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Original Research Article

Sustainable Development of Free and Special Economic Zones with a Scenario-Based Backcasting Approach

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Abstract

Background and Objectives: Economic liberalization and green globalization highlight the need for sustainable Free and Special Economic Zones. However, institutional instability, sanctions, and weak long-term planning undermine their effectiveness. This study proposes a scenario-based backcasting model to support sustainable development and long-term adaptability.

Methods: This qualitative study applied a normative futures approach using scenario-based backcasting. A meta-theme analysis of 12 studies identified 4 key dimensions economic, social, environmental, and governance-institutional along with 26 related components.

Findings: The results of the micro-analysis section identified “political and legal stability of the country” as an independent factor and a necessary condition, and “institutional efficiency” and “transparency/fighting corruption” as key levers of the system.

Conclusion: The research results indicate that sustainable development in Iran's free and special economic zones is not simply an economic or managerial issue, but is entirely conditional on a structural and independent driver.

Running Title: Strategic Foresight of Sustainable Development in Free and Special Economic Zones

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Introduction

Free Zones (FZs) and Special Economic Zones (SEZs) have long functioned as strategic hubs for regional development, serving as instruments for attracting foreign investment, expanding exports, transferring technology, and generating employment in emerging economies (Arpornsilp, 2025). Their core philosophy is to create a regulatory break that enables economic activities within a more internationalized framework (Neveling, 2021). Thus, most studies focus on their economic contributions (Habibjonov, 2024), their role in facilitating global supply chain linkages (Yu *et al.,* 2022), and their policy-driven development (Zeng, 2021). Typically, these zones feature a clearly delimited area, unified administration, tax incentives, simplified customs procedures, and a lighter regulatory environment (Zeng, 2021). They contribute to export-oriented growth and infrastructure upgrading (Ambroziak and Hartwell, 2018), although many still face structural barriers (Barbieri *et al.,* 2019). the generational typology of Zones (1.0–5.0) describes an evolution from FDI- and export-focused models toward diversification, environmental sustainability, service-oriented ecosystems, and ultimately smart, digitally enabled, sustainability-driven zones (Łukaniszyn-Domaszewska *et al.,* 2023). Yet in recent decades, real-world development has centered mainly on short-term economic gains, generating environmental degradation, social inequality, resource depletion, and dependence on tax exemptions (Badi *et al.,* 2025; Danja and Wang, 2024). While sustainable development in these zones includes economic (entrepreneurship and employment), social (population structure and migration), and environmental indicators (green areas and reduced PM emissions) (Esty et al., 2025), the SDGs emphasize meeting the needs of future generations (Khaskheli and Zhao, 2025). a persistent mismatch between fifth-generation ideals and actual short-term growth practices reflects structural inefficiencies in planning and governance (Łukaniszyn-Domaszewska *et al.,* 2023). This short-termism sidelines qualitative and long-term sustainability indicators such as resource preservation, social capital, and regional equity (Alansary and Al-Ansari, 2023). Moreover, traditional linear planning has proven inadequate in contexts of rising uncertainty (Wang *et al.,* 2024).

The literature reveals a substantial gap in strategic foresight, leaving SEZ decision-making insufficiently resilient to multiple futures. Meanwhile, most scenario-based studies rely on predictive, extrapolative models that cannot uncover the historical roots of instability in SEZ governance (Norouzvand *et al.,* 2025). Therefore, this study adopts a scenario-based backcasting futures research model to not only explore alternative futures but also examine past failures and successes in Iran's SEZ sustainable development. The central research question is: What does a scenario-based backcasting futures research model look like for formulating sustainable development strategies in FZs and SEZs?

Are physically defined and enclosed areas within national territory, managed under a unified authority, often located near ports, airports, or borders for logistical advantage (Alansary and Al-Ansari, 2023). Their core aim is to provide a regulatory break, with simplified and more favorable legal frameworks in customs, taxation, currency, labor, and trade to attract both domestic and foreign investors (Neveling, 2021). Strategically, they act as development hubs to attract FDI, boost export-led production, transfer technology, and generate employment—serving as engines of national economic growth (Zeng, 2016). according to the most comprehensive definition (Brundtland Report, 1987), sustainable development is development that: "meets the needs of the present without compromising the ability of future generations to meet their own needs."

The scenario-based backcasting approach is a futures research method that, unlike linear

forecasting, starts from a desired future and works backward to identify the strategic steps, policies, and actions needed today to achieve it (Zárate Rueda *et al.,* 2023; Yang *et al.,* 2024). Integrating scenario planning, it uses multiple future narratives—including normative, possible, and crisis scenarios—to address systemic and environmental uncertainties. This combination enables the design of flexible, resilient strategies capable of withstanding diverse shocks (Suh *et al.,* 2018).

The main aim of this research is to design a scenario-based backcasting model for the sustainable development of Iran's Free and Special Economic Zones. the model includes identifying components and indicators, analyzing causal relationships and uncertainties, developing long-term and alternative scenarios, shaping transition pathways, and validating the framework with experts.

Materials and Methods

The present study is of an applied-developmental type from the perspective of its purpose and of a qualitative study from the perspective of its nature. Also, for the purpose of strategic future research of sustainable development in free and special economic zones, the scenario-based backcasting approach has been used in the present study. In this approach, a desired future (sustainable development achieved in free and special economic zones) is looked back to determine the necessary actions today. This logic operates based on strategic inference rather than linear induction (Suh *et al.,* 2018). It should be noted that the future research horizon considered in the present study is a 20-year horizon. the present study was carried out in four main phases as follows:

Phase 1: Phase 1 identified and structured the sustainable development system in Free and Special Economic Zones by conducting a meta-theme analysis of documents to extract core components and indicators. Experts then refined these components and identified key drivers and uncertainties using the Delphi technique. Finally, Mi'kmaq analysis was applied to determine causal relationships and to classify the most influential and most affected drivers within the system.

Phase 2: Phase 2 mapped out a space of possible futures by selecting key uncertainties (from the Mi'kmaq outcomes) as scenario axes. Multiple narratives – critical, contingent, and normative – were developed to map out alternative long-term development paths for the free trade zones and special economic zones. Through expert consensus, the normative/desirable scenario was selected as the target point for the retrospective model.

Phase 3: designed the backcasting model by comparing the current status of FZs and SEZs with the desired scenario to identify strategic gaps and formulate reverse transition paths and actions over a 20-year horizon.

Phase 4: validated the proposed model through expert consensus (Delphi/panel method) to ensure its scientific and practical reliability.

Finally, operational strategies and policy recommendations were developed based on the finalized transition model. in this study, data collection tools included document analysis, semi-structured expert interviews, and specialized checklists, while analysis tools comprised meta-theme analysis in MAXQDA, Delphi technique, MICMAC structural analysis, structured and narrative scenario writing, gap analysis, and backcasting modeling. the study population in this study consisted of two parts:

(1) A documentary community of official reports, plans, scientific articles, and legal frameworks for free zones/special economic zones.

(2) An expert community of professionals with 10 years or more of operational experience, relevant postgraduate degrees, and expertise in future studies, sustainable development, or regional management.

In this study, using purposive sampling, professionals who met these criteria were selected, and the sample size was determined based on theoretical saturation in the Delphi process. Therefore, the sample size should

ensure consensus and comprehensiveness of opinions. Based on the above, the sample size in different phases of the research is presented in Table 1.

Table 1: Sampling method

Research phase	Description	Required quantity	Sampling method
Phase One: (Delphi/Driver Analysis)	To achieve a high consensus in identifying drivers and components, which is usually achieved with 3 or 4 Delphi rounds.	Between 15 and 25 people	A number of 15 people were selected purposefully using the snowball technique.
Phase Four: (Model Validation)	To validate and finalize the designed model (which may be a subset of the first phase experts).	Between 10 and 15 people	A target group (panel of experts) of 10 people was determined.

Results and Discussion

Identifying dimensions and components of sustainable development through meta-thematic analysis in the first stage of the present study, research on sustainable development of free and special economic zones was conducted in both English and Persian languages using the keywords "development / sustainability / free zones, special economic zones" in the literature. During this study, databases such as Civillca, Google Scholar, Web of Science, Taylor & Francis Online, Science Direct and ProQuest Dissertations & Theses Global were searched. The search was conducted based on the inclusion criteria below. These criteria are shown in Table 2.

Table 2: Inclusion criteria for meta-theme analysis

Time period	Languages studied	Study methods	Keywords
2005-2025	Persian-English	Futures studies, scenario writing, model design, backcasting	Development/sustainability/free zones, special economic zones

In this study, studies that:

- lacked access permissions,
- did not contain quantitative data,
- lacked data necessary for analysis,

were excluded from the analysis. The number of included and excluded studies, along with the reasons for exclusion, is shown in (Fig. 1).

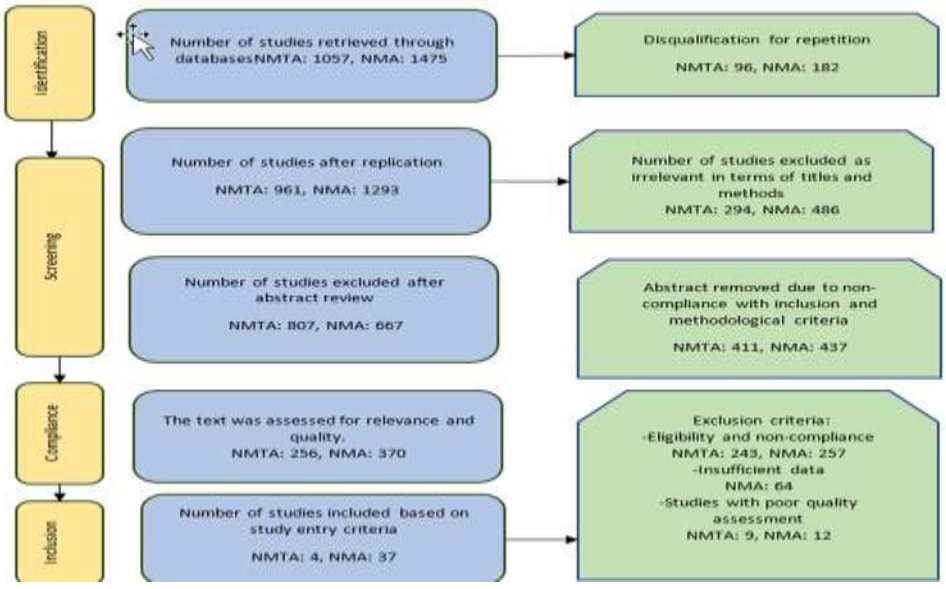

Fig 1: A selection of studies included in the analysis

As shown in (Fig. 1), as a result of the screenings, in the first stage, N = 1475 studies were identified that examine the impact of various sustainability variables on the development of free and special economic zones. Of these studies, 182 were excluded due to duplication, 486 due to irrelevant topics, 437 due to non-compliance with the inclusion criteria - identified through reading the abstracts, and 64 due to insufficient data. As a result, as presented in (Fig. 1), 12 studies were included in the meta-theme analysis. Also, reliability was calculated using the formula [Agree/(Agree + Disagree) × 100] proposed in the study (Miles, 1994) and the research reliability level was determined as 0.90. The data were analyzed using the CMA 2.0 program.

Coding Process

In this section of the study, themes and codes obtained from the meta-thematic analysis of the studies reviewed are presented in relation to various components and indicators affecting the sustainable development of free and special economic zones. Next, two academic experts as coders independently created themes and codes. After completing the coding process, the themes and codes created by both coders were compared to check for consistency and agreement. Similar themes and codes were recorded jointly, while differences were discussed until agreement was reached between the coders. Inter-coder reliability was calculated using the Kappa coefficient (Cohen, 1960). The Kappa value for the topic "Dimensions, indicators and components of sustainable development in free and special economic zones" was 0.79. Kappa values from 0.79 to 0.86 indicate a good to very good level of agreement between the coders.

Reliability in the Transthematic Analysis Process

Reliability methods used in qualitative research were also applied to the meta-thematic analysis in this study. During this phase, the concept of triangulation (Carpenter *et al.,* 2011) was used. In addition, direct quotes from participant statements were included to provide a source of raw data while generating themes and codes. Related quotes are expressed with codes that indicate the study and page number from which the quotes were taken. For example, the numerical expression M12-s.15 refers to M (article), 12 (study number), and "s.15" (page number). Finally, codes and themes were generated through the meta-thematic analysis (Fig. 2)

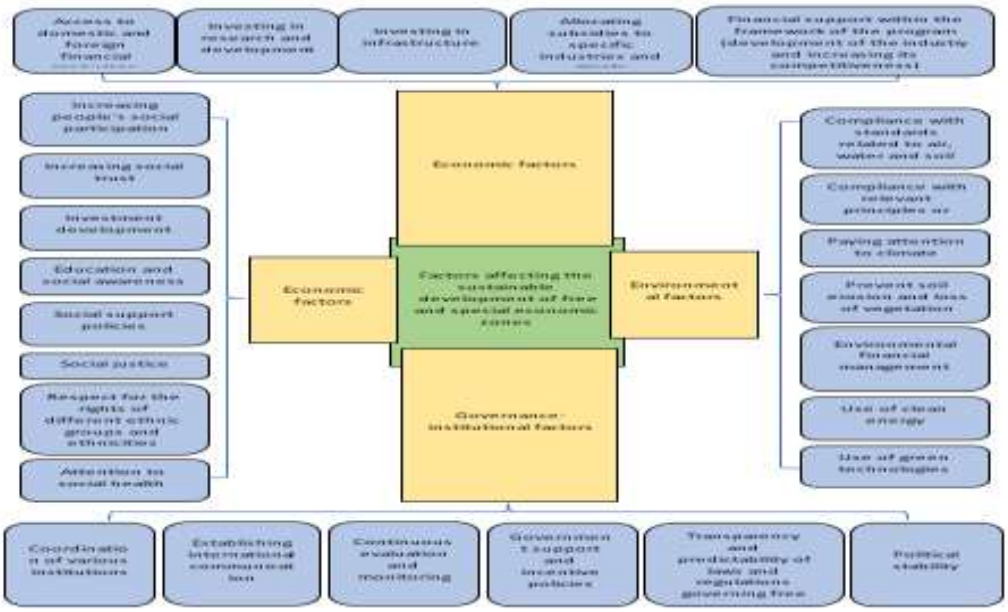

Fig 2: Factors and components affecting the sustainable development of free and special economic zones

Identifying Drivers and Uncertainties through the Delphi Technique

At this stage, using the Delphi technique, 15 experts evaluated the initial 26 components based on impact intensity and certainty/predictability. The resulting consensus led to the extraction of 8 critical factors, classified in **Table.3** as key drivers (high impact, high certainty) and in **Table.4** as key uncertainties (high impact, low certainty).

Table 3: Identification of key drivers through Delphi technique

Row	Key drivers (factors with high impact and certainty)	Related dimension	Reason for expert consensus
1	Development of commercial, manufacturing and smart infrastructure	Economic	Infrastructure is a basic need that can be directly invested in by the government and institutions. Without it, no development can be achieved.
2	Institutional and organizational efficiency	Sovereign-institutional	Improving processes, reducing bureaucracy, and electronicizing services can be achieved in the short term through internal and managerial reforms.
3	Human resource development, specialized education and skills training	Social	Targeted investment in training and attracting skilled workers is a domestic policy and has acceptable long-term effects.
4	Targeted and sustainable management of natural resources (water, energy)	Environmental	The implementation of strict environmental regulations and the use of modern management technologies in the aforementioned areas can be controlled and monitored.

Table 4: Identification of key uncertainties through the Delphi technique

Row	Key uncertainties (high impact, low certainty factors)	Related dimension	Reason for expert consensus
1	The rate of foreign direct investment attraction	Economic	Strong dependence on geopolitical conditions, sanctions, exchange rate stability, and international laws, all of which are uncertain and external factors.
2	The country's overall political and legal stability	Sovereign-institutional	Sudden changes in laws, regulations, or political approaches can transform entire long-term planning for the aforementioned areas.
3	Level of transparency, accountability and anti-corruption	Sovereign-institutional	Achieving true transparency requires serious determination and cultural change, and is always subject to internal threats and management changes.
4	Ensuring social justice and fair distribution of income in neighboring regions	Social	It is a complex output indicator that depends on macroeconomic factors and welfare policies outside the scope of the free zones' mandate.

Determining the most important and least uncertain drivers through MICMAC analysis

In this stage, the relationships among the 8 key factors (4 drivers and 4 uncertainties) were assessed using MICMAC structural analysis, where experts scored the influence and dependence between each pair in an 8×8 effects matrix. This process identified the most influential and least uncertain drivers by evaluating direct relationships on a four-point scale.

Step 1: Defining the direct relationship matrix

This matrix shows how a row factor directly affects a column factor. Table.5.

Table 5: Direct relationship matrix

Agent		Institutional efficiency	Human Resources	Resource management	Attract FDI	Political stability	Transparency	Social justice
Infrastructure development	0	1	2	1	2	0	0	1
Institutional efficiency	2	0	3	2	3	0	3	2
Human Resources	1	2	0	1	1	0	1	2
Resource management	0	1	0	0	0	0	0	0
Attract FDI	2	1	2	1	0	1	1	2
Political stability	3	3	3	3	3	0	3	3
Transparency	1	3	2	1	2	1	0	2
Social justice	1	1	1	1	1	1	1	1

Step 2: Calculate the sum of influence and susceptibility

By summing the rows (influence) and columns (susceptibility), the position of each variable in the Mi'kmaq diagram can be determined.

Table 6: Calculation of total impact and effectiveness

Agent	Variable type (in the chart)	Total columns (impact)	Total rows (impact)
Infrastructure	Leverage variable	10	7
Institutional efficiency	Influential variable	11	16
Human Resources	Dependent variable	11	7
Resource management	Dependent variable	9	1
Attracting FDI	Adjustment variable	12	12
Political stability	Independent variable	3	19
Transparency	Leverage variable	8	13
Social justice	Dependent variable	12	6

The MICMAC analysis revealed that political legal stability (impact 12, dependence 3) functions as the strongest independent driver, exerting major influence while remaining minimally affected by other factors. Two variables institutional/organizational efficiency (16, 11) and transparency, accountability, and anti-corruption (13, 8) emerged as key influencing/leveraging drivers, meaning they both shape the system and are moderately influenced by it. Foreign direct investment (FDI) (12, 12) was identified as a central adjusting/counteracting variable, simultaneously highly influential and highly dependent, making it a critical uncertainty for scenario development. Finally, infrastructure development, human resources, resource management, and social justice (with lower impact but higher dependence scores) were classified as dependent variables, functioning primarily as system outcomes shaped by stronger drivers such as political stability, institutional efficiency, and FDI attraction.

Selection of key uncertainties for scenario building

Based on the MICMAC analysis, political and legal stability and foreign direct investment (FDI) both highly impactful yet unpredictable were identified as the two key uncertainties for scenario building in this study.

Scenario construction and drawing

In this stage, two key uncertainties—political and legal stability (X-axis) and foreign direct investment (FDI) (Y-axis) were set as scenario axes, forming an uncertainty space that generates four distinct, named scenarios for the sustainable development of free and special economic zones.

Scenario Framework

This combination defines four scenarios with distinct and specific names for the sustainable development of free and special economic zones. Table 7.

Table 7: Scenario Framework

High political and legal stability	Low political and legal stability	Y-axis: FDI attraction
Scenario 2: Indigenous Development	Scenario 1: The Swamp of Isolation	Low FDI attraction
Scenario 4: Global Gateway	Scenario 3: Unstable growth	High FDI attraction

Scenario Mapping

The following is a mapping and explanation of each of the four scenarios to clarify the complex causal relationships under each condition.

1 .Isolation Swamp Scenario

- Political and Legal Stability: Low
- FDI Attractors: Low
- Systemic Outcome: Worst Case.

Free zones become fully ineffective as bureaucracy and corruption erode remaining stability, infrastructure deteriorates, and domestic investors withdraw due to an insecure business climate. With no external financing, development efforts collapse, resulting in rising inequality and escalating social tensions around the zones.

2 .Indigenous Development Scenario

- Political and Legal Stability: High
- FDI Attractor: Low
- Systemic Outcome: Relying on Domestic Capacity and Resilience.

With high political–security stability but low FDI, free and special zones rely mainly on domestic resources, institutional efficiency, and managerial capacity. Development proceeds slowly through human-capital improvement, value-added production for domestic markets, and sustainable resource management, resulting in gradual, socially oriented progress without major economic breakthroughs.

3 .Unstable Growth Scenario

- Political and Legal Stability: Low
- FDI Attractor: High
- Systemic Outcome: Volatile and unsustainable growth.

FDI may surge despite internal instability, creating rapid but shallow infrastructure and business growth. Yet weak stability, poor institutional efficiency, and low transparency fuel corruption, quick capital flight, and minimal knowledge transfer. The benefits concentrate among a few groups, so development remains inequitable, unsustainable, and highly vulnerable.

4 .Global Gateway Scenario (Expert Consensus)

- Political and Legal Stability: High
- FDI Attracting: High
- Systemic Outcome: Best Case and Full Realization of Development Goals.

Status of Free and Special Economic Zones: Political stability provides a secure platform for long-term contracts. High FDI attraction as a complement to financing leads to rapid development of smart infrastructure (Driver 1) and introduction of new technologies. Strong institutional efficiency (Driver 2) and high transparency (Driver 7) maintain investor confidence. Free zones become regional manufacturing-commercial hubs, human resources (Driver 3) are enhanced, and social justice (Driver 8) is ensured through increased job opportunities and improved quality of life. Development in this scenario will be comprehensive, rapid, and sustainable.

Backcasting Modeling

This type of futures research is the interface between modeling and policymaking. The purpose of backcasting modeling at this stage of the research is to start from the desired destination (the global gateway scenario) and define practical paths and policy steps necessary to bridge the gap between the current and future status quo.

Given the outlined scenarios and the ultimate goal (scenario-based backcasting modeling), we now need to start from the desired scenario (Scenario 4: Global Gateway) and work backwards to identify the paths, policies, and actions needed to achieve the goal. The roadmap based on the key levers is presented in Table 8.

Table 8: Roadmap based on key levers (Source: Research findings)

Strategic goal	Nature	Key factor from Mi'kmaq
Reforming bureaucracy and facilitating processes.	Internal lever (controllable)	Institutional efficiency
Restoring trust and creating a healthy legal environment.	Internal lever (controllable)	Transparency and the fight against corruption
Consolidation and guarantee of the country's macro laws.	Independent/Life condition	Political and legal stability

20-Year Roadmap for Realizing the "Global Gateway" Scenario

This roadmap is designed in three strategic phases based on the four dimensions of sustainable development (governance, economic, social, environmental).

Phase 1: Rooting in Stability and Trust (Years 1-5)

Strategic objective to focus on governance and institutional reforms to create a foundation for legal stability (impacting factors 6, 2, and 7). Table 9.

Table 9: Phase 1: Rooting in Stability and Trust (Years 1 to 5) (Source: Research Findings)

Sustainable development dimension	Key actions (Phase 1)	Expected results
Governance and Institutional (Factors 2 and 7)	Reforms are summarized in three points: streamlining procedures (permits issued in under 30 days), full transparency (public release of all contracts and financial reports), and legal guarantees ensuring stable regulations and secure investment conditions for at least 10 years.	Corruption index reduced by half. Domestic investors' satisfaction with bureaucracy increased by 100%. Initial and slight improvement in the global ranking of the "Ease of Doing Business" index.
Economic	Elimination of non-targeted exemptions: Elimination of customs and tax exemptions that do not lead to production and directing facilities to knowledge-based and export-oriented industries.	Stabilizing cash flows of free and special zones and increasing domestic income from productive activities by 5%.
Social	Accountability to the local community: Establish a "local social justice council" with representatives from neighboring communities to oversee the distribution of benefits and prevent the escalation of inequality (Factor 8).	30% reduction in social tensions between the local community and employees of free and special zones.
Environmental	Monitoring and benchmarking: Defining transparent environmental criteria for all new industrial activities.	Stop environmental destruction and develop a comprehensive resource management plan (Factor 4).

Phase 2: Economic Rebound and FDI Attractors (Years 6 to 12)

The strategic goal is to use the established stability base to target foreign investment and develop key infrastructure (influencing factors 5, 1, and 3). Table 10.

Table 10: Phase 2: Economic Rebound and FDI Attractors (Years 6 to 12)

Sustainable development dimension	Key actions (Phase 2)	Expected results
Governance and Institutional	Active economic diplomacy reforms: Signing at least 5 bilateral agreements with major countries and economic blocs to support investment.	50% increase in inward FDI compared to the previous phase.

Economic (Factors 1 and 5)	Smart Infrastructure Development: Joint investment between the government and the private sector (through attracted FDI) to develop new generation infrastructure (ports, logistics, smart cities). Investment in the regional value chain: Focus on attracting companies that will transform free and special zones into a regional hub.	Transform at least 2 free zones into regional logistics or manufacturing hubs. Access to 50% of smart infrastructure zones (Factor 1).
Social (Factor 3)	Comprehensive Human Resources Development Program: Establishing a "Specialized University for Free and Special Zones" with the aim of training local labor and specialists based on the needs of FDI industries.	30% increase in local skilled labor in FDI industries (Factor 3).
Environmental (Factor 4)	Transition to renewable energy: Require all new industries to use at least 50% of their energy needs from renewable sources.	10% reduction in water and energy resource consumption in the regions (Factor 4).

Phase 3: Consolidating and Realizing Comprehensive Sustainability (Years 13-20)

The strategic goal is to institutionalize sustainability, ensure social justice, and become a global gateway. Table 11.

Table 11: Phase Three: Consolidating and Realizing Comprehensive Sustainability (Years 13 to 20)

Sustainable development dimension	Key actions (Phase 2)	Expected results
Governance and Institutional	Participatory governance: Transferring some operational responsibilities to international business associations and private infrastructure management companies.	Achieving global governance standards (best in the region).
Economic	Knowledge-based economy: Converting at least 40% of the regions' economic activities into research and development activities and the export of high-value-added services.	Doubling the export volume compared to the second phase.
Social (Factor 8)	Complete social justice: Implementation of joint social security and retirement programs (free and special zones - local community) to ensure fair distribution of benefits and reduce inequality in adjacent areas.	Full recruitment of local workers with equal salaries and benefits as other employees. Full realization of Factor 8 (Social Justice).
Environmental (Factor 4)	Carbon neutrality: Implementing large-scale afforestation and ecological restoration projects to offset the carbon footprint of regions.	Full realization of factor 4 (sustainable resource management).

Validation of the Roadmap

In this stage, the developed roadmap was re-evaluated by experts for feasibility (across political, economic, social, and cultural conditions, rated 1–5) and adequacy of levers (focus on institutional efficiency and access to international financial resources). The second evaluation cycle confirmed the validity of the backcasting model with full expert consensus (100%).

CONCLUSION

The present study was conducted with the aim of designing a scenario-based backcasting strategic model for the sustainable development of free and special economic zones in Iran. The analyses include the important fact that achieving sustainable development (economic, social, environmental, institutional) in free and special economic zones is not a linear path, but rather a path dependent on the macro situation of the country.

The results of the present study state that sustainable development in free and special economic zones in Iran is not a purely managerial-economic issue, but rather a structural political-legal issue that requires a precise backcasting strategy. This result is inconsistent with the study (Shahbazbegian *et al,* 2022), which states that sustainable development in a free zone can be realized by considering the economic, social, and environmental potential of that zone. The

main achievement of the present model is to identify the dependence of the performance of free zones on macro and uncontrollable variables at the regional level (such as political and legal stability) and to transform these variables into an independent factor for prioritization in the first phase of the roadmap. The global gateway scenario is the only achievable path, and to achieve it, the following 3-phase roadmap should be the basis for action:

• Phase 1 (short term: 1-5 years): Stabilizing independent axes: Enacting stable and unchangeable laws and implementing anti-corruption action plans at macro decision-making levels.

• Phase 2 (medium term: 6-12 years): Exploiting the main levers: Using the created stability to attract targeted FDI (knowledge-based investment) and institutionalizing operational transparency in the regions.

• Phase 3 (long term: 13-20 years): Institutionalizing results: Focusing on social justice and environmental sustainability as outputs that ensure economic and legal stability.

This is in contrast to traditional approaches that attempt to improve only internal variables of regions (such as infrastructure) (Molazadeh et al., 2022). Compared to other studies, the designed model integrates qualitative (Delphi), structural (Mik-Mak), and goal-oriented methods. From the perspective of the goal, the scenario-based backcasting model in the present study was normative and goal-oriented. That is, first the goal (global gateway) was determined, then the path to realization was drawn. While studies with exploratory futures research approaches or traditional scenario-making only draw possible futures and do not provide a specific operational path, which shows the superiority of the method used in the present study. Therefore, the designed backcasting model, unlike purely exploratory approaches, not only sees possible futures (scenarios), but also draws a reverse and operational path from the desired goal to the current state. This research shows that the only solution for the sustainable development of Iran's free and special economic zones is a single, central strategy:

Accrediting the factor of "macro-political and legal stability" as a necessary operational phase (Phase 1) before any extensive efforts to "improve institutional efficiency" and "attract FDI." This paradigm shift will ensure that the free zones exit the current state of "unstable growth" and successfully enter the "global gateway" scenario.

Author Contributions

Ghenaatpisheh Sanani, M. H., the corresponding author, has contributed in Conceptualization, Methodology, Scenario development, Backcasting framework design, Formal analysis, Investigation, Data curation, Validation, Writing – original draft, and editing. Salajeghe, S. has contributed in Conceptualization, Methodology refinement, Supervision, Validation, and Writing – review and editing. Ranjbar, M. has contributed in Data curation, Formal analysis, Scenario analysis, Visualization, and Validation. Sharafi, S. has contributed in Resources, Literature review, Investigation, and Writing review and editing. Anjomshoae, Z. has contributed in Policy analysis, Interpretation of results, Validation, and Writing – review and editing.

Conflict Of Interest

The author declares that there is no conflict of interests regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancy have been completely observed by the authors.

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