian Special Economic Zone	Pomeranian West Pomeranian Greater Poland	899,37
9.	The Słupsk Special Economic Zone	Subcarpathian Lesser Poland Lublin West Pomeranian	1495,65
10.	The Starachowice Special Economic Zone	Świętokrzyskie Masovian Opole Łódź Lublin	644,46
11.	The Suwałki Special Economic Zone	Podlaskie Warmian-Masurian Masovian	635,07
12.	The Tarnobrzeg Special Economic Zone	Subcarpathian Masovian Świętokrzyskie Lublin Lower Silesian	1743,30
13.	The Wałbrzych Special Economic Zone	Lower Silesian Opole Greater Poland Lubusz	2921,70
14.	The Warmia-Mazury Special Economic Zone	Warmian-Masurian Masovian	1057,38

Source: Own elaboration based on: Ministerstwo Rozwoju i Technologii, n.d.

Their main characteristics are illustrated in Figure 2a-b, displaying the quantities of active companies, their workforce, invested capital, and developed territories. The graphical representation also portrays the economic advantages stemming from the existence of SEZs in Poland.

The SEZ located in Katowice stands out as the largest among Polish SEZs in terms of active company count, housing a total of 400 firms. On the contrary, the smallest in this regard are Kamienna Góra SEZ, encompassing 53 companies, and Legnica SEZ, housing 57 companies. On average, Polish SEZs accommodate approximately 154 enterprises. Employment within these SEZs varies from 7,000 individuals (as seen in Słubsk SEZ) to 95,000 individuals (exemplified by Wałbrzych SEZ). The most substantial cumulative investments are associated with Katowice SEZ, amounting to €8.4 billion, while the lowest investments are observed in Słubsk SEZ, Kamienna Góra SEZ, Starachowice SEZ, and Suwałki SEZ, all at €0.7 billion each. The territorial expanse of Polish SEZs ranges from 0.4 thousand hectares (as seen in Kamienna Góra SEZ) to 2.9 thousand hectares (exemplified by Wałbrzych SEZ) (ESPON, 2020; Tax benefits from business activities within the Special Economic Zone, n.d.).

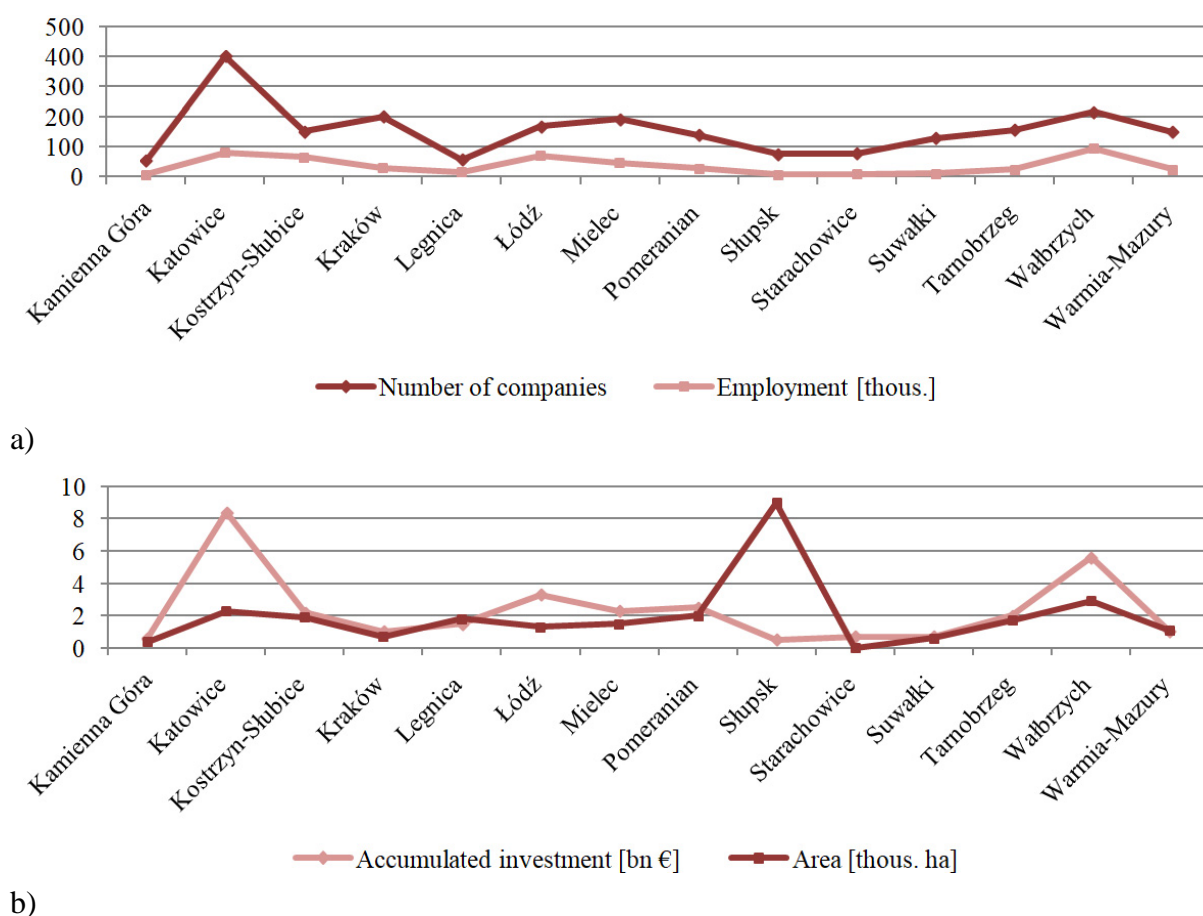


Figure 2. The main characteristics of Polish SEZ.

Source: ESPON, 2020; Tax benefits from business activities within the Special Economic Zone, n.d.

On the other hand, the research presented in the report: Ernst & Young 2011, SEZs after 2020, Ernst & Young demonstrates the impact of SEZs on various aspects of economic growth, including the labor market, investments, and GDP. Below are the main conclusions that can be formulated based on the conducted analysis (Table 3).

Table 3.

The impact of operating SEZs in Poland on the economic outcomes of subregions and counties in years 2002-2010

Element of economic growth	Conclusions
Labor Market	In areas where SEZs are operational, there is an average decrease in the unemployment rate ranging from 1.5 to 2.8 percentage points for subregions and from 2.3 to 2.9 percentage points for counties. Increasing the investment capital within the zone by PLN 100 million leads to a reduction in the subregion's unemployment rate by 0.17 to 0.33 percentage points, and in the county, this reduction ranges from 0.19 to 0.25 percentage points. The expansion of employment by 1,000 positions within the zones corresponds to a decrease in the subregion's unemployment rate by 0.4 to 0.9 percentage points, while at the county level, this decrease falls within the range of 0.7 to 1.0 percentage points.
Investments	Within the subregions hosting SEZs, the gross investment in fixed assets per capita is elevated by approximately PLN 250 to 600, and in counties, this increase ranges from about PLN 510 to 570, when compared to other relevant subregions and counties. The addition of 1,000 jobs within these zones contributes to a rise in the gross investment in fixed assets per capita by around PLN 90 to 105 in subregions and approximately PLN 150 to 160 in counties.
Gross Domestic Product (GDP)	In the subregions hosting SEZs, the GDP per capita is typically elevated by approximately PLN 1,300 to 2,500 compared to other subregions. This indicates a higher GDP per capita ratio, ranging from about 3.9% to 7.5% above the average GDP per capita for Poland when compared to other subregions. The addition of 1,000 jobs within these zones results in an augmented GDP per capita within the corresponding subregion, increasing by roughly PLN 310 to 460.

Source: Ernst & Young, 2011.

Taking into account the analysis of the literature, as well as available research on this subject it can be stated that the economic benefits of SEZs are multifaceted and can have a significant impact on both the local and national economy. The table 4 presents some of the key economic benefits of Polish SEZs include.

It's important to note that the economic benefits of SEZs can be influenced by various factors, including the effectiveness of policies, infrastructure development, local conditions, and global market trends. Therefore, careful planning, monitoring, and adaptability are crucial to maximizing the positive economic impact of SEZs.

Table 4.

Economic benefits stemming from Polish SEZs

Economic benefit	Characteristics
Increased Foreign Direct Investment (FDI)	SEZs often attract higher levels of foreign direct investment due to the favorable business environment, tax incentives, streamlined regulations, and infrastructure support. This influx of investment can contribute to economic growth and job creation
Export Growth	SEZs are designed to promote export-oriented industries. By offering incentives and facilitating access to global markets, SEZs can boost a country's exports, generating foreign exchange earnings and improving the balance of trade.
Job Creation	The establishment of SEZs leads to the creation of new jobs in various sectors, including manufacturing, services, and logistics. This helps alleviate unemployment and improve the standard of living in the region.
Industrial Development	SEZs foster industrialization by providing modern infrastructure, utilities, and logistical support. They attract a diverse range of industries, leading to the growth of industrial clusters and supply chains.

Cont. table 4.

Technological Advancement	SEZs often encourage the transfer of technology and expertise, as they attract multinational corporations and promote collaboration between local and foreign businesses. This can lead to technological innovation and upgrades in local industries.
Skill Enhancement	The presence of SEZs can stimulate skill development and human capital formation through training programs and education initiatives. This enhances the employability of the local workforce and contributes to long-term economic growth.
Increased Tax Revenue	While SEZs offer tax incentives to businesses, the increased economic activity can still lead to higher tax revenues for governments, which can be reinvested in public infrastructure and services.
Stimulated Ancillary Businesses	SEZs can stimulate the growth of ancillary businesses that provide services and support to the companies within the zone, such as transportation, warehousing, and utilities.
Reduced Regional Disparities	By promoting economic activity in specific regions, SEZs can help reduce regional disparities and promote balanced development across the country.
Attracting Global Companies	SEZs create a conducive environment for global companies to establish their presence. This not only brings in investment but also enhances the reputation of the country as a favorable destination for business.

Source: Own elaboration.

4.2. SEZs as hubs for creating clusters

The clustering of industries and enterprises within SEZs has the potential to induce a phenomenon known as the cluster effect, attracting interconnected industries and suppliers to the vicinity. This occurrence can result in heightened cooperation, the exchange of knowledge, and the realization of economies of scale. Building upon the classical definition of a cluster as provided by M.E. Porter (1998; 2000), it is assumed that a cluster is viewed as a spatial concentration of firms, which may not necessarily have a formalized character, and whose members may not be aware that they operate within cluster boundaries - in literature, this type of activity is referred to as a natural cluster. Only a conscious, organized effort aimed at improving the cluster's competitiveness and the deliberate participation of key players can be referred to as a cluster initiative. This type of cluster is more crucial for regional development and SEZs, as it creates an organized network of diverse entities that have a more formalized character (Furman et al., 2002; Morgulis-Yakushev, 2017; Mackiewicz, 2019). Cluster initiatives can therefore be defined as "organized regional sectoral networks among business partners focused on improving innovative performance and international competitiveness". Key representatives of the given cluster are involved in the initiative, and they intend to influence its development in a more conscious and systematic manner. Typically, these representatives come from economic, scientific, and business sectors (Figure 3).

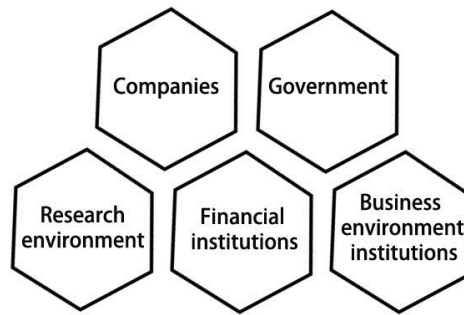


Figure 3. Five types of entities constituting clusters.

Source: Sölvell et al., 2003-2006, p. 25.

Cluster initiatives are often financed by their participants as well as from public funds within cluster development support programs (Baron, 2009). The cluster encompasses (Sölvell, 2008):

- different members, both companies and organizations (representatives: private, public, and higher education institutions),
- cluster organization with a headquarters, manager, website, etc.,
- initiative board (supervisory body),
- initiative funding (from sources: international, national, regional, local, membership fees, etc.).

The Green Book of Cluster Initiatives (Sölvell et al., 2003-2006, pp. 21-24) emphasizes that a cluster initiative refers to a specific project or type of organization with a cluster character. Cluster initiatives include, among others: Autocluster Styria (Austria), Scottish forest industry cluster (Scotland), Plastic Valley (Poland), Valley of the Rising Sun (Lithuania). See: (Sölvell et al., 2003-2006, pp. 19, 110, 119). Also in the publications of Polish researchers, cluster initiatives include the following cluster organizations: Telecom City (Blekinge, Sweden), Silesian Timber Cluster, Medycyna Polska, Wielkopolskie Horses and Carriages, Gdańsk Construction Cluster (Poland) (Brodzicki et al., 2008).

Within the area of a given cluster's occurrence, one or several cluster initiatives in a specific industry can be established. By engaging in activities by entities surrounding the business, clusters can contribute to fostering entrepreneurship, activating the population, attracting external investors, and even result in positioning companies in the given area, which will lead to the development of local organizations and the activation of entrepreneurial activities among various entities (see Figure 1). There is a substantial body of literature focused on assessing such cluster initiatives (Klemens, 2010).

It is estimated that cluster initiatives are an effective tool for concentrating resources and funds, as well as facilitating knowledge and know-how transfer, enhancing innovation, and so forth (Lundequist, Power, 2002; Lundmark, Pettersson, 2012; Pavelkova et al., 2021; Yan et al., 2021). The perspective of potential benefits stemming from cluster initiatives for businesses and regions thus encourages governmental authorities and other partners to implement a policy promoting clusters through three important actions:

- Increasing productivity (through collaborative efforts, access to information and public goods).
- Enhancing innovation (through joint research).
- Creating new businesses (by filling niches and expanding cluster boundaries).

Moreover, Li and Wang (2019) demonstrate that cluster development attracts various research-oriented organizations, thus creating an incubation platform for other entities. According to Wennberg and Lindqvist (2010) companies located in strong clusters create more jobs, generate higher tax revenues, and offer higher wages for employees. Similar conclusions were drawn in the publications by Ketels and Protsiv (2021), who examined the impact of clusters on industry wage levels and regional prosperity. Likewise, Alberti and Belfanti (2021) demonstrated that clusters generate shared value and contribute to creating economic and social opportunities. Thus, they are an ideal solution for fostering sustainable development of all entities within SEZs, where clusters and cluster initiatives influence the behaviors of interconnected entities and the knowledge-sharing process (Canet-Giner et al., 2022). Initiatives built in this manner are often the result of actions taken by public or local government authorities (Brodzki, 2004). It involves governments of countries or local authorities determining themselves which industries in a given area have the greatest potential for development and, as a result, should be supported in the first place. This initiative is carried out based on a local development strategy, thereby providing local authorities with the appropriate tools to effectively encourage action and support business-related institutions and organizations, and through them, companies clustered around them, to create conditions for effective operations within the SEZ area.

In fact, clusters can be found within SEZs, as businesses operating within an SEZ may naturally cluster together to benefit from shared resources and specialized skills. SEZs can foster the growth of clusters by providing the necessary infrastructure, regulatory framework, and incentives that encourage companies to collocate within the zone. Clusters and SEZs can reinforce each other, with SEZs attracting a variety of industries that might naturally form clusters based on proximity and industry relationships.

In summary, while clusters and SEZs have distinct purposes and mechanisms, they can intersect and mutually reinforce each other in certain cases. Clusters promote industry collaboration and specialization, while SEZs provide a policy-driven environment to attract investment and foster economic growth.

5. Discussion – SEZs in regional development

SEZs can have a significant impact on regional development. They are designed to attract investments, stimulate economic growth, create jobs, and enhance the overall competitiveness of a region. The analysis of economic benefits arising from the existence of SEZs in Polish regions has demonstrated that SEZs have had a positive impact on the labor market, investments, and GDP. Similar conclusions are drawn by the report from the World Bank, companies operating within SEZs tend to exhibit superior performance compared to firms not located in SEZs (World Bank, 2017). Additionally, provinces with SEZs have the potential to attract more Foreign Direct Investment (FDI) than provinces without SEZs (Chuop, 2022). Table 5 presents the main effects of the impact of SEZs on regional development.

Table 5.
Effects of the impact of SEZs on regional development

Effect	Description
Investment Attraction	SEZs offer various incentives such as tax breaks, reduced regulations, and infrastructure support to attract domestic and foreign investments. This influx of capital can lead to the establishment of new businesses and industries in the region.
Job Creation	The establishment of businesses within SEZs creates employment opportunities for the local population. As industries grow and expand, more jobs are generated, reducing unemployment rates and improving the economic well-being of the region.
Technology Transfer and Innovation	SEZs often attract technologically advanced industries. The presence of these industries can facilitate the transfer of advanced technologies, knowledge, and skills to the local workforce, promoting innovation and increasing the region's technological capabilities.
Infrastructure Development	SEZs often require the development of infrastructure, including roads, utilities, and transportation systems, to support the businesses operating within them. This infrastructure development can benefit the entire region and improve connectivity.
Export Promotion	Many SEZs focus on export-oriented industries. This can lead to an increase in exports from the region, contributing to a favorable balance of trade and boosting the overall economic growth.
Cluster Effect	The concentration of industries and businesses within SEZs can create a cluster effect, where related industries and suppliers are drawn to the area. This can lead to increased collaboration, knowledge sharing, and economies of scale.
Spillover Effects	The positive developments within SEZs can spill over to neighboring areas, contributing to the overall economic development of the region. Local businesses can benefit from increased demand for goods and services generated by SEZ activities.
Human Capital Development	SEZs often require a skilled workforce. This can encourage investments in education and training programs, enhancing the skills of the local workforce and improving overall human capital in the region.
Regional Competitiveness	By attracting investments and fostering economic growth, SEZs can enhance the competitiveness of the region on both national and international levels.

Source: Own elaboration.

Nonetheless, other studies indicate that the impact of SEZs on development can be diverse. It is important to note that the impact of SEZs on regional development can vary depending on factors such as:

- Zone location including country- and regional-specific business environment and investment climate (Dorożyński et al., 2021), particularly related to the required capital (FIAS, 2008);

- The size of the zone (the most effective are among others large SEZs located in poor areas and not too far from urban centres (World Bank, 2017));
- The distance of the area from the zone (the most effective radius is up to 50 km (World Bank, 2017));
- Zone type (Wang et al., 2022);
- Industry presences (Frick, 2023), and its type that attracted;
- The level of local infrastructure and HR availability (Frick, 2023);
- Promotional activity (among others tax allowances, which attract investments and equity of companies managing the zone, which generates jobs (Dorożyński et al., 2021)). However, it's important to highlight that the mentioned World Bank report underscores that promotional efforts (such as incentive packages) have been depicted as exerting only a restricted influence on the effectiveness of these zones. The findings from Naeem et al. (Naeem, 2020) indicate, among others that the promotion should be based on competitiveness rather than fiscal incentives. This group also includes the creation of shopping malls, townships, and amusement parks within the zones that attract people and contribute to the economic development of that region (Joshi, Bhatia, 2016);
- The effectiveness and quality of governance and administration within the SEZs (Zeng, 2021b), including competition between the companies managing the zones (Dorożyński et al., 2021), as well as elaboration of the clear vision of the zone development (Naeem et al., 2020).

It's worth highlighting that the conducted analysis did not reveal any negative effects associated with SEZs, as indicated by other studies. Potential negative effects such as land displacement (Kabita Kumari Sahu, 2013; Physicians for Human Rights, 2014), environmental concerns (Aung et al., 2022; Ahmed et al., 2020), and unequal distribution of benefits (Hornok et al., 2023; Crane et al., 2018) should also be carefully considered and addressed to ensure balanced and sustainable regional development.

The primary accomplishment of this study lies in illustrating the role of SEZs as central points for the development and organization of clusters.

Nevertheless, the study encompasses certain limitations and weaknesses, specifically centered around restricted applicability. Conclusions drawn from a singular study might not hold relevance for diverse situations, groups, or environments due to disparities in demographics, culture, or economic circumstances. Furthermore, there exists a limitation related to data. The study relies on a limited dataset or outdated information, the results may not accurately reflect the current state of affairs. Inaccurate or incomplete data can weaken the study's validity. A research limitation is also the fact that the authors assumed only positive effects associated with the existence of SEZs, whereas other studies indicate that SEZs may also entail potential negative effects.

The conducted analysis confirms that SEZs have a positive impact on the labor market, influx of both domestic and foreign investments, as well as on the GDP. Nevertheless, it would be worthwhile in future research to compare various regions that have SEZs with those that do not, and examine economic indicators. A direction for future research should also involve analyzing potential negative effects associated with SEZs that were not demonstrated in this study, yet are acknowledged by the authors' knowledge. In future research, it is worth using the perspective of cluster types (shown in Table 1 or within generations I-V) for the presentation of Polish SEZs, as well as examining their impact on regional development.

6. Conclusion

The analysis confirmed the research hypothesis that SEZs have a positive impact on regional development, especially in terms of attracting investments and on the job market, including the reduction of unemployment. The analysis conducted in the paper indicates that SEZs can play a significant role in fostering economic growth and attracting investments in specific regions. SEZs create favorable conditions for businesses by providing various incentives such as tax breaks, infrastructure support, and streamlined regulatory processes. As a result, they often lead to increased industrialization, job creation, and improved infrastructure in the designated areas.

SEZs can attract both domestic and foreign investors, driving innovation and technological advancement. By concentrating businesses in a specific geographic area, SEZs promote collaboration, knowledge sharing, and the development of specialized supply chains. These clusters of related industries can lead to increased productivity, economies of scale, and enhanced competitiveness on a global scale.

However, the impact of SEZs can vary depending on factors such as the location, governance, and policies implemented within each zone. Additionally, there might be concerns related to environmental sustainability, social inequalities, and potential negative effects on the local community.

Clusters can indeed exist within SEZs, as companies operating within an SEZ may naturally come together to leverage shared resources and specialized expertise. Clusters are organic and often emerge naturally based on industry dynamics, shared resources, and collaborative relationships among stakeholders. Clusters promote collaboration, knowledge sharing, innovation, and specialization within a specific industry or related industries. Companies within a cluster collaborate to improve their competitive advantage, share best practices, access shared resources, and engage in joint research and development activities. Clusters encourage knowledge spillovers, promote innovation, attract talent, enhance productivity, and foster a supportive ecosystem for business growth.

SEZs have the potential to cultivate cluster development by offering the essential infrastructure, regulatory framework, and incentives that encourage businesses to co-locate within the designated area. The symbiotic relationship between clusters and SEZs can be observed, with SEZs drawing in diverse industries that could organically form clusters based on their geographic proximity and industry connections. Although clusters and SEZs serve distinct purposes and utilize different mechanisms, there are instances where they intersect and mutually bolster each other. Clusters facilitate collaboration and specialization within industries, whereas SEZs establish a policy-oriented environment aimed at attracting investments and nurturing economic growth.

In conclusion, while SEZs can bring about positive economic and developmental changes in regions, careful planning, monitoring, and adaptive policies are essential to ensure their long-term success and positive impact on regional growth. As a direction for future research, it is advisable to indicate the analysis of regions hosting SEZs in comparison to those without them. A forthcoming research could also encompass an analysis of potential adverse outcomes linked to SEZs, which were not elucidated in this study but are recognized by the authors. Subsequent research could also consider adopting the framework of cluster categorizations (as presented in Table 1 or within generations I-V) to portray Polish SEZs, alongside an assessment of their influence on regional progress.

References

1. *A European Network of Excellence for Cluster Management* (2007). Matching and Promotion, OECD Publications, OECD.
2. Ahmed, W., Tan, Q.M., Solangi, Y.A., Ali, S. (2020). Sustainable and Special Economic Zone Selection under Fuzzy Environment: A Case of Pakistan. *Symmetry*, 12, 242, doi: 10.3390/sym12020242.
3. Alberti, F.G., Belfanti, F. (2021). Do clusters create shared value? A social network analysis of the mo-tor valley case. *Competitiveness Review*, 31(2), pp. 26-350, doi:10.1108/CR-05-2020-0077.
4. Ambroziak, A., Dziemianowicz, W. (2021). The impact of Special Economic Zones on local labour markets in Poland. *Miscellanea Geographica*, 25(2), pp. 93-98.
5. Ambroziak, A.A. (2009). *Krajowa pomoc regionalna w specjalnych strefach ekonomicznych w Polsce*. Warsaw: Warsaw School of Economics Press.
6. Ambroziak, A.A. (2014). The legal framework for regional state aid in the European Union in 2014-2020 and its impact on the attractiveness of Poland's Regions to investors'. In: A.A. Ambroziak (Ed.), *New Cohesion Policy of the European Union in Poland*.

- How It Will Influence the Investment Attractiveness of Regions in 2014-2020* (pp. 63-76). New York/Dordrecht/London/Cham/Heidelberg: Springer.
7. Ambroziak, A.A.; Hartwell, C.A. (2018). The Impact of Investments in Special Economic Zones on Regional Development: The Case of Poland. *Regional Studies*, 52, pp. 1322-1331.
 8. Arbolino, R., Lantz, T.L., Napolitano, O. (2022). Assessing the impact of special economic zones on regional growth through a comparison among EU countries. *Regional Studies*, pp. 1-15.
 9. Aung, T.S., Overland, I., Vakulchuk, R., Xie, Y.H. (2022). The environmental burdens of special economic zones on the coastal and marine environment: A remote sensing assessment in Myanmar, *Remote Sensing Applications: Society and Environment*, 28, 100809, doi: 10.1016/j.rsase.2022.100809.
 10. Balland, P.A., Belso-Martínez, J.A., Morrison, A. (2016). The dynamics of technical and business knowledge networks in industrial clusters: Embeddedness, status, or proximity? *Economic Geography*, 92(1), pp. 35-60, doi: 10.1080/00130095.2015.1094370.
 11. Barbieri, E., Rodolfo, M., Tommaso, D., Tassinari, M., Marozzi, M., Barbieri, E. (2019). Selective Industrial Policies in China: Investigating the Choice of Pillar Industries. *Int. J. Emerg. Mark.*
 12. Baron, M. (2009). *Inicjatywy klastrów w województwie opolskim: wyzwania, modele, rola animatorów*. Materiały szkoleniowe. Głuchołazy.
 13. Brodzicki, T., Dzierżanowski, M., Koszarek, M., Szultka, S. (2008). *Przewodnik dobrych praktyk w zakresie clusteringu*. Gdańsk: IBnGR.
 14. Brodzicki, T., Szultka, S., Tamowicz, P. (2004). Polityka wspierania klastrów. Najlepsze praktyki dla Polski. *Niebieskie Księgi, Rekomendacje, No. 11*. Gdańsk: Instytut Badań nad Gospodarką Rynkową.
 15. Canet-Giner, M.T., Redondo-Cano, A., Balbastre-Benavent, F., Escriba-Carda, N., Revuelto-Taboa-da, L., Saorin-Iborra, M. (2022). The influence of clustering on HR practices and intrapreneurial behavior. *Competitiveness Review*, 32(1), pp. 35-58, doi:10.1108/CR-10-2019-0102.
 16. Chen, J., Long, X., Lin, S. (2022). Special Economic Zone, Carbon Emissions and the Mechanism Role of Green Technology Vertical Spillover: Evidence from Chinese Cities. *Int. J. Environ. Res. Public Health*, 19, 11535, doi: 10.3390/ijerph191811535.
 17. Chuop, T.T. (2022). Effect of Investment Promotion through the Special Economic Zone Mechanism on the Distribution of FDI in Cambodia. *Economies*, 10(231), doi: 10.3390/economies10090231.
 18. Crane, B., Albrecht, C., McKay, D.K., Albrecht, C. (2018). China's special economic zones: an analysis of policy to reduce regional disparities. *Regional Studies, Regional Science*, 5(1), pp. 98-107, doi: 10.1080/21681376.2018.1430612.

19. Deloitte (n.d.). *Czym są specjalne strefy ekonomiczne w Polsce*. Retrieved from: <https://www2.deloitte.com/pl/pl/pages/tax/articles/SSE/SSE-Specjalne-Strefy-Ekonomiczne-czym-sa.html>, 22.08.2023.
20. Dorożyński, T., Świerkocki, J., Dobrowolska, B. (2021). Governance of special economic zones and their performance: Evidence from Poland. *Entrepreneurial Business and Economics Review*, 9(3), pp. 149-167, doi: 10.15678/EBER.2021.090310.
21. Dorożyński, T., Swierkocki, J., Urbaniak, W. (2018). Determinants of Investment Attractiveness of Polish Special Economic Zones. *Entrep. Bus. Econ. Rev.*, 6, pp. 161-180.
22. Dugiel, W., Golejewska, A., Skica, T., Zamojska, A., Zabłocka-Abi Yaghi, A. (2022). Firm-level additionality effects of investments and employment tax credits in Polish Special Economic Zones. *Post-Communist Economies*, 34(8), pp. 1137-1152.
23. Dziemianowicz, W. (1997). *Kapitał zagraniczny a rozwój regionalny i lokalny w Polsce*. EUROREG. Warsaw: University of Warsaw.
24. Dziemianowicz, W., Hausner, J., Szlachta, J. (2000). *Restrukturyzacja ośrodków monokulturowych na przykładzie Mielca*. Warszawa: Instytut Badań nad Gospodarką Rynkową.
25. Dziemianowicz, W., Łukomska, J., Ambroziak, A.A. (2019). Location factors in foreign direct investment at the local level: the case of Poland. *Regional Studies*, 53(8), pp. 1183-1192.
26. Ernst & Young (2011). *Special Economic Zones after 2020*. Warsaw: Ernst & Young.
27. ESPON (2020). *European Special Economic Zones Research spin-off project of "The World in Europe: Global FDI flows towards Europe (ESPON FDI)"*. Policy Brief.
28. FIAS (2008). *Special Economic Zones. Performance, Lessons Learned, and Implications for Zone development*. Washington: The World Bank Group.
29. Frick, S.A., Rodríguez-Pose, A. (2023). What draws investment to special economic zones? Lessons from developing countries. *Regional Studies*, doi: 10.1080/00343404.2023.2185218.
30. Frick, S.A., Rodríguez-Pose, A., Wong M.D. (2019). Toward Economically Dynamic Special Economic Zones in Emerging Countries. *Economic Geography*, 95(1), pp. 30-64, doi: 10.1080/00130095.2018.1467732.
31. Furman, J.L., Porter, M.E., Stern, S. (2002). The determinants of national innovative capacity. *Research Policy*, 31(6), pp. 899-933, doi: 10.1016/S0048-7333(01)00152-4.
32. Grant, R., Carmody, P., Murphy, J.T. (2020). A green transition in South Africa? Sociotechnical experimentation in the Atlantis Special Economic Zone. *J. Mod. Afr. Stud.*, 58, pp. 189-211.
33. Hornok, C., Raeskyesa, D.G.S. (2023). Economic zones and local income inequality: Evidence from Indonesia. *J. Econ. Inequal.*, doi: 10.1007/s10888-023-09581-x.
34. Jankowska, B. (2016). Clusters on the Road to Internationalization—Evidence from a CEE Economy. *Compet. Rev.*, 26, pp. 395-414.

35. Jensen, C. (2018). The employment impact of Poland's special economic zones policy. *Regional Studies*, 52(7), pp. 877-889.
36. Joshi, M.C., Bhatia, R. (2016). A Comparative Study of Special Economic Zones (SEZS) in India and China. *IJABER*, 14(7), pp. 5047-5055.
37. Kabita Kumari Sahu (2013). Displacement, Land Acquisition & Special Economic Zones in India. *International Journal of Humanities and Social Science Invention*, 2(3), pp. 35-40.
38. Ketels, C., Protsiv, S. (2021). Cluster presence and economic performance: A new look based on European data. *Regional Studies*, 55(2), pp. 208-220, doi: 10.1080/00343404.2020.1792435
39. Klemens, B. (2010). *Tradycja wytwarzania jako determinanta rozwoju klastrów i inicjatyw klastrowych*. Materiały Konferencyjne nt.: Uwarunkowania polityki rozwoju regionu – wymiar społeczny, gospodarczy i środowiskowy. Opole: Politechnika Opolska.
40. Kryńska, E. (2000). Specjalne strefy ekonomiczne w Polsce - teraźniejszość i przyszłość. In: E. Kryńska (Ed.), *Polskie specjalne strefy ekonomiczne*. Warszawa: Scholar.
41. Laskowski, P. (2013). Specjalne strefy ekonomiczne jako czynnik rozwoju regionalnego na przykładzie wałbrzyskiej specjalnej strefy ekonomicznej "INVEST-PARK". *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu*, 307, pp. 317-329.
42. Li, J., Wang, Y. (2019). Coupling effect of regional industrial cluster and innovation based on complex system metric and fuzzy mathematics. *Journal of Intelligent & Fuzzy Systems*, 37(5), pp. 6115-6126, doi: 10.3233/JIFS-179196.
43. Li, Y.C., Zhang, X., Phelps, N., Tu, M. (2022). Closed or connected? The economic geography of technological collaboration between special economic zones in China's Suzhou-Wuxi-Changzhou metropolitan area. *Urban Geography*, doi: 10.1080/02723638.2022.2129867.
44. Liu, W., Shi, H.-B., Zhang, Z., Tsai, S.-B., Zhai, Y.M., Chen, Q., Wang, J.T. (2018). The Development Evaluation of Economic Zones in China. *Int. J. Environ. Res. Public Health*, 15(56), doi: 10.3390/ijerph15010056.
45. Lu, Z. (2022). Human capital spillovers from Special Economic Zones: Evidence from Yangtze Delta in China. *Economies*, 10(99), doi: 10.3390/economies10050099.
46. Łukaniszyn-Domaszewska, K., Mazur-Włodarczyk, K., Karaś, E. (2023). Chinese FDI in Poland and the Czech Republic – inflows, determinants and challenges, Scientific papers of Silesian University of Technology. *Organization and Management Series*, 170, doi: 10.29119/1641-3466.2023.170.17.
47. Lundequist, P., Power, D. (2002). Putting porter into practice? Practices of regional cluster building: Evidence from Sweden. *European Planning Studies*, 10(6), pp. 685-704, doi: 10.1080/0965431022000003762.
48. Lundmark, L., Pettersson, Ö. (2012). The relevance of cluster initiatives in rural areas: Regional policy in Sweden. *Urbani Izziv*, 23(Suppl. 1), pp. 42-52, doi: 10.5379/urbani-izziv-en-2012-23-supplement-1-004.

49. Ma, T., Cao, X.X., Zhao, H. (2022). Development zone policy and high-quality economic growth: quasi-natural experimental evidence from China. *Regional Studies*, pp. 1-16.
50. Mackiewicz, M. (2019). Role of clusters in the Polish innovation system. *Central European Economic Journal*, 6(53), pp. 304-310, doi: 10.2478/ceej-2019-0021.
51. Ministerstwo Rozwoju i Technologii (n.d.). *Specjalne Strefy Ekonomiczne*. Retrieved from: <https://www.gov.pl/web/rozwoj-technologia/specjalne-strefy-ekonomiczne>, 21.08.2023.
52. Mohiuddin, M., Regnière, M., Su, A., Su, Z. (2014). The special economic zone as a locomotive for green development in China. *Asian Soc. Sci.*, 10, 109.
53. Morgulis-Yakushev, S., Sölvell, Ö. (2017). Enhancing dynamism in clusters: A model for evaluating cluster organizations' bridge-building activities across cluster gaps. *Competitiveness Review. An International Business Journal*, 27(2), pp. 98-112, doi: 10.1108/CR-02-2016-0015.
54. Naeem, S., Waheed, A., Naeem, K.M. (2020). Drivers and Barriers for Successful Special Economic Zones (SEZs): Case of SEZs under China Pakistan Economic Corridor. *Sustainability*, 12, 4675, doi: 10.3390/su12114675.
55. Nazarczuk, J.M., Umiński, S. (2019). *Foreign trade in special economic zones in Poland*. Olsztyn: Wydawnictwo Uniwersytetu Warmińsko-Mazurskiego w Olsztynie.
56. Pakdeenurit, P., Suthikarnnarunai, N., Rattanawong, W. (2017). Location and Key Success Factors of Special Economic Zone in Thailand. *Mark. Brand. Res.*, 4, pp. 169-178.
57. Pavelková, D., Zizka, M., Homolka, L., Knapkova, A., Pelloneova, N. (2021). Do clustered firms out-perform the non-clustered? Evidence of financial performance in traditional industries. *Economic Research-Ekonomska Istraživanja*, 34(1), pp. 3270-3292, doi: 1331677X.2021.1874460.
58. Physicians for Human Rights (2014). *A Foreseeable Disaster in Burma: Forced Displacement in the Thilawa Special Economic Zone*. Retrieved from: https://s3.amazonaws.com/PHR_Reports/Burma-Thilawa-English-Report-Nov2014.pdf, 22.08.2023.
59. PI&TA (2022). *Investment incentives Polish Investment Zone*, Polish Investment & Trade Agency. Retrieved from: https://www.paih.gov.pl/why_poland/Polish_Investment_Zone#, 4.01.2023.
60. Porter, M.E. (1998). Clusters and the new economics of competition. *Harvard Business Review*, pp. 77-90. Reprint 98609.
61. Porter, M.E. (2000). Location, competition, and economic development: Local clusters in a global economy. *Economic Development Quarterly*, 14(1), pp. 15-34, doi: 10.1177/089124240001400105.
62. Rodrigues, C., Steenhagen, P. (2022). SEZs and China's Development Promotion: Policy Exchanges Under the Belt and Road Initiative. In: P. Figueiredo, F.J., Leandro, Y.C. Li (Eds.), *Handbook of Research on Special Economic Zones as Regional Development Enablers* (pp. 21-38). IGI Global, doi: 10.4018/978-1-7998-7619-9.ch002.

63. Romyen, A., Liu, J.X., Sriboonchitta, S., Cherdchom, P., Prommee, P. (2019). Assessing Regional Economic Performance in the Southern Thailand Special Economic Zone Using a Vine-COPAR Model. *Economies*, 7(30), doi: 10.3390/economies7020030.
64. Ślusarczyk, B., Grondys, K. (2018). The Concept of Sustainable Development in the Functioning of Municipalities Belonging to Special Economic Zones in Poland. *Sustainability*, 10, 2169, doi:10.3390/su10072169.
65. Sölvell, O. (2008). *Clusters. Balancing Evolutionary and Constructive Forces (Redbook)*. Stockholm: Ivory Tower Publishers.
66. Sölvell, O., Lindqvist, G., Ketels, C. (2003-2006). *Zielona Księga Inicjatyw Klastrowych. Inicjatywy klastrowe w gospodarkach rozwijających się i w fazie transformacji*. Warszawa: PARP.
67. Sölvell, Ö., Lindqvist, G., Ketels, Ch. (2003). The cluster initiative greenbook. Ivory Tower A.B. Sommerlatte, T., Deschamps, J.-P. (1986). Der strategische Einsatz von Technologien. In: *Management im Zeitalter der strategischen Führung*.
68. Stojčić, N., Pylak, K., Alibegović, D.J. (2022). The spatial impact of entrepreneurial zones: firm, city and inter-city evidence. *Regional Studies*, 56(12), pp. 2164-2176.
69. Tax benefits from business activities within the Special Economic Zone (SEZ) (n.d.). *Special Economic Zones (SEZs)*. Retrieved from: <https://getsix.eu/resources/doing-business-in-poland/special-economic-zones-sezs/>, 4.01.2023.
70. Vats, A., DeClerq, M., Clements, S., Chen, X.M. (2018). *Special Economic Zones as a Tool for Economic Development. Over-hyped white elephants or valuable economic enabler in today's increasingly globalised market place?* Oliwer Wyman, Marsh & McLennan Company.
71. Wang, Z., Yang, Y., Wie, Y. (2022). Has the Construction of National High-Tech Zones Promoted Regional Economic Growth?—Empirical Research from Prefecture-Level Cities in China. *Sustainability*, 14, 6349, doi: 10.3390/su14106349.
72. Wennberg, K., Lindqvist, G. (2010). The effects of clusters on the survival and performance of new firms. *Small Business Economics*, 34, pp. 221-241, doi: 10.1007/s11187-008-9123-0.
73. World Bank (2017). *Special economic zones: an operational review of their impacts*, Washington. Retrieved from: <http://documents.worldbank.org/curated/en/316931512640011812/Special-economic-zones-an-operational-review-of-their-impacts>, 24.08.2023.
74. Yan, Y., He, M., Song, L. (2021). Evaluation of regional industrial cluster innovation capability based on particle swarm clustering algorithm and multi-objective optimization. *Complex & Intelligent Systems*, doi: 10.1007/s40747-021-00521-8.
75. You, J., Chen, X., Chen, J. (2021). Decomposition of Industrial Electricity Efficiency and Electricity-Saving Potential of Special Economic Zones in China Considering the Heterogeneity of Administrative Hierarchy and Regional Location. *Energies*, 14, 5468, doi: 10.3390/en14175468.

-
76. Żagun, K., Strojny, M., Klimczak, D., Mańkowski, M. (2009). *A guide to special economic zones in Poland*. KPMG in Poland. Raport.
77. Zeng, D.Z. (2016). *Special Economic Zones: Lessons from the Global Experience. PEDL Synthesis Paper Series, No. 1. Private Enterprise Development in Low Income Countries (PEDL)*. Warwick, UK.
78. Zeng, D.Z. (2021a). *The Dos and Don'ts of Special Economic Zones*. Washington: International Bank for Reconstruction and Development/The World Bank.
79. Zeng, D.Z. (2021b). The Past, Present, and Future of Special Economic Zones and Their Impact. *Journal of International Economic Law*. *jgab014*, doi:10.1093/jiel/jgab014.