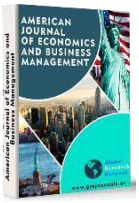

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Article

The Role of Special Economic Zones in Regional Economic Development and Methodology for Assessing Their Impact

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Abstract: *This article examines the role of Special Economic Zones (SEZs) in regional economic development and develops a methodological framework for assessing their socio-economic impact. In the context of globalization, industrial restructuring, and increasing competition for investment, SEZs are increasingly used as instruments for attracting capital, expanding exports, creating employment, stimulating innovation, and reducing regional disparities. The study argues that SEZ effectiveness cannot be evaluated solely through the amount of attracted investment or the volume of industrial production. A comprehensive assessment should also include the quality of investment, employment effects, export diversification, infrastructure development, fiscal efficiency, innovation capacity, environmental sustainability, and linkages with the local economy. The article applies systemic, structural, comparative, and institutional approaches to identify the mechanisms through which SEZs influence regional growth. Based on international experience and the institutional context of Uzbekistan, the paper proposes a multidimensional assessment model that can be used by researchers and policymakers to evaluate the real contribution of SEZs to regional transformation. The findings show that SEZs can become effective drivers of sustainable regional development only when they are integrated with national industrial policy, supported by transparent governance, and connected with local enterprises, labor markets, universities, and infrastructure systems.*

Keywords: *special economic zones, regional development, investment, export diversification, employment, industrial policy, impact assessment, Uzbekistan.*

1. Introduction

Regional economic development is one of the central priorities of contemporary economic policy because the uneven distribution of investment, employment, infrastructure, industrial capacity, and technological resources creates long-term disparities between territories. In developing and transition economies, such disparities are especially visible in the concentration of high-value-added production in a few large urban centers while peripheral regions remain dependent on raw materials, low-productivity agriculture, or traditional services. Under these conditions, Special Economic Zones have become widely used instruments for accelerating regional modernization and creating localized platforms for investment, production, exports, and innovation [1].

Special Economic Zones are usually understood as geographically delimited areas that operate under a distinct legal, administrative, customs, tax, and infrastructure regime compared with the general national economy. Their purpose is to create a business environment that is more favorable for investors and exporters, thereby stimulating industrial growth and regional competitiveness. In Uzbekistan, official investment policy

defines SEZs as specially designated areas that operate under a distinct legal and economic regime to attract investment, develop industries, and boost regional economic growth [2].

The relevance of SEZs has increased as countries search for new ways to attract foreign direct investment, promote export-oriented production, and diversify their industrial base. International evidence shows that SEZs may help integrate regions into global value chains, generate jobs, and accelerate technology transfer. However, the creation of a zone itself does not guarantee success. If a SEZ remains institutionally weak, poorly connected to local suppliers, or dependent only on tax privileges, its contribution to regional transformation can remain limited [3].

Therefore, the central research problem of this article is how SEZs can be assessed as instruments of regional economic development. The objective of the study is to analyze the role of SEZs in regional growth and to propose a multidimensional methodology for evaluating their socio-economic impact. The article is structured around three research tasks: first, to identify the main theoretical channels through which SEZs influence regional economies; second, to examine key performance dimensions of SEZ activity; and third, to develop an integrated assessment framework suitable for empirical application in Uzbekistan and comparable developing economies [4].

2. Methodology and Literature Review

This research is based on a qualitative analytical design supported by comparative, systemic, structural, and institutional approaches. The comparative method allows the performance of SEZs to be analyzed across territories and over time. It is especially useful for comparing regions with SEZs and similar regions without SEZs, as well as for identifying differences in investment attraction, employment, export growth, and infrastructure development. The systemic approach treats a SEZ not as an isolated territory but as part of a broader regional economic system that includes firms, public institutions, labor markets, transport corridors, universities, and local communities.

The structural approach is used to evaluate changes in the sectoral composition of regional economies. It helps determine whether SEZs contribute to diversification or merely reproduce existing dependence on raw materials and low-value-added activities. The institutional approach focuses on the quality of governance, the stability of legal rules, administrative transparency, investor protection, and coordination between state bodies and private enterprises. These dimensions are essential because international experience shows that weak institutions can significantly reduce the expected benefits of SEZ policies.

The theoretical foundation of the article is based on regional development theory, industrial policy theory, export-led growth models, and the concept of structural transformation. Porter's cluster theory emphasizes that regional competitiveness depends on the interaction of firms, suppliers, institutions, infrastructure, and innovation capacity. From this viewpoint, SEZs may function as spatial platforms where such interactions are concentrated and supported by targeted public policy. Similarly, structural transformation theory argues that long-term economic growth requires the reallocation of resources from low-productivity sectors toward higher-productivity manufacturing and service activities.

The literature on SEZs shows mixed outcomes. Farole and Akinci argue that SEZs can become important tools for investment attraction and export development, but their performance varies significantly depending on location, governance, infrastructure, and linkages with the domestic economy. Frick, Rodríguez-Pose, and Wong emphasize that SEZs in emerging economies are more likely to produce dynamic effects when they are embedded in broader regional development strategies rather than designed as isolated enclaves. UNCTAD also notes that the global expansion of SEZs requires governments to rethink zone

policies in light of sustainable development, digital transformation, and changing patterns of international production.

Based on this literature, the article proposes that SEZ impact assessment should combine direct and indirect indicators. Direct indicators include investment volume, number of enterprises, industrial output, exports, employment, and fiscal revenues. Indirect indicators include technology transfer, local supplier development, human capital formation, infrastructure spillovers, regional diversification, and environmental sustainability. This distinction is important because a SEZ may show strong production figures while producing weak spillover effects for the surrounding economy.

3. Results and Discussion

1. SEZs as Instruments of Regional Investment Attraction

The first major function of SEZs is to attract investment to territories that may otherwise face limited access to capital. Investors often prefer locations with reliable infrastructure, predictable regulation, accessible land, skilled labor, and efficient administrative services. SEZs reduce investment barriers by concentrating these advantages within a clearly defined territory. This is particularly important for regions outside national capitals, where infrastructure and institutional capacity may be weaker.

Investment attraction should be assessed not only by total capital inflow but also by its developmental quality. High-quality investment creates long-term production capacity, introduces modern technology, generates stable employment, expands exports, and strengthens local supplier networks. In contrast, low-quality investment may remain dependent on short-term privileges without significantly improving regional competitiveness. Therefore, a methodology for SEZ assessment must distinguish between quantitative investment volume and qualitative investment impact.

In Uzbekistan, the expansion of industrial and economic zones demonstrates the growing importance of this policy instrument. Officially reported data indicated that, as of January 1, 2024, Uzbekistan had 766 industrial-zone structures, including 24 special economic zones, 532 small industrial zones, and 210 youth industrial and entrepreneurial zones. More recent statistical reporting cited by national media shows that by the first quarter of 2026 the number of active SEZs had further increased, reflecting the continued institutionalization of preferential production zones as part of regional industrial policy [5].

2. Employment Creation and Human Capital Effects

The second development channel is employment creation. SEZs generate direct employment through enterprises operating inside the zone and indirect employment through logistics, construction, maintenance, retail, transport, and supplier networks. This employment effect can be particularly important in regions with high youth unemployment or limited industrial activity.

However, employment quality is as important as employment quantity. If SEZs create mainly low-skilled, low-wage jobs, their long-term contribution to human capital development remains limited. A stronger developmental effect appears when zone-based enterprises introduce vocational training, modern management practices, digital skills, engineering competencies, and technical specialization. Therefore, the assessment of SEZs should include the number of jobs, average wages, labor productivity, share of skilled workers, and the availability of training programs.

Human capital effects also depend on cooperation betwen SEZ enterprises and educational institutions. Universities, vocational colleges, and research centers can help prepare the labor force required for industrial modernization. Without such cooperation, SEZs may face labor shortages or depend excessively on imported skills. For this reason, the

proposed methodology includes human capital and institutional linkage indicators.

3. Export Expansion and Industrial Diversification

SEZs are often established to promote export-oriented production. By offering customs privileges, logistics infrastructure, and simplified procedures, they may reduce transaction costs for exporters and strengthen integration into global value chains. Export-oriented SEZs also encourage enterprises to meet international quality standards, improve packaging, adopt certification systems, and modernize production technologies [6].

At the same time, export growth should be evaluated together with export diversification. A region that exports a narrow range of raw materials remains vulnerable to external shocks. SEZs can contribute to diversification by attracting enterprises in manufacturing, agro-processing, pharmaceuticals, textiles, electrical equipment, logistics, and technology-related sectors. The diversification effect is especially important for resource-dependent regions where economic growth depends heavily on commodity cycles.

From a methodological perspective, export impact should be measured by export volume, export growth rate, number of export-oriented enterprises, export destinations, share of value-added products, and degree of product diversification. These indicators help determine whether SEZs create sustainable competitiveness or simply increase the volume of existing low-value exports [7].

4. Infrastructure and Spatial Development

SEZs can become centers of infrastructure modernization. Roads, electricity, gas, water supply, telecommunications, warehouses, logistics terminals, customs facilities, and industrial land are often developed to support zone residents. These assets may also benefit nearby communities and enterprises, creating wider territorial spillovers.

The infrastructure effect is one of the most important long-term contributions of SEZs. Even if some enterprises cease operations, the improved infrastructure may continue to support future investment and local economic activity. Therefore, infrastructure assessment should include not only the existence of utilities but also their reliability, cost, capacity, and accessibility for both zone residents and surrounding businesses [8].

Spatial development is also relevant. SEZs should not be randomly located; they should correspond to the comparative advantages of the region. Agro-industrial zones are more effective in territories with agricultural potential; logistics zones should be connected to transport corridors; tourism zones should be near cultural and natural assets; and scientific-technological zones require proximity to universities, research centers, and skilled labor markets [9].

5. Innovation, Technology Transfer and Local Spillovers

Modern SEZ policy increasingly focuses on innovation rather than simple tax privileges. Technology transfer occurs when firms introduce new equipment, digital systems, production standards, quality management, and organizational practices. These innovations can spread to local firms through supplier relations, labor mobility, demonstration effects, and cooperation with research institutions [10].

Nevertheless, spillovers do not occur automatically. If SEZ enterprises import most inputs, employ limited local labor, and operate separately from domestic firms, the zone may become an enclave. In such a case, production may increase inside the zone without significantly transforming the regional economy. Therefore, a serious assessment framework must include indicators of local supplier participation, SME integration, university-industry cooperation, innovation activity, and training intensity [11].

The sustainability of SEZs also requires environmental modernization. International experience increasingly links SEZ performance with green industrial policy, renewable energy, circular economy practices, and resource efficiency. For developing economies, this

means that future SEZs should not only attract investment but also support cleaner production and sustainable territorial development [12].

6. Proposed Methodological Framework for SEZ Impact Assessment

A comprehensive methodology for assessing the impact of SEZs on regional development should include several interconnected blocks of indicators. The proposed framework is presented in Table 1.

Table 1

Proposed indicators for assessing the impact of SEZs on regional economic development

Indicator block	Key indicators	Assessment purpose	Expected regional effect
Investment impact	Total investment, FDI, domestic investment, number of investors	Measures capital attraction and investment quality	Expansion of productive capacity
Production impact	Industrial output, value added, sectoral structure, capacity utilization	Evaluates real economic activity	Industrial modernization and diversification
Export impact	Export volume, export growth, export destinations, value-added exports	Assesses external competitiveness	Integration into global markets
Employment impact	Jobs created, wages, labor productivity, skilled labor share	Measures social and labor-market effects	Income growth and human capital formation
Fiscal impact	Tax revenues, customs effects, public infrastructure costs	Evaluates budgetary efficiency	Balanced public cost-benefit outcome
Infrastructure impact	Utilities, transport access, logistics capacity, digital connectivity	Assesses readiness of the business environment	Improved regional infrastructure
Innovation impact	Technology adoption, R&D, training, university-industry cooperation	Measures modernization capacity	Technology transfer and knowledge spillovers
Spillover impact	Local suppliers, SME participation, service-sector linkages	Assesses integration with local economy	Multiplier effects beyond the zone

The proposed framework makes it possible to evaluate SEZs through a

multidimensional lens. For example, a zone may perform well in investment attraction but poorly in local supplier development. Another zone may generate employment but fail to create innovation spillovers. Therefore, the integrated approach prevents policymakers from overestimating SEZ success based on one indicator only [13].

For quantitative assessment, the study proposes the Special Economic Zone Regional Impact Index (SEZ-RII):

$$SEZ\text{-}RII = w1I + w2P + w3X + w4E + w5F + w6INF + w7INN + w8S$$

Where I represents investment impact, P production impact, X export impact, E employment impact, F fiscal impact, INF infrastructure impact, INN innovation impact, S spillover impact, and w represents the weight assigned to each indicator. The weights may be determined according to national development priorities, expert evaluation, or statistical techniques such as principal component analysis [14].

The index may be calculated by normalizing each indicator on a scale from 0 to 1. This makes it possible to compare different SEZs and monitor their progress over time. Such an approach is useful for government agencies, researchers, and regional development institutions because it transforms fragmented statistical information into a coherent analytical tool [15].

4. Conclusion

The study demonstrates that Special Economic Zones can play a significant role in regional economic development when they are strategically designed, institutionally supported, and integrated with the broader economy. Their main contribution lies in attracting investment, creating employment, expanding exports, improving infrastructure, promoting industrial diversification, and stimulating innovation. However, the developmental effect of SEZs is not automatic. Zones that rely only on tax incentives, lack infrastructure, or remain isolated from local enterprises may generate limited regional benefits.

The article argues that SEZ impact should be assessed through a multidimensional methodology. Investment, production, exports, employment, fiscal efficiency, infrastructure, innovation, and spillover effects should all be included in the evaluation process. This approach allows policymakers to identify not only the direct outputs of SEZs but also their broader contribution to structural transformation and sustainable regional development.

For Uzbekistan, the continued expansion of SEZs and industrial zones creates an important opportunity to strengthen regional competitiveness. To maximize this opportunity, SEZ policy should focus on quality investment, local supplier development, human capital formation, transparent governance, innovation cooperation, and environmental sustainability. Future empirical research should apply the proposed SEZ-RII model to specific regions and zones in Uzbekistan in order to identify best-performing models and improve evidence-based regional industrial policy.

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