

Designing a Sustainable Business Models for Green Transition of SEZ in Campania—Towards the Conceptual Framework



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Article

Designing a Sustainable Business Models for Green Transition of SEZ in Campania—Towards the Conceptual Framework

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Abstract Launched by the Region of Campania in 2017, the special economic zone (SEZ) in Campania is being developed as a consequence of the various interventions supported by the Recovery Plan of the Italian government. Economic, fiscal, and regulatory measures are promoted in foreign nations (China, Africa, India, Europe, South-East Asia, etc.), and currently in Italy, for the development of firms and the industrial sector in SEZ. Investment and consumption of production processes can lead to a polluted environment that impacts the local population and does not achieve the goal of sustainable development. This study proposes an analysis of all Campania SEZ and the introduction of a set of indicators to be used in Campanian SEZ to implement a circular economy business model across different areas (coastal, inner land, and intermediate areas) and to understand how these circular economy principles can interact with the current ecological transition for process decarbonization. This study's methodology is based on a cross-qualitative investigation of indicators that link the sustainability of manufacturing and economic processes to environmental transformation. While foreign SEZs are rapidly increasing, Italian SEZs, notably in Campania, are still in their early stages. In this regard, the objective of this paper is to reinforce the topic of sustainability for the Campanian SEZ to support decision-making processes, as well as to provide further reflection on the development of Campanian SEZ in Italy through the lens of the ecological transition, and in line with foreign SEZs, to understand how decarbonization measures can be applied for a circular economy of production.

Keywords special economic zone (SEZ); Italy; business models; decarbonization, green transition, circular business model; decision-making; social sustainability

1. Introduction

Special economic zones (SEZs) are designated areas where a governing authority provides incentives to businesses that use infrastructure and equipment that operate differently from what is used for conventional national policy. The main objectives of SEZs, which are mostly found in developing countries, are to increase established businesses' competitiveness, attract direct investment, particularly from foreigners, increase exports, create new jobs, and strengthen the region's overall productive fabric by fostering industrial growth and innovation. SEZs have been referred to as "growth poles" by academics and politicians since they are regions with different restrictions, fees, and taxes from the rest of the country. In many developing nations, SEZs have become a popular policy instrument to support industrialization and economic expansion. A specific definition of SEZs is provided by [1], which is based on the UNCTAD's World Investment Report 2019 (WIR 2019) [2] and highlights the fundamental differences between SEZs and free zones [2–4]. The term "special economic zones (SEZs)" was chosen to be more inclusive than "free zones", which no longer reflected the very wide variety of new "zones", particularly those oriented toward specific technologies and new services (e.g., health, tourism, security), as well as sustainable development, including high-tech parks, science parks, and science and technology zones are examples of SEZ [1].

The growth of SEZ is also significantly influenced by the European Union's (EU) cohesion policy [5], which aims to reduce disparities and differences in the degree of development of various EU areas. The SEZ industry has advanced significantly to the contemporary "Economic Zone 5.0", which is built on state-of-the-art digital technologies and is seamlessly connected to urban growth. Given the variety of human activities, government directives for the ecological

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transition and the advancement of “Clean and Affordable Energy”, one of the Sustainable Development Goals (SDGs) [6], are essential. This strategy is consistent with the recommendations of the United Nations Agenda 2030 for Sustainable Development [6], particularly SDGs 9 and 12, which aim to ensure sustainable patterns of production and consumption, advance inclusive and sustainable industrialization, and enable resilient infrastructure. Social issues are also addressed by Goals 1, 5, and 8, which aim to reduce poverty, advance economic growth, and gender equality, and generate meaningful employment.

The circular economy (CE) and the ecological transition (ET) claim that the goal is to define a model for special economic zones (SEZs) in which the economic system is in line with the 5Rs (refuse, reduce, reuse, repurpose, recycle) and with the objective of achieving sustainable development while creating environmental quality, economic prosperity, and social equity, for the benefit of present and future generations. The three common characteristics must also be followed by a sustainable SEZ model that supports the ecological transformation and circular economy, as proposed by the Ellen MacArthur Foundation [7] and [8,9] are a) eliminating waste and pollution, b) preserving products and materials in use, and c) renewing natural systems all of which fall under the first category.

While reporting on environmental, social, and governance (ESG) issues is becoming more and more popular among businesses, there is still no standard way for them to report on resource use or the progress of the transition to a circular economy. Although there are many metrics and frameworks, each one has a specific function and uses a different set of indications because of this. Businesses find it challenging to measure and report on the circular economy in a systematic manner. As a result, it becomes extremely harder for investors to direct their money toward the most promising circular opportunities.

Although there have been many publications on the circular economy, the ecological transition, and business models during the past ten years, there has been relatively little theoretical and scientific research on SEZ [10], especially in Italy. Circular business models (CBMs) that employ key performance indicators (KPIs) and their corresponding performance indicators and measures are yet largely unexplored in the literature [11–14].

The development of SEZ requires an analysis of business models set in the context of circular sustainability and ecological transition that explains how companies develop and deliver value to the territory, as well as the methods used to obtain a share of that value. The circular economy was first discussed in early 2000, but in recent years, researchers, policymakers, and practitioners have focused heavily on the idea of putting programs into place that will facilitate the shift from a linear to a circular economy. The success of a firm depends on the design and implementation of the business model just as much as it does on the choice of technologies and the operation of tangible assets and equipment, as is evident from the link to earnings. The business plan offers a strategy for turning technological advancement, expertise, and the use of both tangible and intangible assets into a revenue stream [15,16]. SEZ must address the energy concerns, particularly in the medium and long term, to meet the sustainability goals advocated by Europe, the World Bank, and the OECD [17–23]. The government gives enterprises operating in special economic zones public aid, which is preferable to what is offered on the free market, is selective, and influences global trade. Therefore, it is the duty of governmental authorities to establish the optimum business climate and secure related economic benefits that are not available to companies operating outside the zone. The zones specifically affect the growth of employment and export, the inflow of foreign direct investment, the development of human capital and knowledge transfer, new technologies, and know-how. Over time, these variables contribute to the acceleration of growth. Strategic location, zone strategy integration with overall development strategy, market understanding and comparative advantage utilization, and, most importantly, ensuring that zones are “special” in terms of a business-friendly environment, particularly a solid legal and regulatory framework and an embodiment of sustainability and resiliency, are all essential elements of successful special economic zone programs.

Effective execution, as shown in China, Taiwan, and the Republic of Korea, is the primary explanation for these nations’ success with SEZ. SEZ has significantly aided China’s economic development, contributing to 22% of the nation’s GDP, 46% of FDI (foreign direct investment), 60% of exports, and more than 30 million jobs in recent years. Industrial parks may be responsible for 80–90% of GDP growth in some areas. Farmer incomes are demonstrably increased by national industrial parks, particularly agro-tech parks, and agricultural demonstration zones [2–4].

Several elements also contribute to the success of SEZ implementation in these nations, which include governmental support, political stability, effective macroeconomic management, pro-trade exchange rates and trade policies, effective SEZ development, and participation in regional trade agreements.

The success factors of SEZs have been the subject of research, especially in the countries of South-East Asia and Africa, less so in Italy where they have developed recently. Information on these areas' behavior across national borders, how to get internal company data, the economic effects, and time management are typically challenging to come by for researchers. This shows that the majority of the research on the subject has been done on case studies, from which it is challenging to find scientific data that is widely accepted. African states must evaluate the need for reliable infrastructure, developing links and spillovers, mainstreaming SEZ into national development goals, establishing a conducive business environment, and political will, among other things. The majority of SEZs in Africa were unsuccessful, much like the early zones in Bangladesh. Only after the government allowed garment firms to invest did they begin to make significant profits [24]. However, SEZs with fewer technological components seem to be growing the fastest in emerging nations.

As highlighted by [24–26], SEZs have been able to generate large profits in Egypt, Jordan, Morocco, Tunisia, and the United Arab Emirates. Even Sub-Saharan countries like Kenya, Ghana, and Ethiopia have shown dynamism in their special economic zones. These countries have succeeded in getting past structural obstacles. However, institutional failures to correctly address the various issues of SEZ development have proven to be one of the key impediments to successfully implementing SEZ. Inadequate industrial, transportation, and communication infrastructure; excessive regulation; poor planning and management; inappropriate locations; low-productivity labor supplies; rent-seeking; and a lack of an industrial culture have also been identified as factors limiting SEZ performance.

In the Philippines, for example, the share of FDI flows going to the country's eco-zones increased from 30% in 1997 to over 81% in 2000. In Bangladesh, \$103 million of the \$328 million of FDI inflows were registered in EPZs [27]. According to [27], the Dominican Republic has produced 10–15 times more jobs per person than Ghana and Kenya. The United Nations Conference on Trade and Development (UNCTAD) [2] observed that in 65% of countries, investment promotion agencies describe their zones as not being properly occupied by tenants and are therefore categorized as underutilized zones in a snapshot study of SEZ in 2019.

A business assessment of 7000 enterprises in 19 Sub-Saharan African nations across several sectors was carried out in 2010 by the United Nations Industrial Development Organization (UNIDO). According to the findings, tax incentive programs were ranked 11th out of 12 in terms of importance, behind elements like economic stability and raw material costs [28]. Tax incentives are a crucial part of the global rivalry to draw investment, but the research suggests that nations shouldn't try to outdo their neighbors by offering more incentives to boost FDI flows [28,29].

Successful factors for SEZ analyzed in the literature have been grouped by [29–33]. High levels of international investment mobility competition as well as changes in the political landscape, such as shifting trade preferences, are examples of external variables. The strategic focus of zones, the institutional and legal framework, the infrastructure, and the services and benefits offered to investors in zones are all controllable elements. Additionally, insufficient site locations that necessitate high construction expenditures, are remote from infrastructure centers, have poor utilities, have weak governance systems, or have an excessive amount of bureaucracy in the zone management have all been noted as key barriers to the successful implementation of SEZ.

Between 2011 and 2021, the Private Sector Development Support Project (PSDSP) in Bangladesh facilitated the creation of over 41,000 jobs and \$3.9 billion in direct private investment. It supported the building of the Bangladesh Economic Zone Authority (BEZA), motorways, eight bridges, three electric substations, and two water reservoirs, as well as a regulatory reform process [34]. Part of the literature agrees that infrastructure, which encompasses both physical and intangible infrastructures, is an important element. For the former, a zone should have good access to highways, ports, communications, and other facilities. It should also have reliable supplies of basic utilities like gas, electricity, and water, as well as environmental conveniences like waste disposal [35].

Due to the lack of data, quantitative analyses have become difficult to carry forward in the search. The quantitative analyses have favored China and the Asian countries. In Brussevich's

work [36], the indicators used to analyze SEZ are socioeconomic and demographic indicators (employment indicators include paid employment share, manufacturing employment share, and female employment rate), as well as changes in average real wages, size-adjusted household incomes, and district-level income inequality as measured by the Gini coefficient, as well as investment. Brussevich [36] has developed an interesting indicator for assessing the significance of SEZ intervention and spillover effects on neighboring districts.

According to [37,38], the Canary Islands review gives brief information on noteworthy measures for the impact of a SEZ versus a conventional business in terms of occupancy, investment, productivity, and a valuation of the efficacy of public financing in the example of Hungary and Canaria. In Hungary, according to the authors, a competition between SEZ participants and non-participants should have been established, using the method to measure the effects of the Canary Islands Special Economic Zone. The SEZ is expected to generate 16,000 as benefits (direct, indirect, and induced) new jobs. The authors [37–39] model the growth of industrial firms' exports as well as the number of employees they employ over a 10-year period (2018–2028) to estimate the impact of Calabrian SEZ on employment and exports in the Italian environment.

Exports for businesses inside the SEZ are predicted to more than triple over a ten-year period, while exports for enterprises outside the SEZ or if the SEZ is not developed at all are expected to increase only marginally.

The objective of this research, considering research studies [40–42], is to provide global KPIs for developing a theoretical CBM for SEZs that prioritizes ecological transition and circularity, aiming to assist decisionmakers by providing a reference frame considering the set of KPIs required for developing a sustainable business model for SEZs. The studies of Brussevich [36] and Farole & Akinci [43] are both relevant and in line with the ongoing research to which this article seeks to provide qualitative responses in preliminary analyses.

The structure of the paper is as follows. The subject background, the research gap and the study's purpose and significance, the overall goal, and the paper's primary contributions are all presented in Section 1. The literature review is presented in Section 2. The background of SEZs in Italy is presented in the Section 3. The methodological steps that were taken are thoroughly described in Section 4. The results and discussions are shown in Section 5. Finally, Section 6 presents the conclusions, limits, and recommendations for further research.

2. Literature Review

The primary objective of SEZ in emerging economies is frequently to draw FDI to develop, diversify, and modernize industries, and countries that have traditionally had difficulty luring FDI exhibit a greater propensity to seek SEZ policies. According to [44], the primary issue with the concept of sustainable development is that local communities' social, economic, and environmental indicators show a continuous growth in living standards. The indicators offer a coordinated framework for assessing sustainable development, which should highlight changes in each element independently as well as their close relationships and connections. The launching of SEZ is an active and developing tool, but in defining programs, the focus is mainly on business revitalization and revitalization of spatial and infrastructural connections. Literature on foreign SEZ is enough developed, as in Poland [40–42] and those in China have often been developed as entire cities [45–47]. Southern Italy's SEZ was born on the concept of interconnected industrial parks covering a large area with contrasting and intersecting values and functions [48].

The weak results of previous policies have gradually contributed to lowering the focus on the Mezzogiorno. It is thus not a question of incentives, but rather of having a wide understanding of the role and future of the Mezzogiorno. The creation in 2017 (Decree-Law No. 91 of 20 June 2017) of special economic zones near the main port areas in southern Italy was a remarkable step [48,49]. The SEZ, as a tool, aims to significantly accelerate growth rather than being a “port-franchise” or merely a “tax-free” area of the Mezzogiorno and, by extension, the entire Italian country. The empirical studies on special economic zones are largely concerned with evaluating their efficacy and are founded on several factors, mostly economic ones. The scope of the research, which considers the economic, social, and environmental aspects of how SEZs function, led to the conduct of a literature review in this area. China, Africa, and Poland create a large amount of SEZ studies, but Italy produces very little robust SEZ literature. The SEZ's capacity to boost the regional economy and the production sector is evaluated. Research indicates that SEZs are not easy to execute as a one-sided approach to economic development, and even those

that are successful usually take ten years or more to begin showing results. Among the main objectives of the circular economy is to consider economic prosperity, followed by environmental quality.

Contributions to innovative and sustainable circular business models have been evaluated in accordance with the goal of this article. Special economic zones can be an effective approach to promote industrialization. The SEZs are an outstanding example of China's pragmatic and experimental approach to reform. Beginning in the 1980s, they were employed in China as a test stage for the country's transition from a planned to a market economy. The Suzhou Industrial Park is one of the most remarkable success stories of China's special economic zones, and it is beneficial in terms of social and urban growth that is both economical and environmentally acceptable.

According to [50,51], the development of urban-industry well-integrated special economic zones in a weak market environment can benefit greatly from the facilitation and reform-oriented host government, in addition to foreign talent and knowledge and a "whole value chain" approach. On the same line of research, [40,41,52,53] analyze the relation among SEZ, policies, and the creation of sustainable value. The assessment criteria and indicators have been examined by [52,53] to comprehend how performances or impacts (i.e., life-cycle impact assessment) in already-conducted S-LCA (social life cycle assessment) studies should be or are measured.

Farole & Akinici [43] examine the economic growth spillovers generated by 346 SEZs in 22 emerging markets to offer insight into this problem. To overcome the lack of trustworthy economic indicators for analyzing SEZ performance, the research employs night light data as a proxy for SEZ performance as well as the economic performance of the surrounding area. Additionally, it uses a recently created data collection on SEZ attributes to determine the extent to which they impact the neighboring districts' economic performance. The results indicate that the surrounding towns' economic performance is positively impacted by SEZs. Growth spillovers, on the other hand, are limited in area and exhibit a strong distance decay effect: the amplitude of the influence declines constantly up to 50 km. Additional indicators emerging from the Russian SEZ have been divided into four groups: indicators of socioeconomic growth; indicators of economic security; indicators of crisis circumstances; and environmental indicators [54].

The World Investment Report 2019 [55–58] analyzed China's SEZ. The Chinese government has created periodical assessments of all its SEZs, both technology development zones (HTDZ) and economic and technological development zones (ETDZ), specifying a specific set of metrics that include: a) indicators that monitor the performance of the "static" zones (e.g., an annual amount of new investments number of companies tax revenues), b) indicators that monitor the performance of the "dynamic" zones (e.g., an annual amount of new investments), c) number indicators that assess zone spillovers such as employee education level, d) indicators that monitor zone transformation R&D expenditures, the quantity of research institutes and incubators, and the quantity of high-tech companies that file intellectual property. Spillovers may also manifest SEZ through the spread of knowledge and technology. The agglomeration effects of SEZ, which stimulate knowledge spillovers between firms by clustering investors in certain locations, are described by [59]. However, there is a scarcity of data on horizontal spillovers, making this a promising subject for further research. SEZs can also have a significant positive impact on the economy through collaborations between domestic enterprises outside the zone and foreign firms inside. For starters, the presence of FDI opens new market opportunities for local enterprises looking to boost their sales.

Numerous studies on environmental issues and sustainable development consider environmental problems caused by urbanization and industrialization as well as industrial zone activity that goes against the fundamentals of sustainable development. Several studies [43,54–60] emphasize that despite the wide range of opinions on how the zones affect the social and environmental aspects, these effects must be considered in addition to the economic aspect because they are interconnected [60].

Lichota [61] concentrated the study on SEZs based on financial performance, assessing the financial information that supported the notion that the benefits of the zones' efficiency outweigh the expenses associated to their operation. Ślusarczyk [62] also raises the problem of government assistance used to entice foreign direct investment to SEZ. According to [63], the zones' favorable effects on the growth of entrepreneurship were broken down into counties. Attention to an improvement in the efficiency of resource management in the territory of the zones as well as an increase in the competitiveness of the regions is analyzed by [64–66]. SEZ best achieved its goals

when it promoted an increase in the number of jobs created in problem areas [67]. Ambroziak [68] examines the financial investments made in special economic zones and their ability to create new jobs to determine how well they function. On the other hand, Stawicka [69] examines the economic development of the nation based on urbanization, whose component is the physical extension of the zones, using the example of Chinese SEZ. The studies [70–72] have also considered how the laws and regulations affect how well the zones attract enterprises. Numerous assessments of the principles and prerequisites for investment in the sphere of SEZ have described legal legislation [73–75]. The research of [76] on investment also focuses on the visuality of the region, including special economic zones, considering the information association of place and significant element signature of a cultural civilization. Lonarkar [77] highlights that the good perception of a location is determined by the clear, well-organized, and given information about its social-cultural potency, economic growth, environment, and accessibility. Both zones' investment promotion is primarily focused on linking and accelerating SEZ realization for investors and zone potential. The study's other findings show that Bitung (Indonesia) SEZ is more focused on developing strategies for increasing value-added logistics, profit, and benefits for the industry. SEZ in Mandalika (Indonesia) emphasizes competitiveness strategy, value chain, and tourism network growth. The investment promotion of SEZ has an impact on the strategy of attracting financial investment to SEZ, organizing the zone, and controlling the spatial structure and pattern of SEZ in accordance with the regional spatial plan [77].

The causes of the success and failure of foreign SEZs are many but common, such as regulatory incentives. The level of public assistance offered to entrepreneurs had a favorable impact on social and economic advancement, and it was proved that regional aid from the state in the form of tax breaks was more significant for the poorest regions. SEZs in China have increased the number of enterprises in the designated zones, which has raised capital investment, employment, production, productivity, and wages [78,79]. One of the major empirical challenges is the recovery of private (and public) data that can describe the effects and ramifications of SEZ on the surrounding region. Since there is a lack of data and it is difficult to find appropriate “control groups” to compare results against, it is tricky to quantify the direct effects of SEZ. According to disaggregated studies, the impact of SEZ in fostering economic and private sector development appears to be rather diverse between nations and regions. Augustyński [80] examined the export performance of SEZs in India and discovered notable variations between the various zones in terms of their export performance. In many cases, SEZ also failed to achieve the desired export levels. Hausmann et al. [78] give credibility to the hypothesis that immigrants, particularly those attracted by SEZs, are creating beneficial spillovers in the labor market that increase the output of Panamanian workers. SEZ's relationship to labor market dynamics has been the subject of much research in the literature; nevertheless, there has been little discussion of the relationship between SEZ and modern ecological transition goals. In [81], the research on SEZs in Panama shows that despite the need for higher education and experience, SEZs have provided steady, well-paying jobs for Panamanians. Numerous studies have examined the connection between SEZ and various aspects of the labor market, including the impact of SEZ on job creation, the conditions of the workplace, and unionization (the formation of a labor union within the zone). Jauch [82] utilizes a sample of 59 of the previous empirical studies to examine the relationship between SEZ and employment, incomes, and labor conditions. The performance of the zones is poorly rated in numerous studies. A compelling study of SEZ is provided by [36], who challenges the idea that investments in a certain area wouldn't be made without the zones.

According to [83], the zones fall short of expectations when used as instruments to promote the creation of jobs and reduce town unemployment rates. On the other hand, Zeng [35] notes that new investment in the region is significantly constrained because of the benefits attained by investors in the zones, which marginalize the socio-economic problems specific to the region. The author's analyses concern the impact of the zones on the economy of South Africa. The working class is the subject of analyses proposed by [36,84–86], with the latter study focusing on gender and well-being in the Dominican Republic. These findings show a change in the direction of SEZ analysis and their impacts on the landscape. Holliday et al. [87] and Hamzah et al. [60] offer a perspective on the social impacts of SEZ using an econometric model to catch potential SEZ program participation and to detect the casual effects of SEZ program.

The study conducted by [85] highlights that the establishment of SEZ has a disproportionately positive impact on female workers and reduces income disparity at the local level. The results do, however, also imply that land prices in SEZ areas typically increase while pay levels

in comparison to other districts mostly hold steady. The research also examines the effects of clusters of numerous SEZs on agglomeration and socio-economic spillovers to nearby communities. This study [60] examines the negative effects of sustainable construction practices on infrastructure projects in special economic zones and their environmental impact.

The social aspect is frequently disregarded in the evaluation of sustainability in business models. Ethical and socially responsible behavior needs to be expanded to encompass not just the actions of an organization but also the entire supply chain that it is a part of or may affect as well as the markets in which it operates. The analysis of quantitative indicators for the social sustainability of the supply chain was emphasized in the literature but did not extend to the analysis of indicators for regional, industrial, and port economies [85–91].

A different method is used by [92–94] to connect environmental value to innovative and strategic aims. Urban green innovation is anticipated to develop into a powerful instrument for local governments to compete under a system of fiscal decentralization as a combination of innovation and environmental advantages. On the one hand, local governments seek to minimize political restraints and pursue regional economic growth goals through redevelopment, while also attracting more investment and talent. Green innovation initiatives are seen as an important strategy for achieving sustainable development since they mix environmental protection and economic growth. Accordingly, local governments will encourage urban green innovation through a variety of policies to increase the possibility that places will be renovated to achieve the objectives stated for selecting regions for SEZ.

The SEZ of the Campania Region has recently been studied in relation to the sustainability of various districts, evaluating their impact on the surrounding area [95–97], and in relation to accessibility [97]. Along these lines, SEZs are a tool for spatial planning procedures and for enhancing revitalization measures, despite their complicated nature [97]. Prior to the development of SEZ, port regions, such as those in China, widened the economic and welfare gap between coastal cities, promoting a social and environmental disconnect.

In the literature, the examination of SEZ has been related to the progress of port areas [98–102]. The studies of [101,102] analyze the SEZ for the Calabria Region. Musolino et al. [101] developed a system of models for estimating the primary consequences of an SEZ in the Mediterranean area, referring to the TEN-T core node of Gioia Tauro and the proposed SEZ in the associated territories. The supply model is then recreated, considering all the modalities, to connect the numerous internal nodes to the region and the external macro-nodes.

The planning initiatives implemented by port authorities in Central and Southern Italy in recent years have been remarkable and have the potential to increase the competitiveness of Campania and Southern Italy. The maritime economy represents a competitiveness potential that is still significantly underutilized in the framework of regional development initiatives for the South-Italy “Mezzogiorno” [103–106]. In light of these understandings, the scientific literature points to a lack of investigation of an integrated business model between port area, production processes, social values, and sustainability, but they are analyzed individually or only on certain topics. Forte [107] has addressed the issue of management complexity between port, urban, and inland areas in assessing economic and environmental development, highlighting how the main element of fragility capable of undermining the potential competitiveness of the port system south has so far been the fierce competition among Italian port authorities, who—lacking a strategic and systemic vision—have tried to act individually. This internal competition has also resulted in a significant waste of resources intended for infrastructure improvements to gain a competitive edge over nearby ports, frequently without considering the potential related to the physical conformation and geographic location of the terminals and without justification of an actual market demand.

Regarding Mezzogiorno, all contextual (economic, social, cultural, institutional, and environmental) aspects of the place of destination that may have an impact on the price of an item, a company’s productivity and profitability, or an individual’s quality of life are proposed determinants for local attractions as locational considerations [101]. Traditional elements include market size, accessibility, human capital, labor costs, trade openness, land, agglomeration and localization economics, infrastructure and service quality and cost, scientific and technological assets, and so on. Institutional quality (legal system, bureaucracy, security, political stability, property rights protection, etc.), cultural and environmental assets, quality of life, social cohesion, and policy framework (tax policies, labor market regulations, environmental policies, trade policies, etc.) are also important considerations.

3. Italian Background of SEZ

From an environmental perspective, Italian SEZs (Figures 1 and 2) still have a lot of unrealized potential and a long way to go before they can be sustained. The SEZs in Italy are a component of a political system where choices, decisional drives, or motivation are still being made. These strategies are clearly going to negatively impact Italy's coastal and inland environments. Economic zones are so widespread all over the world that, despite their varied functions and strategies, they always seek to promote economic growth and regional development. The Italian Special Economic Zones, established in Italy in 2017 by Decree-Law No. 91 [48,49] are geographically delimited and clearly identified areas within the boundaries of the State, as well as consisting of non-territorially adjacent areas if they have functional economic nexus, and including at least one port area. Special economic zones offer several types of advantages in addition to automatic tax incentives, such as the distribution of land or buildings or the development of very advantageous procedural and administrative processes for investors¹.



Figure 1. The SEZ in Campania Region. Source: Regione Campania. <https://www.investincampania.it/it/zes-2>

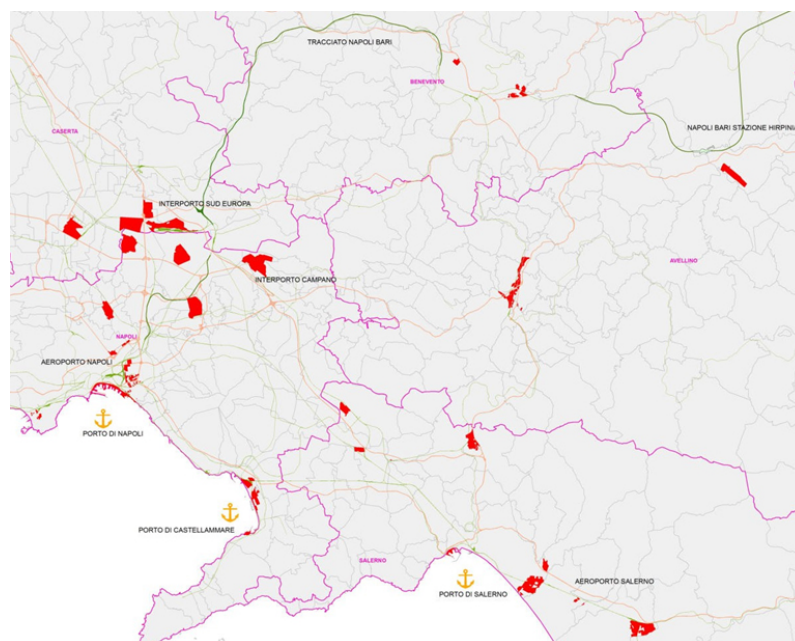


Figure 2. Location of SEZ and areas in Campania. Source: The Campania SEZ Strategic Plan (<https://www.nagora.org>).

¹ <https://www.nagora.org/media/documenti/ZES-Campania-Punti-salienti-Nagora-settembre-2018.pdf> (accessed 13 November 2023).

The administration of special economic zones (SEZs) is typically handled either by a completely public company (involving national and/or local institutions) or by a mixed type of company composed of both public entities and one or more private operators. The authority that national and local laws grant to customs officials and other agencies is not impacted by this. SEZs are also viewed as a tool for the country's economic policy, encouraging activity, modernization, and regional economic development.

The use of sustainable development concepts in municipalities aims to bring about beneficial qualitative and quantitative changes while upholding social equity and environmental values. Therefore, thoughts on the development of the region include a category of socio-economic growth known as sustainable development. At the same time, achieving global equilibrium between environmental preservation and economic growth is a difficult task that calls for collaboration from numerous organizations.

Environmental issues have become more significant in the field of sustainable construction over the last 15 years. People's quality of life may be impacted by infrastructure, which is a component of industrial structures. Construction increased along with the population rise, especially the infrastructure required to support human activity. The building industry is responsible for 35% of the global carbon dioxide (CO₂) emissions, according to empirical research on SEZ.

According to an empirical study on SEZ, the construction sector is responsible for 35% of the world's carbon dioxide (CO₂) emissions [50]. Additionally, it was shown that 40–65% of the construction waste is produced by the trash that is disposed of. And the 18% of the 30% dangerous greenhouse gas emissions from industrial construction, which are produced by several ancillary operations including the processing of building materials, are related to this industry. Coordination and development, which are defined by the indicators of the subsystems of the economic, social system, and environment, make up an assessment of sustainable development in a region. As a result, each decision about the region's development must be ethically, politically correct, and commercially feasible.

The formation of SEZs in Italy and the use of the city-port relationship as a strategy for product development have both been researched and sustainable growth linked in the context of European and national strategies for regional economic development [103–119], with [120] focusing on Campania and assessing the value of start-ups in SEZ. Cisternino & Desiderio [121] claim that among the many lessons learned from effective special economic zone programs, the essential components include a strategic location, integration of zone strategy with overall development strategy, understanding the market and leveraging comparative advantage, and, most importantly, ensuring that zones are “special” in terms of a business-friendly environment, especially a strong legal and regulatory framework and an embodiment of sustainability. There is empirical data on sustainability and business models [122–126]. Literature on the Italian Special Economic Zone (SEZ), particularly the Campania Region, lacks wide empirical evidence. The SEZ in the Campania Region was the first constructed in 2017 in contrast to other SEZs in Italy, and the investments are still in the planning stages. There are few studies examining the economic, social, financial, and environmental benefits of SEZ. Within Mezzogiorno areas, Musolino et al. [101] proposed an analysis of key factors for the SEZ in the Calabria Region. The integrated quality system between infrastructures, urbanization, territory, and landscape is only determined by the urban plan.

In this regard, special attention should be paid to regional economic growth, which is already very important at the level of the local populations living in municipalities and is supported by government funding within the framework of the operation of SEZ. Because of their close relationships with the community, familiarity with their needs, and knowledge of the environment, municipalities should be the first to implement the principles of sustainable development. Businesses must operate concurrently while considering economic and environmental considerations for governments to grow in an environmentally responsible context. Therefore, it is crucial to carry out continual research that is effective and efficient to create ecologically friendly construction models and lower CO₂ emissions. The negative consequences of human activities on the environment, such as ozone depletion, global warming, and many types of air, water, and noise pollution, should be lessened via sustainable development. This study suggests a qualitative investigation to find a tool within innovation and ecological transition for a sustainability model for SEZ in Campania with a sustainability core. By defining key performance indicators (KPIs) and identifying KPIs related to the ecological and sustainable dimensions that can enhance the social component of sustainability that can be used for this purpose, this study aims to fill the research

gap in this area. A conceptual framework for identifying a sustainable business model that links industrial processes to the sustainability of Campania's Special Economic Zone is provided by the current study. This is achieved by comparing the inner and shore sides of the region's SEZ sustainability.

3.1. The Sustainability Direction of the SEZ

During the definition process, the Campania Region identified roughly 30 locations. More than 70% of the SEZ are located at industrial agglomerations run by IDA (Industrial Development Area, known in Italy as ASI—"Aree di sviluppo industriale") consortia and industrial agglomerations in inland regions, while the remaining areas are port and inter-port areas. Table 1 contains the 30 areas that make up the Campania SEZ.

Table 1. SEZ in Campania. Author's elaboration.

Area characteristic	Type of area (cost, inner, intermediate)	Name of the city	Land extension (ha)	District of pertinence
Ports	Coast	Naples	158	Naples
		Salerno	38	Salerno
		Castellammare of Stabia	25	Naples
Interports	Intermediate	Sud Europa Marcianise/Maddaloni	348	Caserta
		Campano	155	Caserta
Airports	Coast/Intermediate	Naples Capodichino	53	Naples
		Salerno-Costa d'Amalfi	20	Salerno
Industrial agglomerations	Intermediate	Acerra	298	Naples
		Arzano-Casoria-Frattamaggiore	162	Naples
		Caivano	291	Naples
		Foce Sarno	206	Naples
		Marigliano—Nola	297	Naples
		Pomigliano	308	Naples
	Inner	Calaggio	36	Avellino
		Pianodardine	294	Avellino
		Valle Ufita	237	Avellino
		Ponte Valentino	113	Benevento
	Intermediate	Aversa Nord	294	Caserta
		Marcianise—San Marco	550	Caserta
		Battipaglia	340	Salerno
		Fisciano—Mercato S. Severino	168	Salerno
Coast	Salerno	356	Salerno	
Industrial and logistics areas	Coast	Bagnoli Coroglio	32	Naples
		Napoli est	168	Naples
	Inner	Piattaforma contrada Olivola	41	Benevento
	Intermediate	Area PIP Nocera Inferiore	55	Salerno
	Intermediate	Area PIP di Sarno	95	Salerno
	Intermediate	Area PIP Nautico di Salerno	8	Salerno
	Intermediate	Castel San Giorgio	2	Salerno

The Campania region in Southern Italy recorded a high development index in 2016 with a GDP growth of 3.2%, prompting the government to adopt the Campania SEZ in 2017. The growth of the Campania economy is building a robust position within the Mediterranean, driving the creation of social and economic value chains to reshape a new economic geography of the Mediterranean.

Within the framework of the Campania SEZ, to favor the creation of favorable conditions for the development of the economic, productive fabric of the southern region, companies can benefit from numerous interventions implemented in customs, fiscal, financial, and administrative terms to promote the development of activities in the area to attract new companies and new

investments. Tax rebates and other government incentives are currently being used to support the structural system of production and logistics. According to the current requirements and the administrative application phase, several methods are used to construct these regions in terms of their duration, identification, delimitation, access to them, and the kinds of benefits that can be requested. The requirements in place are summarized in [Table 2](#).

Table 2. SEZ requirement. Author's elaboration.

Sector	Requirement
geographical	Identification of the areas to be beneficiaries
transport	List of existing, connecting, to be strengthened, to be developed infrastructures, with indicators of proximity, times of trips
production	Identification of the type of activity Activity of specialization
social	Number of jobs
economic	% of import/export recorded
financial	Identification of administrative simplifications Type of potential investments
governance	Identification of opinions, understandings, and focus groups to increase social value Characteristics of public or private incentives

The various initiatives put in place to encourage the manufacturing sector in Campania, such as the ICT, mechanical, textile, and furniture technology sectors, tend to strengthen Campania's Special Economic Zones as a tool for connecting the region's manufacturing activities with Mediterranean and international trade, taking advantage of the evolution of industrial activities toward economic logistical processes.

The idea of a circular business model [125,126] has been adopted in this study in order to view the SEZ as a model of circularity, to be maintained throughout the entire process, from obtaining raw materials to their production, use, and waste disposal at the end of a product's life cycle, delivery, and use of energy. Since each economic level is a part of a circular perspective and can benefit from the other, the circularity model for the SEZ is proposed in an integrated system between the various areas (coastal, internal, and intermediate). This allows for the identification of circular business models, circular performance indicators, and profitability.

4. Research Methodology

4.1. The Definition of a Sustainable Model for SEZ in the Campania Region

The research conducted so far indicates the positive impact of the operation of zones on selected areas of municipal activity, especially in economic terms. Simultaneously, as investment and industrially active places, SEZs generate negative connotations related to changes in the natural environment and the existence of the local community. These aspects are not defined in the literature with standard indicators.

According to [86,125,126], an adapted approach for SEZ in Campania is proposed.

[Figure 3](#) illustrates the five aspects of Campania's SEZ that contribute to keeping SEZ more sustainable considering the following levels: energy sustainability for production activities and port areas, pollution reduction for ship transit, port operations, and freight transport to and from the port, improvement of community social indicators, and finally the export of a business model outside of Campania to spread SEZ innovation. The described model ([Figure 4](#)) for SEZ is based on CE concepts [7,8,13,18], and this study on SEZ analysis aims to provide a simple tool based on a methodology starting from the steps shown in [Figure 3](#) for the collection of key performance indicators (KPIs). These 5 dimensions are used to evaluate the reference sectors and identify the sustainable KPIs, as per the methodology in [Figure 4](#).

Due to the gap exposed in literature, it is essential to determine a sustainable pattern in the regions that make up the SEZ to assess the benefits of the SEZ. To be consistent with the concept of sustainable development in terms of economic growth, SEZs must also be based on equal opportunities between regions with different levels of economic development [10,60,67]. Although the goals and guiding principles of sustainable development are clearly defined at the level of several research fields, further research is needed to analyze it in terms of the growth of

municipalities and the associated operation of SEZ. Based on the evidence [1,9,32,40, 42,45, 121–127], the study’s research project proposed establishing the extent to which the functioning of various SEZ differed from one another in terms of implementing a sustainable development model. The empirical research framework was generally followed by the research sample, which was divided into two groups: municipalities belonging to SEZ in coastal areas and those in inland areas. The overall methodology applied is shown in Figure 4.

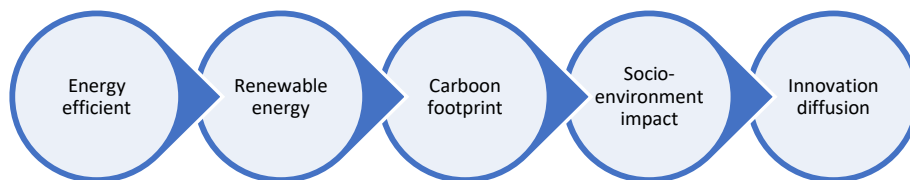


Figure 3. The five dimensions of SEZ. Author’s elaboration.

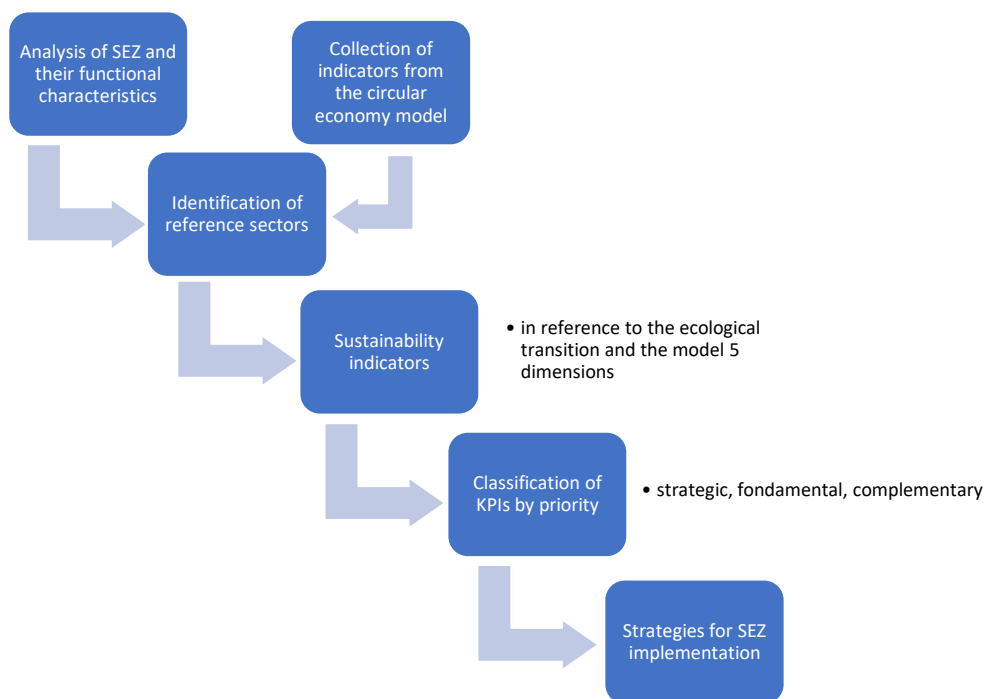


Figure 4. Methodology diagram. Author’s elaboration.

The circular economy model [10,46,58,60,67] served as the foundation for the second phase of the research, which identified the variables influencing towns’ performance in the economic, social, and environmental aspects as well as with the most recent ecological shift. The groups that were analyzed provided information about current changes in these parameters in the absence of data collection, which was then utilized to develop research hypotheses, the major one of which was based on the identification of performance gaps between the groups.

The structure of the empirical research consisted of two main parts. The first was to define the objective and scope of the research, with a review of the existing literature on SEZ, circular economy, and ecological transition. The second is the qualitative analysis of the Campania SEZ to identify indicators for the proposal of an ecological business model.

5. Results and Discussions

5.1. KPIs Analysis in CBM

The development of indicator measures is based on the analysis of literature and studies promoted at the European and global level on the circular economy. These indicators have been defined in a qualitative manner and a survey method is proposed to analyze them, such as interviews, questionnaires, analysis of documents, and workshops between decisionmakers to validate the business model between coastal and inland areas.

The Campania SEZ can be subdivided by geographical similarity between coastal and inland areas. Coastal areas contain strategic transport infrastructures and productive activities and are densely populated. Inland areas have a more industrial vocation and are connected to logistical nodes but have a poorly developed transport network. The table groups the Campania SEZ by coastal and inland areas with a further differentiation for the Caserta SEZ, which is intermediate but located in a metropolitan area. Table 3 shows whether the SEZ in the macro dimension fulfills these KPIs in their organization, dividing the SEZs for the three macro-areas (Naples and Salerno, Caserta, Avellino, and Benevento). The SEZs located in Naples and Salerno are located on a coastal area, while those of Caserta are called “intermediate”, indicating a central geographical feature between those on the coast and the internal ones, as for Avellino and Benevento. The intermediate classification does not indicate their functionality (lesser or greater) compared to the other SEZs.

Table 3. State of art of KPIs in SEZ. Author’s elaboration.

SEZ Groups	Performance KPIs			Social KPIs		
	production	economic	transportation	environmental sustainability	sustainable Process	well-being community
SEZ coastal areas (Naples, Salerno)	●	●	×	×	×	○
SEZ intermediate areas (Caserta)	●	●	×	○	×	○
SEZ internal areas (Benevento, Avellino)	●	●	×	○	×	○

Legend for the current state of SEZ and KPIs. ● (present), ○ (not present), × (in progress of definition).

The public transportation systems in the cities of Salerno and Naples are operational, and improvements are being made, however, the KPIs used to measure progress are currently not very trustworthy. Economic indicators are already in place and are currently being established in terms of production (GDP, number of jobs created) for the new investment regulations associated with the European Green Deal and Recovery Plan [17,128] funds. Coastal regions are currently being chosen for efforts including urban regeneration, such as the work for the Caserta region, to improve the urban status. Some SEZs in Campania in operation do not enhance accessibility to the regions or have a strong circular economy cycle.

Figure 5 aims to combine sustainability criteria with the circular economy methodology applied to SEZs. Sustainability emerged as a literary gap, at least for those in Italy and Campania. As a result, the purpose is to provide experts and stakeholders with a set of indicators sorted by priority category. The terms “gap” and “effect generation” are used to refer to two distinct situations in terms of ex-ante (current) and ex-post (expected effects) analysis. “Gap” refers to the gap in SEZ planning processes in the Campania region. Those gaps in planning that the KPI seeks to fill, as well as the expected effect generated during this phase, may be considered as a preliminary benefit, called “effect generation”. As shown in Figure 5, we attempt to offer a link between the sectors in which the SEZs are located and the potential indicators, not only of an economic and sustainable nature but also linked to circularity (five dimensions) implementing into account manufacturing processes and innovation.

The S1–S5 indicators cover the social component by returning to the categories of consumers, describing the requirements that must be maintained such as the ethical and social part of work and the community, such as diversification and enhancement of users.

The E1–E4 indicators relate to the environmental sector and have a prevalence in the sector of carbon footprint reduction and socio-environmental impacts. Among these, it is important to preserve the perception of the landscape, the maintenance and enhancement of the landscape by evaluating its impacts, and not to close the context of accessibility proximity between urban areas in and around the SEZ. The economic sector presents indicators belonging to the sectors of innovation of cognitive processes, training, and production values. The indicators of renewable energy and their efficiency suggest that companies present in the SEZ must monitor the state of consumption of production, jobs, and the state of energy. The KPIs were also classified according to their type as fundamental, strategic, and complementary.

Sustainability sectors	5 dimension category	Sector	KPIs code	KPIs description	Gap	Effect generation	Type of KPIs (Fundamental, strategic, complementary)
Social	Socioenvironment impact	Consumers	S1	Customer welfare & wellbeing	Areas with higher economic productivity and higher investments	Increase in well-being	F
			S2	Inequality risk monitoring		Reduction in inequality in areas	
	innovation diffusion	Community	S3	Community of capital	Absence of social networks	Community capital between cities in SEZs	S
	innovation diffusion	Operators	S4	Ecofriendly of companies	Spread awareness among company stakeholders	Reduce green washing	
	Socioenvironment impact	Human rights	S5	Ensure just rights for citizens	Absence of this aspect in the policies	Social value	C
Environmental	carbon footprint	Environmental risk	E1	monitoring of environmental indicators	pollution from processing exposure	Air quality, water, cleanliness	F
	Socioenvironment impact	Landscape	E2	Evaluation of impacts of ZES on land use	state of the art on impacts	knowledge of the area	S
		Urban space	E3	Accessibility	improve land use by users	Connect areas of different types	C
	E4		proximity	reduction of distances			
Economic	Socioenvironment impact	Equity	EC1	Job creation	monitor employment indicators	Green jobs, % of female, minorities at work	F
	innovation diffusion	Financial sustainability	EC2	rario of investmnet	monitoring of current investments in SEZs	% of investment in coastal and inland areas	
		Social investments in education	EC3	Focus groups	link between stakeholders	Training	S
	Carbon footprint	Sector operators and companies	EC4	Definition of standards of practices	lack of regulations	Safety at work	F
			EC5	Production consumption	consumption monitoring	strategies for reduced consumption	S
	energy efficiency	EC6	Performance ratio	monitoring of energy indicators	Monitor and raise the effectiveness of companies resources	C	
	innovation diffusion	EC7	Value of training and knowledge	Export of files outside the ZES areas	dissemination of knowledge of the productive value of the ZES outside the region	C	
	Socioenvironment impact	EC8	Return on Investment – ROI	company support	profitability of investments made in technology, infrastructure	F	
		EC9	Net Present Value – NPV	financial sustainability	support for economic analyses	F	
	innovation diffusion	EC10	Distribution of energy	Identify anticipated consumer demand	distribution of long-term scenarios	S	
		EC11	Number of patents	Little investment in innovation	Export of excellence	S	
	renewable energy	EC12	Capacity Utilization Rate (CUR)	actual energy output as a proportion of the maximum output.	efficiency of assets	S	
		EC13	Levelized Cost of Energy (LCOE)	compare various electricity producing techniques	economic evaluation of the average lifetime construction and operating costs	S	
		EC14	Energy Payback Time (EPBT)	energy monitoring of companies	evaluate the lifecycle environmental performance of energy systems.	F	
	energy efficiency	EC15	Operational Efficiency	measuring the efficiency of the conversion process from input (resources) to output (energy)	translate directly into energy cost savings	F	
		EC16	Maintenance Cost per Unit	recover efficiency and lower cost status	cost associated with maintaining each unit of capacity	F	
		EC17	Carbon Reduction Value	measures the amount of carbon dioxide emissions your company	measure of environmental impact, but can also be monetized through carbon credit	F	
		EC18	Energy Storage Capacit	energy storage status for companies	ensure they can meet demand even in low-production periods.	F	

Figure 5. Framework to assess the social dimension of sustainability in a CBM model. Author’s elaboration.

Based on the proposed analysis, we can identify a horizontal and vertical hierarchical analysis of the indicators. The analysis aims to classify them as fundamental, strategic, and complementary. Fundamental indicators include value strategies, which are part of the company's mission, production for the development and dissemination of values. The strategic ones, on the other hand, are KPIs related to both technological and innovative development of the SEZ values between different areas. KPIs that combine SEZ functions, such as urban redevelopment, while representing a significant investment to be launched alongside other initiatives are the complementary ones. These indicators should be evaluated as part of a strategy framework that blends sustainability and economic value to aid decisionmakers in understanding what is required to undertake social dilemma-related activities and to accomplish strategic and tactical goals. In other words, it formalizes the inherent subjectivity in strategic-level indicators, which are typically multidimensional and include several decision-making components. The criteria hierarchy was based on a thorough examination of the literature.

Figure 5 also illustrates the order in which the criteria used in this study were applied to explicit KPIs. The value of community capital, which also has value for human resources, needs to be identified in the CBM, according to the economic and social indicators. This aspect shows how important it is to include sub-indicators that account for short-term contracts, the degree of long-term supplier agreement for port regions of SEZ, and the relationship between parties involved in logistics and production, as well as between the public and private sectors, as KPIs proposed for the SEZ.

Human rights and the value of people are fundamental in the sustainable circularity of work, both for welfare needs and for making businesses sustainable. Indicators assessing respect for human rights by suppliers and subcontractors performed worst. These indicators are intended to measure the extent to which the special economic zone (SEZ) can create jobs for people from different social classes (women, men, and minorities). The indicators assessing the respect for the human rights of internal employees are well evaluated. Given that the organization's aims are centered around social responsibility, it is feasible to confirm through strategic factor observation that the procedures for implementing strategies are linked to ethical and social goals and ethical commitment and the control, measured by "Eco-friendly of companies" and "Evaluation of impacts of SEZ on land use", are in line with the indicators promoted on the sectors of ecological transition and indirectly connected with the role of consumers, community, suppliers, human resources and human rights.

The corporation needs to consider the human rights indicator while determining what steps to implement. The result will necessitate closer monitoring and knowledge of the practices and actions used by supply chain suppliers. Every supply chain in the globe has a weakness in this area, but those linked to the many companies with SEZ locations are particularly vulnerable. The research has extensively examined the effects of implementing sustainability on organizational performance, with the mediating roles of business reputation, employee satisfaction, and sustainability performance as potential non-economic rewards [36,85–87].

Indicators pertaining to the context of knowledge have also been added to involve stakeholders, to make decisionmakers more aware of their strategic and complementary roles, and to analyze the overall performance of the company as well as the level of innovation of the SEZ listed companies.

The innovation and sustainability dissemination process considers the assessment of financial risk, investment risk, and inequality risk. The identified KPIs, such as "Inequality Risk Monitoring", "Production Consumption", "Performance Ratio", "Value of Training and Knowledge" and "Return on Investment—ROI", are all broad indicators that also require long development and evaluation times. However, this procedure often lacks transparency, process visibility, and information that prevents external access to information. The economic indicators also emphasize the corporate social responsibility in the supply chain of the process and logistics, which, not clearly expressed, is linked to the essence of SEZ. The indicators "Number of patents", "Capacity Utilisation Rate (CUR)", "Levelised Cost of Energy (LCOE)", "Energy Payback Time (EPBT)", "Operational Efficiency", and "Maintenance Cost per Unit", also demonstrate how well-prepared businesses are in terms of sustainability awareness and initiatives and strategies. Adopting sustainable practices and rational energy consumption also means the company has minimal risk.

5.2. Future Research Implications

The following steps will require the implementation of some changes from decisionmakers, mainly related to the management of providers to ensure that human rights are respected, that proper labor conditions and compensation are provided, and that the welfare of customers is ensured. This includes keeping an eye out for and preventing certain practices in the factories of suppliers and subcontractors, such as the use of prohibited hazardous materials in the finished product. The lack of control and visibility in supply chains is a reality in the firms of SEZ because it presents several stakeholders and different areas of investment. In this context, initiatives to strengthen the control are highly recommended to avoid risks related to unethical practices occurring in the suppliers’ factories.

Figures 5–7 show the possibility of developing a singular business model with connections between the external, internal, and intermediary markets with a focus on the energy, deflation, and social value creation sectors. The examination of the indicators determines the subsequent cross-analysis in relation to the coastal, internal, and intermediate areas (Figures 6–8). Figures 6–8 show the KPIs that may be generated by current ZES legislation. The empty cells in the illustration indicate the sector where the indicator is not as developed as the standard requirement.

0			Customer welfare & wellbeing	Inequality risk monitoring	Community of capital	Ecofriendly of companies	Ensure just rights for citizens	monitoring of environmental indicators	Evaluation of impacts of ZES on land use	Accessibility	proximity	Job creation	ratio of investment	Focus groups	Definition of standards of practices	Production consumption	
Area characteristic	Type of area (cost, inner, intermediate)	City	S1	S2	S3	S4	S5	E1	E2	E3	E4	EC1	EC2	EC3	EC4	EC5	
Ports	Coast	Naples	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
		Salerno	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
		Castellammare of Stabia	•			•			•	•		•				•	•
Interports	Intermediate	Sud Europa Marcianise/Maddaloni	•		•	•	•	•	•	•	•	•	•			•	
		Campano	•			•			•	•	•	•					•
Airports	Coast/Intermediate	Naples Capodichino	•	•	•		•		•	•	•	•	•				
		Salerno-Costa d’Amalfi	•		•		•		•	•	•	•	•	•			•
Industrial agglomeration	Intermediate	Acerra	•			•		•								•	
		Arzano-Casoria-Frattamaggiore	•	•		•		•									•
		Caivano	•			•											•
		Foce Sarno	•		•							•					•
		Marigliano – Nola	•			•							•		•		•
		Pomigliano	•			•			•		•	•	•		•		•
	Inner	Calugogno	•	•		•					•	•	•				•
		Pianodardine	•			•					•	•	•		•		•
		Valle Ufita	•	•		•					•	•	•		•		•
	Intermediate	Ponte Valentino	•			•			•		•	•	•		•		•
		Aversa Nord	•			•			•		•	•	•				•
		Marcianise – San Marco	•			•			•	•	•	•	•		•		•
	Coast	Battipaglia	•			•			•	•					•		•
		Fisciano – Mercato S. Severino	•			•			•	•		•	•				•
		Salerno	•			•			•	•		•	•				•
Industrial and logistic areas	Coast	Bagnoli Coroglio	•		•	•		•	•	•	•	•		•		•	
		Napoli est	•	•	•	•	•	•	•	•	•	•		•		•	
	Inner	Piattaforma contrada Olivola	•	•		•	•	•				•		•		•	
	Intermediate	Area PIP Nocera Inferiore	•		•		•	•	•	•		•				•	
	Intermediate	Area PIP di Sarno	•	•	•	•	•	•	•	•		•				•	
	Intermediate	Area PIP Nautico di Salerno	•		•	•	•	•	•	•		•				•	
	Intermediate	Castel San Giorgio	•		•	•	•	•	•	•		•				•	

Figure 6. Sustainable CBM for SEZ in Campania Region. Author’s elaboration.

Energy indicators are needed for port areas and existing inland and intermediate industrial areas. Intermediate and coastal areas share the need for KPIs for human resources, with the greater presence of companies, proximity, and accessibility to take advantage of the existing network of transport links. For inland areas, several connections currently exist. Strategic infrastructure as interports can bring benefits in terms of patents, as they are promoters of development, like protective industrial products PIP areas, and subject to investments in the short term. The

carbon footprint to be reduced is particularly high, because SEZs are full of production areas and there is no real zoning of areas by type of goods processed.

As results of Figures 6–8, this study aims to emphasize that industries in SEZ require all KPIs linked to environmental, social, and economic issues to enable the transition to the circular economy and the decarbonization of processes, and in the second point, to complement the previous analysis of social indicators and to propose a framework to achieve sustainability. Coastal areas are sensitive to the value of landscape and other environmental protection areas (marine areas), sustainable freight transport, and the encouragement of intermodality for workers. Many intermediate regions lack circularity in their operations, indicating that government agencies and business organizations are concentrating on their sustainable development.

Other strategies to be adopted for social KPIs are to strengthen the process of training, aggregation, and improvement of the working environment, to create a strong relationship and engagement with the community, and to create a social network between local and national suppliers, monitoring human rights and more manageable working conditions.

			Performance ratio	Value of training and knowledge	Return on Investment – ROI	Net Present Value – NPV	Distribution of energy	Number of patents	Capacity Utilization Rate (CUR)	Levelized Cost of Energy (LCOE)	Energy Payback Time (EPBT)	Operational Efficiency	Maintenance Cost per Unit	Carbon Reduction Value	Energy Storage Capacity	
Area characteristic	Type of area (coast, inner, intermediate)	City	EC6	EC7	EC8	EC9	EC10	EC11	EC12	EC13	EC14	EC15	EC16	EC17	EC18	
Ports	Coast	Naples	•	•	•	•	•	•	•	•	•	•	•	•	•	
		Salerno	•	•	•	•	•	•	•	•	•	•	•	•	•	
		Castellammare of Stabia	•		•	•	•	•	•	•	•	•	•	•	•	
Interports	Intermediate	Sud Europa Marcianise/Maddaloni		•	•	•	•	•	•	•	•	•	•	•	•	
		Campano		•	•	•	•	•	•	•	•	•	•	•	•	
Airports	Coast/Intermediate	Naples Capodichino		•	•	•	•	•	•	•	•	•	•	•	•	
		Salerno-Costa d'Amalfi		•	•	•	•	•	•	•	•	•	•	•	•	
Industrial agglomeration	Intermediate	Acerra													•	
		Arzano-Casoria-Frattamaggiore		•												•
		Caivano		•												
		Foce Sarno		•												
		Marigliano – Nola		•		•	•	•	•	•	•	•	•	•	•	
		Pomigliano		•		•	•	•	•	•	•	•	•	•	•	
	Inner	Calaggio		•							•	•	•	•		
		Pianodardine		•							•	•	•	•		
		Valle Ufita		•		•	•				•	•	•	•		
		Ponte Valentino									•	•	•	•		
	Intermediate	Aversa Nord					•				•	•	•	•		•
		Marcianise – San Marco		•		•	•	•			•	•	•	•		•
		Battipaglia		•		•					•	•	•	•		•
	Fisciano – Mercato S. Severino		•								•	•		•		
Coast	Salerno							•	•	•	•		•	•		
Industrial and logistic areas	Coast	Bagnoli Coroglio				•	•	•	•	•	•		•	•	•	
		Napoli est		•	•	•	•	•	•	•	•		•	•	•	
	Inner	Piattaforma contrada Olivola		•	•	•	•	•	•	•		•	•	•	•	
	Intermediate	Area PIP Nocera Inferiore		•	•	•	•	•	•	•		•	•	•	•	
	Intermediate	Area PIP di Sarno		•			•	•	•	•		•	•	•	•	
	Intermediate	Area PIP Nautico di Salerno		•			•	•	•	•		•	•	•	•	
	Intermediate	Castel San Giorgio		•			•	•	•	•		•	•	•	•	

Figure 7. Sustainable CBM for SEZ in Campania Region. Author’s elaboration.

Finally, based on Figure 8, the following strategies are proposed:

1. Local governments are responsible for promoting sustainability measures;
2. Companies are responsible for creating social values among themselves and strengthening the network. Companies in SEZ must adopt agreements on sustainability and the circular economy of processes in order to be in line with the principles of decarbonization by 2050;

3. Research institutes and companies must monitor the status of KPIs to study the social and environmental economic effect of SEZ in Campania;
4. From a social perspective, businesses should increase their oversight of suppliers with regard to human rights and working conditions, implement a continuous and ongoing evaluation of new long-term suppliers, increase supplier awareness of human rights issues, negotiate agreements with suppliers regarding hazardous management of processes, and create action plans with port authorities to address the issues of decarbonization and improve innovation;
5. The value of social and human resources offers a chance to include SEZ in kinds of greening such as eco-industrial parks, low-carbon zones, and green industrial clusters that can be utilized to link economic zones that support green growth.

Area characteristic	Type of area (cost, inner, intermediate)	City	S1	S2	S3	S4	S5	E1	E2	E3	E4	EC1	EC2	EC3	EC4	EC5	EC6	EC7	EC8	EC9	EC10	EC11	EC12	EC13	EC14	EC15	EC16	EC17	EC18	
Ports	Coast	Naples	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
		Salerno	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
		Castellammare of Stabia	•					•	•	•	•	•	•	•	•		•	•	•	•	•	•		•	•	•	•	•	•	•
Interports	Intermediate	Sud Europa Marcianise/Maddaloni	•					•	•	•	•	•	•	•																
		Campano	•					•	•	•	•	•	•	•																
Airports	Coast/Intermediate	Naples Capodichino	•	•	•	•	•	•	•	•	•	•	•	•																
		Salerno-Costa d'Amalfi	•																											
Industrial agglomerations	Intermediate	Acerra	•																											
		Arzano-Casoria-Frattamaggiore	•	•																										
		Caivano	•																											
		Foce Sarno	•																											
		Marigliano – Nola	•																											
	Inner	Pomigliano	•																											
		Calaggio	•	•																										
		Pianodardine	•																											
		Valle Ufita	•	•																										
	Intermediate	Ponte Valentino	•	•																										
		Aversa Nord	•																											
		Marcianise – San Marco	•																											
	Intermediate	Battipaglia	•																											
		Fisciano – Mercato S. Severino	•																											
Coast	Salerno	•																												
Industrial and logistics areas	Coast	Bagnoli Coroglio	•																											
		Napoli est	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	Intermediate	Piattaforma contrada Olivola	•	•																										
		Area PIP Nocera Inferiore	•																											
	Intermediate	Area PIP di Sarno	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	Intermediate	Area PIP Nautico di Salerno	•																											
	Intermediate	Castel San Giorgio	•																											

Figure 8. Global KPIs for SEZ. Author's elaboration.

6. Conclusions

This paper provides a basis for the discussion of circular models and SEZs. As the SEZs are densely populated places with productive activities and contain port areas with commercial exchanges, there is a strong need for discussion and reflection regarding the necessity to observe the SEZs in relation to climate change and the ecological transition. Production development must be executed in an efficient and environmentally friendly approach. In addition to aiming

for sustainable development, as did China, Poland, and the African SEZs, the Campania SEZ must include interventions that reduce the gaps between inland and coastal towns while not undervaluing the importance of creating resilient and livable cities. The SEZs can be used as a model for lessons learned, especially when it comes to integrating production with anthropogenic metropolitan areas and natural regions. This study is limited by the absence of data from numerous sources, but its goal is to provide a framework for a quantitative analysis of circularity indicators for SEZ sustainability.

This qualitative model aims to support decision-making and highlight the need for the development of indicators, actions, and objectives in the Campania Region's plan, based on the successful experiences of SEZs in order to have wider economic impacts. The approach used is structured and wide-ranging, with considerable monitoring of the interventions, in line with [26,129]. To support industry stakeholders' and experts' decisions, this study intends to illustrate the possible relationship between SEZ sustainability and the implementation of a circular economy model. According to the proposed model, the possible decisionmakers that can adopt the methodology are large public authorities "Pas" (such as port authorities) by assessing the risks and benefits of investments, considering the environmental constraints that port areas are subject to. To improve research on such circularity processes, start-ups can create a connection with universities to foster R&D not currently present in the plan objectives. Furthermore, the predicted benefits include greater production in Campania interports with additional job openings, which will be facilitated by improved port infrastructure. The potential benefits to be expected from Campania's SEZs are not only in terms of job creation but also in establishing the Neapolitan ports as a hub of southern Italy connected with the Calabrian port of Gioia Tauro that can connect with northern Europe and eastern Asia [130,131]. Slow bureaucracy and fear of lack of profit for investors are slowing down the interest of potential investors in opening locations in SEZs. The idea of creating industrial clusters (with eco-industrial parks with social functions) could provide a key to development in some areas of the SEZs where local associations are redeveloping space to regain part of the territory. A further limitation is the absence of an economic-industrial identity strategy linked to manufacturing areas that could become the best practices of the Campania SEZs.

The current focus of Campania's SEZs is on investments and the encouragement of related start-ups, with the potential to draw in investment and generate employment, but legislators must put in place the right regulations for the many types of SEZ sites that may be found in Campania. The strategy is designed specifically for huge attractors and interior areas to avoid economic distortions. Coastal places benefit from more connections than inland areas. The growth barriers are relatively connected with the economic power of that area and with economic and fiscal connections. In terms of South Italy SEZ, the SEZ in Campania can develop a strategic direction as highlighted by [26,27,60,132].

First and foremost, infrastructure plays a critical role. Second, it is suggested that policymakers along port areas attempt to create low-pollution production networks (with the promotion of clean and green energy) rather than dispersed activities with difficulties in moving goods without a sustainable infrastructural network (trains rather than vehicles). In terms of administration, it is suggested that a framework be established to justify why SEZs are a suitable type of political intervention, reviewing in ex-post what benefits have been brought about, including using European funds (Recovery Plan—PNRR). A cost-benefit analysis should be used by area planners to assess the feasibility of their proposal. The study should compare the project's direct (e.g., infrastructure costs) and indirect (e.g., lost income from tax incentives) advantages to its direct (e.g., job creation) and indirect (e.g., potential spillovers) costs. At the governance level, it is proposed to establish buffer zones to examine the potential effects of SEZs and soft policies on strategic and basic policies. These include increased investor-supplier meetings and worker training initiatives to encourage these impacts, as exposed by [133].

Finally, as this study based on international experiences shows, "M&E" monitoring and evaluation steps are crucial and relevant for the SEZ's performance. Monitoring zone performance across a wide range of important measures, such as direct and indirect benefits, costs, and regulatory compliance, contributes to zone effectiveness. A strong "M&E" system relies on the acquisition of trustworthy data via administrative systems and focused investigations. Monitoring can also assist policymakers in using SEZs as "policy laboratories" to test new ideas in a flexible environment free of distortions and rent-seeking motives that may be prevalent elsewhere in the economy.

Finally, as shown in Figure 8, indicators from EC7–EC18 are not spread across all levels of sustainability. Some of them were included to strengthen the decarbonization of processes (using cold-ironing in port areas, reconverting term vehicles to electric vehicles, promoting rail travel, emission control along port and retro-port areas, industrial, intermodality for port-airport travel) and the reduction of pollutant emissions from production activities and freight transport related to industrial areas in SEZs. The gaps in KPIs (the empty areas) are an analysis of the current state of programming on which policymakers are invited to reflect in practice to concretely improve the ecological transition for the Campania SEZs.

Conflicts of Interest

The author has no conflict of interest to declare.

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