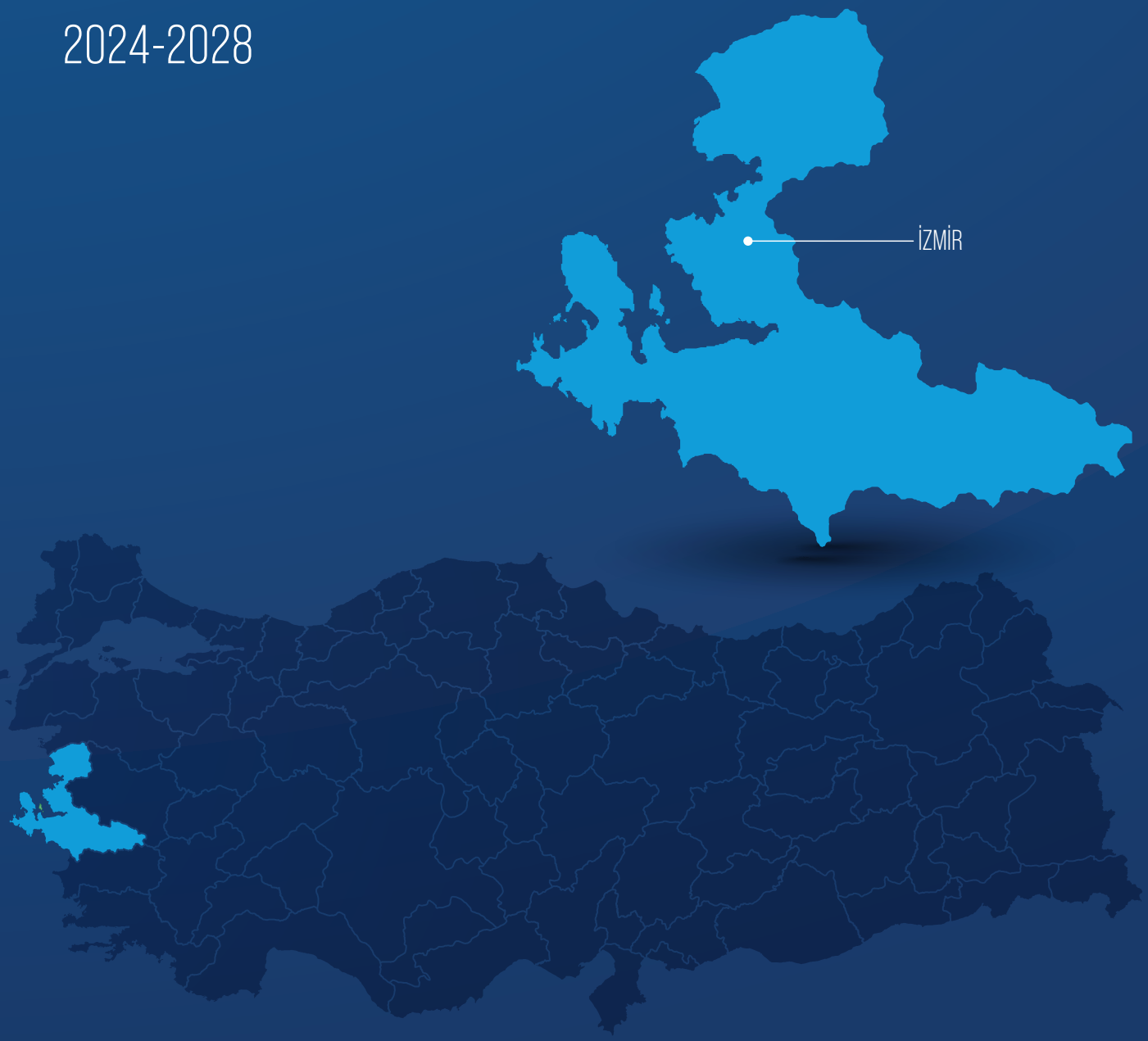
TR31
LEVEL-2 REGION
İZMİR REGIONAL PLAN

2024-2028



REPUBLIC OF TÜRKİYE
MINISTRY OF INDUSTRY
AND TECHNOLOGY

#LOCAL DEVELOPMENT MOVE

İZMİR
DEVELOPMENT
AGENCY

İzmir Development Agency

2024-2028
İzmir Regional Plan

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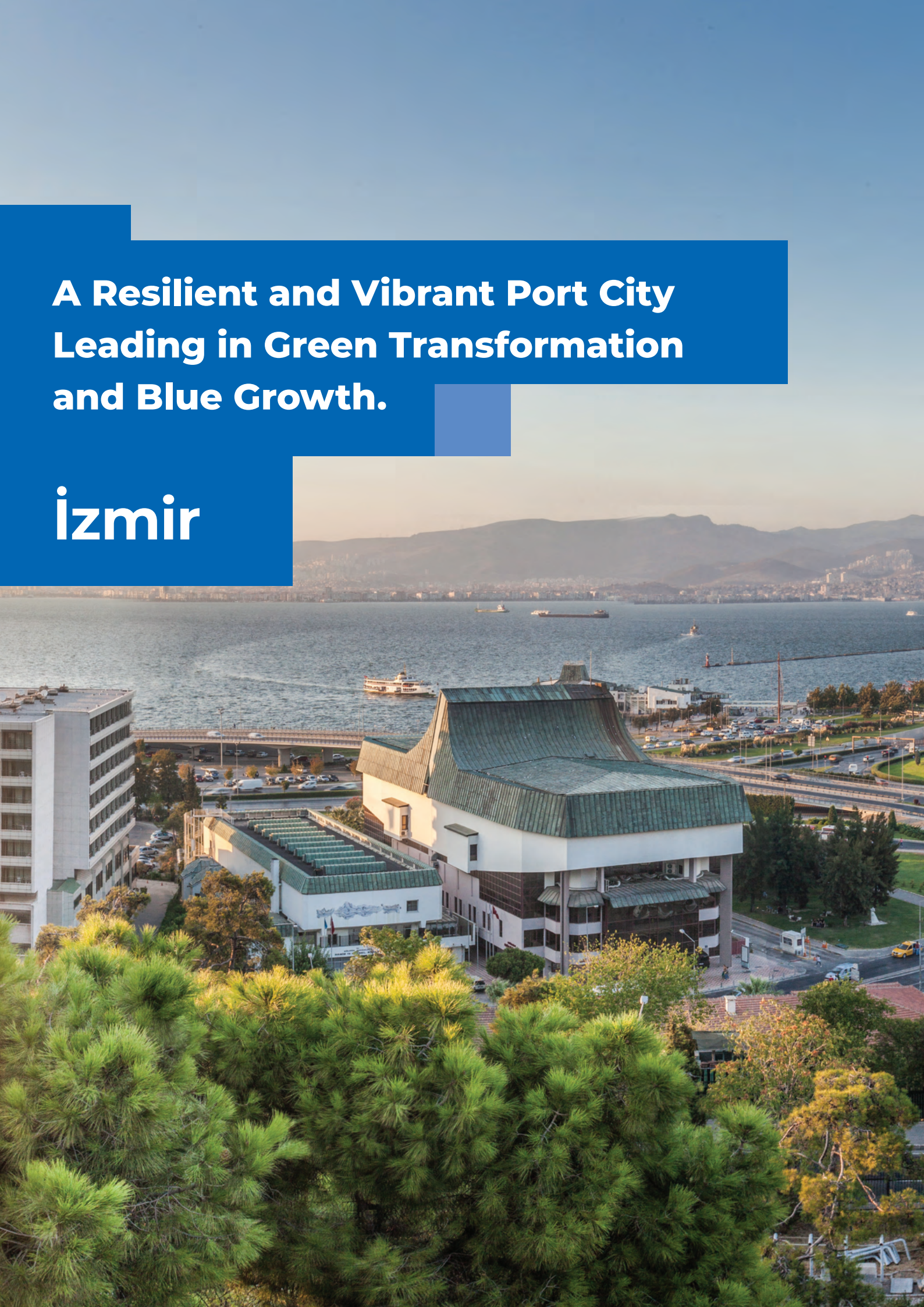
2024-2028

I love all of İzmir and all İzmir people. I am sure that the pure-hearted people of beautiful İzmir also love me.

Mustafa Kemal Atatürk

A Resilient and Vibrant Port City Leading in Green Transformation and Blue Growth.

İzmir




YKM
KONAK
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Foreword

The *2024-2028 İzmir Regional Plan* has been prepared with the responsibility of safeguarding quality of life standards for future generations by raising awareness, promoting responsibility, and ensuring efficiency in resource use. The Plan also aims to ensure the optimal utilization of İzmir's existing resources within the framework of sustainable development principles.

Adopting a current, dynamic, flexible, results-oriented, strategic, interactive, and participatory planning approach, the *2024-2028 İzmir Regional Plan* aspires to create a unique local and sustainable development model for both Türkiye and İzmir. At its core, this model seeks to foster the development and sustainability of all elements of production and life in İzmir.

Supporting the policies and objectives of the Twelfth Development Plan, the *2024-2028 İzmir Regional Plan* aims to enhance communication, coordination, cooperation, and a culture of collaboration among the public sector, private sector, and civil society. The Plan seeks to mobilize local potential and strengthen the alignment of goals across all sectors through its robust analyses and participatory framework. Alongside increasing İzmir's contribution to the national economy and competitiveness, the Plan will offer a new positioning in response to global trends, consistent with İzmir's historic identity as a "port city," which has shaped its development.

Progress in line with the *2024-2028 İzmir Regional Plan* relies on the public sector, private sector, and civil society embracing and owning the Plan, and recognizing it as a key reference document in their work programs, strategic plans, and investment frameworks. We hope that the *2024-2028 İzmir Regional Plan* will advance İzmir's sustainable development through collective efforts, and we express our gratitude to all parties that contributed to the planning process.

Mehmet Fatih KACIR
Minister of Industry and Technology

ABBREVIATIONS

EU	:	European Union
ABPRS	:	Address-Based Population Registration System
AFAD	:	Disaster and Emergency Management Authority
R&D	:	Research and Development
BASBAŞ	:	Western Anatolia Free Zone
BEKRA	:	Regulation on Prevention of Major Industrial Accidents and Reducing Their Impacts
BGUS	:	National Strategy for Regional Development
UN	:	United Nations
ICTA	:	Information and Communication Technologies Authority
GIS	:	Geographic Information System
CLC	:	Corine Land Cover
EP	:	Environmental Plan
MoLSS	:	Ministry of Labor and Social Security
MoEUCC	:	Ministry of Environment, Urbanization and Climate Change
DSİ	:	General Directorate of State Hydraulic Works
EBSO	:	Aegean Region Chamber of Industry
ENSİA	:	Energy Industrialists and Businesspeople Association
ESBAŞ	:	Ege Serbest Bölge Kurucu ve Isleticisi A.S. (Aegean Free Zone)
ESHOT	:	General Directorate of Electric, Water, Air Gas, Bus and Trolleybus
MoENR	:	Ministry of Energy and Natural Resources
FDI	:	Foreign Direct Investment
FEE	:	Foundation for Environmental Education
SPP	:	Solar Power Plant
GDP	:	Gross Domestic Product
Ha	:	Hectare
IAP2	:	International Association for Public Participation
ICZM	:	Integrated Coastal Zone Management
IRENA	:	International Renewable Energy Agency
İBB	:	İzmir Metropolitan Municipality
İRAP	:	Provincial Disaster Risk Reduction Plan
IZTECH	:	İzmir Institute of Technology
İZBAN	:	İzmir Suburban Rail System
İZBAŞ	:	İzmir Serbest Bölge Kurucu ve Isleticisi A.S. (İzmir Free Zone)
İZDENİZ	:	İzmir Deniz Isletmeciligi A.S.
İZKA	:	İzmir Development Agency
İZSU	:	İzmir General Directorate of Water and Sewerage Administration
İZTO	:	İzmir Chamber of Commerce
DGDA	:	Directorate General of Development Agencies
CBRN	:	Chemical, Biological, Radiological, Nuclear
KMB	:	Küçük Menderes Basin
SIS	:	Small Industrial Site
MoCT	:	Ministry of Culture and Tourism

MoNE	:	Ministry of National Education
CBA	:	Central Business Area (CBD: Central Business District)
MSP	:	Marine Spatial Planning
OECD	:	Organisation for Economic Co-operation and Development
OIZ	:	Organized Industrial Zone
SEZ	:	Special Economic Zone
WPP	:	Wind Power Plant
RÜZMER	:	Wind Energy Meteorology and Environmental Application and Research Center
SAF	:	Sustainable Aviation Fuel
FZ	:	Free Zone
SEDR	:	Socio-Economic Development Ranking Surveys
SGK	:	Social Security Institution
ROP	:	Results-Oriented Programming
MoIT	:	Ministry of Industry and Technology
FAR	:	Floor Area Ratio
TDRP	:	Türkiye Disaster Response Plan
TDRRP	:	Türkiye Disaster Risk Reduction Plan
TCDD	:	Turkish State Railways
TCMB	:	Central Bank of the Republic of Türkiye
TEPAV	:	The Economic Policy Research Foundation of Türkiye
TDZ	:	Technology Development Zone
TİM	:	Turkish Exporters Assembly
TOBB	:	The Union of Chambers and Commodity Exchanges of Türkiye
TÜBİTAK	:	Scientific and Technological Research Council of Türkiye
TURKSTAT	:	Turkish Statistical Institute
TÜRÇEV	:	Environmental Education Foundation of Türkiye
TÜREB	:	Turkish Wind Energy Association
TÜRKLİM	:	Port Operators Association of Türkiye
TÜRKPATENT	:	Turkish Patent and Trademark Office
MoTI	:	Ministry of Transport and Infrastructure
UNDRR	:	United Nations Office for Disaster Risk Reduction
UNESCAP	:	United Nations Economic and Social Commission for Asia and the Pacific
UNESCO	:	United Nations Educational, Scientific and Cultural Organization
UNWTO	:	United Nations World Tourism Organization
URAK	:	National Competitiveness Research Institute
USIMP	:	University-Industry Cooperation Centers Platform
WB	:	World Bank
WRI	:	World Resources Institute
WWF	:	World Wide Fund for Nature
YABISAK	:	Software and Informatics Cluster Association
YER-SIS	:	Urban and Rural Settlement Systems Research in Türkiye
YÖK	:	Council of Higher Education

List of Figures

FIGURE 1.	İzmir Regional Plan Strategic Structure	18
FIGURE 2.	İzmir Regional Plan Strategic Framework	19
FIGURE 3.	Distribution of Settlements Where Agricultural Products are Sold (%)	115
FIGURE 4.	Identity and Mission Elements of İzmir's Spatial Development	116
FIGURE 5.	İZBP Spatial Development Programs	118
FIGURE 6.	Relationship Between İZBP Objectives and Spatial Development Programs	119
FIGURE 7.	Present and Proposed Settlement Relationship Structures	138
FIGURE 8.	Existing and Proposed Regional Logistics Infrastructure Scheme of İzmir	142
FIGURE 9.	Integration Principles for Flows and Forms	154
FIGURE 10.	Natural Structure Synthesis Evaluation Framework	155
FIGURE 11.	Alignment of National and Local Regional Plan Spatial Typology Relations	156
FIGURE 12.	Layering Approach of Spatial Schemes in the Regional Plan	157
FIGURE 13.	Relationships with Focuses and Positioning of Corridors in the Regional Spatial Development Scheme	157
FIGURE 14.	Intervention Types in the Regional Spatial Development Scheme and Links with Plan Measures	158

List of Tables

TABLE 1.	2024-2028 İzmir Regional Plan Strategic Structure	20
TABLE 2.	Research and Analyses Contributing to the Regional Plan Studies	23
TABLE 3.	Settlement Hierarchy of Districts' of İzmir as Service Centers	31
TABLE 4.	Key Indicators at the Level of Türkiye, Aegean Region and İzmir	36
TABLE 5.	Existing OIZs in İzmir and Related Data (2023)	56
TABLE 6.	Planned OIZ Areas in İzmir and Related Data (2023)	56
TABLE 7.	Changes in Handling Volumes and Growth Rates by Cargo Type (%)	77
TABLE 8.	Population Density in Built-up Areas within the Metropolitan Area	123
TABLE 9.	Sustainable Development Goals and Indicators Associated with the 2024-2028 İzmir Regional Plan	172

List of Maps

MAP 1.	2024-2028 İzmir Regional Plan Strategic Structure	44
MAP 2.	Natural Assets and Various Protection Areas in İzmir	52
MAP 3.	Information on the Blue Economy and Blue Resources in İzmir	72
MAP 4.	Transportation, Industry, and Logistics Infrastructures in İzmir	83
MAP 5.	Distribution of Population Density and Housing Prices in İzmir	89
MAP 6.	Innovation and Entrepreneurship Infrastructure in İzmir	107
MAP 7.	İzmir Center Service Regions	114
MAP 8.	İzmir Service Region and City Region	115
MAP 9.	Urban Development Process of the Metropolitan Area	121
MAP 10.	Urban Development Areas and Constraints	121
MAP 11.	Urban Growth, 2011-2021	122
MAP 12.	Urban Fabric in the Metropolitan Area	124
MAP 13.	Number of Employees in Free Zones and OIZs	126
MAP 14.	OIZ Area Size and Occupancy Rates	127
MAP 15.	Developed Industrial Areas	129
MAP 16.	Urban Development and Threshold Analysis by District	130
MAP 17.	Spatial Distribution of Urban and Rural Neighborhoods in İzmir	132
MAP 18.	District-Based Population Redistribution Index, 2021	133
MAP 19.	District-Based Rural Population Growth Rate (%), 2013-2021	134
MAP 20.	Rate of Increase in Housing Prices for Sale, 2018-2022 (%)	135
MAP 21.	İzmir Transportation Infrastructure and Proposed Railway Connections	140
MAP 22.	Density of Small Industrial Sites	147
MAP 23.	Spatial Distribution of Earthquake Risk	149
MAP 24.	Spatial Distribution of Flood Risk in Built Areas	150
MAP 25.	Sea Level Change (10 m)	151
MAP 26.	Explosion Impact Distances of Industrial Facilities in Aliağa District	151
MAP 27.	Disaster Risk and Production Infrastructure	152
MAP 28.	İzmir Region Spatial Development Scheme	161
MAP 29.	TR31 İzmir Region Sub-Region Coverage	162
MAP 30.	İzmir Metropolitan Central Sub-Region Spatial Development Scheme	165
MAP 31.	Peninsula Sub-Region Spatial Development Scheme	167
MAP 32.	Northern İzmir Sub-Region Spatial Development Scheme	169
MAP 33.	Southern İzmir Sub-Region Spatial Development Scheme	170

Contents

FOREWORD **7**

EXECUTIVE SUMMARY **15**

1. INTRODUCTION **17**

2. PLAN PREPARATION PROCESS **22**

2.1. Design of the Planning Process and Stakeholder Analyses 22

2.2. Review of Existing Studies, Data Collection and Processing 22

2.3. 2023 İzmir Situation Analysis Preparation 24

2.4. Regional Analyses at the Spatial Level and Regional Spatial Development Schemes 24

2.5. Implementation of Participatory Processes 24

2.6. Holistic Data Analysis and Strategic Design 25

2.7. Program and Project Portfolio 25

2.8. Determination of Performance Indicators 25

3. INTERNATIONAL DEVELOPMENTS AND THEIR IMPACTS ON THE REGION **27**

3.1. Digitalization 27

3.2. Demographic Change 27

3.3. Climate Change and Resource Scarcity 28

3.4. General Trends in Türkiye 29

4. OVERVIEW OF İZMİR (TR31) REGION **31**

4.1. Population 32

4.2. Education 32

4.3. Healthcare 32

4.4. Tourism 32

4.5. Transportation 32

4.6. Research & Development and Innovation 33

4.7. Energy 34

4.8. Foreign Trade 35

4.9. Income and Sectoral Distribution 35

4.10. Employment 35

4.11. Competitiveness and Investment Environment 36

5. VISION, STRATEGIC PRIORITIES, OBJECTIVES AND MEASURES 41

5.1. Strategic Priority 1: Ensuring the Green Transformation of Existing Economic Activities in İzmir 43

5.2. Strategic Priority 2: Leveraging the Blue Economy Potential 69

5.3. Strategic Priority 3: Enhancing Social Resilience on the Basis of Sustainability 87

6. SPATIAL DEVELOPMENT 113

6.1. An Overview of the İzmir City Region 114

6.2. Direction of Spatial Development in İzmir 116

6.3. Spatial Development Program for the İzmir Region 120

6.4. Method and Approach to Regional Spatial Development Schemes 154

6.5. 2024-2028 İzmir Regional Plan Spatial Development Scheme 160

6.6. İzmir Region Sub-Regional Spatial Development Schemes 162

7. RELATIONSHIP OF REGIONAL PLAN OBJECTIVES WITH SUSTAINABLE DEVELOPMENT GOALS (SDG) 172

8. COORDINATION, MONITORING AND EVALUATION 175

9. PERFORMANCE INDICATORS 176

10. REFERENCES 182

11. APPENDICES 187

İzmir Port, 1850–1865

Executive Summary

İzmir is an ancient port city. Looking over its history spanning more than 8,500 years, it becomes evident that the port has played a decisive role in the economy and development of İzmir and its surrounding areas. From antiquity to the Industrial Revolution, İzmir stood as one of the key centers of trade between the East and the West. With the onset of industrialization, leveraging the advantages of its port, İzmir became one of the first industrializing regions in the country.

Today, İzmir's economy stands out for its multi-sectoral structure and export-oriented character. Contributions to İzmir's economy are divided as follows: 57% from services, 38% from industry, and 5% from agriculture. The industrial share is above the national average. Although the share of agriculture is below the national average, İzmir ranks among the top in many product categories nationally, reflecting its high level of efficiency in this area.

İzmir makes the largest contribution to the national economy (in terms of sectoral value-added) through the "water transport," "refined petroleum products," and "paper and paper product manufacturing" sectors (İZKA, 2021a). This finding, identified through the Regional Input-Output Analysis, highlights İzmir's specialization in maritime transport and port services, as well as the significance of its industrial infrastructure within the national economy.

Another notable recent development in İzmir's economy is its progress in the production of clean energy equipment, particularly in wind energy. Blessed with rich renewable energy resources, Türkiye's first wind power plant was established in Çeşme, and through this process that began nearly 25 years ago, İzmir has become the province generating the most wind energy in the country today. With factories of global brands and local suppliers that produce equipment for this energy production, İzmir has emerged as one of the largest manufacturing hubs in Eastern Europe and the Mediterranean Basin.

As these indicators reveal, İzmir's economy boasts a strong production infrastructure. However, evaluating an economy solely based on production indicators does not provide a fully robust assessment. In an era marked by the climate crisis and numerous environmental challenges, it is essential to consider the economy together with its environmental impact.

With the European Union's announcement of the "Green Deal," sustainable development has become a more prominent topic in public discourse. Since the 1970s, sustainability has gained traction on the agendas of countries and, over the past 20 years, has increasingly dominated economic analyses as the prevailing paradigm. Sustainable development, which can be summarized as "producing with the awareness that resources and the environment belong not only to us but also to future generations, and developing in line with that awareness," primarily focuses on "production aligned with environmental sensitivities."

In the context of İzmir, it is clear that the city is under significant environmental pressure due to various factors, including heavy industrial facilities in the northern axis, intensive agricultural production in Küçük Menderes and Bakırçay Basins, and the dense urban population and tourism activity extending from the city center to the peninsula. İzmir produces one-quarter of the hazardous waste in Türkiye, and due to sectors that consume large amounts of water in industry and agriculture, the region is classified as "water-scarce."

Therefore, to ensure the continuation of the positive trends and indicators in İzmir's economy in the coming years, it is imperative to take necessary measures for the efficient use of resources in harmony with environmental sensitivities. In the medium and long term, this is essential for leaving a sustainable ecosystem for future generations, and in the short term, it is crucial to minimize the impact of the Border Carbon Adjustment Mechanism, introduced under the "Green Deal," and even turn this situation to İzmir's advantage.

In this context, the "green transformation" and "blue economy" approaches, which address sustainable development in terrestrial and marine ecosystems as a whole, along with "social transformation," the other key component of robust development, have become the primary priorities of the *2024-2028 İzmir Regional Plan*. The main framework of *the Regional Plan* includes the promotion of resource efficiency and clean production technologies in the industrial and agricultural sectors, the activation of the region's coastal economy potential with a focus on İzmir's ports, and the reinforcement of these developments through innovation and entrepreneurship. This framework is supported by spatial schemes that take a holistic view of the region, including its interactions with neighboring provinces, and reflect various intervention areas based on the spatial impacts of the Plan's objectives.

İzmir Port, today

1. Introduction

As the effects of climate change become increasingly evident in today's world, our planet is grappling with pandemics, rising natural disasters and resource scarcity. The current economic structure, based on excessive resource use of resources that has been shaped by rapid technological development, uncontrolled population growth and shifts in consumer behavior, poses threats of global scale. To address these developments, which endanger humanity's current economic and social welfare, the transition to a low-carbon economic system has now become one of the most critical items in the global agenda.

Green growth, as "an approach that protects natural resources while simultaneously fostering the economy through environmental technologies," has emerged as a new and competitive growth model to tackle both economic and environmental challenges. Many regions around the world are integrating the goal of transitioning to green growth into their regional development strategies, and are designing policies and implementing programs towards green transformation.

The green transformation process, which aligns with existing sustainable development initiatives in many countries, involves both structural changes necessary for the transition to a green economy and the development of cleaner growth drivers such as green industries and green technologies. Transitioning to green growth requires radical transformations in technologies, relevant markets and institutions, as well as the development of new and innovative skills across all sectors of society.

The Twelfth Development Plan (2024-2028) establishes goals and policies focused on sustainable natural resource management in our country's economic and social development, resilience to risks, particularly disasters, competitiveness centered on green and digital transformation, quality growth based on productivity, and a robust social structure. To achieve an effective and inclusive transformation, it is necessary to consider seas and coastal areas as critical natural resources and ensure the sustainability of the marine environment and biodiversity. In this context, the concept of blue growth, which can be summarized as "protecting the seas and coastal areas for future generations while also leveraging their potential for employment and growth," becomes relevant.

Within the approach to green and blue growth, the efficient use and management of resources is regarded as the primary objective of economic policy. The transition process towards green and blue growth should be seen as initiating a transformation that directs current economic investments towards green economic activities and clean technologies, thereby changing production and consumption structures.

With its natural resources on the brink of renewal capacity, its sensitive ecosystems that need protection, its rapidly growing polluting industries, the coastal economy potential developed around its ports, and its innovation and entrepreneurship ecosystem, İzmir holds a strategic position for launching regional green transformation and blue growth initiatives.

The *2024-2028 İzmir Regional Plan*'s main framework is based on the effective and efficient utilization of İzmir's existing resources, the development of green transformation and the blue economy to combat climate change, the elimination of environmental threats, and ensuring the sustainability of economic growth, supported by societal transformation. Along with enhancing social resilience, a spatial development and transformation approach that is centered on disaster risk management, including the effects of climate change, holds a central place within the development strategy identified in *the Regional Plan*. Within this framework, entrepreneurship and spatial dimensions are addressed as horizontal axes, both supporting and being supported by this design (Figure 1).

FIGURE 1. İzmir Regional Plan Strategic Structure

The findings related to İzmir's current situation and recent data-driven studies have formed the foundation of the *2024-2028 İzmir Regional Plan*. The generation of information is based on numerous regional analysis studies and participatory practices carried out during the plan preparation process.

In this context, the vision of the *2024-2028 İzmir Regional Plan* has been set as **"A Resilient and Vibrant Port City Leading in Green Transformation and Blue Growth."** In alignment with national strategies, the Plan focuses on the region's needs and potentials, and encompasses the strategic priorities, objectives, measures, programs and project proposals, in other words the key intervention areas significant for achievement of such vision.

The analyses, research, stakeholder views and evaluations, as well as current trends at the national and international levels, have revealed three strategic priorities concerning İzmir's current structure. Thus, the region's development perspective is built on these three interrelated and complementary axes:

- Ensuring the Green Transformation of Existing Economic Activities in İzmir
- Leveraging the Potential of the Blue Economy
- Enhancing Social Resilience on the Basis of Sustainability

The main objectives within the strategic priority of "Ensuring the Green Transformation of Existing Economic Activities in İzmir" include the widespread implementation of resource efficiency practices, the protection of natural resources, the strengthening of infrastructure to support the green and blue transformation process, and the increased use of clean energy and clean technologies.

Under the strategic priority of "Leveraging the Potential of the Blue Economy," the focus is on the sustainability of blue growth sectors, increasing the revenue generated from these sectors, revitalizing the ports in İzmir to enhance their contribution to the regional economy, and improving the region's logistics infrastructure.

And under the strategic priority of "Enhancing Social Resilience on the Basis of Sustainability," the objectives include improving the quality of urban and rural life, supporting sociocultural and socioecological transformation to complement the green and blue transformation process, transforming the existing workforce, developing innovation and technology creation, and strengthening the entrepreneurship ecosystem. In this regard, the strategic framework of the *2024-2028 İzmir Regional Plan* has been structured as shown below (Figure 2):

FIGURE 2. İzmir Regional Plan Strategic Framework

2024-2028 İZMİR REGIONAL PLAN
STRATEGIC FRAMEWORK

Vision: A Resilient and Vibrant Port City Leading in Green Transformation and Blue Growth

Sectoral Priority 1:
Ensuring the Green Transformation of Existing Economic Activities in İzmir

- **Objective 1:** By promoting resource efficiency practices, the transition to a green production model in the industrial and agricultural sectors will be achieved.
- **Objective 2:** Pollution of natural resources and excessive consumption will be prevented, and these vital resources will be improved.
- **Objective 3:** Technical infrastructure, administrative, and social capacities to support green transformation will be strengthened.
- **Objective 4:** The share of clean energy production will be increased and its use will be made widespread.

Sectoral Priority 2:
Leveraging the Potential of the Blue Economy

- **Objective 1:** The sustainability of blue growth sectors and the revenue obtained from these sectors will be increased.
- **Objective 2:** Ports in İzmir will be revitalized to enhance their contributions to the regional economy.
- **Objective 3:** The region's logistics infrastructure will be improved.

Sectoral Priority 3:
Enhancing Social Resilience on the Basis of Sustainability

- **Objective 1:** The quality of urban and rural life will be improved.
- **Objective 2:** Sociocultural and socioecological transformations will be supported, and institutions will be strengthened to effectively respond to such transition.
- **Objective 3:** The capacity of the existing workforce and working environments will be improved.
- **Objective 4:** To support the transition, innovation and technology production will be developed, and the entrepreneurship ecosystem will be strengthened.

The *2024-2028 İzmir Regional Plan* consists of 11 objectives, 38 measures and 17 programs/projects under three strategic priorities (Table 1).

TABLE 1. 2024-2028 İzmir Regional Plan Strategic Structure

Strategic Priority	Objective	Measure/Program/Project
S.P. 1 Ensuring the Green Transformation of Existing Economic Activities in İzmir	**O 1.1:** The transition to a green production model in industrial and agricultural sectors shall be achieved by promoting resource efficiency practices.	**M 1.1.1:** Efficiency in the use of energy, water, and raw materials shall be increased.
		M 1.1.2: Practices aimed at increasing the use of secondary and alternative resources in industry and agriculture shall be supported.
		M 1.1.3: Through circular processes in production and consumption, product lifespan and usage efficiency shall be enhanced, and the amount of waste produced shall be reduced.
		M 1.1.4: Food losses shall be reduced, and food security shall be strengthened by establishing sustainable food systems.
		Project 1.1.1: İzmir Resource Efficiency Center Project
		Project 1.1.2: Agricultural Waste Cellulose Production Facility Project
		Project 1.1.3: Furniture Waste Reuse and Recycling Center Project
		Project 1.1.4: High Economic Value Industrial Dairy Products Production Facility Project
	O 1.2: Pollution and overuse of natural resources shall be prevented, ensuring the improvement of resources.	**M 1.2.1:** Pollution loads from industrial and agricultural production shall be reduced.
		M 1.2.2: Transition to a crop pattern that reduces irrigation water needs in Küçük Menderes, Gediz and Bakırçay basins shall be planned.
		M 1.2.3: Practices aimed at improving natural wetlands, lagoons, natural forests and afforestation areas shall be supported.
		Project 1.2.1: Sustainable Aviation Fuel (SAF) Production Waste Oils Preprocessing Facility Project
	O 1.3: The technical, administrative, and social capacities to support green transformation shall be developed.	**M 1.3.1:** Waste management infrastructure and processes shall be improved.
		M 1.3.2: Continuous and high-quality secondary raw material production for priority value chains shall be supported by increasing value-added recycling.
		M 1.3.3: Green transformation infrastructure in industrial production zones shall be supported.
		M 1.3.4: Enterprises' readiness and compliance capacity for the "Green Deal" shall be enhanced.
		M 1.3.5: Green entrepreneurship practices shall be promoted.
		Program 1.3.1: Green and Blue Entrepreneurship Acceleration Program
	O 1.4: The share of clean energy production shall be increased, and its use shall be expanded.	**M 1.4.1:** The use of clean energy systems shall be expanded.
		M 1.4.2: Clean energy production infrastructure shall be strengthened.
		M 1.4.3: Development of the clean energy and clean technologies sector shall be supported.
		Project 1.4.1: İzmir Hydrogen Valley Project
		Project 1.4.2: Floating Offshore Wind Turbine Platform Production Facility Project
		Project 1.4.3: International Geothermal Energy Research and Application Center Project

Strategic Priority	Objective	Measure/Program/Project
S.P. 2 Leveraging the Potential of the Blue Economy	**O 2.1:** Sustainability of blue growth sectors and the income derived from these sectors shall be increased.	**M 2.1.1:** Fisheries production and fishing activities shall be improved and developed in ways that ensure the sustainability of fish stocks.
		O 2.2: Ports in İzmir shall be revitalized to increase their contributions to the regional economy.
		O 2.3: The region's logistics infrastructure shall be improved.
		Project 2.1.1: İzmir Maritime University Project
	O 2.2: Ports in İzmir shall be revitalized to increase their contributions to the regional economy.	**M 2.2.1:** Sectors supporting the İzmir region's ports shall be developed to enhance port capacity utilization rates.
		M 2.2.2: The capacity and share of TCDD İzmir Port in cargo handling shall be increased.
		M 2.2.3: The accessibility and cooperation capacity of the Aliağa port cluster shall be improved.
		Project 2.2.1: Çandarlı Port Clean Energy Sector Adaptation Project
		Project 2.2.2: İzmir Clean Energy Specialized Industrial Zone Project
	O 2.3: The region's logistics infrastructure shall be improved.	**M 2.3.1:** Railway connections of Kemalpaşa Logistics Center, particularly with TCDD İzmir Port, shall be established.
		M 2.3.2: Ports' transition to smart technologies and green transformations shall be actualized.
		M 2.3.3: The investment in connection roads to the Çandarlı Port motorway shall be realized.
S.P. 3 Enhancing Social Resilience on the Basis of Sustainability	**O 3.1:** Urban and rural quality of life shall be improved.	**M 3.1.1:** Urban accessibility shall be increased through the widespread use of sustainable transportation infrastructure.
		M 3.1.2: Fundamental services that improve urban living quality, secure spaces and housing, and accessible social facility infrastructure shall be developed.
		M 3.1.3: Planning and organizational capacity for effective disaster management shall be improved, and infrastructures to reduce disaster risks shall be strengthened.
		M 3.1.4: Smart city applications shall be expanded.
		M 3.1.5: Living conditions and job opportunities in rural areas shall be improved.
	O 3.2: Sociocultural and socioecological transformation shall be supported, and institutions shall be strengthened to respond to this transformation.	**M 3.2.1:** The integration of vulnerable groups into social and economic life shall be increased.
		M 3.2.2: The region's awareness, knowledge and competence level regarding responsible consumption and resource use shall be raised.
		M 3.2.3: Institutional capacity to support transformation shall be developed.
	O 3.3: The capacity of the existing workforce shall be increased, and work environments shall be improved.	**M 3.3.1: T**he technical capacity and skill level of the workforce shall be developed to meet the needs and expectations of the green and blue transformation.
		M 3.3.2: Work environments shall be strengthened to meet workforce expectations and the requirements of efficient and sustainable production.
		M 3.3.3: Occupational health and safety conditions shall be improved in high-risk sectors.
	O 3.4: Innovation and technology creation shall be developed, and the entrepreneurship ecosystem shall be strengthened to support transformation.	**M 3.4.1:** Creation of domestic green technologies needed for the green and blue transformation shall be supported.
		M 3.4.2: Development of knowledge and technology-based new sectors and creative industries shall be supported.
		M 3.4.3: Training, awareness, and dissemination activities aimed at strengthening the entrepreneurship ecosystem shall be supported.
		Program 3.4.1: İzmir Venture Capital Fund (İzmir Fund)
		Project 3.4.1: İzmir Creative Industries Center Project
		Project 3.4.2: Bearing Production Facility Project
		Project 3.4.3: İzmir Cathode Active Material Production Facility Project
		Project 3.4.4: İzmir Inverter Production Facility Project

2. Plan Preparation Process

The preparatory work for the *2024-2028 İzmir Regional Plan* commenced with the Presidential Circular No. 2022/7, published in the Official Gazette No. 31859 dated June 7, 2022. In the preparation process of *the Regional Plan*, a planning approach was adopted that strategically addresses the region's needs and priorities over a five-year period, with a strong local context, aiming to increase the ownership and adoption potential of the plan, rather than a comprehensive planning approach that attempts to cover all areas of development. The key elements highlighted in this context are:

- Basing the plan on information generated through qualified data and analyses
- Ensuring local participation in the planning stages
- Transforming the plan's objectives into reality through tangible projects and programs
- Granting the plan the power to guide local and national plans with its information and spatial dimension

The *2024-2028 İzmir Regional Plan* has been prepared with the aim of evaluating İzmir's potential in a sustainable manner, enhancing the region's contribution at the national level and its position at the international level, and bringing a new and holistic perspective to regional development efforts in our country. The stages implemented during the preparation of the plan are as follows:

- Design of the planning process and stakeholder analysis
- Review of existing studies, data collection and processing
- Preparation of the 2023 İzmir Situation Analysis
- Regional analyses at the spatial level and regional spatial development schemes
- Implementation of participatory processes
- Holistic analysis of data and strategic design
- Program and project portfolio
- Determination of performance indicators

2.1. Design of the Planning Process and Stakeholder Analyses

The plan preparation process was designed to involve all units of the İzmir Development Agency working together and contributing. Stakeholders were supported to play an active role in the planning stages. In stakeholder analyses, the participation levels defined by the International Association for Public Participation (IAP2) were taken as a basis, and the stakeholders were grouped into the following participation spectrum: inform, consult, involve, collaborate and empower.

2.2. Review of Existing Studies, Data Collection and Processing

Since the transition of development agencies to a Results-Oriented Program (ROP) approach in 2018, in-depth studies have been carried out on priority topics and areas identified for regional development. In this context, sectoral and thematic analyses were conducted, supporting the generation of knowledge in different areas of development in İzmir, such as economy, society, environment and space. The first phase of the process followed for plan preparation involved identifying and holistically considering the studies related to the region. The local and national-level studies, which particularly stand out with their contributions to the plan for İzmir, are listed in Table 2.

In addition to the research and analysis studies, significant global policy documents and national sectoral and thematic strategy documents were reviewed, and the policies and measures of the *Twelfth Development Plan* and the *2024-2028 National Strategy for Regional Development (BGUS)* were considered.

TABLE 2. Research and Analyses Contributing to the Regional Plan Studies

Title	Publication Year	Institution / Organization
İzmir Situation Analysis	2023	İzmir Development Agency
Green Transformation and Blue Opportunities Perspective in İzmir	2022	İzmir Development Agency
Research on the Potential, Usage Areas and Economic and Environmental Impacts of Geothermal Resources in İzmir	2022	İzmir Development Agency
İzmir Cooperative Analysis	2022	İzmir Development Agency
Situation Analysis and Development Perspective of the Ports of İzmir	2022	İzmir Development Agency
Aliağa Ports Hinterland Transportation and Logistics Study	2022	İzmir Development Agency
İzmir Aliağa Ship Recycling Sector Analysis	2022	İzmir Development Agency
Development Analysis of Foreign Trade in Türkiye and İzmir	2022	İzmir Development Agency
Feasibility and Operational Model Study of Kemalpaşa Logistics Center	2022	İzmir Development Agency
Feasibility Study of İzmir Electricity Factory and Hinterland Development	2022	İzmir Development Agency
Feasibility Study of Çandarlı Port	2022	İzmir Development Agency
Feasibility Study of Clean Energy Specialized OIZ Integrated with Çandarlı Port	2022	İzmir Development Agency
İzmir's Ancient Production Basins	2022	İzmir Development Agency
Socio-Economic Development Ranking Surveys (SEDR)	2022, 2017	Directorate General of Development Agencies
Research on Urban and Rural Settlement Systems in Türkiye (YER-SIS)	2022	Directorate General of Development Agencies
Analysis of Sectors Leading Resource Use and Waste Production in İzmir	2021	İzmir Development Agency
Wind Energy Sector and İzmir Offshore Wind Energy Roadmap	2021	İzmir Development Agency
İzmir Regional Input-Output Analysis	2021	İzmir Development Agency
Analysis of the Creative Industries in Türkiye at NUTS-2 Region Level: Focus on İzmir	2021	İzmir Development Agency
Analysis Study on Determining Rural and Urban Areas in İzmir	2021	İzmir Development Agency
Potential for Biogas and Organic Fertilizer Production in İzmir	2020	İzmir Development Agency
Evaluation of TCDD İzmir Alsancak Port in Terms of Regional Economy from Past to Present	2020	İzmir Development Agency
Socio-Economic Indicators of İzmir (2004-2019)	2020	İzmir Development Agency
İzmir Innovation Ecosystem Monitoring Reports	2021, 2020, 2019, 2018	İzmir Development Agency
İzmir's Strategy for Living in Harmony With Nature 2021-2030	2021	İzmir Metropolitan Municipality
İzmir Tourism Promotion Strategy and Action Plan (2020-2024)	2020	İzmir Metropolitan Municipality
İzmir Sustainable Urban Logistics Plan (LOPI)	2020	İzmir Metropolitan Municipality
İzmir Sustainable Energy and Climate Action Plan 2020	2020	İzmir Metropolitan Municipality
İzmir Green City Action Plan 2020	2020	İzmir Metropolitan Municipality
İzmir Transport Master Plan (UPI 2030)	2019	İzmir Metropolitan Municipality

2.3. 2023 İzmir Situation Analysis Preparation

A comprehensive and up-to-date situation analysis has been conducted to serve as a guide for the planning efforts related to İzmir. Both existing studies at local, national and international levels, as well as the situation analysis prepared, have provided the necessary knowledge base for the strategic priorities and objectives of the plan. This knowledge base has also supported spatial decisions and the regional spatial development scheme, particularly with its dimensions at the district level.

2.4. Regional Analyses at the Spatial Level and Regional Spatial Development Schemes

Large-scale projects, main infrastructures, existing spatial plans, resource use and any associated potentials or challenges were examined in light of İzmir's sectoral and thematic development goals. Accordingly, a perspective was defined that directed the spatial development of İzmir, integrated with the strategic priorities and objectives of *the Regional Plan*, and synthesized spatial maps and regional spatial development schemes were created.

2.5. Implementation of Participatory Processes

During the plan preparation process, participatory processes such as district workshops, open surveys, sectoral and thematic workshops, and focus group discussions were implemented. The feedback, suggestions and evaluations obtained from these processes were taken into consideration in shaping the plan's vision and strategic framework. Digital platforms and social media tools were used to promote the plan, ensure its visibility and convey its objectives to the public.

Through workshops held in 30 districts during October-November 2022, with a total of 573 participants, the findings of district-level analyses were reviewed together with representatives from local public, private sector and civil society organizations, contributing to the planning process. In the İzmir Natural Structure Inventory Synthesis Workshop held at the provincial level, İzmir's spatial data and maps, particularly concerning water, food, energy and waste, were interpreted with expert input, and prominent data gaps were identified. A total of 138 institutions participated in an external stakeholder survey aimed at determining the region's needs and priorities. The feedback and suggestions obtained were synthesized with the analysis findings during the preparation process.

TCDD İzmir Port

2.6. Holistic Data Analysis and Strategic Design

The priority and objective design of the *2024-2028 İzmir Regional Plan* was established through a review of the analysis studies, workshop outcomes, stakeholder feedback and suggestions, relevant reports, and national strategy documents. The initial strategic design was then reviewed with national and local stakeholders. Necessary updates were made following the evaluation of the feedback and suggestions received.

2.7. Program and Project Portfolio

Sample project and program proposals were developed in alignment with the plan's strategic priorities, aiming to implement the plan's objectives while generating added value and having a significant multiplier effect on the economies of İzmir and Türkiye. The project and program proposals, extending beyond the responsibilities of the İzmir Development Agency, have become well-defined through ongoing research and feasibility studies. The components of the *2024-2028 İzmir Regional Plan*'s project and program portfolio are as listed below:

- İzmir Resource Efficiency Center Project
- İzmir Hydrogen Valley Project
- Floating Offshore Wind Turbine Platform Production Facility Project
- İzmir Maritime University Project
- Çandarlı Port Clean Energy Sector Adaptation Project
- İzmir Clean Energy Specialized Industrial Zone Project
- İzmir Creative Industries Center Project
- Agricultural Waste Cellulose Production Facility Project
- Sustainable Aviation Fuel (SAF) Production Waste Oils Preprocessing Facility Project
- Bearing Production Facility Project
- International Geothermal Energy Research and Application Center Project
- Furniture Waste Reuse and Recycling Center Project
- İzmir Cathode Active Material Production Facility Project
- High Economic Value Industrial Dairy Products Production Facility Project
- İzmir Inverter Production Facility Project
- Green and Blue Entrepreneurship Acceleration Program
- İzmir Venture Capital Fund (İzmir Fund)

2.8. Determination of Performance Indicators

Once the strategic priorities and objectives of *the Regional Plan* were finalized, quantitative values to indicate the level of achievement of the determined objectives were identified as performance indicators. As the main element of the plan's monitoring and evaluation process, the performance indicators were designed to be few in number, measurable, attainable, relevant and time-bound at the objective level.

The *2024-2028 İzmir Regional Plan* was finalized with all its content, discussed in the İzmir Development Agency's Board of Directors and Development Council, and submitted to the Directorate General of Development Agencies of the Ministry of Industry and Technology.

İzmir Bird Paradise

3. International Developments and Their Impacts on the Region

In the process of globalization, major global trends and developments in the fields of economics, politics, culture, environment and technology are presenting new challenges for all sectors of society. Global developments and trends that should be taken into account due to their impact on the development process are revealed to include digitalization, demographic change, resource scarcity and climate change.

3.1. Digitalization

With the technological advancements of our day, data is becoming increasingly central to how individuals, businesses, and even public institutions live and work. Collecting and processing real-time data in the production value chain to improve productivity is making digitalization an essential part of efficiency, production and daily life.

Especially after the Covid-19 pandemic, the world is witnessing an unprecedented acceleration in digital transformation across all sectors. The rise of new-generation technologies and the rapid changes in customer behaviors and expectations are forcing companies to transform their business models.

In line with the developments in digital technologies, the importance of complementary services in manufacturing is increasing through the collection and processing of detailed data related to production and logistics processes and consumer preferences, and their integration throughout the entire value chain. Digital technology developments are also giving rise to new professions and ways of doing business, prompting countries to adjust their labor laws to include different business models.

Companies and policymakers recognize the significant opportunities that digitalization, interconnectivity and new production technologies offer for maintaining industrial presence and growth. This approach encourages new business models, the sustainable and efficient use of limited resources, and the production of highly customizable products at affordable costs.

Today, as one of the key drivers of economic and social development, digitalization is influencing economies and societies in complex, interrelated ways, necessitating more strategic approaches.

3.2. Demographic Change

Urban populations around the world are steadily increasing, and the number and share of metropolises and megacities in the total population are rising, particularly in developing countries. It is expected that by 2050, urban populations will account for 70% of the world's total population (World Bank, 2023). As metropolises grow, production and daily life in surrounding areas are becoming more integrated, and city regions are developing.

On the other hand, global population growth is slowing, while life expectancy increases and the aging trend continues. The share of elderly populations worldwide, which stood at 8% in 2015, is expected to reach 16% by 2050. According to World Bank data, countries experiencing intense population aging may face negative economic impacts due to workforce contraction, increasing the need for health and active aging policies. In developing countries that are in earlier stages of such demographic transition, a period of increased working-age population can drive rapid economic growth by improving workforce productivity, highlighting the importance of education policies for productivity.

Another factor contributing to demographic change is migration. The increasing intensity of international migration today is leading to numerous economic, social, political and cultural impacts and outcomes. Therefore, international migration is increasingly being associated with the phenomenon of development in global policy discussions, alongside the economic, political and social changes occurring at the international level.

3.3. Climate Change and Resource Scarcity

The increasing energy demand, driven by population growth and supplied by fossil-based sources such as coal, natural gas and oil, has increased carbon emissions, causing rapid climate change. It is observed that climate change, intensified by high greenhouse gas emissions, leads to the increase of natural disasters and poses a serious threat to humanity. This also causes unpredictability of water stocks, intensification of water scarcity, and pollution of water resources, which are the fundamental source of life. Between 2001 and 2018, approximately 74% of natural disasters, including droughts and floods, were water-related, and the frequency and intensity of such events are expected to rise further with climate change (EM-DAT, 2019).

As the various global impacts of climate change are accelerating, it is considered that the levels of commitment and adaptation displayed by developed and developing countries under the Paris Agreement, which offers a new framework on this issue, remain insufficient to achieve global goals. As the growing demand for food, climate change, urbanization, and issues related to land, water resources, and agricultural products place increasing pressure on producers, the development of plant and animal species adapted to changing climates and the protection of the environment and biodiversity gain importance, and in order to meet the growing food demand with fewer resources, an increasing need emerges for skilled labor and technology.

In this context, the "Green Deal," declared by the EU to implement existing commitments to combat the crises caused by climate change more broadly and effectively, is of significance. The agreement, which targets the year 2050 regarding the commitments, includes a series of transformative policies aimed at making Europe "climate neutral" by that time. To achieve this goal, it foresees a transition to a clean and circular economy by increasing resource efficiency, restoring biodiversity and reducing pollution.

This transformation, which is essential for countries and regions, has now made sustainability a fundamental component of development policies in both green and blue growth dimensions. Green growth focuses on ensuring the continuity of natural resources and environmental elements, which are the foundation of our existence, while promoting economic development, and blue growth centers around oceans, seas and inland waters, which are directly related to life and the economy.

Green growth, considered an essential tool both for combating climate change and environmental threats and balancing environmental protection and economic growth, is expected to create new job opportunities and thus increase employment and income through sustainable production practices, changing consumption habits, realizing energy efficiency and the use of clean energy. In the context of blue growth, where marine areas are positioned as fundamental resources for income, value-added, employment and innovation, the protection and development of blue resources are targeted to help mitigate the destructive effects of carbon emissions and climate change.

Bergama Kestelli Dam

3.4. General Trends in Türkiye

Türkiye's population has been on an upward trend in recent years. According to TURKSTAT data, the country's population increased by 0.7 per thousand compared to the previous year, reaching 85,279,553 in 2022. The youth population ratio occurred to be 15.2%, with 49.9% of the population being female and 50.1% male. Migration has been the most significant factor affecting the demographic structure recently. While our country previously stood out as a country that was a source and transit for migration, it has recently become a destination country for migration. Furthermore, in recent years, Türkiye has been one of the countries most severely affected by international forced migration due to humanitarian crises and instability in neighboring regions.

Türkiye, among the countries to be most affected by climate change given its geographical location, already faces disasters such as sudden rains, floods and droughts. As a developing country, Türkiye's efforts for reduction of emissions and adaptation to climate change continue. The disaster risks and actual events our country experiences make emergency and disaster management a critical issue in the agenda of the country. The major earthquakes on February 6, 2023, which affected 10 provinces and over 13 million people, led to one of the country's most severe loss of life and destruction, reinforcing the urgency and priority of the issue.

Identifying risks across multiple dimensions and addressing disasters on a broad regional scale, integrating risk reduction policies with sustainable development policies, and conducting sectoral, thematic and spatial planning in a holistic manner are emerging as more pronounced needs for our country in the upcoming period. In terms of physical, economic, social and environmental sustainability, regions must both prepare themselves to be resilient to disasters and strengthen their capacities to contribute to the resolution of disasters and crises occurring outside their regions and to manage the impacts of these developments upon their areas.

In line with global technological developments, Türkiye is implementing policies aimed at transitioning its economy to a structure that produces advanced technology. In this context, efforts are underway to enrich the skilled workforce in priority sectors and areas, increase the dissemination of technology to businesses, develop firms' organizational and innovation capabilities, and introduce mechanisms for financing research and development (R&D) and innovation.

From an economic perspective, Türkiye achieved 11.4% growth in 2021, the highest growth rate in the past 50 years, following measures and support taken to mitigate the negative economic impacts of the Covid-19 pandemic, as well as the rapid attainment of high vaccination rates (PSB, 2022).

In the first half of 2022, economic activities remained buoyant. The effects of rising raw material and energy costs, coupled with disruptions in regional supply chains caused by the Russia-Ukraine War, had limited effects on Türkiye's growth performance. Thanks to increased domestic and foreign demand, the Turkish economy recorded a strong growth rate of 7.5% in the first half of the year (PSB, 2022).

Türkiye continues to maintain the export momentum it achieved in 2021. Exports increased by 12.9% compared to the previous year, reaching 254 billion USD in 2022 (TURKSTAT, 2023a). With multinational companies beginning to source goods from Türkiye instead of more distant, less reliable exporters with higher freight costs, Türkiye has successfully capitalized on opportunities in global transportation.

Konak Square

4. Overview of İzmir (TR31) Region

İzmir, a significant trading hub of the Mediterranean Basin, has had an economy predominantly related to trade as a port city throughout its ancient history. And throughout its history, İzmir has played an important role in the trade of surplus products produced in the Western Anatolia hinterland with other production centers. As one of the most important cities on the Mediterranean coast, İzmir has continued to host tourist attractions, major industrial areas, large-scale projects and commercial investments.

In the settlement hierarchy of Türkiye, İzmir's settlement status corresponds to the 6B category. İstanbul occupies the highest level (7), and there are no other 6th-level settlements in Türkiye besides Ankara and İzmir. When examining the upper-level settlements to which other settlements are connected for various services, it is seen that three provincial centers, Aydın, Manisa and Uşak, along with a total of 20 district centers, are directly connected, and 36 settlements are indirectly connected (through intermediate-level settlements) to İzmir. In other words, İzmir is the top-tier settlement that provides the most services to a total of 56 settlements, including 3 provincial centers. This clearly demonstrates İzmir's position as a regional center at the national level.

Within the borders of İzmir province, there are also three third-level settlements (Table 3). Aliağa (3A), Kemalpaşa (3B), and Torbalı (3B), in addition to being centers of employment and production, also serve surrounding settlements by way of trade relations. However, the education, health, transportation and communication services these districts provide to neighboring settlements are limited. Such services are generally provided by İzmir (6B), the central settlement.

TABLE 3. Settlement Hierarchy of Districts' of İzmir as Service Centers

District	Urban Service Center Score	Urban Service Level
Aliağa	0.1011	3A
Bayındır	0.0324	2B
Bergama	0.0633	2A
Beydağ	0.0065	1B
Çeşme	0.0483	2A
Dikili	0.0301	2B
Foça	0.0284	2B
Karaburun	0.0128	1B
Kemalpaşa	0.0757	3B
Kınık	0.0137	1A
Kiraz	0.0203	1A
Menderes	0.0477	2A
İzmir Center	0.4383	6B
Ödemiş	0.0548	2A
Seferihisar	0.0375	2B
Selçuk	0.0421	2A
Tire	0.0586	2A
Torbalı	0.1158	3A
Urla	0.0614	2A

Source: YER-SİS, 2022

4.1. Population

İzmir, both in terms of population and economic indicators, is Türkiye's third-largest city, with a population of 4,462,056 as of 2022, according to TURKSTAT. İzmir's population accounts for 5.2% of Türkiye's total population and 41% of the Aegean Region's population.

The city has a higher population density than the national average. In 2022, while the population density in Türkiye was 111 people/km², İzmir's was observed to be 371 people/km². İzmir experiences positive net migration. In 2022, the number of people moving to İzmir exceeded those leaving by 25,114 people. The net migration rate, which was 2.46 per thousand in 2012, increased to 5.64 per thousand by 2022, more than doubling over the last decade (TURKSTAT, 2023c).

4.2. Education

The literacy and schooling rates in İzmir are observed to be above the national average. In 2022, the literacy rate was 98.8%, while the net schooling rate for 2021 was 94.7% in primary education and 92.1% in secondary education. Similarly, with a higher education graduate rate of 22.2%, İzmir also surpasses Türkiye's national average of 18.1% (TURKSTAT, 2023c).

The number of universities in İzmir increased from 7 in 2009 to 10 in 2018. During the 2022/2023 period, a total of 191,345 students were enrolled in higher education, accounting for 4% of the population (YÖK, 2023; TURKSTAT, 2023c). Other educational indicators for the region also mostly surpass both the national averages and those of other major regions. As the educated population increases, the uneducated population decreases, and average education durations lengthens, thus steadily raising the overall education level in the region.

4.3. Healthcare

İzmir ranks above the national average also in healthcare services. As of 2021, the region had 63 healthcare institutions, of which 32 were public or university hospitals, and 31 were private hospitals. The number of hospital beds per 100,000 people in İzmir is below the national average. In 2021, the number of doctors per 1,000 people in İzmir was 2.76, while Türkiye's average was 2.17 (TURKSTAT, 2023c). The İzmir City Hospital, expected to begin services in 2023, is anticipated to further improve this indicator.

Infant mortality rates in İzmir are lower than the national average. Similar to national trends from 2009 to 2022, the infant mortality rate in İzmir has shown a declining trend, reaching 8.9 per thousand in 2022 (TURKSTAT, 2023c).

4.4. Tourism

İzmir has been a constant attraction throughout history due to its rich geographic and cultural heritage, favorable climate and natural beauty. As of 2023, the city has a total of 278 registered accommodation facilities, with an overall bed capacity of 42,968. İzmir ranks fourth in Türkiye in terms of number of registered facilities, after Antalya, Muğla and İstanbul. There are 28 environmentally sensitive facilities in the region, with 5,453 rooms and 11,349 beds, placing İzmir fourth in Türkiye in terms of environmentally conscious businesses (Ministry of Culture and Tourism, 2023a).

The region's natural and historical areas are protected under both national legislation and international agreements. The ancient city of Pergamon, a significant center of the ancient world, lies within İzmir's borders. The "Pergamon Multi-Layered Cultural Landscape" and "Ephesus World Heritage Site" are listed on the UNESCO World Heritage List, while the "Historic Town of Birgi," "Foça and Çandarlı Castles," and "Historic Port City of İzmir" are on the UNESCO World Heritage Tentative List. Gediz Delta, also known as Bird Paradise, is a significant wetland located in İzmir. Additionally, there are two separate Special Environmental Protection Areas in Foça and Karaburun. İzmir also has two Cultural and Tourism Protection and Development Areas and 17 Tourism Centers declared under the "Law No. 2634 on the Promotion of Tourism" (Ministry of Culture and Tourism, 2023b).

4.5. Transportation

The transportation infrastructure in İzmir consists of ports, railways and highways. As a port city, İzmir has historically been the gateway for Anatolia's trade to the world. Today, 16 ports of İzmir handle 17% of Türkiye's total cargo and 15% of its container cargo (Ministry of Transport and Infrastructure, 2023).

TCDD İzmir Port in Alsancak is the only publicly operated port in the Aegean Region and stands out as the only port that can serve all types of ships and cargo in the region. Private sector ports operate in Nemrut Bay in Aliağa district, contributing significantly to Türkiye's import and export of strategic goods and exhibiting rapid growth.

The efficient and healthy operation of port structures is linked to their transportation networks. Within İzmir's borders, a road network of 1,594 km, including 355 km of highways, 516 km of state roads and 723 km of provincial roads, along with a railway network of 571 km, serves the relevant transportation needs (Ministry of Transport and Infrastructure, 2023). Biçerova Station and Kemalpaşa Logistics Center, which is still under construction, are logistical elements of significance.

Being in proximity to centers with high capacities for agriculture, industrial production and mineral processing such as Manisa, Denizli, Aydın, Muğla, Bursa, Uşak and Kütahya makes İzmir one of Türkiye's significant logistics hubs. In 2022, 1.9 million TEUs were handled in the region, where a total handling capacity of 2.6 million TEUs may be mentioned (İZKA, 2021c). The low capacity utilization indicates insufficient logistics infrastructure in the region.

In terms of air transport, İzmir benefits from its proximity to the European Union countries that possess high capital and technology concentrations. İzmir Adnan Menderes Airport, serving on an area of 204,500 m^2 with a passenger capacity of 30 million, handled nearly 10 million passengers in 2022. As of 2023, Adnan Menderes Airport offers flights to 36 countries, with international connections to 64 foreign airports and domestic flights to 21 airports in Türkiye (State Airports Authority, 2023). The main components of urban transportation include metro, tram and İZBAN rail system lines, as well as 391 bus routes and 9 sea transportation lines (ESHOT, 2022; İZDENİZ, 2023).

4.6. Research & Development and Innovation

It is observed that R&D activities in the İzmir region have increased over the years, although the growth rate has slowed after 2019. Considering that R&D growth rates have slowed also in other regions after 2019, this situation may be attributed to the Covid-19 pandemic.

Between 2008 and 2022, the sectoral diversity of R&D centers in İzmir increased, reaching a total of 40 centers (Ministry of Industry and Technology, 2023). The sectors with the most R&D centers in the region occur to be automotive supply industry, textiles, electronics, computer and communication technologies, software, and machinery and equipment manufacturing.

The number of patents and utility models produced in İzmir as well as patent diversity are also observed to have increased. İzmir region is the third-largest in Türkiye in terms of patent production. The highest number of patents in İzmir are produced in the fields of health, entertainment, physics and transportation (Turkish Patent and Trademark Office, 2023).

Among the top 20 universities in terms of patent and utility model applications, Ege University ranks 14th with 71 patents, and Dokuz Eylül University ranks 19th with 54 patents from İzmir. No other universities from the Aegean Region are among the top 20. In terms of the number of commercialized patents, Ege University ranks second among universities (University-Industry Cooperation Centers Platform, 2021).

İzmir ranked third in Türkiye in 2022 with 5.1 million broadband internet subscribers and 24,620 km of fiber-optic cable length, according to provincial statistics published in line with the digitalizing economy by the Information and Communication Technologies Authority (ICTA, 2023). As a region with strong internet infrastructure and data transmission speed, İzmir enjoys a higher potential for easier transition to innovative technologies such as digital transformation, the internet of things, big data and Industry 4.0.

4.7. Energy

Increasing the use of clean energy sources and providing reliable and low-cost energy in an environmentally sustainable manner in a growing economy constitutes the primary energy policy of our country. Investments and practices in this area are rapidly increasing. İzmir is among the most important regions of Türkiye in terms of clean energy resources. According to the data published by the Ministry of Energy and Natural Resources in September 2022, İzmir is the only province in our country with installed capacity in all four main types of clean energy (wind, solar, biomass and geothermal).

When examining clean energy investments in terms of installed capacity, it becomes evident that wind power plants (WPP) are predominantly established in the Aegean Region due to its high wind potential. Of Türkiye's total installed wind power capacity of 11,102 MW, 3,718 MW (34%) is located in the Aegean Region, and 1,887 MW (17%) is within the borders of İzmir (TÜREB, 2022). İzmir is not only significant in wind energy production but also hosts a substantial cluster for equipment and service production for wind plants.

The wind industry clustered in and around İzmir has positioned Türkiye as the fifth-largest production and distribution hub in Europe. Thanks to its location, İzmir has the capacity to serve wind plants in both the Black Sea and Mediterranean regions. In efforts aiming to enhance İzmir's investment environment, attract local and international investors to the region, and integrate into international supply chains, it has been determined that many wind industry investors have preferred the region, and consequently, a wind industry with employment exceeding 10,000 people and an annual export volume of over $750 million has emerged. The region, with its production infrastructure and sector-specific workforce, also holds the potential to become a hub for the offshore wind industry.

In addition to wind energy, İzmir has high potential in other clean energy subsectors in terms of both energy production, and equipment production and service provision. The region is one of the leading areas in our country in regards with solar power plant installation services. Moreover, the investments decided in 2022 for the production of solar panel cells and inverters in the region have strengthened the sector's technological production capacity in the area.

The geological and tectonic formations densely present in İzmir endow the province with significant geothermal energy potential. The geothermal resources in these areas are used in various fields such as electricity generation, heating, cooling, greenhouse farming, drying and thermal tourism. İzmir's Balçova-Narlıdere Geothermal Field is among the world's best examples in the urban heating sector, while Dikili Geothermal Field stands out as a notable example of geothermal greenhouse farming.

Due to its geographical structure and fertile lands, İzmir is home to intensive agricultural and livestock activities, resulting in large amounts of agricultural waste. The region's high population also leads to substantial domestic waste potential. Utilizing waste for energy production is crucial both for waste management and for leveraging biomass potential. Considering the existing biomass potential, investments aimed at expanding biomass energy production in İzmir need to be increased.

In regards to the decarbonization processes of various sectors, R&D and pilot projects have begun in the field of green hydrogen, one of the most discussed climate technologies in recent years. Aliağa region, in particular, offers significant opportunities for the production and use of green hydrogen.

In addition to producing clean energy and equipment, İzmir specializes in logistics and technical infrastructure for the clean energy sector, given the sensitive logistics operations required for wind industry equipment due to their size and materials, as well as the necessity for specialized tests and quality certifications for their design and materials. The clean energy and clean technologies sector, with its high added value and export potential, its demand for green jobs and high technology, and its multi-stage value chain, is a strategic area of specialization for both İzmir and Türkiye.

4.8. Foreign Trade

Exports and imports, in other words, the volume of foreign trade, are effective variables in analyzing the performance of regions and gaining insights into the economic dynamics of these regions. İzmir, as the center of Western Anatolia and the Aegean Region and Türkiye's third-largest city, has been the focal point of production and trade based on production throughout the ages. İzmir's proximity to the EU region, combined with its transportation infrastructure, allows for the expansion of regional and national production to international markets and an increase in trade volume.

According to TURKSTAT data, İzmir's exports, which amounted to $10 billion in 2013, rose to $17 billion as of the year 2022. İzmir's share of Türkiye's exports in 2022 was observed to be 6.7%. This share corresponds to 61.7% within the Aegean Region. In imports, İzmir's share in Türkiye in 2022 was 3.7%, while in the Aegean Region, this share was 65.5%. When examining import values, it is seen that İzmir's imports, totaling $11.8 billion in 2013, rose to $13.6 billion as of the year 2022. However, İzmir's share in Türkiye's imports decreased from 4.5% in 2013 to 3.75% in 2022 (TURKSTAT, 2023c).

The export-to-import ratio (exports/imports) in the İzmir region is on a rising trend. Between 2013 and 2021, the ratio of exports to imports in terms of total value produced turned from negative to positive. The manufacturing, agriculture, forestry, and fishing sectors have contributed significantly to this development and transformation. The diversity of İzmir's exports makes the region more resilient to global crises.

4.9. Income and Sectoral Distribution

According to TURKSTAT data, İzmir's Gross Domestic Product (GDP) in 2021 was recorded at TRY 123.899 billion (at 2009 constant prices). Compared to the previous year, this represents an approximately 14.1% growth, significantly higher than the 2.2% growth rate achieved in the previous year. This growth rate is also above the 11.4% growth of Türkiye and the 12% growth achieved by the Aegean Region.

When the GDP is broken down by economic activities, it is seen that the services sector took the largest share in İzmir in 2021, accounting for 53.7%. This ratio is higher than the services sector's share of Türkiye's GDP at 52.7%. The industrial sector follows with 30.5%, while agriculture ranks last with a share of 4.1%. It is observed that, while the share of the industrial sector in GDP is increasing, the services and agriculture sectors are in decline (TURKSTAT, 2023c).

İzmir consists of regions that show significant differences in terms of sectoral dominance. Despite these regional differences, according to the Situation Analysis (İZKA, 2023a), the number of dominant sectors in İzmir increased to 12 in 2021, showing that İzmir's economy has diversified, strengthened and become more resilient over the past 10 years, despite the crises.

4.10. Employment

According to TURKSTAT data, the workforce participation rate in İzmir was 54.4% as of 2022. This rate is higher than the national average of 53.1%. The number of employed persons in İzmir increased from 1.5 million in 2014 to 1.7 million as of 2022. Along with this increase in the number of employed persons, the employment rate also rose from 46.1% in 2014 to 47.3% in 2022. The unemployment rate in İzmir, at 13%, is above the national average of 10.4%.

More than half of İzmir's employment is provided by the services sector. The share of the services sector in İzmir's employment was 60.2% in 2022, still lower compared to İstanbul (68%) and Ankara (71.4%). The industrial sector ranks second in İzmir, with a share of 32.5% in employment. Contrary to the trend in the services sector, this rate is higher than that of İstanbul (31.5%) and Ankara (24.4%). The share of the agricultural sector in İzmir's employment is below the national average. Only one in every 38 agricultural employments in Türkiye is located in İzmir (TURKSTAT, 2023c).

4.11. Competitiveness and Investment Environment

In global economies, metropolises, where economic components such as population, capital and labor accumulate and concentrate, are defined as attraction points for economic activities that increase the wealth of nations and enhance their competitiveness with other countries. The functions that metropolitan areas like İzmir can undertake in wealth creation also increase their importance in national development processes.

An examination of the OECD Regional Explorer data for 461 metropolitan regions in 2020 reveals that İzmir ranks 219th in terms of GDP per capita among 461 metropolitan regions. According to the growth index data published by the same database, İzmir became the 45th region with the highest growth in per capita GDP (in dollars) with a 142% increase. In terms of population, İzmir ranks 78th among these 461 regions (OECD, 2022b).

With the advantages of its geographical location and status as a port city, enabling its diverse economic activities and its qualified workforce, and fertile agricultural lands, temperate climate, proximity to transportation networks, cultural diversity, rich history, and potential to attract and retain a skilled workforce, İzmir is recognized as one of the most livable and investable metropolitan areas globally.

Foreign Direct Investment (FDI) Intelligence identifies İzmir as one of Europe's cities and regions of the future in terms of investments. In the FDI Intelligence report "European Cities and Regions of the Future 2022/23," İzmir ranked among the top 10 large cities and regions in Europe in the categories of "business-friendliness" and "cost-effectiveness." İzmir's foreign direct investment strategy, focusing on clean energy-clean technologies and software-information technology sectors, also placed İzmir among the top 10 large cities with the best "foreign direct investment strategy."

According to the "Socio-Economic Development Ranking of Provinces and Regions Survey (SEGE)" published by the Ministry of Industry and Technology in 2017, İzmir ranks third in Türkiye with a score of 1.926. According to the SEGE 2017 report, prepared using 52 variables under the headings of demographics, education, health, employment, competitive and innovative variables, financial variables, accessibility, and quality of life, İstanbul ranks first with a score of 4.051, followed by Ankara with a score of 2.718 (DGDA, 2017).

International Competitiveness Research Institute (URAK)'s 2018 City Competitiveness Index study ranked İzmir as the third most competitive province in Türkiye, in parallel with its population and socio-economic development status. In terms of sub-indexes, İzmir ranks fifth (44.75) in the human capital and quality of life sub-index, third (24.65) in the innovation sub-index, fourth (37.92) in the production and trade sub-index, and fifth (30.42) in the livability sub-index (URAK, 2018).

In line with the İzmir Situation Analysis (İZKA, 2023), prepared as part of the *2024-2028 İzmir Regional Plan* studies, comprehensive analyses of İzmir were carried out, and on the basis of which the basic economic and social indicators obtained are presented below in a comparative manner with Türkiye and the Aegean Region (Table 4).

TABLE 4. Key Indicators at the Level of Türkiye, Aegean Region and İzmir

INDICATOR	Türkiye	Aegean Region	İzmir
GEOGRAPHY AND DEMOGRAPHICS			
Surface Area (Excluding Lakes) (km²)	783,562	89,997	12,012
Population (2022 ABPRS)	85,279,553	10,886,803	4,462,056
Annual Average Population Growth Rate (2021-2022) (‰)	7.05	9.43	8.16
Population Density (2022) (person/km²)	111	122	371

INDICATOR	Türkiye	Aegean Region	İzmir
INCOME			
GDP Per Capita (2021) (USD)	9,592	9,575	11,668
Gross Domestic Product (Constant Prices, 2009 Base) (2021) (Billion TL)	2,009	252	124
Gross Value Added (2021) (Billion TL)	6,481	825	413
Industrial Sector Gross Domestic Product (Constant Prices, 2009 Base) (2021) (Billion TL)	524	77	38
Share of Industrial Sector in GDP (2021) (%)	26.1	30.7	30.5
Agricultural Sector Gross Domestic Product (Constant Prices, 2009 Base) (2021) (Billion TL)	115	21	5
Share of Agricultural Sector in GDP (2021) (%)	5.7	8.3	4.1
Services Sector Gross Domestic Product (Constant Prices, 2009 Base) (2021) (Billion TL)	1,059	125	67
Share of Services Sector in GDP (2021) (%)	52.7	49.6	53.7
EDUCATION			
Literacy Rate (2022) (%)	97.6	98.6	98.8
Net Schooling Rate in Primary Education (2021) (%)	94.3	94.5	94.7
Net Schooling Rate in Secondary Education (2021) (%)	89.7	91.6	92.1
Net Schooling Rate in Preschool (3-5 years) (2021) (%)	44.1	49.3	47.4
Higher Education Graduates Rate (2022) (%)	18.9	19.3	22.2
Higher Education Graduates Rate (2022) Male (%)	19.73	19.89	22.39
Higher Education Graduates Rate (2022) Female (%)	18.13	18.80	22.03
EMPLOYMENT (ages 15+)			
Workforce Participation Rate (2022) (%)	53.1	54.4	54.4
Employment Rate (2022) (%)	47.5	49.0	47.3
Unemployment Rate (2022) (%)	10.4	10.1	13.0
Share of Agriculture in Total Employment (2022) (%)	15.8	18.1	7.34
Share of Industry in Total Employment (2022) (%)	27.7	28.9	32.5
Share of Services in Total Employment (2022) (%)	56.5	53.0	60.2
SOCIAL SECURITY			
Rate of Population with Social Security (April 2023) (%)	87.5	92.0	92.2
Active Persons with Social Security / Population (April 2023) (%)	29.25	30.79	32.29
Passive Persons with Social Security / Population (April 2023) (%)	15.77	21.31	22.45
HEALTHCARE			
Number of Hospitals (2021)	1,547	203	63
Number of Beds per 100,000 People (2021)	301	293	279
Total Number of Doctors per 1,000 People (2021)	2.17	2.25	2.76

INDICATOR	Türkiye	Aegean Region	İzmir
INDUSTRY SECTOR			
Number of Enterprises by Business Records: Total (2021)	4,384,672	640,661	263,875
Number of Enterprises by Business Records: Wholesale and Retail Trade (2021)	1,480,339	217,968	88,751
Number of Enterprises by Business Records: Manufacturing (2021)	493,909	71,526	30,653
Number of Enterprises by Business Records: Agriculture, Forestry, and Fishing (2021)	39,983	6,557	1,745
AGRICULTURE SECTOR			
Agricultural Land/Total Land (2022) (%)	30.0	31.1	26.8
Value of Crop Production (2021) (Billion TL)	306,4	42,8	9,6
Value of Animal Production (2020) (Billion TL)	108,6	9,5	2,8
TOURISM SECTOR			
Number of Accommodation Facilities with Tourism Operation Licenses (June 2023)	4,969	961	278
Bed Capacity of Facilities with Tourism Operation Licenses (June 2023)	1,100,139	205,071	42,968
Number of Environmentally Friendly Facilities (June 2023)	438	84	28
Bed Capacity of Environmentally Friendly Facilities (June 2023)	285,256	41,458	11,119
FOREIGN TRADE			
Foreign Trade Volume (2022) (Million USD)	617,881	48,361	30,637
Foreign Trade Balance (2022) (Million USD)	-109,539	+6,761	+3,387
Exports (2022) (Million USD)	254,171	27,561	17,012
Exports per Capita (2022) (USD)	2,980	2,532	3,813
Share of Exports in Türkiye (2022) (%)	100	10.8	6.7
Imports (2022) (Million USD)	363,710	20,800	13,625
Share of Imports in Türkiye (2022) (%)	100	5.7	3.7
Imports per Capita (2022) (USD)	4,265	1,911	3,053
Export to Import Coverage Ratio (2022) (%)	69.9	132.5	124.9
ENVIRONMENT			
Average Daily Municipal Waste per Capita (kg/person-day) (2020)	1.1	1.3	1.5
Daily Water Consumption per Capita in Municipalities (liter/person-day) (2020)	228	228	221
Daily Wastewater per Capita in Municipalities (liter/person-day) (2020)	189	166	174
Installed Capacity of Wind Energy (MW) (2021)	11,102	3,718	1,887
Greenhouse Gas Emissions per Capita (tons CO2) (2018)	4.8	-	6.6
INNOVATION			
Patent Applications per 10,000 People (2022)	1.06	0.80	1.01
Utility Model Applications per 10,000 People (2022)	0.65	0.70	0.80
Number of Trademark Registrations per 10,000 People (2022)	16.42	15.06	20.32
R&D Expenditure (2021) (Million TL)	81,922	6,234	3,521
Share of R&D Workforce in Türkiye (2021) (%)	100	10.5	6

Bayraklı

5. Vision, Strategic Priorities, Objectives and Measures

The vision of the *2024-2028 İzmir Regional Plan* has been determined as **"A Resilient and Vibrant Port City Leading Green Transformation and Blue Growth."** Three main strategic priorities, along with their underlying objectives, measures, programs and projects, shall help achieve this vision.

1

Ensuring the Green Transformation of Existing Economic Activities in İzmir

2

Leveraging the Potential of the Blue Economy

3

Enhancing Social Resilience on the Basis of Sustainability

İzmir Free Zone, Menemen, Anadolu Agency

5.1.
Strategic Priority 1:
Ensuring the Green Transformation of Existing Economic Activities in İzmir

With its multi-dimensional and multi-sectoral economic structure, İzmir holds significant potential in key sectors such as industry, agriculture, tourism and services. Within İzmir's existing economic activities, sectors that rely on natural resource use and agricultural production are predominant. There are serious environmental, social and economic risks that require immediate action to ensure the continuity of economic activities in İzmir. Rapidly growing polluting industries and agricultural activities in the region have brought natural resources to the brink of their self-renewal capacity.

Water scarcity has become a significant problem in recent years for İzmir, which, being at the intersection of Gediz, Küçük Menderes and Büyük Menderes basins, is a production hub for agriculture and livestock. According to the General Directorate of State Hydraulic Works (DSİ), İzmir's annual water potential is 4,508 hm^3. With an annual usable water potential of 639 m^3 per capita, İzmir is one of Türkiye's "water-poor" regions. In terms of sectoral water usage, the agriculture sector ranks first with 70%, followed by industrial water usage at 20%, and urban water usage at 10%. The water scarcity caused by unconscious and excessive use in agriculture and industry is expected to worsen in the coming period due to the effects of climate change, reducing current agricultural and industrial production (İZKA, 2022a).

Dependence on foreign raw materials is another risk factor for current production activities. Sectors where input costs rise due to increases in foreign exchange rates and oil prices face serious difficulties in accessing raw materials. On the other hand, İzmir, one of Türkiye's leading provinces in waste production, generates 700,000 tons of waste annually, but these wastes cannot be integrated into the economy due to insufficient waste management practices that separate, collect and recover waste at its source. In İzmir, where recycling rates remain around 10%, developing a value-added recycling infrastructure shall ensure that the necessary quality and quantity of sustainable raw materials required by sectors such as plastics, paper, glass, textiles and metals are sourced domestically (İZKA, 2022a).

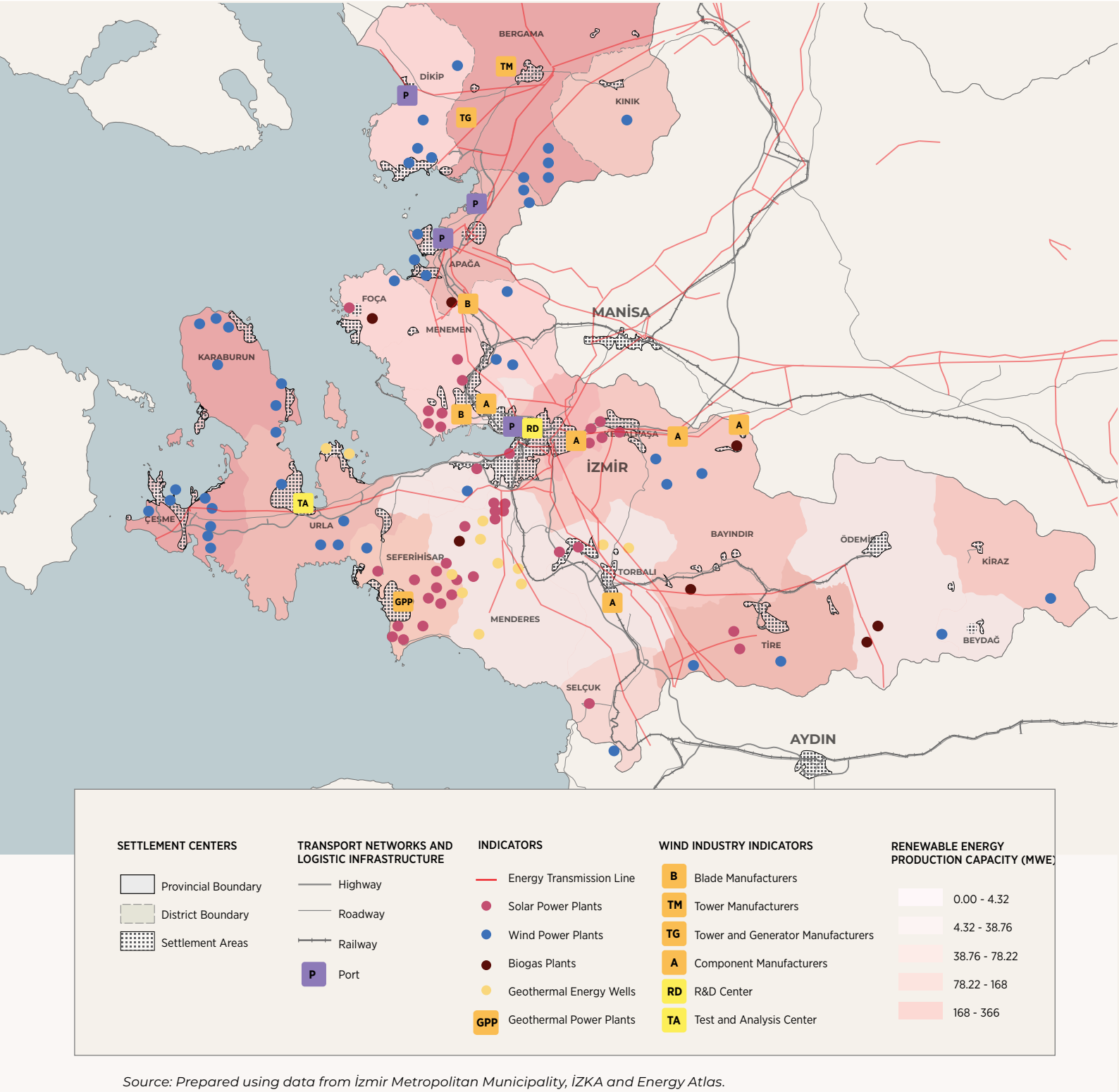
The potential İzmir enjoys in regards to clean energy presents a significant opportunity to mitigate existing economic risks. While 4% of Türkiye's installed solar energy capacity (SPP) and 17% of its installed wind energy capacity (WPP) are located in İzmir, the region is also rich in biomass due to its livestock activities and in geothermal energy resources due to its geological structure (İZKA, 2022a).

Green transformation is an important tool to reduce the risks posed by the current economic system and to leverage İzmir's opportunities. Green transformation refers to the transition to a green economic system where natural resources are conserved, resources are used efficiently, and the economy develops around clean energy and technologies. This approach aims not only to transform the existing economic structure to protect natural resources but also to ensure economic growth through advancing environmental technologies and green investments (OECD, 2011). Transitioning to the green growth model, first proposed by the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) in 2005 for developing Asian countries, is now part of the development policies of many countries. International organizations such as the World Bank (WB) and the Organisation for Economic Co-operation and Development (OECD) are making significant efforts to accelerate countries' transitions to green growth, publishing conceptual frameworks and strategy documents to guide them.

On the other hand, in recent years, the agenda and developments regarding climate change, sustainable and inclusive development, and increasing resilience, along with national policies and commitments, have provided significant support and driving force for the green transformation. The ratification of the Paris Agreement, which forms the framework of the climate change regime, places significant responsibilities on Türkiye in terms of limiting carbon emissions. Similarly, the European

Union, its member states, and all other countries with commercial and economic relations with these states are working to implement the "Green Deal," which mandates the transformation of trade and production systems to become "carbon neutral." The "Green Deal" particularly includes standards for efficient use of resources in export products, reduction of waste emissions, labeling systems, and the establishment of taxes and non-tariff barriers. With this system, which shall be implemented to effectively price carbon throughout the economy, it will become mandatory in the upcoming period for resource and energy-consuming polluting sectors to meet the specified standards; otherwise, losses in foreign trade revenues may occur.

MAP 1. Energy Sources and Wind Industry in İzmir



Source: Prepared using data from İzmir Metropolitan Municipality, İZKA and Energy Atlas.

Development Plan, is also sensitive in regards to this issue, prioritizing digitalization and green transformation in adapting to global competitive conditions. In this context, the objective of "Competitive Production with Green and Digital Transformation" focuses on achieving resource efficiency, primarily in energy, manufacturing, transportation and agriculture sectors, in harmony with the 2053 net-zero emission targets, and the policies to be implemented aim at transitioning to a production structure that is circular, export-oriented, technology-intensive, and high in value-added.

With its natural resources at the brink of their renewal capacity, sensitive ecosystems in need of protection, rapidly growing polluting industries, and being one of the most important agricultural production centers in the country, İzmir is in a strategic and advantageous position to initiate the green transformation, thanks to its existing social and institutional capacity and the opportunities it holds in the clean energy sector.

The Green Transformation and Blue Opportunities Perspective in İzmir identifies the economic, environmental and social gains that green transformation offers for İzmir, as well as the transformation objectives, the areas where the impact of the transformation will be most visible, the priority interventions, and the focus areas. The macro-analyses conducted within the framework of a methodology differentiated according to local needs and opportunities, in line with national and international green transformation plans, reveal that significant economic, environmental and social gains can be achieved in the next decade with the green transformation. The gains calculated through scenarios in the areas of waste, water and energy transformation are observed to hold a significant share within the İzmir economy. According to the transformation scenarios, a minimum net economic gain of 20.9 billion USD is possible for the next ten years, which corresponds to 48% of İzmir's 2020 gross domestic product. In the optimistic scenario, the net economic gain for the same period is projected to reach a total of 35.1 billion USD, amounting to 73% of İzmir's 2020 gross domestic product (İZKA, 2022a).

At the core of İzmir's green transformation lies the efficient use of resources, effective waste management, overcoming resource constraints, and ensuring the continuity of economic activities through the protection, enhancement and increased value of natural resources. For İzmir, the green transformation process also includes the opportunities brought about by the emergence of new growth areas such as green sectors and clean technologies, alongside structural changes. In this context, it is expected that with the transformation, new investments with high environmental performance will increase, clean production and energy efficiency practices will become more widespread, the share of clean energy use will rise, and new sectors and technologies will develop.

In light of this information, four objectives are identified under the strategic priority of "Ensuring the Green Transformation of Existing Economic Activities in İzmir":

- The transition to a green production model in the industrial and agricultural sectors shall be achieved by ensuring widespread use of resource efficiency practices.
- Pollution and overuse of natural resources shall be prevented, ensuring the improvement of resources.
- The technical infrastructure, as well as the administrative and social capacity to support green transformation shall be developed.
- The share of clean energy production shall be increased, and its use shall be expanded.

Objective 1.1: The transition to a green production model in the industrial and agricultural sectors shall be achieved by ensuring widespread use of resource efficiency practices.

One of the main components of the green transformation of existing economic activities is ensuring the efficient use of resources in production and consumption, thus preventing pressure on natural resources.

Resource efficiency is an approach that involves creating more value through the more efficient use of limited and depletable resources like raw materials, energy and water, and reducing the environmental impacts that arise from production processes, and is regarded as an essential tool in realizing green transformation. Resource efficiency practices take a holistic view of all production processes, aiming to reduce resource consumption and waste production, and to promote clean and circular production methods that minimize environmental impacts. In this context, promoting resource efficiency practices is crucial for the transformation of industrial and agricultural production, as these practices yield short-term results, are practically accessible and are measurable.

In İzmir, one of the leading factors increasing energy

and water consumption and causing raw material loss in both agriculture and industry is the use of low-tech production processes. Therefore, replacing old and inefficient technologies with new ones and digitizing production processes will ensure the efficient use of resources and increase efficiency throughout the entire value chain.

Efficient resource use alone is not sufficient to eliminate risks concerning access to resources and the continuity of production in agriculture and industry. Creating alternative resources and promoting their use is necessary for improving, enhancing and protecting natural resources. In this regard, investments aimed at creating alternative water resources through advanced wastewater treatment systems, rainwater harvesting and efficient methods for desalinating seawater are becoming prominent.

Value-added recycling is one of the most significant tools for reintegrating raw materials into the production cycle. This facilitates continuous and inexpensive access to raw materials for sectors dependent on foreign raw materials, ensuring the continuity of production. Moreover, the use of recovered raw materials significantly reduces costs such as energy and water consumption, transportation and others during production processes. One of the tools that serve the promotion of alternative raw material use is the establishment and widespread adoption of industrial symbiosis collaborations, in which businesses share their idle resources.

Thanks to its multi-sectoral production structure, İzmir has the potential for establishing industrial symbiosis collaborations among businesses. Over the last five years, significant technical and administrative capacity has been developed in the region for industrial symbiosis through studies conducted with the involvement of relevant stakeholders. Interest and demand for industrial symbiosis practices have been growing, through which businesses share resources such as by-products, energy, logistics and especially wastes. Particularly within the scope of the "Green Deal," businesses are shifting towards secondary raw material procurement to reduce carbon emissions resulting from raw material supply, and are forming partnerships with other businesses in this regard. At this point, the establishment of a unique administrative structure for İzmir could support systematic and long-lasting collaborations among businesses.

In addition to efficiency practices in production processes, ensuring resource efficiency also requires reducing waste production by keeping products or materials within the consumption cycle for a longer period. Circular processes that increase product lifespan and usage efficiency should therefore be designed to reduce waste production.

One of the most critical risks that environmental degradation will pose in the future is the restriction of access to safe food. Establishing sustainable food systems is essential for reducing risks. In İzmir, organic waste holds the largest share within the total waste produced, indicating significant losses and waste in the food value chain. Therefore, systems aimed at reducing food waste should be established, and interventions ensuring access to safe and sufficient food for all segments of society should be implemented.

In light of this information, the following measures and projects are proposed for implementation within the scope of the objective "The transition to a green production model in the industrial and agricultural sectors shall be achieved by promoting resource efficiency practices."

Measure 1: *Efficiency in the use of energy, water, and raw materials shall be increased.*

Measure 2: *Practices aimed at increasing the use of secondary and alternative resources in industry and agriculture shall be supported.*

Measure 3: *Through circular processes developed in production and consumption, product lifespan and usage efficiency shall be enhanced, and the amount of waste produced shall be reduced.*

Measure 4: *Food losses shall be reduced, and food security shall be strengthened by establishing sustainable food systems.*

Project 1: *İzmir Resource Efficiency Center Project*

Project 2: *Agricultural Waste Cellulose Production Facility Project*

Project 3: *Furniture Waste Reuse and Recycling Center Project*

Project 4: *High Economic Value Industrial Dairy Products Production Facility Project*

Measure 1.1.1: Efficiency in the use of energy, water and raw materials shall be increased.

The transition to new techniques and technologies to achieve energy efficiency in energy-intensive sectors such as paper, plastics, and fruit and vegetable processing/storage in İzmir shall be supported. The districts where these sectors are spatially concentrated shall be prioritized in the support programs to be implemented. In this context, Kemalpaşa and Bornova for the paper sector; Menemen, Kemalpaşa and Torbalı for the plastic sector; and Kemalpaşa and Torbalı for the fruit and vegetable processing/storage sector have been identified as the priority areas for intervention. Priority intervention goals have been determined as preventing energy losses and leakages, reusing waste heat as an energy source, replacing motors and production equipment with energy-efficient ones, and establishing automation systems.

Interventions to ensure water efficiency for the agricultural and manufacturing sectors are planned under this measure. Production techniques and technologies aimed at reducing water consumption, preventing losses and leakages, and enabling water recovery in water-intensive sectors such as milk and dairy products, material recovery, and vegetable oil production shall be supported. The priority areas for intervention are identified as milk and dairy products in Bornova, Menemen and Küçük Menderes Basin; material recovery in Bornova and Torbalı; and vegetable oil production in Küçük Menderes Basin, Aliağa and Çiğli.

The transition to technologies that ensure water efficiency and controlled consumption of water resources in the agricultural sector shall be accelerated. During the plan period, the installation and use of underground/above-ground drip irrigation, smart irrigation and metering systems shall be supported in forage crop production within Küçük Menderes Basin and in cotton production within Menemen and Bergama districts. Additionally, the use of agricultural information platforms that will enable transition to environmentally friendly production based on image processing techniques, meteorological data and regional conditions shall be promoted.

Towards the aim of ensuring raw material efficiency, technologies that reduce raw material losses in current production processes, along with practices such as lean production and clean production, shall be supported. In this regard, the priority areas for intervention are Kemalpaşa for the paper sector, Kemalpaşa and Torbalı for the fruit and vegetable processing/storage sector, and Bornova and Torbalı for the material recovery sector.

Measure
Efficiency in the use of energy, water, and raw materials shall be increased.
Responsible Entities
State Hydraulic Works (DSİ) 2nd Regional Directorate Aegean Region Chamber of Industry Cooperatives OIZ administrations Free Zone administrations Irrigation unions Provincial Directorate of Agriculture and Forestry Agricultural research and application institutes
Associated Entities
Environmental consultancy companies Ministry of Energy and Natural Resources Energy consultancy companies İzmir Development Agency Ministry of Industry and Technology Sectoral associations Ministry of Agriculture and Forestry Technology producer companies

Measure 1.1.2: Practices aimed at increasing the use of secondary and alternative resources in industry and agriculture shall be supported.

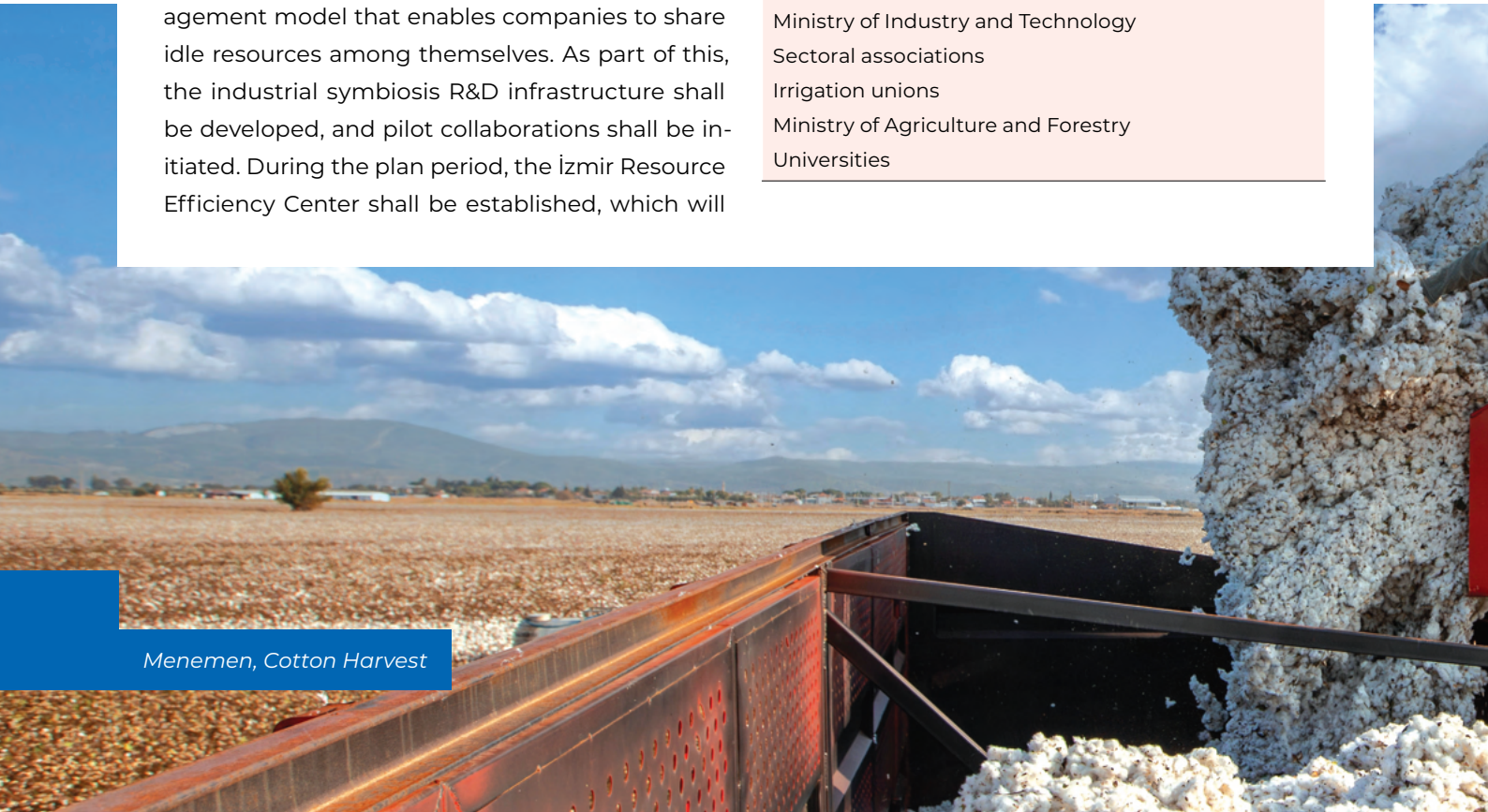
Advanced treatment systems that enable the reuse of wastewater in appropriate production processes shall be promoted, particularly in the manufacturing sectors of vegetable oil production, dairy/dairy products, and textile products that consume large amounts of water. Küçük Menderes Basin, Aliağa and Çiğli districts shall be prioritized intervention areas for vegetable oil production, while Küçük Menderes Basin, Bornova and Menemen districts shall be the prioritized areas for milk and dairy product production. In addition, advanced wastewater treatment and water recovery infrastructure shall be strengthened within domestic wastewater treatment plants.

The need for water supplied from surface/groundwater sources shall be reduced by expanding the use of rainwater harvesting practices. During the plan period, the use of rainwater harvesting and storage systems in public buildings and enterprises operating in high water consumption sectors, particularly bovine livestock enterprises in Küçük Menderes Basin, shall be supported, and establishment of the necessary infrastructure shall be supported.

To increase the use of alternative raw materials, İzmir shall implement a unique industrial symbiosis management model that enables companies to share idle resources among themselves. As part of this, the industrial symbiosis R&D infrastructure shall be developed, and pilot collaborations shall be initiated. During the plan period, the İzmir Resource Efficiency Center shall be established, which will institutionalize the management of industrial symbiosis applications and provide regional-scale services to enterprises in areas such as digital transformation and resource efficiency. Detailed information on the İzmir Resource Efficiency Center Project, designed to include these actions, is provided in the annex to the plan.

In addition, certification practices such as green purchasing, green tariffs and green labels shall be promoted to increase the use of recycled, recyclable and secondary raw materials by businesses.

Measure
Applications to increase the use of secondary and alternative resources in industry and agriculture shall be supported.
Responsible Entities
Provincial Directorate of Environment, Urbanization and Climate Change Aegean Region Chamber of Industry District Municipalities İzmir Metropolitan Municipality İzmir Development Agency İZSU General Directorate OIZ administrations Free Zone administrations
Associated Entities
Ministry of Environment, Urbanization and Climate Change Cooperatives Ministry of Industry and Technology Sectoral associations Irrigation unions Ministry of Agriculture and Forestry Universities



Menemen, Cotton Harvest

Measure 1.1.3: Through circular processes in production and consumption, product lifespan and usage efficiency shall be enhanced, and the amount of waste produced shall be reduced.

To develop circular processes that will reduce waste production, İzmir's current material and waste flow analyses shall first be conducted, and need and impact analyses for sectors shall be prepared according to the prominent waste and material flow groups.

Additionally, the development of circular product designs that incorporate criteria such as durability, reparability, upgradability, reusability, ease of disassembly and recyclability shall be supported, and the use of these designs in production shall be encouraged.

To extend product lifespan, the development of collection, donation, exchange, repair and shared-use infrastructure for product reuse shall be supported. At the district level, particularly for bulky waste such as furniture, household appliances and electronic devices, "reuse networks" providing internet-based collection, refurbishment and donation services to those in need shall be developed, and repair and maintenance centers shall be established. Furthermore, the widespread adoption of the "product as a service" business model, where producers retain ownership of products and are responsible for them throughout their lifecycle, shall be promoted.

To reduce waste production, the use of biodegradable packaging in production, the adoption of simple packaging instead of multiple packaging for eliminating unnecessary packaging and the development of sales models offering consumers the option to purchase products without packaging in a manner that ensures product safety, shall be encouraged.

Measure
Product lifespan and usage efficiency shall be increased, and waste production shall be reduced through circular processes developed in production and consumption.
Responsible Entities
Aegean Region Chamber of Industry District Municipalities İZDOĞA A.S. İzmir Metropolitan Municipality
Associated Entities
Recycling companies İzmir Development Agency Sectoral associations Türkiye Environment Agency Universities

Measure 1.1.4: Food losses shall be reduced, and food security shall be strengthened by establishing sustainable food systems.

In Küçük Menderes Basin where there is a concentration of agricultural production activities, water and soil pollution shall be reduced, and product efficiency and food security shall be increased through the widespread adoption of good agricultural and smart agricultural practices. Accordingly, pilot production areas shall be established in cooperation with producer organizations, allowing farmers to experience the benefits of traditional agriculture, smart agriculture and good agricultural practices in terms of efficiency and resource consumption.

Practices aimed at reducing food loss during and after harvest, be it in transportation, storage or access to markets, shall be expanded, particularly for fruit/vegetable products where food loss is highest. In this context, digitalization of the agri-food supply chain shall be promoted, particularly among businesses operating in the processing/storage sector of fruits and vegetables in Kemalpaşa and Torbalı districts, to detect the amounts and stages of losses, and the use of techniques and technologies to reduce food losses during production shall be promoted. Contract farming shall be promoted to balance the supply-demand of agricultural products and reduce food loss caused by overproduction. In addition, applications that facilitate the direct delivery of products to end consumers by shortening the food supply chain, such as community-supported agriculture models and platforms that bring producers and consumers together in a relationship of trust, shall be developed.

Urban farming practices shall be supported to increase supply of food and reduce loss of food in the food logistics chain. Thus, the dependence of urban centers on rural areas will be reduced, making them more resilient in the face of crises. In this context, agricultural practices such as urban gardens and rooftop farming using both open and closed spaces and soil-based and soilless production models shall be implemented and encouraged. Circular production shall be supported in such practices by utilizing waste heat, compost from organic waste, and water recovered from advanced treatment.

Measure
Food losses shall be reduced, and food security shall be strengthened by establishing sustainable food systems.
Responsible Entities
District Municipalities İzmir Metropolitan Municipality Cooperatives Provincial Directorate of Agriculture and Forestry Agricultural research and application institutes
Associated Entities
Sectoral associations Ministry of Agriculture and Forestry Universities

Project 1.1.1: İzmir Resource Efficiency Center Project

The project aims to establish a Resource Efficiency Center that will enhance the region's current capacity in the fields of resource efficiency, clean production, industrial symbiosis, and digital transformation, and will provide technical support, consultancy, training and R&D infrastructure support to develop and expand sustainable production practices in all sectors, especially industry and agriculture. Detailed information regarding the project is available in the "Appendices" section.

Project 1.1.2: Agricultural Waste Cellulose Production Facility Project

Cellulose is the largest cost component in the paper industry, and Türkiye's paper sector largely relies on imported substitute products. The project aims to establish a production facility for recycling agricultural production waste containing various amounts of cellulose. Detailed information regarding the project is available in the "Appendices" section.

Project 1.1.3: Furniture Waste Reuse and Recycling Center Project

The project aims to establish a center that shall collect furniture waste, refurbish it, make it available to users, and convert unusable parts and industrial waste into alternative raw materials. Detailed information regarding the project is available in the "Appendices" section.

Project 1.1.4: High Economic Value Industrial Dairy Products Production Facility Project

This project aims to establish a facility for producing high-value-added bioactive dairy products, utilizing the significant raw milk production capacity of Küçük Menderes Basin. Detailed information regarding the project is available in the "Appendices" section.

Objective 1.2: Pollution and overuse of natural resources shall be prevented, ensuring the improvement of resources.

In İzmir, which hosts intensive agricultural and industrial production activities, preventing the difficult-to-repair damage caused by overuse and pollution of natural resources should be prioritized in order to improve resource quality and transform existing economic activities.

In this context, water resources are critical for İzmir's current economic activities, but their availability in agriculture and industry is decreasing due to uncontrolled use and pollution. Additionally, future climate scenarios indicating medium-to-high levels of drought predict a further reduction in this potential.

The current crop pattern in İzmir involves agricultural products with high amount of water demand. In Küçük Menderes Basin, silage corn has become widespread as feed for bovine livestock farming. In Gediz Basin, cotton production is preferred by farmers for its economic returns. In recent years, water scarcity has driven cotton producers in Gediz Basin to shift toward silage corn production. Both crops, due to their high water and/or agricultural chemical needs, are rapidly depleting and polluting water resources. Despite any measures to be implemented, this agricultural pattern is not sustainable in the medium to long term. Therefore, region-specific crop pattern planning, taking into account factors such as water potential, climate conditions and soil structure, will reduce water demand in agricultural production and ensure sustainable use of water resources.

In plant production, the extensive use of agricultural chemicals in traditional spraying activities contributes to the pollution of water and soil resources. In İzmir, most bovine livestock farms are small enterprises with fewer than 50 cattle and lack proper animal waste storage facilities. These improperly managed animal wastes are another significant source of pollution. To reduce the pressure that agricultural production activities exert on natural resources, priority must be given to addressing the use of agricultural chemicals and livestock waste.

Failure to properly dispose waste from industrial production is another factor contributing to the pollution of natural resources. Replacing the outdated technologies currently used in production processes with new technologies that minimize environmental impact provides significant gains in protecting natural resources.

Many wildlife protection areas, protected wetlands, water basins and forest areas in İzmir host rare or endangered species. The degradation of natural resources threatens these areas and the biodiversity they contain. Preventing the pollution that threatens these habitats and rehabilitating damaged areas is crucial to preserving and enriching the biodiversity in natural habitats.

In light of this information, the following measures and project are proposed within the objective of "Pollution and overuse of natural resources shall be prevented, ensuring the improvement of resources.

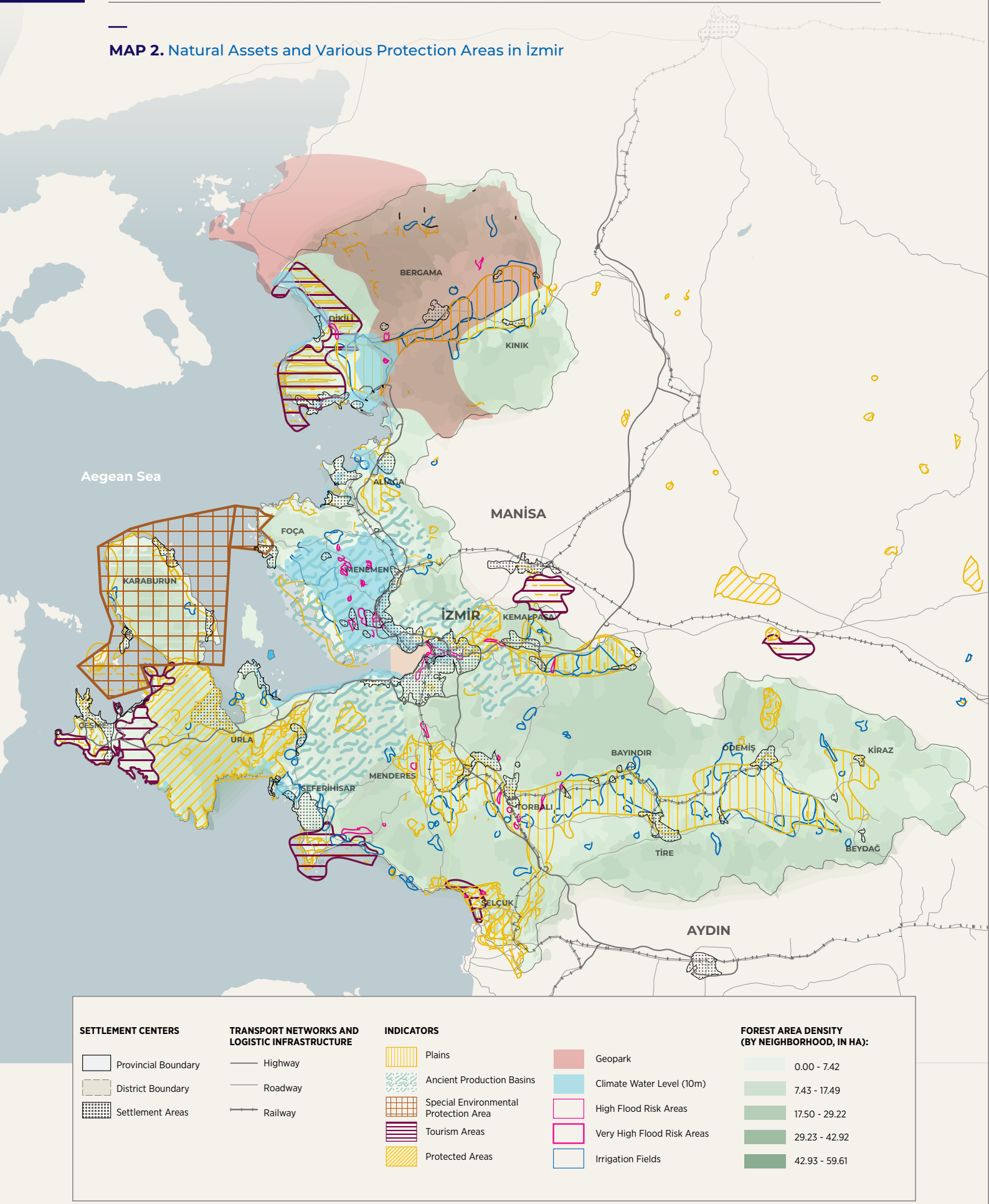
Measure 1: *The pollution load from industrial and agricultural production shall be reduced..*

Measure 2: *Transition to a crop pattern that reduces irrigation water needs in Küçük Menderes, Gediz and Bakırçay basins shall be planned.*

Measure 3: *Practices aimed at improving natural wetlands, lagoons, natural forests, and afforestation areas shall be supported.*

Proje 1: *Sustainable Aviation Fuel (SAF) Production Waste Oils Preprocessing Facility Project"*

MAP 2. Natural Assets and Various Protection Areas in İzmir



Source: Prepared using data from İzmir Metropolitan Municipality, İZKA and Energy Atlas..

Measure 1.2.1: The pollution load from industrial and agricultural production shall be reduced.

Clean production assessments shall be conducted on industrial production, prioritizing the milk and dairy products, leather, olive oil, and chemical sectors, which have high pollution potential, and on-site application training and investments aimed at clean production and pollution prevention in accordance with the best available techniques shall be supported. Life cycle analysis studies shall be expanded at the sectoral and enterprise levels to identify the environmental impacts of products and services at all stages of the value chain, and programs shall be implemented to raise awareness and develop technical capacity in enterprises. Additionally, awareness of developments in the use of harmful chemicals in production and compliance efforts with international developments shall be enhanced for both industrialists and agricultural producers.

The use of unmanned aerial vehicles in spraying activities in İzmir shall be supported, particularly for cotton production in Bergama and Menemen districts and for the production of forage crops in Küçük Menderes Basin, reducing the amount of pesticides used in agricultural production. Furthermore, the use of biological and biotechnical control methods to reduce pesticide usage shall be expanded.

In order to reduce nitrogen and phosphorus pollution caused by bovine livestock farming activities, investments shall be encouraged for the establishment of specialized production facilities, where businesses with 50 or fewer bovine animals in Küçük Menderes Basin will gather, and for the development of infrastructure for bioenergy/compost production.

Remote sensing, sensors, GIS, and other technology-based models will be designed and tools shall be developed to identify areas contaminated by industrial and agricultural pollutants, monitor existing pollution loads and sources, and guide the development of solution oriented measures.

Measure
The pollution load from industrial and agricultural production shall be reduced.
Responsible Entities
Provincial Directorate of Environment, Urbanization and Climate Change
Aegean Region Chamber of Industry
District Municipalities
İzmir Metropolitan Municipality
Cooperatives
OIZ (Organized Industrial Zone) Managements
Free Zone Managements
Provincial Directorate of Agriculture and Forestry
Agricultural Research and Application Institutes
Associated Entities
Environmental consultancy companies
Ministry of Environment, Urbanization and Climate Change
Ministry of Industry and Technology
Ministry of Agriculture and Forestry
Technology producer companies
TÜBİTAK
Universities

Bergama

Measure 1.2.2: Transition to a crop pattern that reduces irrigation water needs in Küçük Menderes, Gediz and Bakırçay basins shall be planned.

To reduce water consumption in Küçük Menderes Basin, relevant planning efforts shall be realized to transition to a new crop pattern, with priority given to areas where silage corn, a water-intensive crop, is produced. In this context, crops compatible with the natural resource potential of the basin and that maintain/improve farmers' income levels shall be identified, and pilot production shall be carried out. During the transition period, ovine livestock farming activities shall be promoted to reduce the demand for silage corn and thus the irrigation water consumption in the basin.

In Gediz Basin, particularly in Bergama and Menemen districts where cotton production is most prevalent, pilot applications towards growing cotton varieties that require less water shall be supported. Furthermore, planning efforts shall be undertaken to transition to a new crop pattern, with priority given to silage corn cultivation areas, which have increased as an alternative to cotton in recent years. Additionally, research and application activities aimed at producing naturally colored cotton, which eliminates the need for the dyeing stage in textile production, thereby significantly reducing water and chemical consumption in production, shall be carried out.

Measure
Transition to a crop pattern that reduces irrigation water needs in Küçük Menderes, Gediz and Bakırçay basins shall be planned.
Responsible Entities
Cooperatives Provincial Directorate of Agriculture and Forestry Agricultural research and application institutes
Associated Entities
General Directorate of State Hydraulic Works Ministry of Industry and Technology Irrigation unions Ministry of Agriculture and Forestry Universities

Measure 1.2.3: Practices aimed at improving natural wetlands, lagoons, natural forests, and afforestation areas shall be supported.

Situation analyses shall be conducted for natural wetlands, lagoons and natural forests, leading to roadmaps to be prepared that include priority intervention areas and actions.

Infrastructure investments such as the separation of wastewater and stormwater lines and the improvement of wastewater collection systems shall be implemented to reduce pollutants, improve water quality and protect biodiversity in İzmir Bay. In addition, the reuse of treated urban wastewater for the rehabilitation of natural wetlands, particularly in Gediz Delta, which is at risk of drought, shall be supported.

Technologies to prevent marine pollution caused by the ship recycling sector in Aliağa shall be supported, and systems shall be established to continuously monitor leaks and spills into the sea.

Carbon sequestration practices aimed at improving natural forests and afforestation areas shall be expanded.

Measure
Practices aimed at improving natural wetlands, lagoons, natural forests, and afforestation areas shall be supported.
Responsible Entities
Provincial Directorate of Environment, Urbanization and Climate Change District municipalities İzmir Metropolitan Municipality İZSU General Directorate Regional Directorate of Forestry OIZ administrations
Associated Entities
Ministry of Environment, Urbanization and Climate Change Relevant associations and foundations Ministry of Agriculture and Forestry

Project 1.2.1: Sustainable Aviation Fuel (SAF) Production Waste Oils Preprocessing Facility Project

The aim is to establish a facility that will collect and process vegetable waste oils, the most significant SAF raw material in our country, thus creating the infrastructure needed for domestic production of SAF. Detailed information regarding the project is included in the "Appendices" section.

Objective 1.3: Technical infrastructure, administrative and social capacity to support the green transformation shall be developed.

Green transformation stipulates significant changes in the existing production and consumption structure to control resource use. In the transformation process, certain production activities expand while others contract, based on technological knowledge. To change the production structure, new value chains, sectors, business models and infrastructures, which include actors that previously did not interact, need to be established. Green entrepreneurship activities, which provide technological and service innovations geared towards the transformation, act as a driving force in this regard.

Circular production becomes possible by implementing a circular model that involves everything from product design to the recycling and reuse of the product at the end of its lifecycle. Sectors and infrastructures that will support the transition to circular production processes, ensuring that all resources such as water, energy, by-products, solid waste etc., which are excluded as waste, are reintegrated into production, are critical for the transformation.

Given the infrastructural deficiencies and legal regulations introduced by the current waste management system, recovery and value-added recycling of waste raw materials in İzmir are insufficient. The waste management infrastructure and processes must be improved as a priority intervention area to ensure the supply of continuous and clean waste required by the recycling sector, which produces secondary raw materials by processing wastes such as plastic, metal, waste oil, and paper, and has seen an increase in production capacity in recent years. Robust waste management requires significant infrastructure and technology investments from collection to processing, recycling, energy generation, and final disposal of the waste.

In İzmir, sectors dependent on imported raw materials, such as plastic, paper, textiles and furniture, have low access to and use of alternative raw materials. The recovery sector plays a critical role in producing continuous and high-quality alternative raw materials. Despite increased waste processing capacity in recent years, İzmir's recovery sector has a significant shortage of raw materials, which is met through imported waste. Imported waste, especially in recent years, has been used as cheap and continuous raw material for the growing production capacities in the paper, plastic and textile industries. The easier and more economical access to imported waste is seen as an obstacle to the development of the recycling sector. By establishing an efficient waste management system in İzmir, where waste is separated and collected at the source, sufficient and clean waste can be provided to the recycling sector, making it possible to produce high-quality alternative raw materials. The sector heavily uses low-tech and manual processing techniques. Modernizing the recycling sector will increase the production of continuous and high-quality secondary raw materials for priority value chains.

The green transformation of İzmir's industrial zones, which hold a significant share within the city's industrial production, will act as an accelerator and incentive for the transformation of the industry. With the infrastructure to be established under a common management, enterprises will be able to make their waste, water and energy management more efficient, transition to clean production, and develop a climate change adaptation strategy. İzmir has 17 Organized Industrial Zones (OIZs), 4 of which are planned (under construction) and 13 of which are operational (OSBÜK, 2023).

The largest OIZ in İzmir, in terms of area, is İzmir Kemalpaşa with 1,317 hectares, followed by Aliağa Chemical Specialized and Mixed OIZ and İzmir Atatürk OIZ (Table 5). The OIZs with the highest allocation ratios include Kınık, İzmir Pancar, Torbalı Mixed and Furniture, İzmir Atatürk, ITOB, Menemen Plastic Specialization, and Buca Ege. These OIZs, generally located at the center or periphery of the İzmir metropolitan area, have allocation rates above 95%.

TABLE 5. Existing OIZs in İzmir and Related Data (2023)

OIZ Name	District	Type	Area (Hectare)	Allocation Ratio (%)
Aliağa Chemicals Specialized and Mixed	Aliağa	Spec.	922	82.77
İzmir Atatürk	Çiğli	Mixed	624	96.54
Bağyurdu	Kemalpaşa	Mixed	146.8	98.89
Bergama	Bergama	Mixed	179	98.46
Buca Ege	Buca	Mixed	57.7	94.29
İTOB	Menderes	Mixed	248.8	95.98
İzmir Kemalpaşa	Kemalpaşa	Mixed	1.317	100
Kınık	Kınık	Mixed	74.3	100
Menemen Plastics Specialized	Menemen	Spec.	85.5	95.12
Ödemiş	Ödemiş	Mixed	97.4	94.12
İzmir Pancar	Torbalı	Mixed	128.9	100
Tire	Tire	Mixed	410	61.45
Torbalı Mixed and Furniture	Torbalı	Mixed	129.2	100

Source: OSBÜK, July 2023

The OIZs currently being planned or under construction in İzmir include İzmir Bayındır (Floristry) Specialized Organized Industrial Zone Based on Agriculture (SOIZBA), Dikili TDİ (Geothermal Source Greenhouse) OIZ, İzmir Kınık Plant Production (Seed, Seedling, Medicinal & Aromatic Plants, etc.) SOIZBA, and İzmir Aliağa Bağyurdu (Private). Detailed information about these OIZs is provided in Table 6.

TABLE 6. Table 6: Planned OIZ Areas in İzmir and Related Data (2023)

OIZ Name	District	Type	Area (Hectare)	Total Lots	Allocated Lots	Lots to be Allocated
İzmir Bayındır (Floristry) SOIZBA	Bayındır	SOIZBA	89	42	0	42
Dikili (Geothermal Source Greenhouse) SOIZBA	Dikili	SOIZBA	303	85	85	0
İzmir Kınık Plant Production (Seed, Seedling, Medicinal & Aromatic Plants, etc.) SOIZBA	Kınık	SOIZBA	122.83	90	0	0
İzmir Aliağa Bağyurdu (Private)	Aliağa	MIXED	135	81	0	81

Source: OSBÜK, July 2023

It has been proposed that a new industrial zone, İzmir Clean Energy Specialized Industrial Zone, be established during the regional plan period. The proposed industrial zone, expected to cover an area of 265 hectares, shall operate primarily in clean energy sectors, particularly in the wind energy industry, integrated with the Çandarlı Port. The details of the project proposal are included as appendix to the plan.

Approximately half of İzmir's total exports are made to EU countries. With the commencement of the implementation period of the "Green Deal," failure to meet the obligations introduced, particularly for resource- and energy-intensive, polluting sectors, poses a significant risk to İzmir's foreign trade revenues. Therefore, it is urgent to take action, especially for businesses operating in export-oriented sectors, to raise awareness and build capacity to comply with the "Green Deal."

In light of this information, it is recommended that the following measures and programs be implemented under the objective of "Technical infrastructure, administrative and social capacity to support the green transformation shall be developed."

Measure 1: *Waste management infrastructure and processes shall be improved.*

Measure 2: *Continuous and high-quality secondary raw material production for priority value chains shall be supported by increasing value-added recycling.*

Measure 3: *Green transformation infrastructure in industrial production zones shall be supported.*

Measure 4: *Enterprises' readiness and compliance capacity for the "Green Deal" shall be enhanced.*

Measure 5: *Green entrepreneurship practices shall be promoted.*

Program 1: *Yeşil ve Mavi Girişimcilik Hızlandırma Programı*

Measure 1.3.1: Waste management infrastructure and processes shall be improved.

In order to improve waste management infrastructure, "waste strategies" containing appropriate methods and technologies for different waste types, based on İzmir's current waste composition shall be developed in consideration of the waste hierarchy. In line with these strategies, the establishment of waste processing, source separation, treatment and disposal facilities specifically designed according to waste types shall be supported, along with the modernization or capacity expansion of existing facilities; and energy production from non-recyclable waste through incineration shall be promoted. Local administrations, which bear the high costs of current waste management activities, shall be supported with pilot-scale programs in establishing the necessary infrastructure and shall be enabled to benefit from national funds, credit or incentive programs.

The number and accessibility of waste drop-off centers, source separation equipment and other tools shall be increased to ensure the value-added recycling of domestic and industrial waste. Additionally, card-based systems that offer refunds or shopping discounts to waste producers as part of the national deposit system shall be developed and promoted. A monitoring system shall also be established to track and supervise waste management for greater efficiency.

Measure
Waste management infrastructure and processes shall be improved.
Responsible Entities
District municipalities İZDOĞA A.S. İzmir Metropolitan Municipality
Associated Entities
Ministry of Environment, Urbanization and Climate Change İzmir Development Agency Turkish Environmental Agency

Measure 1.3.2: Continuous and high-quality secondary raw material production for priority value chains shall be supported by increasing value-added recycling.

To ensure access to affordable and continuous domestic raw materials for sectors with high dependency on imported raw materials-such as plastic, paper, textiles, furniture, glass, and basic metals-waste processing and recycling facilities that produce secondary raw materials from waste shall be modernized. The facilities, primarily located in Bornova and Torbalı, shall be supported to increase their production capacities and product quality by replacing existing production lines with equipment and machinery with advanced technology. In addition, innovative techniques shall be adopted to replace inefficient processing methods that degrade product quality and generate high levels of waste, and technical capacity in this area shall be developed.

Additionally, during the plan period, the certification processes for recycling facilities shall be supported, particularly for those handling textile waste, increasing the number of certified enterprises.

Innovative applications, such as producing paper from crop waste or plastics from fruit peels and olive pits, shall be supported to be implemented at pilot scale and expanded across the sector.

Measure
Continuous and high-quality secondary raw material production for priority value chains shall be supported by increasing value-added recycling.
Responsible Entities
Aegean Region Chamber of Industry
District municipalities
İZDOĞA A.S.
İzmir Metropolitan Municipality
İzmir Development Agency
Associated Entities
Ministry of Environment, Urbanization and Climate Change
Recycling companies
Relevant associations and cooperatives
OIZ administrations
Free zone administrations
Turkish Environmental Agency

Kemalpaşa OIZ, Paper Production Facility

Measure 1.3.3: Green transformation infrastructure in industrial production zones shall be supported.

The transformation of organized industrial zones operating in İzmir to meet national green OIZ criteria shall be encouraged. In this regard, feasibility reports and roadmaps outlining green transformation targets and interventions for industrial regions shall be developed.

Energy efficiency applications and the use of clean energy shall be promoted on the scale of industrial regions and their member enterprises. Integrated waste management and wastewater treatment infrastructure shall be strengthened at the industrial zone level, and investments such as advanced wastewater treatment and rainwater harvesting, which will provide alternative water sources for enterprises, shall be expanded. The identification and monitoring of industrial symbiosis relationships among enterprises shall be supported, and infrastructure investments for the flow of energy, water and waste heat shall be implemented.

Within the framework of the administration structures of organized industrial zones, units that will coordinate among enterprises shall be established in terms of human resources, technology use and risk management during the green transformation process, fulfilling the requirements of green transformation criteria, and monitoring the process, and the development of the technical and administrative capacities of these units shall be supported. In addition, industrial regions shall be supported to increase their level of utilization of the Green OIZ Credit Program carried out by the Ministry of Industry and Technology.

In terms of new industrial investments, clean industrial sectors shall be prioritized, and investments with local-level environmental degradation from pollution and natural resource consumption shall not be encouraged. Furthermore, the development of new industrial areas shall be based on clustering approaches and integrated with existing transportation and logistics infrastructure, avoiding dispersed development.

Measure
Green transformation infrastructure in industrial production zones shall be supported.
Responsible Entities
Aegean Region Chamber of Industry İzmir Development Agency SIS administrations OIZ administrations Free Zone administrations
Associated Entities
Ministry of Environment, Urbanization and Climate Change Ministry of Energy and Natural Resources Ministry of Industry and Technology

Aliağa, Scrap Metal Recycling Facility

Measure 1.3.4: Enterprises' readiness and compliance capacity for the "Green Deal" shall be enhanced.

Capacity-building and preparatory activities shall be carried out in İzmir for enterprises operating in sectors subject to the Border Carbon Adjustment, such as iron-steel, cement, aluminum, fertilizer, and electricity production, as well as energy-intensive sectors like paper, plastic, and the processing/storage of fruits and vegetables, and sectors with a high export share to EU countries such as textiles, apparel, automotive parts, electrical machinery and equipment manufacturing.

In this context, information, promotion and technical support activities shall be carried out on topics such as the "European Green Deal," carbon footprint, Border Carbon Adjustment Mechanism, Emissions Trading System, product life cycle, and green financing opportunities. Necessary support shall be provided for measuring the carbon footprints of enterprises in these sectors, as well as preparing roadmaps to reduce greenhouse gas emissions, and implementing the determined interventions. Technical support shall be provided for the development of environmentally friendly products and services and for environmental labeling certification processes.

Micro and small enterprises, which are suppliers to large companies in sectors subject to the Border Carbon Adjustment and are likely to be adversely affected by the regulations, shall be provided with technical support related to the process, and investments for their transition to clean production techniques aimed at reducing carbon emissions and achieving energy efficiency shall be supported.

Measure
Enterprises' readiness and compliance capacity for the "Green Deal" shall be enhanced.
Responsible Entities
Aegean Region Chamber of Industry Aegean Exporters' Association District Chambers of Commerce İzmir Commodity Exchange İzmir Chamber of Commerce OIZ administrations Free zone administrations
Associated Entities
Environmental consultancy companies Energy consultancy companies Business associations İzmir Development Agency Ministry of Industry and Technology Ministry of Trade Universities

İzmir Atatürk Organized Industrial Zone

Measure 1.3.5: Green entrepreneurship practices shall be promoted.

Green entrepreneurship is an approach that produces a profitable product/service while considering environmental and societal benefits, and develops innovative solutions to environmental problems. During the plan period, various programs and new support mechanisms shall be designed and implemented to promote the establishment and growth of green technology-based initiatives in İzmir.

Under this measure, priority areas shall include raw material, water and energy efficiency, recycling, clean energy production and storage, sustainable transportation vehicles, disaster risk reduction, biodegradable material production, alternative raw material production, sustainable irrigation systems, smart waste management systems, basin-based pollution monitoring systems, and value-added product production from waste.

Training, mentorship activities, accelerator programs, incubator programs, demo day events, investor matchmaking, and one-on-one consultancy services shall be offered to green technology entrepreneurs by regional ecosystem stakeholders.

Favorable environments shall be created to address one of the biggest challenges for entrepreneurs: reaching institutional actors and accessing their first customers. Networking activities shall be carried out to develop collaboration channels between institutional actors and entrepreneurs, and their continuity shall be ensured.

To reduce the financial access challenges faced by green entrepreneurs, innovative support mechanisms such as regional venture capital funds, angel investor networks and crowdfunding platforms shall be implemented in addition to R&D funds. Activities shall be carried out to attract leading global accelerator institutions to the region and introduce high-potential green initiatives to foreign investors.

Academic entrepreneurship shall be encouraged to expand the pool of entrepreneurs particularly within the field of green technology. Activities shall be conducted to raise awareness, knowledge and interest levels of researchers regarding entrepreneurship, aiming to commercialize green technology research projects carried out at universities. The capacities of technopark companies and technology transfer offices shall be strengthened to support the commercialization of technology generated at universities and the entrepreneurial processes of academics from idea to company formation.

Furthermore, activities shall be carried out to raise society's awareness and value perception of green products and services.

Measure
Green entrepreneurship practices shall be promoted.
Responsible Entities
Venture capital investment funds Entrepreneurship centers İzmir Development Agency Incubation centers OIZ administrations Technology Transfer Offices Technoparks Universities
Associated Entities
Aegean Region Chamber of Industry District municipalities İzmir Metropolitan Municipality İzmir Chamber of Commerce KOSGEB Ministry of Industry and Technology TÜBİTAK

Program 1.3.1: Green and Blue Entrepreneurship Acceleration Program

Towards the aim of developing the sectors and the infrastructure that shall support the green and blue transformation of existing economic activities in İzmir, the Entrepreneurship Acceleration Program shall be implemented. The program focuses on bringing together start-ups that produce or localize innovative techniques, technologies, processes, materials, automation solutions, software and services in the fields of green and blue technologies within the region with the institutional actors who use such technologies, thus initiating new collaborations. Through this program, it is aimed to create favorable environments for start-ups and institutional actors to develop collaborations via various channels, from joint R&D projects and product/service sales to investments and technology licensing. Detailed information about the program is provided under "Appendices" of the plan.

Menemen Plain

Objective 1.4: The share of clean energy production shall be increased, and its use shall be expanded.

The seventh UN Sustainable Development Goal (SDG) is specifically dedicated to energy under the title "Affordable and Clean Energy." According to the UN, the primary reason for such focus is that 60% of global greenhouse gas emissions, which contribute to climate change, result from energy production and utilization activities. While this percentage varies between 60% and 75% in different studies, energy remains a crucial area in the fight against climate change. According to one study on the sectoral distribution of global greenhouse gas emissions, the share of emissions from energy use for electricity generation, manufacturing, heating and transportation is 74.4% (WRI, 2022).

The fact that energy plays such a significant role in climate change has led to increased measures and investments globally in clean energy transformation. The "Global Renewable Energy Outlook" report by the International Renewable Energy Agency emphasizes the importance of transitioning to clean energy by using two key indicators: GDP and employment (IRENA, 2020). If countries implement stronger policies beyond their current clean energy transition policies, it is projected that global GDP could increase by 1.95% by 2030 and by 2.38% by 2050. According to this projection, the number of people employed in the direct and indirect clean energy sector, which stood at 12.3 million in 2017, could reach 29.5 million by 2030 and 41.9 million by 2050. This presents a significant economic opportunity for all countries and regions aiming to accelerate their development by advancing in more competitive sectors.

The share of clean and renewable sources in Türkiye's energy production has exceeded 50%. İzmir has already become the production hub of wind energy equipment for Eastern Europe and Central Asia. International companies operating worldwide are increasing their investments in İzmir, and many local companies are being integrated into this sector's value chain. According to the statistics of the Turkish Wind Energy Association (TÜREB), İzmir ranks first, with a 16.99% share, among provinces with wind energy installed capacity in Türkiye, followed by Balıkesir with 12.39%, Çanakkale with 8.26%, Manisa with 6.55%, and Aydın with 3.32%. These figures indicate that approximately 50% of wind power plants in Türkiye are located in and around İzmir. Consequently, the services sector related to this area has also concentrated in İzmir. In addition to wind energy, İzmir and its surrounding areas have significant potential in various clean energy sectors such as solar energy, biomass, geothermal energy, and, most recently, the emerging green hydrogen sector.

According to the Technical and Economic Assessment of Türkiye's Green Hydrogen Production and Export Potential Report (SHURA, 2021), İzmir is expected to have the highest hydrogen demand in Türkiye. The report highlights that the presence of refineries and petrochemical plants in the region, the availability of ports, and trade opportunities will support this demand.

The report also states that from an investment perspective, considering İzmir's clean energy potential (especially wind), its water resources (with the possibility of desalinating seawater due to its coastal location), and the existing hydrogen demand, İzmir offers the best opportunities among all cities where domestic green hydrogen production projects could begin. From this perspective, İzmir has the potential to become a center that not only requires green hydrogen but is also capable of producing it and ensuring its distribution. İzmir could play a pioneering role in the transition from a carbon-based economy to a green hydrogen economy by implementing exemplary and innovative practices.

Considering the global climate change agenda and the associated clean energy transformation, it is assessed that İzmir's comparative advantage in the clean energy sector could present significant development opportunities.

In light of these assessments, the following measures and projects are proposed in line with the objective of "The share of clean energy production shall be increased, and its use shall be expanded."

Measure 1: *The use of clean energy systems shall be expanded.*

Measure 2: *Clean energy production infrastructure shall be strengthened.*

Measure 3: *The development of the clean energy and clean technologies sector shall be supported.*

Project 1: *İzmir Hydrogen Valley Project*

Project 2: *Floating Offshore Wind Turbine Platform Production Facility Project*

Project 3: *International Geothermal Energy Research and Application Center Project*

Measure 1.4.1: The use of clean energy systems shall be expanded.

İzmir was selected for the EU's Climate-Neutral and Smart Cities Mission, which aims to create cities that are resilient to the threats posed by climate change. As part of this mission, which targets zero carbon emissions, relevant projects shall be implemented in İzmir, serving as an example for other cities worldwide, by way of planned investments to be made until the year 2030. Achieving the targets under this mission requires transformation across all sectors that use energy intensively.

The decarbonization process of the industrial sector holds a key role in this transformation. Transition to clean energy use, energy efficiency and waste heat-to-energy applications shall be encouraged by increasing knowledge and awareness, starting with energy-intensive industrial enterprises. In this context, pilot projects aimed at supporting clean energy production (such as energy cooperatives and energy-producing systems like rooftop installations) shall be implemented. The transformation of existing industrial zones into green OIZs shall be accelerated, and new industrial zones shall be planned according to green OIZ standards during their design phase. The use of green hydrogen in production processes is recognized globally as a significant transformation tool. Within the scope of the İzmir Hydrogen Valley Project, pilot applications for the production of green hydrogen and its use in industries such as transportation and iron-steel shall be implemented.

Energy efficiency applications and the concept of the prosumer (producing consumer) provide effective solutions for the clean energy transition. In this regard, household awareness shall be increased, green building and prosumer practices shall be promoted, and subsidy programs related to solar power plant installations, similar to international examples, shall be implemented.

Balçova-Narlıdere and Dikili-Bergama-Kınık geothermal fields have very high urban heating potential, yet this potential is not being fully utilized at present. The Karşıyaka-Bayraklı, Menemen-Çiğli, and Aliağa geothermal fields display a similar situation. Utilizing these resources will enable 40,000 households to transition to geothermal heating systems. Scientific data related to İzmir shows that the region has high geothermal potential, and thus, in addition to the use of existing and potential geothermal fields for electricity generation, integrated and direct-use projects shall be carried out in areas such as urban heating-cooling, greenhouse heating, drying, health-thermal tourism, agricultural applications, and mineral extraction. Using geothermal energy in greenhouse farming and fruit-vegetable drying increases productivity and the added value produced, while also reducing the carbon footprint of the sector. To this end, a geothermal-heated greenhouse project shall be implemented in Dikili.

To meet the energy needs for municipal services, particularly public transportation, solar power plants and green hydrogen usage shall be increased, thereby reducing carbon emissions. Pilot applications for the use of green hydrogen shall be implemented in cooperation with relevant stakeholders.

Tedbir
The use of clean energy systems shall be expanded.
Responsible Entities
Dikili Jeotermal A.S. GDZ Electricity Distribution Inc. District municipalities İzenerji A.S. İzmir Metropolitan Municipality İzmir Jeotermal A.S.
Associated Entities
Ministry of Energy and Natural Resources OIZs Ministry of Industry and Technology Sectoral CSOs Free Zones Technology Development Zones Universities

Measure 1.4.2: Clean energy production infrastructure shall be strengthened.

İzmir is rich in all types of clean energy sources. Towards the aim of achieving carbon-neutral targets, these resources shall be used effectively, and necessary production infrastructure shall be strengthened.

The installed capacity of offshore wind energy, which is significantly more efficient than other types of energy, is steadily increasing worldwide. In line with this trend, efforts to establish regulations and infrastructure for offshore wind energy in our country have been brought to the agenda. The Ministry of Energy and Natural Resources is preparing tender plans for investments in this sector, and interest in offshore wind energy is on the rise. To enable investment in this new field for our country, a high-quality offshore wind model is required. In northern İzmir, Türkiye's first offshore wind measurements shall be conducted, models shall be created, and a pilot project for electricity production from offshore wind energy shall be implemented. To support local equipment manufacturing in the offshore wind energy sector, a production facility for floating offshore wind turbine platforms, which can be used in deeper waters where fixed-base platforms are not feasible or cost-effective, shall be established.

Although İzmir has the highest installed capacity for onshore wind energy in Türkiye, it has not yet utilized its full wind energy potential. Additionally, the replacement of wind turbines that have reached the end of their economic life can increase installed capacity. Efforts shall be made to increase wind energy capacity both onshore and offshore.

İzmir also has significant potential for biogas production from the large amount of cattle waste available, and small-scale farm-based biogas systems, village-scale medium-sized biogas systems, and large-scale central biogas plants shall be established to enable recovery of this waste.

In line with İzmir's agricultural production and its developed food industry, the region possesses high biomass energy potential. The vegetable and fruit processing/storage sector, which has grown proportionally with İzmir's diverse and intensive vegetable and fruit production, holds a significant share of İzmir's total food production in terms of employment, business concentration and export potential. The waste management of the significant losses and waste generated during the processing and packaging of fruits and vegetables has become an important issue. The production of frozen or dried fruits and vegetables accounts for 87% of the sector's total waste. To increase the use of this waste as raw material and energy source, pilot biogas and compost facility projects shall be implemented in Kemalpaşa and Torbalı, where the sector is concentrated. Furthermore, the establishment of small-scale biogas facilities shall be supported to reduce the carbon footprint in agricultural regions, primarily in Küçük Menderes Basin.

The transition to clean energy shall be prioritized in districts like Aliağa, where industrial carbon emissions are high. To conduct pilot projects for producing and using green hydrogen in industry and developing related technologies, the İzmir Hydrogen Valley Project shall be implemented. Aliağa district holds the potential to become a center that has both demand for green hydrogen and the means to produce and distribute it.

In the clean energy transition, the compatibility of distribution and transmission infrastructure is as important as production infrastructure. Particularly, transformer infrastructure shall be upgraded to support clean energy production, and cabling and power systems shall be enhanced both in terms of quality and quantity. The region's storage capacity shall be increased, and the system's evolution towards distributed energy systems shall be encouraged.

Energy storage systems, which are increasingly widespread today and aim to store the energy generated from clean energy sources at specific times to balance the potential gap between energy supply and demand, shall be established and their capacities expanded.

Measure
Clean energy production infrastructure shall be strengthened.
Responsible Entities
GDZ Electricity Distribution Inc. EÜAŞ District municipalities İzenerji A.S. İzmir Metropolitan Municipality TEİAŞ
Associated Entities
Ministry of Energy and Natural Resources OIZs Ministry of Industry and Technology Sectoral CSOs Free Zones Technology Development Zones Universities

Measure 1.4.3: Development of the clean energy and clean technologies sector shall be supported.

In the clean energy transition and energy independence, producing the equipment and technologies for energy production and providing related services are as crucial as the production of energy itself.

The sector's development shall be ensured through cluster-based development strategies. The capacity development of businesses operating in the clean energy and clean technologies sector, conducting marketing and promotional activities both domestically and internationally, and thereby supporting companies' internationalization and integration into the global supply chain shall be encouraged. Companies from other sectors shall be enabled to produce also for this sector in line with their competencies. Entrepreneurial activities and open innovation events shall be organized for the sector, and relevant measures shall be implemented to train the qualified workforce the sector needs. Collaboration among ecosystem stakeholders, including universities, industry and public institutions, shall be increased. Investment support activities shall be developed to attract foreign-capital companies and nationally significant producers to the region.

In addition to the wind, solar, geothermal and biomass energy sectors, the development of the value chain for offshore wind and green hydrogen production, which are globally emerging sectors, shall be prioritized goals. Necessary support shall be provided for İzmir to become a system manufacturer for the onshore wind energy sector, produce offshore wind energy equipment in the region, develop related services, and localize equipment for green hydrogen systems, especially electrolyzers.

Alongside the support for companies in the sector, the establishment of the necessary logistics and production infrastructure for the sector, displaying concentration in the northern axis of İzmir, shall be prioritized. The sector's development shall be supported through the implementation of a specialized Çandarlı Port Project focused on exporting equipment for the clean energy sector, particularly wind energy, and a Clean Energy Specialized Industrial Zone Project to meet investors' production area needs.

Development of the clean energy sector in the region also necessitates the establishment of testing, certification and experience infrastructure for the sector. With the Wind Energy Meteorology and Environmental Application and Research Center (RÜZMER) Guided Project at İzmir Institute of Technology (IZTECH), it is aimed to establish a test and analysis center that can serve every layer of the rapidly growing wind energy sector. The center aims to meet the test and analysis needs of existing and upcoming facilities, particularly those of domestic producers, under one roof.

İzmir and its surrounding region have a high export potential for clean energy equipment and services. The classification of sectoral products and services under relevant codes for this sector is important to reveal the sector's export potential and accelerate its development. As part of this measure, efforts shall be undertaken to establish a Clean Energy Equipment and Services Exporters' Union under the Aegean Exporters' Associations to provide services addressing the shared needs of exporters in the sector.

Measure
Development of the clean energy and clean technologies sector shall be supported.
Responsible Entities
Aegean Exporters' Association Energy Industrialists and Businesspeople Association (ENSİA) İzenerji A.S. İzmir Development Agency
Associated Entities
Ministry of Energy and Natural Resources KOSGEB Chambers and Unions OIZs Ministry of Industry and Technology Sectoral CSOs Free Zones Technology Development Zones TENMAK TÜBİTAK TÜREB Universities

Project 1.4.1: İzmir Hydrogen Valley Project

The common element in hydrogen strategies that are rapidly developing at global scale, is green hydrogen produced with clean energy sources. The İzmir Hydrogen Valley Project, planned to contribute to Türkiye's place in the emerging global green hydrogen economy, aims to establish a structure that will enable research on promising hydrogen technologies and contribute to the maturation and commercialization of technologies being developed. Supporting the measure in the Twelfth Development Plan to develop hydrogen technologies and infrastructure, especially green hydrogen, the project will include activities transforming ideas into products, pilot projects in hydrogen technologies, examples of production and consumption applications, commercialization activities, and training and awareness initiatives. Detailed information about the project can be found in the "Appendices" section.

Project 1.4.2: Floating Offshore Wind Turbine Platform Production Facility Project

In İzmir, already a leading region in terms of installed wind power capacity and also standing out in equipment production in this field, promoting local manufacturing of relevant equipment is one of the most critical goals of renewable energy policies. The aim of the facility is to support the development of the offshore wind energy value chain by producing floating platforms locally. Detailed information about the project can be found in the "Appendices" section.

Project 1.4.3: International Geothermal Energy Research and Application Center Project

The project goal is to establish an international center that will provide R&D and consultancy services related to geothermal energy, conducting laboratory and field tests In İzmir, which boasts high geothermal energy potential and various applications. Detailed information about the project can be found in the "Appendices" section.

Seferihisar, Geothermal Power Plant

Aliaga, Port Operations

5.2.
Strategic Priority 2:
Leveraging the Blue Economy Potential

Seas, offering numerous opportunities such as food, transportation, energy and recreation, are critical for the future, prosperity and well-being of humanity (OECD, 2016). Seas play a key role in transitioning to a sustainable economy while providing vital resources and ecosystem services like temperature regulation, carbon absorption, oxygen production and biodiversity (EC, 2022). The United Nations' sustainable development goal, "Life Below Water," aims to ensure the conservation and sustainable utilization of oceans, seas and marine resources for sustainable development (OECD, 2019).

The blue economy is aligned with the concept of blue growth, which can be summarized as the sustainable management of seas for development and welfare, encompassing economic sectors directly dependent on or indirectly linked to seas. The EU identifies coastal tourism, maritime transport, shipbuilding and repair, port services, seabed mining, aquaculture and marine fisheries as established sectors of the blue economy. Emerging sectors include marine clean energy (offshore wind, wave, tidal), blue biotechnology and desalination (EC, 2019).

Calculations on the EU's blue economy reveal that 4.45 million people were employed in existing sectors, generating €667.2 billion in revenue and €183.9 billion in added value by 2019. Compared to 2009, it is observed that employment in the European blue economy increased by 0.5%, revenue by 15%, and added value by 20% (EC, 2022). In the United States, a maritime nation, the blue economy contributed approximately $373 billion to the country's GDP and supported 2.3 million jobs. The country's 2025 blue economy strategy focuses on maritime transport, ocean exploration, seafood competitiveness, tourism, recreation and coastal resilience (NOAA, 2021).

The Mediterranean Basin, including İzmir's coasts, stands out with its blue economy potential. Expectations for the future indicate that all traditional sea-related sectors, except fisheries, will continue to grow, while relatively new sectors such as marine clean energy, seabed mining and biotechnology develop faster (WWF, 2015). Türkiye, surrounded by seas on three sides with an 8,333 km coastline (MoEUCC, 2022b), hosts several sectors such as coastal and marine tourism, maritime transport, port services, fisheries and aquaculture. Moreover, research, knowledge infrastructure and applications are advancing in marine biotechnology, marine clean energy and seabed mining sectors.

According to the İzmir Regional Input-Output Analysis results, the sector in which İzmir contributes the most to Türkiye's sectoral production and added value, with a 28% share, is observed to be "maritime transport," part of the blue economy (İZKA, 2021a). This significant contribution is due to İzmir's historical identity as an ancient port city, reinforced by its capacity and expertise as the largest city in the Aegean Region in terms of population and foreign trade.

When considering coastal and coastal interaction zones, the Aegean Region, with its 22 ports, is prominent in maritime transport and port services, with the TR31 İzmir region hosting 16 of those ports. Seventy-five percent of İzmir's exports are transported via maritime routes. By 2022, İzmir's ports handled 92 million tons of cargo, accounting for 17% of Türkiye's total cargo. 15.2% of the country's strategic container cargo was handled at İzmir's ports. The four container ports in the region handled 1.9 million TEUs of container load as of the year 2022. This means that approximately one in every eight containers in the Eastern Mediterranean traffic is handled in İzmir. Thanks to İzmir container ports' direct connections to a total of 220 ports, cargo handled in the region is swiftly distributed to Europe, America and the Mediterranean via direct routes (İZKA, 2022b; MoTI, 2023). In line with the framework of the Twelfth Development Plan's 2053 vision, aiming for Türkiye to become a global logistics leader, İzmir's role is poised to be further strengthened.

Aliağa district of İzmir, where ports and heavy industrial enterprises are located, is also home to 22 businesses operating in ship recycling. These businesses dismantle an average of 800,000 tons of ships annually, directly employing approximately 2,000 people and contributing to an economic scale of over 500 million USD. With this economic scale and dismantling tonnage, Türkiye ranks third among the countries where the industry is most concentrated worldwide, following India and Bangladesh. Out of the 22 companies operating in İzmir, nine have been accredited and found compliant with the regulations of the "Ship Recycling Regulation," enacted by the European Parliament in 2013 to reduce the negative impacts caused by the dismantling of ships bearing the flags of EU States. The recycling sector, driven by ship recycling industry activities, is one of the key sectors in the region, with one of the highest backward linkages, according to the İzmir Regional Input-Output Analysis results (İZKA, 2022c).

Offshore wind energy is currently at the forefront among the types of energy that can be harnessed from the seas, both in terms of technological capability and existing examples. This leading sector within the newly emerging industries of the blue economy is expected to display significant leaps in both added value and employment in the coming period (OECD, 2016). Although the investment costs for offshore applications are still higher compared to onshore applications, the high efficiency and capacity factors in offshore wind energy enable its share in global wind energy investments to rise rapidly. As of 2022, the global installed wind power capacity reached 837 GW, with offshore applications accounting for 14% of this capacity (GWEC, 2022).

Thanks to its logistics infrastructure, qualified workforce, living conditions for investors and employees, wind energy potential, and the presence of international companies in the sector, İzmir has recently become a hub for wind energy equipment production. In addition to global companies manufacturing major wind turbine components, local companies producing components for these systems have also created a broad supply chain in the region. As of 2022, the wind industry employed over 10,000 people, and the export of large-size components and parts, often classified as project cargo, amounted to over 750 million USD annually through the ports. This figure represents approximately 5% of İzmir's annual exports (İZKA, 2021d). Furthermore, the companies, which primarily produce equipment for onshore applications, are expected to quickly gain the capabilities to produce offshore wind turbine components in the near future.

Fisheries and aquaculture, part of the blue economy, are critical sectors in meeting humanity's food demand. The total global production of fisheries and aquaculture (excluding algae) reached 178 million tons, showing a 41% growth between 2000 and 2020. Aquaculture, the primary driver of growth in fisheries and aquaculture production, grew at an average annual rate of 5.1% during the 2000-2020 period, reaching 87.5 million tons as of the year 2020. Capture fisheries production has remained stable at around 90 million tons since the early 1990s, with a production volume of 90.3 million tons observed in 2020 (FAO, 2022).

The Twelfth Development Plan, which outlines national development policies for 2024-2028, prioritizes sustainable practices in aquaculture production, aiming to increase production and exports through the conservation of natural resources and biodiversity. Of the 61 significant fishing centers on the Aegean Sea coast, 34 (56%) are located in İzmir, mainly concentrated around İzmir Bay. While the Aegean Sea accounts for approximately 10% of Türkiye's marine fish production, its share of income from fishing reaches up to 30%, due to the presence of high-value species (Tokaç, 2017). Over one-third of Türkiye's marine aquaculture production is conducted along the coasts of İzmir. The second-largest sector in terms of İzmir's contribution to Türkiye's sectoral exports is fishing, fish farming, and related services, accounting for a share of 27%. Over the past 20 years, it is observed that aquaculture has shown growth in İzmir, while fishing has declined in terms of production volume. Nearly all of the approximately 30 active aquaculture companies are exporters, working closely with fish and shellfish processing facilities, hatcheries and feed producers (İZKA, 2022a).

Marine and coastal tourism, a prominent component of the blue economy, particularly in terms of employment, is one of the fastest-growing areas within this vast industry. The Mediterranean coasts account for one-third of global tourism, attracting over 400 million tourists annually. In parallel with coastal tourism, ecological tourism (ecotourism), based on the unique assets of coastal and inland areas, also displays a developing trend. Ecotourism, as defined by the United Nations World Tourism Organization (UNWTO), is nature-based tourism involving travel to places where fauna, flora and cultural heritage are preserved (Interreg MED, 2022). The focus on personal experiences, outdoor activities, and longer stays at fewer destinations in ecotourism aligns with post-COVID-19 trends in sustainable tourism and meets new tourism expectations that support local businesses (ETC, 2021). İzmir, which hosts a significant portion of Türkiye's ecotourism routes, stands out in the Mediterranean Basin due to its natural environment, climate suitability for ecotourism, and its coastal connection.

İzmir has a coastline stretching 40 km around the Bay in the city center, with a total of 629 km of shoreline. Its 101 km-long natural beaches are suitable for sea tourism and maritime recreational activities. According to the evaluations conducted by the Foundation for Environmental Education (FEE) under the "Blue Flag Program" regarding bathing water quality, environmental management, environmental education and safety, the number of blue flag beaches in İzmir has increased by more than 50% in the last 10 years, reaching 66 as of the year 2022. Thanks to investments and arrangements, four marinas, including one in the inner bay, have also been awarded blue flag status (TÜRÇEV, 2022).

The natural structure and climate of İzmir offer numerous opportunities for ecotourism. The city hosts many areas where various activities such as nature walks, mountaineering, bicycle tourism, cave tourism, underwater diving and camping can be carried out. The fact that districts located centrally also possess valuable natural and rural areas enables such activities in almost all of İzmir's 30 districts. Activities in coastal districts are linked to the sea, with coastal areas included in ecotourism routes. Studies point to 72 significant natural and rural destinations within the borders of İzmir in terms of ecotourism. Preserving, appropriately organizing, and incorporating these areas — which include picnic areas, monumental trees, recreational areas, wetlands, walking paths and nature parks — into ecotourism activities are crucial for realizing İzmir's potential (İZKA, 2020).

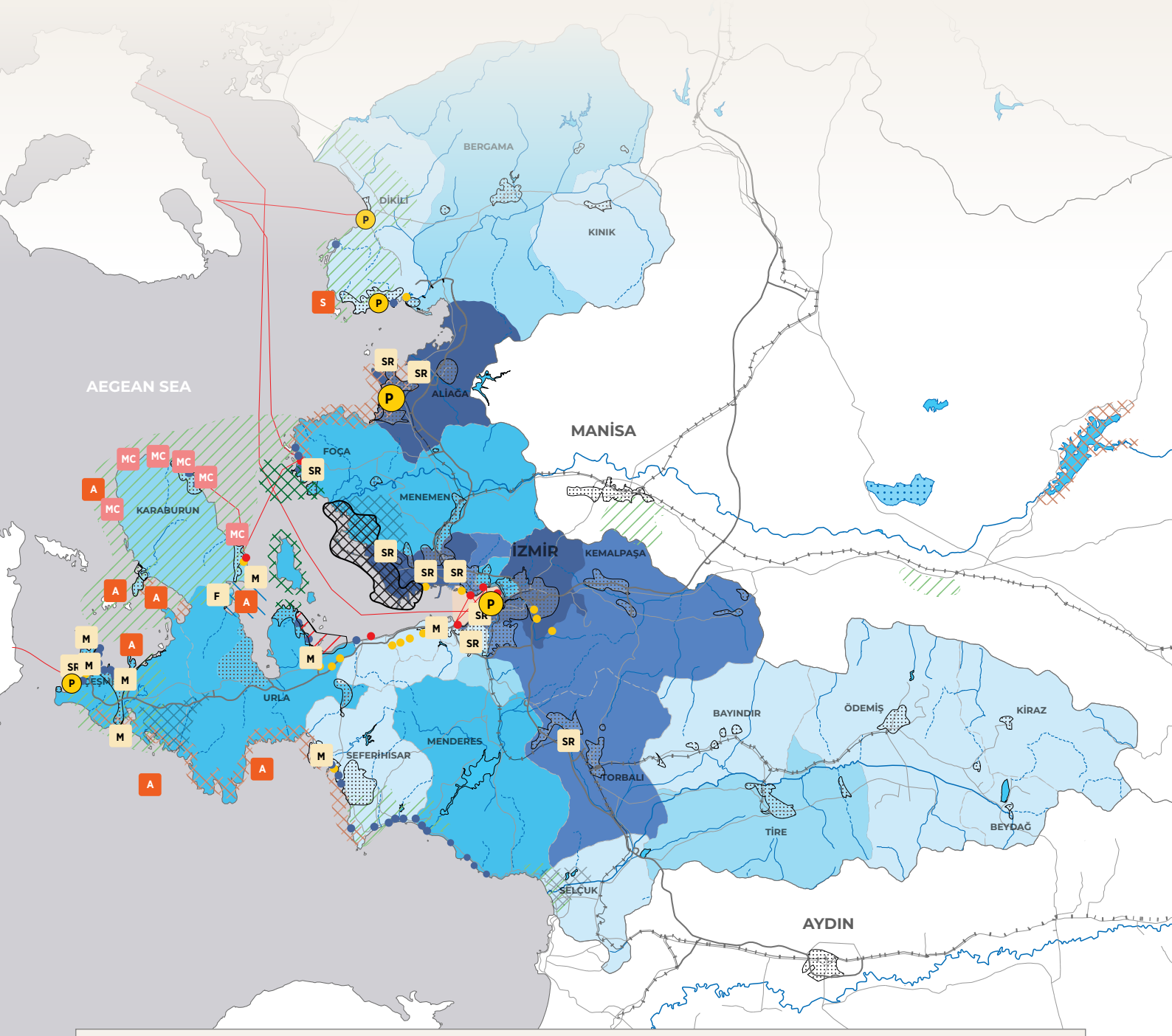
Based on this information, three objectives have been designed concerning the strategic priority of "Leveraging the Blue Economy Potential":

- Sustainability of blue growth sectors and the income derived from these sectors shall be increased.
- Ports in İzmir shall be revitalized to increase their contributions to the regional economy.
- The region's logistics infrastructure shall be improved.

Objective 2.1: Sustainability of blue growth sectors and the income derived from these sectors shall be increased.

Blue growth is a long-term strategy that involves sustainably benefiting from the economic potential offered by the seas. Economic activities related to the sea, which make up the blue economy, strengthen regions' ability to generate jobs, income and added value. Maritime transport and port services, shipbuilding and repair, ship recycling, fishing, aquaculture and coastal tourism are the main sectors within the blue economy. To advance İzmir's marine and coastal economy and increase the share of the blue economy within the regional economy, relevant sectors must be developed in a sustainable manner. Models should be developed that address various blue economy activities in a holistic way through integrated coastal and marine management. The ecosystem should be strengthened with structures that support the production of knowledge needed by the region towards revealing the economic value of marine resources, and multidisciplinary and application-based efforts aimed at the sustainable management of seas.

MAP 3. Information on the Blue Economy and Blue Resources in İzmir



Source: Prepared using data from İBB, İZKA and SGK.

In the marine fishing sector of Türkiye, the Black Sea region has the leading role with an 80% share, followed by the Aegean region with a 9.5% share (İZKA, 2022a). On the other hand, the Aegean Sea along which lie the shores of İzmir, is richer in species diversity compared to the Mediterranean, Marmara and Black Seas. The number of fish species living in the waters around İzmir Bay and its surroundings is about 225, and this number is expected to increase even further. Another important aspect is that the species in İzmir's fisheries have high economic value. The fishing areas that begin in the north with Dikili-Çandarlı Bay extend to İzmir, Gülbahçe, Çeşme and Sığacık Bays. This indented coastline and its bays and coves harbor a rich biodiversity. İzmir and Çandarlı Bays serve as breeding, feeding and growing grounds for many aquatic species (Tokaç, 2017).

There are a total of 39 active fisheries cooperatives within İzmir's borders. The total number of cooperative members is 2,275, with an average membership size of 58 per cooperative. The oldest cooperative was founded in 1958, and the newest was founded in 2021. The majority of cooperatives have between 11 and 50 members. None of the cooperatives established between 2011 and 2021 have more than 100 members. The districts with the highest number of cooperatives are Çeşme, Karaburun and Urla, respectively. The number of cooperatives established in recent years has been quite low (İZKA, 2022e). The main issues faced by fishermen and the fisheries cooperatives they form include port facilities, slipways, illegal fishing, marketing, cooperative organization, use of fishing grounds, legal regulations and administrative matters (Tokaç, 2017).

In regards to aquaculture production, Muğla ranks first among all provinces in Türkiye, with a share of 33.1%. İzmir follows in second place, accounting for 21.6% of total aquaculture production (TURKSTAT, 2023d). In İzmir, aquaculture is conducted in eight different areas, namely Dikili-Denizköy, Urla-Gülbahçe, Karaburun-Kuzey and Mordoğan, Çeşme-Adalar, Çeşme-Gerence, Çeşme-Ildırı, Çeşme-Mersinkoy, and Urla-Demircili, with the primary focus on seabass and gilthead bream production. Due to the intensive production of these species in the Mediterranean and European countries, İzmir's competitiveness in aquaculture is decreasing, making it increasingly important to introduce new species for aquaculture (İZKA, 2022a).

In İzmir province, aquaculture facilities face logistical challenges, such as providing living spaces for personnel, storing feed, delivering feed to cages, bringing harvested products ashore, and sorting fish by size. Coastal logistics structures and land-based facilities of fish farms are insufficient. There are also significant opportunities in the cultivation of new species, especially algae, shellfish and sea cucumbers. The most essential input in aquaculture is feed, but the decreasing production of fishmeal due to fishing limitations cannot meet the growing demand, leading to rising prices and increased reliance on imports. Promoting domestic fishing, especially herring and sprat stocks, with the aim of reducing dependence on foreign sources is increasing pressure on marine ecosystems, threatening their sustainability, and limiting the society's access to fish (İZKA, 2022a). Policies aimed at increasing production and efficiency in aquaculture, ensuring sustainable fisheries, protecting aquatic resources, and developing these resources should be addressed in a holistic manner.

With their bays and natural beaches, İzmir's coasts contribute to the blue economy in terms of tourism and recreation. In addition to preserving natural areas and ecosystems, sustainably utilizing the existing potential in tourism activities is also important. The spread of water sports, which have shown development especially in Çeşme, to other coastal districts in suitable disciplines, and the concentration of recreational activities in the inner bay area to strengthen residents' connection with the sea, are key factors in leveraging the city's blue economy potential. Associating İzmir's ecotourism routes with suitable coastal areas and integrating them with health and cultural tourism will expand tourism activities and strengthen the connection with the sea. Supporting marine-related ecotourism activities in Çeşme, Seferihisar, Menderes, Karaburun, Urla, Foça and Dikili districts will contribute to vitalizing the existing potential. Additionally, increasing the number of blue flag beaches and investments in this direction will support sustainable coastal tourism.

In line with the objective "Sustainability of blue growth sectors and the income derived from these sectors shall be increased," the following measures and project are proposed for implementation.

Measure 1: *Fisheries production and fishing activities shall be improved and developed in ways that ensure the sustainability of fish stocks.*

Measure 2: *Development of marine recreation and ecological tourism shall be supported.*

Measure 3: *Blue entrepreneurship practices shall be promoted.*

Project 1: *İzmir Maritime University Project*

Measure 2.1.1: Fisheries production and fishing activities shall be improved and developed in ways that ensure the sustainability of fish stocks.

The institutional capacities of local actors operating in the fisheries and aquaculture sectors in İzmir shall be enhanced, and their production activities shall be strengthened in terms of modern techniques and sustainability. To meet the needs for coastal logistics facilities and structures for aquaculture production, necessary areas shall be allocated within fishing coastal structures for the transportation of juveniles and feed to cages, as well as for landing the products farmed in cages. Storage facilities shall be established, and inter-institutional cooperation and coordination shall be developed in this regard. Information and promotional activities shall be conducted to reduce common concerns regarding farmed aquatic products. These activities shall include the promotion of the nutritional value and health benefits of farmed fish, incorporating results from scientific studies, and public service announcements and printed and visual materials shall be prepared accordingly.

To maintain and improve İzmir's competitiveness in the aquaculture sector, relevant R&D activities shall be carried out to develop environmentally friendly farming techniques and to use alternative feed ingredients (such as soybean, canola, cottonseed, sunflower seed, corn, hazelnut and red lentils, as well as micro and macro algae). Technologies related to closed-loop systems, studies to improve feed conversion ratios, energy efficiency and energy transformation, as well as R&D activities for the production and processing of new species (especially herbivorous species), shall be supported. Additionally, blue biotechnology efforts to capitalize on the potential of aquatic products for high-value-added products in medicine, cosmetics and food sectors shall be promoted. Key projects include extracting biopolymers from shellfish, culturing sea cucumbers and utilizing their collagen in various fields, alongside R&D and product commercialization for new high-value species.

In addition to increasing production and efficiency in aquaculture, policies shall also be implemented towards the aim of ensuring sustainable fisheries, conserving and improving aquatic resources. Training programs shall be organized for areas with employment needs within the sector. Physical and technical capacities shall be improved to address key challenges faced by fishermen and fisheries cooperatives, such as ports, dry docks, illegal fishing, marketing, cooperative management, use of fishing areas, legal regulations and administrative matters. Cooperatives' capacities towards sustainable and value-added production shall be enhanced, Relevant actions shall be realized in key areas such as combating invasive species, protecting and enhancing aquatic biodiversity, improving fisheries data collection systems, and ensuring food safety.

Measure
Fisheries production and fishing activities shall be improved and developed in ways that ensure the sustainability of fish stocks.
Responsible Entities
Provincial Directorate of Environment, Urbanization and Climate Change District municipalities İzmir Metropolitan Municipality Fisheries Cooperatives and Associations Provincial Directorate of Agriculture and Forestry
Associated Entities
Ministry of Environment, Urbanization and Climate Change İzmir Development Agency Ministry of Agriculture and Forestry Universities

Measure 2.1.2: Development of marine recreation and ecological tourism shall be supported.

To leverage İzmir's marine tourism potential and strengthen the city's relationship with the sea, the variety of activities related to water sports shall be increased, particularly along the coastal areas of the bay near the city center. Water sports centers shall be established to enhance the recreational, entertainment and leisure value of the bay's coasts, clubs specializing in water sports shall be supported, and infrastructure investments shall be made to facilitate sea activities for all age groups. Necessary arrangements shall also be implemented at marinas and piers. Events such as festivals and races for sailing, yachts and canoes shall be organized to increase interest in water activities within the bay area. Coastal social facilities and recreational areas shall be improved to support water sports and various sea activities accessible to all segments of society.

In this city under the pressure of a dense population and a developed urban environment, ecotourism activities shall be strengthened and expanded across the city, with the aim of reinforcing the complementarity between rural and urban areas, primarily in districts such as Çeşme, Urla, Karaburun and Seferihisar. Ecotourism routes, particularly those related to coastal areas, shall be mapped and marked, with increased visibility through mobile applications.

Relevant infrastructure investments shall be prioritized to meet the necessary standards and increase the number of Blue Flag beaches. Underwater cultural tourism routes shall be created in İzmir Bay and the coastal areas of the city to uncover, protect and promote underwater cultural heritage for cultural tourism purposes. Efforts shall also be made to protect and display underwater cultural heritage sites in their original locations.

Towards the aim of achieving sustainable tourism, eco-friendly accommodation facilities shall be developed with efficient energy, water and waste management systems. Incentives shall be provided to facilitate the ecological transformation of accommodation facilities in sensitive areas, and planning efforts shall focus on increasing eco-friendly accommodation facilities in sensitive coastal regions. Gediz Delta Wetland Conservation Area in the city center shall be utilized for ecotourism activities, and the region's tourism potential shall be developed from a conservation-oriented perspective.

A "Marine Park" shall be established in the peninsula area to strengthen the relationship with the sea through increased recreational activities while contributing to marine conservation and awareness efforts. The park shall serve as a platform for social assistance, education, conservation and research activities related to local marine biodiversity, offering education on marine biodiversity, implementing conservation activities to restore marine areas and enhance biodiversity, and conducting marine research and volunteer activities.

Measure
Development of marine recreation and ecological tourism shall be supported.
Responsible Entities
District municipalities İzmir Metropolitan Municipality İzmir Development Agency Provincial Directorate of Culture and Tourism
Associated Entities
General Directorate of Nature Conservation and National Parks Provincial Directorate of Environment, Urbanization and Climate Change Ministry of Culture and Tourism Provincial Directorate of Agriculture and Forestry Universities

Karaburun

Measure 2.1.3: Blue entrepreneurship practices shall be promoted.

Blue economy is an approach that increases growth, employment and social welfare while considering the environmental sustainability of seas and coastal areas. Blue entrepreneurship, along with blue innovation, focuses on developing new investments and solutions in emerging sectors within the broad spectrum of industries associated with the seas, as well as on making activities in traditional sectors more environmentally friendly and adapting them to new conditions. To promote blue entrepreneurship in İzmir, programs and support mechanisms shall be implemented to enhance the regional entrepreneurship ecosystem's focus on blue growth components, establish and support technology-based start-ups operating in the blue economy, and foster their growth. Priority shall be given to technology areas such as environmentally friendly maritime technologies, innovative concepts for ships and marine structures, sensors, automation and monitoring technologies, advanced manufacturing, safety, sea-based energy-producing technologies, shipyards, ports, marine technologies for marinas, and efficient, integrated desalination technologies.

Under the scope of the blue economy, entrepreneurs dealing in developing commercially viable, innovative and sustainable solutions for traditional and emerging sectors shall be provided with business model development training, grant support shall be given to entrepreneurs who are ready for the market and investment, and the formation of regional venture funds shall be supported. Interface structures and commercialization platforms that will serve as a bridge between companies, investors and entrepreneurs operating in blue economy sectors shall be established. Maritime clusters shall be supported to bring together businesses, researchers and investors, accelerating the adoption of innovative solutions developed by entrepreneurs in the sectors.

Events shall be organized to generate innovative ideas and solutions in the blue economy sectors, with promising ideas being developed into companies through incubation centers. Acceleration programs shall be run to scale up blue start-ups, and entrepreneurs shall be introduced to angel investor networks. Blue entrepreneurs at the scale-up stage shall participate in one-on-one coaching and mentoring sessions to prepare for investor meetings. Events shall also be organized to raise public awareness of environmental threats such as climate change, degradation of marine ecosystems and loss of habitats, and to showcase successful entrepreneurs who are making a difference.

Measure
Blue entrepreneurship practices shall be promoted.
Responsible Entities
Aegean Region Chamber of Industry Entrepreneurship centers İzmir and Aliağa branches of the Chamber of Shipping İzmir Development Agency İzmir Chamber of Commerce Incubation centers Technology transfer offices Technoparks Universities
Associated Entities
İzmir Metropolitan Municipality Port operators TÜBİTAK

Project 2.1.1: İzmir Maritime University Project

The project aims to establish the İzmir Maritime University to support multidisciplinary and application-based studies required for the region, in line with the priority of developing the blue economy potential in İzmir, focusing on the sustainable management of the seas and uncovering the economic value of marine resources. Detailed information about the project can be found in the "Appendices" section.

Objective 2.2: Ports in İzmir shall be revitalized to increase their contributions to the regional economy.

The port infrastructure in the İzmir region consists of TCDD İzmir Port, the ports in Aliağa region, and the ports of Dikili and Çeşme. TCDD İzmir Port and the ports in the Aliağa region, which handle almost all of the region's cargo, are the main focus of policies and evaluations related to freight transport. While Çandarlı Port is not yet operational, it remains a significant national public investment due to its high potential, although its superstructure has not yet been completed.

The fact that Çandarlı Port's superstructure has not been built yet offers an opportunity to plan the port according to current trends and needs. Its strong accessibility through the Northern Aegean Motorway and the potential for restructuring the port in line with energy sector developments, particularly wind energy equipment production, provide advantages in terms of regional compatibility, sustainability and complementarity.

Among İzmir's ports, the only one operated by a public entity is TCDD İzmir Port. Opened in 1959, TCDD İzmir Port is currently the largest port in the Aegean region and the second largest port in Türkiye in terms of quay length and backfield area. It is also the only port in the Aegean region capable of servicing all types of ships and cargo, making it the region's most important logistics infrastructure.

The data reveal that İzmir has a well-developed port ecosystem. As foreseen in the policy priorities of the Twelfth Development Plan, strengthening the ports with the necessary logistics and transportation investments shall contribute not only to İzmir's regional economy but also to the economy of the Aegean Region, which lies within the hinterland of İzmir's ports, and to the generation of added value in Türkiye. In this context, the role of ports in the blue economy within the region is noteworthy, both today and historically.

Between the years 2011 and 2020, when comparing the types of cargo handled at all Turkish ports with those at İzmir ports, it is observed that İzmir ports outperformed the Turkish average in total cargo and bulk cargo (due to developments in the Aliağa ports), while they fell below the national average in container cargo handling (Table 7).

TABLE 7. Changes in Handling Volumes and Growth Rates by Cargo Type (%)

Cargo Type	2011-2020 Change (%)	Turkish Ports	İzmir Ports
Container	Change	78.2	63.1
	Annual Average Growth Rate	6.6	5.6
Dry Bulk Cargo	Change	53.5	56
	Annual Average Growth Rate	4.9	5.1
Liquid Bulk Cargo	Change	12.8	67.1
	Annual Average Growth Rate	1.4	5.9
Total Cargo	Change	36.7	61
	Annual Average Growth Rate	3.5	5.4

Source: MoTI, 2022; İZKA, 2022b

The annual growth rate of total container cargo handled at İzmir ports was recorded at 5.6%, while the same rate for total container cargo handled at Turkish ports was 6.6%. During this period, the amount of containerized cargo handled at Turkish ports increased by 78.2%, while the growth rate at İzmir ports remained at 63.1%. These figures show that the performance of İzmir ports in container handling fell below the national average. The share of İzmir ports in the total container handling at Turkish ports has shown a downward trend (İZKA, 2022b).

As of the year 1999, 30% of the container cargo handled at Turkish ports was handled at TCDD İzmir Port alone. However, by 2020, the total share of container handling at all İzmir region ports had fallen below 15%. This situation can be attributed to the slow pace of infrastructure and superstructure investments in the ports and logistics infrastructure in İzmir region compared to other regions, as well as the appeal of faster-paced investments in the Mediterranean region (especially in Mersin and Adana regions) that have created more attractive service conditions for exporters. The failure of the privatization tender for TCDD İzmir Port, which was included in the privatization program in 2004, and the port's removal from the privatization scope and program in 2016 caused a long period of uncertainty, which in turn resulted in failure to make necessary infrastructure and superstructure investments (İZKA, 2022b).

Aliağa, one of Türkiye's leading regions regarding oil and its derivatives, is a significant and rapidly growing cargo hub due to the industrial sectors it hosts. Among the ports in the Aegean region, Aliağa ports, which share the same hinterland as TCDD İzmir Port, have the capacity to serve container ships and different types of cargo. The Aliağa port region, which consists entirely of privately owned ports, accounted for approximately 88% of İzmir's total cargo with 81 million tons handled in 2022 (MoTI, 2023). With three container ports in operation, the region's container handling in 2022 amounted to 1.5 million TEU, representing 79% of İzmir's total. Aliağa ports stand out as a logistics hub at the intersection of the İzmir-Çanakkale, İzmir-İstanbul motorways, the ring road and the İzmir-Bandırma railway (İZKA, 2021g). The fact that the ports in Aliağa region were established individually at different times and that their capacities have increased gradually in time has also led to transportation problems in the region. It has been identified that the physical conditions of the port's transportation network are insufficient, and steps need to be taken at the planning level to improve and expand port areas (İZKA, 2022f).

Ro-Ro transportation, a type of combined transport, is conducted in İzmir through TCDD İzmir Port and Çeşme Port, with routes to Tarragona (Spain) and Trieste (Italy), respectively. The İzmir-Tarragona line, which started in 2021, is developing, and as of 2022, it accounted for 2.1% of Türkiye's total Ro-Ro transportation by carrying 13,670 vehicles. On the İzmir (Çeşme)-Trieste line, which has been in operation since 2000, 70,013 vehicles were transported as of 2022, accounting for 13.9% of the national total (MoTI, 2023). The fact that cargo does not need to wait at the port, nor does it require port operations, combined with its reliability, compatibility with intermodal transport, and alignment with green logistics, makes Ro-Ro transportation an attractive option.

In the year 2022, İzmir achieved approximately $17 billion in exports and $13.6 billion in imports, continuing to maintain a trade surplus, ranking second after İstanbul among the provinces with the highest export volumes in Türkiye. Additionally, according to customs gate export data, İzmir achieved $30.3 billion in exports in 2021. Given that Türkiye's total exports amounted to $254.2 billion in 2022, İzmir contributed a significant share accounting to 13.4% to the national total (İZKA, 2022i). The development of ports is closely related to the growth of export-based production capacity in the port hinterland. Therefore, increasing the volume of goods produced is a key strategy for enhancing the share of the region's ports in handling activities.

An analysis of İzmir, positioned as a net exporter, through the input-output table of the sectors contributing the most to exports reveals that the textile, apparel, leather and related products sector ranks first with a share of 13.4% within İzmir's exports. The food, beverages, and tobacco products sector follows with an 11.7% share of exports. Additionally, "water transport services," "manufacture of motor vehicles, trailers and semi-trailers," and "manufacture of coke, refined petroleum products and nuclear fuel" are other sectors observed to have the highest export volumes among all (İZKA, 2021a). Projections for 2033 indicate that İzmir's foreign trade could reach $52 billion, with regional container handling reaching 4.7 million TEU (İZKA, 2022b).

Wind energy equipment is an important export sector for İzmir. In this rapidly growing global industry, the global market share of equipment used in the wind energy sector is expected to reach $100 billion annually over the next five years. Broader projections suggest that the share of other clean energy

sources in the total global energy sector will rise to 85% by 2050, with the wind energy sector, particularly offshore wind energy investments, displaying rapid development. The rapid rise in wind energy equipment production has positioned Türkiye, with contributions from the wind industry clustered around İzmir, as Europe's fifth-largest production and distribution hub. İzmir and its surrounding region, with their industrial infrastructure and specialized workforce in the wind energy sector, also have the potential to become a hub for offshore wind energy. Due to its high value-added products and export and employment potential, the wind energy sector has become strategically important for both Türkiye and İzmir (İZKA, 2022g). Data and findings indicate that the development of ports, which has historically been closely linked to İzmir's growth, has slowed over the past 20 years, highlighting the need for policies to strengthen the region's position.

In line with the objective of "Ports in İzmir shall be revitalized to increase their contributions to the regional economy," the following measures and projects are proposed for implementation.

Measure 1: *Sectors supporting the İzmir region's ports shall be developed to enhance port capacity utilization rates.*

Measure 2: *The capacity and share of TCDD İzmir Port in cargo handling shall be increased.*

Measure 3: *The accessibility and cooperation capacity of the Aliağa port cluster shall be improved.*

Project 1: *Çandarlı Port Clean Energy Sector Adaptation Project*

Project 2: *İzmir Clean Energy Specialized Industrial Zone Project*

Measure 2.2.1: Sectors supporting the İzmir region's ports shall be developed to enhance port capacity utilization rates.

In the region, particularly the sectors involved in container transport, such as manufacture of textile and apparel, manufacture of food, manufacture of motor vehicles, manufacture of plastics products, manufacture of machinery and parts, manufacture of furniture based on functional design, shall be prioritized for their role in utilizing port capacity, contributing to port revenues, employment, and the export-driven development of the region's economy. Integration of the region with global value chains through ports and production shall be supported.

To increase the number of exporting companies in the region, companies with export potential shall be identified, obstacles to their willingness to export shall be addressed, and individual consultancy support shall be provided towards encouraging them to become exporters. The export capacity of companies already exporting shall be increased by improving new market and product diversification and marketing methods. The export capacity of the manufacturing industry, which is accelerating in medium-high and high-technology sectors, shall also be supported.

Measure
Sectors supporting the İzmir region's ports shall be developed to enhance port capacity utilization rates.
Responsible Entities
Aegean Region Chamber of Industry Aegean Exporters' Associations İzmir Chamber of Commerce
Associated Entities
IMEAK Chamber of Shipping İzmir and Aliağa Branches İzmir Development Agency Port operators Ministry of Industry and Technology Ministry of Trade

Aliaga, Port Operations

Measure 2.2.2: The capacity and share of TCDD İzmir Port in cargo handling shall be increased.

Although still the largest port in the Aegean Region, TCDD İzmir Port is facing significant cargo and market loss due to outdated superstructure elements and delays in dredging operations. The primary issues include insufficient water depth, the absence of quays capable of accommodating new-generation vessels, inadequate warehouse space, and the lack of efficient operations and modern equipment at the port (İZKA, 2019). Investments shall be implemented to expand and increase the capacity of TCDD İzmir Port, which holds historical significance for İzmir's current development and competitiveness. The investments shall include dredging the İzmir Bay approach channel and maneuvering area, putting into service the second section of the existing fill and quay, relocating quays 10 to 19 further into the sea, reorganizing the warehouse building, and investing in port equipment. Relevant efforts shall also be made to enhance the port's human resources capacity in line with current developments. The port infrastructure shall be improved for Ro-Ro and passenger transportation, enhancing İzmir's international connections, and necessary actions shall be carried out to meet the demands of modern cruise tourism.

Measure
The capacity and share of TCDD İzmir Port in cargo handling shall be increased.
Responsible Entities
TCDD İzmir Port Operations Directorate Ministry of Transport and Infrastructure
Associated Entities
Ministry of Environment, Urbanization and Climate Change İzmir Metropolitan Municipality

Measure 2.2.3: The accessibility and cooperation capacity of the Aliağa port cluster shall be improved.

Within the Aliağa Nemrut Bay region, which hosts both ports and industrial facilities, and faces significant freight traffic and inadequate road, connection routes, railway and logistics infrastructure, the transportation and logistics infrastructure shall be strengthened. The existing issues in the Nemrut Bay hinterland shall be addressed by central and local institutions with a focus on analysis studies and future capacity increases, and solutions shall be implemented with a participatory approach. Road and railway infrastructure, logistics elements, and service facilities within the region shall be improved and expanded. Spatial solutions such as road widening, new roads, intersection arrangements, shared use for railway lines, truck parking areas, customs facilities, new facility entrances and pre-port areas shall be created (İZKA, 2022f; İZKA, 2023b).

The cluster approach shall be treated as a key factor towards strengthening communication and cooperation between port actors for the region's competitiveness in Aliağa, a multi-actor and multi-dimensional production area. In addition to increasing the physical and technical infrastructure necessitated by the regional demand, steps shall also be taken to develop the cooperation capacity in the region. The synergy created by improving the cooperative environment and capacity will contribute to the implementation of holistic approaches to common issues instead of piecemeal solutions. Specialized issues such as roads in the hinterland, motorway tariffs, zoning planning, and the improvement and expansion of port areas shall be the focus of such approaches. Clustering and governance approaches shall be supported by new management models, including port authorities (İZKA, 2022b).

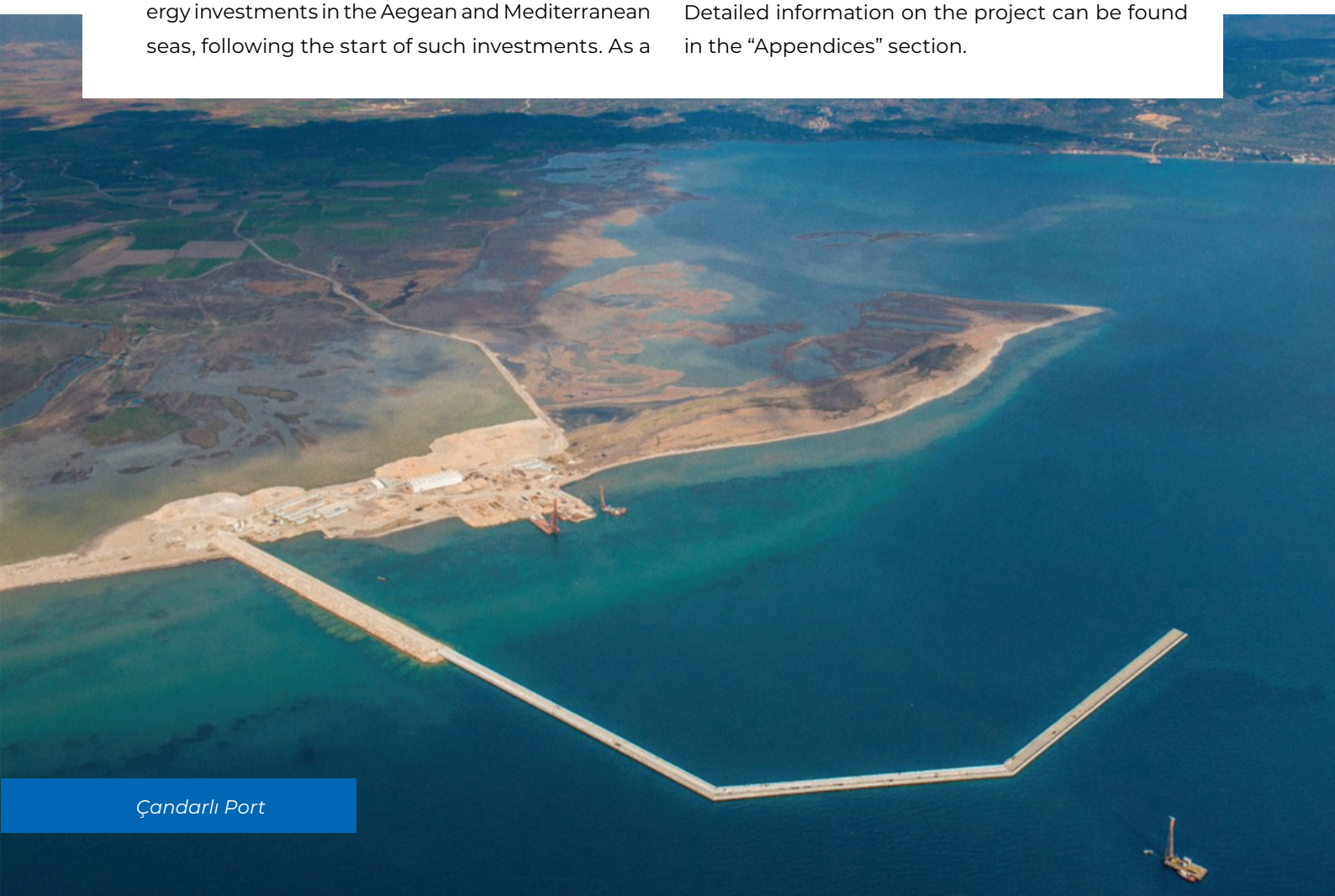
Measure
The accessibility and cooperation capacity of the Aliağa port cluster shall be improved.
Responsible Entities
Aliağa Municipality Aliağa port operators IMEAK Chamber of Shipping Aliağa Branch İzmir Metropolitan Municipality Ministry of Transport and Infrastructure
Associated Entities
Aliağa Chamber of Commerce Ministry of Environment, Urbanization and Climate Change İzmir 2nd Regional Board for the Protection of Cultural Heritage İzmir Development Agency Turkish Port Operators Association (TÜRKLİM)

Project 2.2.1: Çandarlı Port Clean Energy Sector Adaptation Project

Given that wind turbine components produced in the wind industry are large-scale project cargoes, they require specific logistics conditions in international logistics. To meet these conditions, overcome transportation challenges between ports and production areas, and offer large parcels suitable for operations, specialized industrial zones integrated with ports are being established as part of the global approach. Prioritized as an infrastructure investment to support an integrated development approach in "Regional Development" within the Twelfth Development Plan, Çandarlı Port shall be restructured as a specialized port for the clean energy sector, integrated with the İzmir Clean Energy Specialized Industrial Zone planned in the port's hinterland. This will allow the port's entire area, equipment and human resources to focus on the wind industry, helping to attract new investments while preventing existing companies from relocating their expansion investments abroad (İZKA, 2022g). In addition to its export role, Çandarlı Port will also handle the installation of offshore wind energy investments in the Aegean and Mediterranean seas, following the start of such investments. As a strategic project of critical importance for Türkiye, the development of Çandarlı Port will support the growth of wind turbine component manufacturers and similar project cargo-producing sectors, enhance alignment with global trends, and boost regional competitiveness. Detailed information on the project can be found in the "Appendices" section.

Project 2.2.2: İzmir Clean Energy Specialized Industrial Zone Project

Çandarlı Port has easy access to existing production facilities via the Northern Aegean Motorway. Given the suitability of the port's hinterland for establishing a specialized industrial zone focused on clean energy and its ability to offer efficient storage and handling services for project cargo volumes, plans are in place to implement the İzmir Clean Energy Specialized Industrial Zone Project, which will be integrated with the port. The project supports the policies and policy measures outlined in the Twelfth Development Plan for the energy priority sector, including increasing Türkiye's capabilities and competitiveness in energy technologies, strengthening its export potential, and promoting the domestic production of critical and high-value equipment. Detailed information on the project can be found in the "Appendices" section.



Çandarlı Port

Objective 2.3: The region's logistics infrastructure shall be improved.

Ensuring the smooth, fast and efficient delivery of cargo to ports depends on establishing strong road and rail connections with the hinterland. Logistics centers, which perform critical functions such as loading, storage and customs clearance, integrate different transportation modes necessary for fast transport, and thus enable combined transportation, are crucial infrastructure for ports. By offering integrated services and connections, logistics centers contribute to the efficiency, cost-effectiveness and productivity of transportation. Additionally, reducing the distance traveled by road vehicles and increasing rail transportation decreases carbon emissions in the port hinterland and improves traffic safety. Centralized distribution, the use of smart storage and handling systems, and fast customs procedures are functional features of logistics centers that provide speed, efficiency and effectiveness. It is critical for logistics centers to be located within or near an urban area, have road and rail connections, and offer direct and efficient access to multimodal transportation facilities, ports and airports (İZKA, 2022i).

The establishment of the Kemalpaşa Logistics Center in İzmir, which has largely completed its infrastructure, and the creation of connections between the center and the ports to ensure integration, will make a significant contribution to the development of the regional port ecosystem. The center will play an active role in the clustering of the logistics sector in İzmir, unlocking the city's logistics potential, institutionalizing the logistics sector in terms of organizational capabilities, and reducing transportation costs for exporters in the region (İZKA, 2022i).

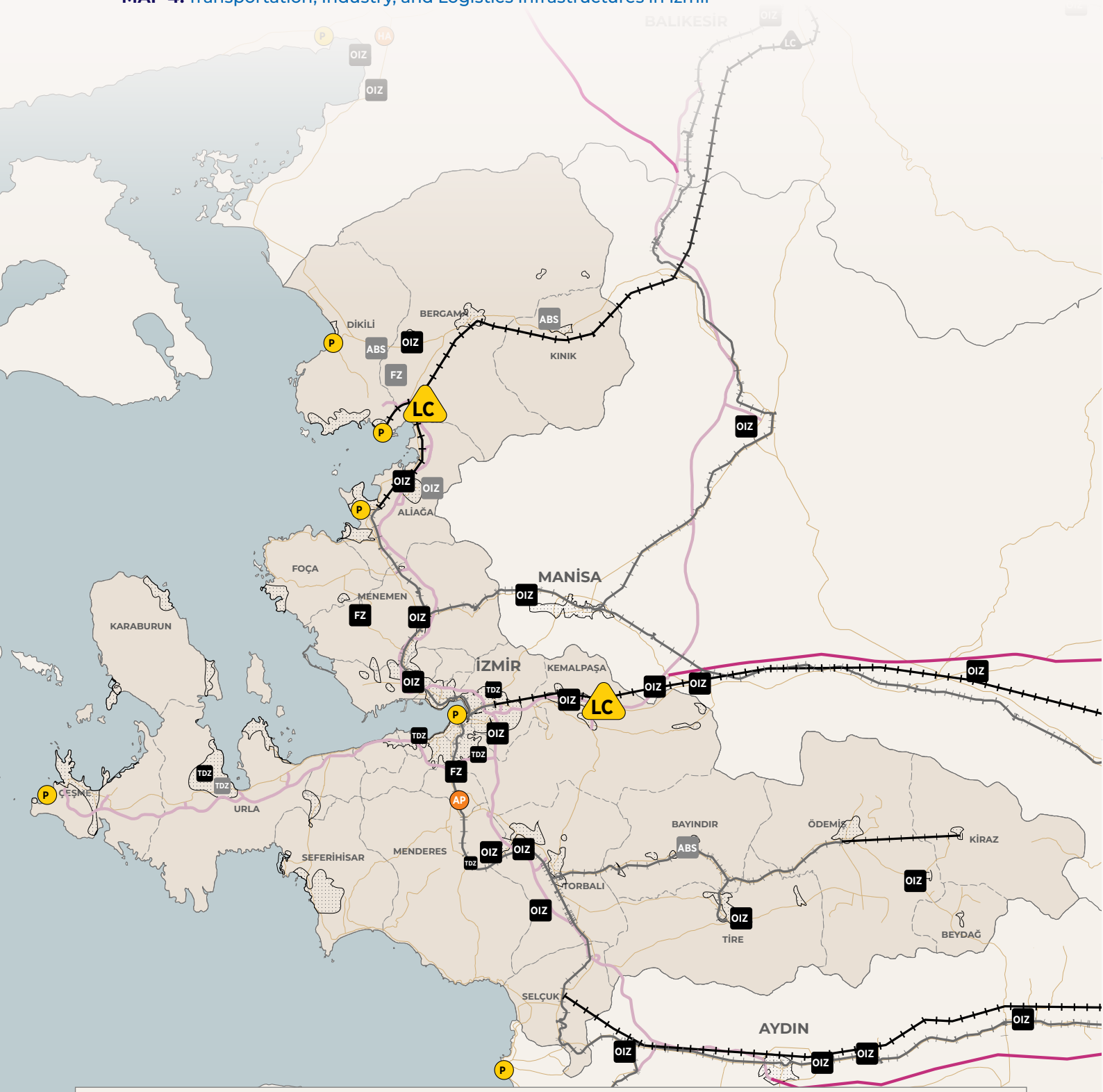
The investments in the İzmir-İstanbul Motorway, the 1915 Çanakkale Bridge, Çandarlı Port, TCDD İzmir Port, İzmir-Ankara High Standard Train Line, and the İzmir-Denizli Motorway are of great importance in directly connecting the Aegean Region to Europe and in the economic development of İzmir as a regional hub. Establishing the Kemalpaşa Logistics Center, linking it via rail to TCDD İzmir Port, the Aliağa ports and Çandarlı Port, and integrating the Kemalpaşa-Torbalı line into this development shall strengthen the operational efficiency of İzmir's port ecosystem, reinforce İzmir and its surroundings as an attraction hub, and solidify the Aegean Region's position within Türkiye's production and trade network. In this context, investment in a logistics center for the region carries strategic importance on both national and local scales (İZKA, 2022i).

On the other hand, the İzmir Clean Energy Specialized Industrial Zone, proposed under *the Regional Plan*, is planned to operate in an integrated manner with the Çandarlı Logistics Center, which is expected to be developed over an area of approximately 10 hectares. Additionally, it is proposed to establish a Railway-Connected Logistics Center and a Rural Product Collection Center in Torbalı, which will function as a regional logistics hub in conjunction with developments along the Denizli and Aydın axes.

Another supporting action for the development of Çandarlı Port will be the construction of appropriate connecting roads between the port and the Northern Aegean Motorway, which has now reached close enough proximity to establish a link with the port. Moreover, ensuring the connection of existing railway lines to Çandarlı Port, the planned logistics center in this area, regional organized industrial zones, free zones, and the Bergama settlement is of significance regarding the improvement of the region's logistics infrastructure. The policy priority of the Twelfth Development Plan to ensure that cargo and logistics centers near ports are also used as disaster logistics centers highlights the increasing importance of infrastructure investments that strengthen connectivity in terms of resilience.

A key development area that ports need for sustainable service delivery today is the transition to green transformation and smart technologies. Ports, which are established on coasts—one of the most sensitive ecosystems— and face heavy traffic, are confronted with issues such as environmental compliance, reducing their carbon footprint, proper disposal of waste and ballast water, transitioning to new fuel types, and utilizing renewable resources. It is estimated that greenhouse gas emissions from maritime transportation account for approximately 2.5% to 3% of total emissions. Concrete measures and regulations have been implemented for both ships and ports to reduce this percentage in the future. These regulations have become one of the main determinants of modern maritime practices (İZKA, 2022b). Concepts like port automation, smart ports and green ports, which envision more environmentally friendly and efficient operations, are coming into focus.

MAP 4. Transportation, Industry, and Logistics Infrastructures in İzmir



Source: Prepared using data from İBB, İZKA, and MoTI.

Transition to automation, triggered by the need to reduce labor costs and carbon emissions, necessitates the integration of technologies such as digitalization, artificial intelligence and blockchain into ports. The concept of Port 4.0, which involves the simultaneous digitization of port and logistics elements, encompasses all parties in the supply chain reaching a high level of integration through the use of specific technologies. Green ports implement environmentally friendly and sustainable practices against issues such as pollution, energy, waste and noise while delivering their services, thereby meeting the evolving expectations of transportation. The implementation of these efforts provides ports and logistics elements with competitive advantages in line with modern conditions through speed, efficiency and low energy requirements.

In the Twelfth Development Plan's year 2053 perspective, it was envisaged that the number of green ports in Türkiye, based on digitalization and energy efficiency, are to be increased. Moreover, in the context of logistics and transportation sector policies, policies and measures have been defined that prioritize railway and maritime transportation to minimize environmental impacts and costs, increase energy efficiency, and establish a safe, uninterrupted, efficient, integrated and sustainable transportation network and logistics centers.

In line with the objective of "The region's logistics infrastructure shall be improved," the following measures are proposed for implementation.

Measure 1: *Railway connections of Kemalpaşa Logistics Center, particularly with TCDD İzmir Port, shall be established.*

Measure 2: *Ports' transition to smart technologies and green transformations shall be actualized.*

Measure 3: *The investment in connection roads to the Çandarlı Port motorway shall be realized.*

Measure 2.3.1: Railway connections of Kemalpaşa Logistics Center, particularly with TCDD İzmir Port, shall be established.

Towards the aim of integrating the Kemalpaşa Logistics Center, located at the intersection of road, sea and rail transportation networks in the Aegean Region, into the port ecosystem and its hinterland, railway connections with TCDD İzmir Port, Aliağa Port Area, Çandarlı Port and Torbalı shall be developed. A 30.5 km railway connection between TCDD İzmir Port and Kemalpaşa Logistics Center shall be established to ensure that the logistics center effectively supports the port. This will prevent TCDD İzmir Port from being used solely as a container storage and depot area, enable combined transportation and reduce logistics costs. Similarly, the Aliağa region's ports and Çandarlı port connections shall be developed, integrating the logistics center with the entire port ecosystem. By establishing the Torbalı-Kemalpaşa railway connection, effective access to the ports shall be ensured for manufacturing enterprises in the Aegean Region, particularly along the Aydın-Denizli industrial corridor. In this context, railway-connected logistics infrastructures shall be developed in Torbalı.

Measure
Railway connections of Kemalpaşa Logistics Center, particularly with TCDD İzmir Port, shall be established.
Associated Entities
Ministry of Environment, Urbanization and Climate Change Ministry of Transport and Infrastructure
Responsible Entities
Aliağa port operators İMEAK Chamber of Shipping İzmir and Aliağa Branches İzmir Metropolitan Municipality TCDD İzmir Port Directorate

TCDD İzmir Port

Measure 2.3.2: Ports' transition to smart technologies and green transformations shall be actualized.

The transition of İzmir's ports, especially container ports, to smart technologies and green transformation shall be supported. Necessary infrastructure shall be developed at ports and logistics units to make port operations faster and more efficient through the use of smart systems and automation management, and institutional strategies and analyses shall be prepared in this direction. The policy priority of continuing to support green port practices has been outlined in the Twelfth Development Plan. Accordingly, green port practices shall be promoted in İzmir to increase energy efficiency in port operations, minimize environmental impacts and ensure sustainability. In line with the concept of green ports, port businesses shall be developed and exemplary practices supported in fields such as waste generation, water quality, air pollution, energy consumption, noise pollution, pollution from ships, and worker health and safety, which are all critical to the sustainability of port activities.

Measure
Ports' transition to smart technologies and green transformations shall be actualized.
Responsible Entities
Aliağa port operators Provincial Directorate of Environment, Urbanization, and Climate Change İzmir Metropolitan Municipality TCDD İzmir Port Directorate
Associated Entities
İMEAK Chamber of Shipping İzmir and Aliağa Branches İzmir Development Agency Turkish Port Operators Association (TÜRKLİM)

Measure 2.3.3: The investment in connection roads to the Çandarlı Port motorway shall be realized.

Menemen-Aliağa-Çandarlı Motorway, with 56 kilometers of motorway and 40 kilometers of connection roads, spans a total of 96 kilometers. Opened in 2020, the motorway has reached close enough proximity to provide a connection to Çandarlı Port. To implement the Çandarlı Port and the integrated İzmir Clean Energy Specialized Industrial Zone projects, a port-motorway connection shall be established. Additionally, access to the port for wind energy equipment manufacturers and other producers concentrated in Northern Aegean, who rely on road transport for export, shall be strengthened. The investment shall also take into consideration the Western Anatolia Free Zone (BASBAŞ), which is currently being established as İzmir's third free zone in the Bergama district. The increased use of the Northern Aegean Motorway for freight transportation shall be encouraged.

Measure
The investment in connection roads to the Çandarlı Port motorway shall be realized.
Responsible Entities
İzmir Metropolitan Municipality Ministry of Transport and Infrastructure
Associated Entities
Aliağa Municipality Ministry of Environment, Urbanization and Climate Change Northern Aegean Motorway Operator Wind energy equipment manufacturers Ministry of Industry and Technology

Alsancak, Behind the Port

5.3.
Strategic Priority 3:
Enhancing Social Resilience on the Basis of Sustainability

Resilience is the capacity of a society to adapt when faced with danger. A resilient society can withstand shocks and, if necessary, rebuild itself. Demonstrating resilience with sufficient flexibility to withstand potential problems, thereby maintaining well-being, are the characteristics of a socially sustainable society. True resilience can be spoken of when environmental and economic sustainability are combined with social sustainability. Furthermore, societal resilience is significantly related to the resilience of cities. A resilient city is one that can cope with threats, damage or challenges posed to it and sustain itself through its systems (Prasad et al., 2009).

Hosting approximately 5.2% of the country's population and being Türkiye's third-largest city, İzmir faces challenges in terms of housing, environment, transportation and infrastructure due to the processes of rapid urbanization, industrialization and population growth. Resilience against these challenges is critical for ensuring social sustainability (İZKA, 2021b). According to 2022 ABPRS records, İzmir has a population of 4.46 million, with the net migration rate increasing from 2.26 per thousand in 2011 to 5.6 per thousand in 2022. Net migration has more than doubled over the past ten years, with approximately 25,000 people added to the provincial population from within the country as of the year 2022. As of July 2023, the population that has arrived via international migration constitutes 3.1% of the city's population, equivalent to 136,000 people. The statistics reveal that migration is one of the key population dynamics of İzmir.

The population density in İzmir is 371 people per square kilometer, and when compared to Türkiye's average of 111 people/km², it is evident that the regional population density is above the national average. According to 2022 ABPRS records, the median age of Türkiye's population is 33.5, while the median age of İzmir's population is 38.0. The proportion of the population aged 65 and over is 12.4% in İzmir, surpassing the national average of 9.9%. Demographic data related to İzmir's population shows that, in addition to the low proportion of the youth population, the elderly population ratio is notably above the national average.

Detailed population projections for the year 2050 (İZKA, 2022h) estimate that the population, currently at 4.4 million, could reach between 5.6 and 5.9 million by the end of 2050, depending on different migration scenarios. If only fertility is taken into account and the city is assumed to receive no migration, the population is projected not to increase and could even decrease to 4.3 million. The projections demonstrate that migration is the fundamental factor behind the population growth needed for İzmir's social sustainability.

The average household size in 2021 was observed to be 3.2 across Türkiye, while it was 2.8 in İzmir (TURKSTAT, 2023a). Projections suggest that the trend of decreasing household size will continue, with the number of households, 1.4 million as of 2021, expected to reach 1.5 million in 2025 and 2.5 million by the end of 2050. Moreover, in a scenario where the province receives no migration, the share of the population aged 65 and over is projected to rise to 16.5% by 2030 and 28.3% by 2050. Even in the scenario where migration is considered, the proportion of the elderly population will reach 23%, translating into 1.3 million people by 2050 (İZKA, 2022h). Household size, aging and migration are parameters that need to be considered, particularly for planning urban services and housing needs.

The geographical distribution of the population analyzed with these key features also brings to the forefront the regional differences and urban-rural distinction within the region. In addition to its densely populated metropolitan area, İzmir also encompasses a vast rural area. The distribution of the population across urban and rural areas raises questions such as how to address the differing demands and needs of these populations, the types and scales of investments required for these areas, and how urban-rural interaction can be improved. While the urbanization rate of İzmir is stated as 100% based on administrative boundaries, calculations made using methods developed in global urban-rural classification studies estimate the urbanization rate as 89% for İzmir and as 77.3% for Türkiye as a whole. Within this framework, the districts of Bayındır, Beydağ, Karaburun, Kınık and Kiraz are identified as "rural"; Kemalpaşa, Menderes, Bergama, Foça, Urla, Ödemiş, Dikili, Seferihisar, Tire and Çeşme as "intermediate";

Torbalı, Aliağa, Selçuk, Menemen, Güzelbahçe, Çiğli,

Buca and Bornova as "predominantly urban"; and Karabağlar, Konak, Karşıyaka, Balçova, Bayraklı, Gaziemir and Narlıdere as entirely "urban" (İZKA, 2021b).

In the urbanization degree study conducted by TURKSTAT based on the EU Urban Degree (DEGURBA) classification, it was determined that 78.6% of İzmir's population resides in areas with high urbanization, 12.2% in areas with medium urbanization, and 9.1% in areas classified as rural (TURKSTAT, 2023b).

Quality of life, which encompasses the fundamental requirements of social sustainability, includes ensuring that services provided to society in both urban and rural areas are equitable and accessible. The Better Life Index, created by the OECD, compares well-being across countries by addressing topics such as housing, income, employment, community, education, environment, civic engagement, health, life satisfaction, safety and work-life balance (OECD, 2022a).

In İzmir, the amount of green space per capita is 8.31 m^2 (İBB, 2022a), below the national standard of 10 m^2 (İBB, 2020), highlighting the importance of strategies aimed at increasing green spaces in the region.

The population size of İzmir's urban center renders insufficient the current approach, which primarily focuses on rubber-tired transportation systems for urban transit. The increasing population and number of housing units further escalate the pressure on private vehicle use. The rise in the number of private vehicles necessitates measures to increase the share of public transportation in urban transit.

In addition to the suburban rail line (İZBAN) operated by the İBB and TCDD, the length of the city's metro and tram lines totals 177 kilometers (İBB, 2020). Upon the completion of the 7.2-kilometer metro line between Fahrettin Altay and Narlıdere, which is under construction, the length of the rail system is projected to reach 186.5 kilometers by the end of 2023 (İBB, 2022b). According to İzmir's Transportation Master Plan, the rail transit network in the city is expected to expand to 664 kilometers by 2030 (İBB, 2017).

Throughout its history, İzmir has never lost its characteristic as a port city. İzmir Bay also presents an opportunity for urban transportation. There are nine maritime transportation routes within the bay, and with inactive piers included, the total number of piers amounts to 13. The share of maritime transportation in İzmir's public transportation system is 3% (ESHOT, 2022). To improve urban quality of life, it is essential to reduce the pressure on road transport and increase the share of rail and maritime transportation modes.

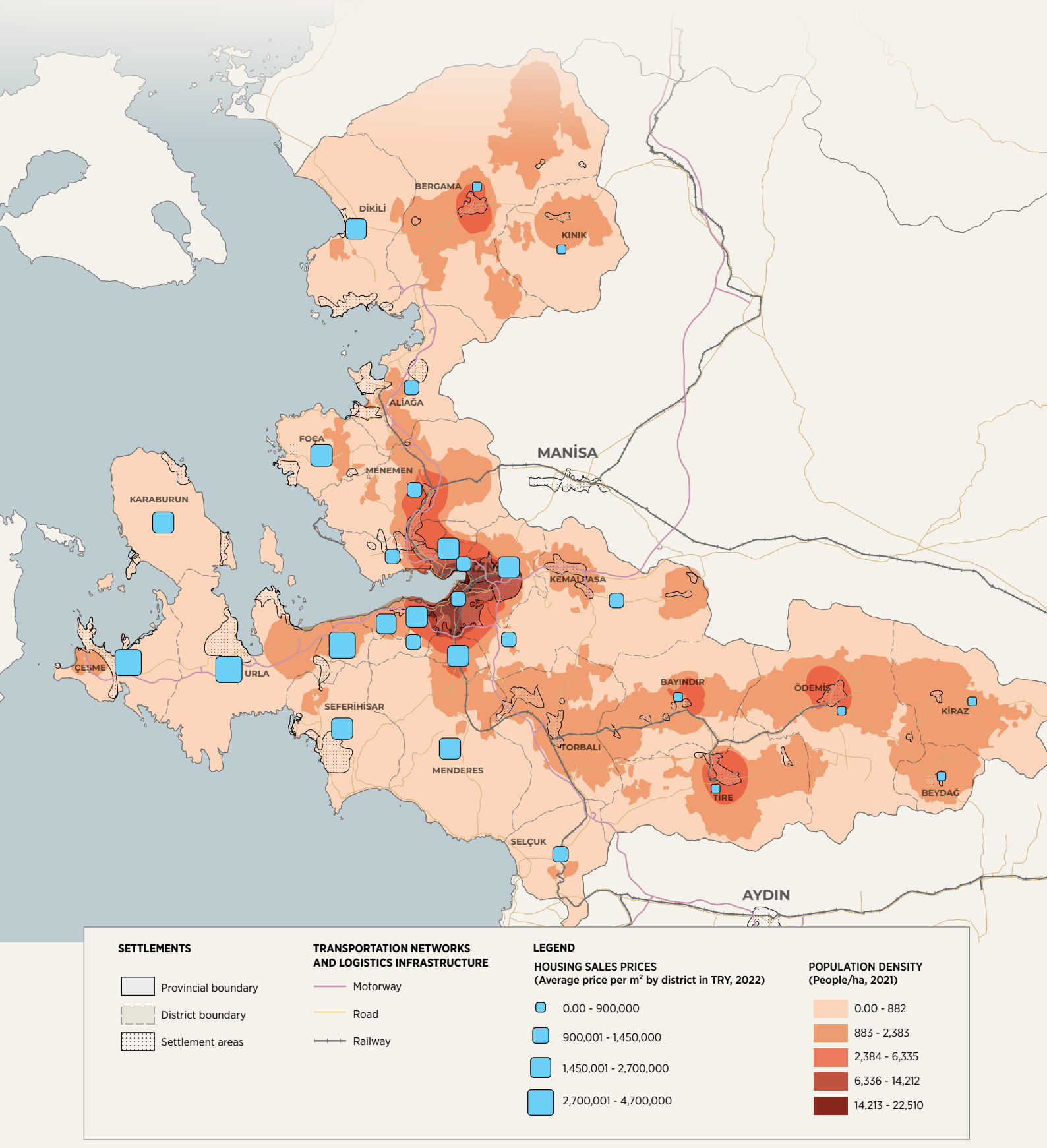
To ensure the continuity of life and production, resilience against disasters must be established. İzmir is among regions with high disaster risk due to hazards such as earthquakes, landslides, rockfalls, floods, meteorological and climatic events, fires, and industrial accidents. The presence of 21 faults within İzmir, capable of producing earthquakes of magnitude 6.0-7.2, and numerous active faults beneath the Aegean Sea, make precautions regarding the building stock critical (AFAD, 2021). The earthquake in the Aegean Sea on October 30, 2020, caused loss of life in İzmir and affected the housing stock through the damage it caused.

The dynamics of İzmir's population, such as migration and average household size, increase housing demand and affect economic accessibility to housing. According to the TCMB (Central Bank of the Republic of Türkiye) housing price index, İzmir experienced the highest annual increase in housing unit prices (25.5%) between 2010 and 2022. During this period, the annual price increase for housing units was 25.1% in İstanbul, 21.7% in Ankara, and 24.4% nationwide. The unit price per square meter for houses for sale increased from 3,058 TL/m^2 in 2018 to 16,000 TL/m^2 in 2022. In 2022, the highest housing unit prices were observed in the metropolitan area, particularly in Güzelbahçe, Urla and Çeşme (Endeksa, 2022). The Twelfth Development Plan defines the objective of housing policy as ensuring access to affordable, energy-efficient, resilient, safe and healthy housing for everyone. In this context, policies aimed at developing the housing market to meet housing needs and respond to various demands, as well as improving housing accessibility for all segments in İzmir, are of great significance.

In light of this information, four objectives are outlined under the strategic priority of "Enhancing Social Resilience on the Basis of Sustainability":

1. Urban and rural quality of life shall be improved.
2. Sociocultural and socioecological transformation shall be supported, and institutions shall be strengthened to respond to this transformation.
3. The capacity of the existing workforce shall be enhanced, and working environments shall be improved.
4. Innovation and technology creation shall be developed, and the entrepreneurship ecosystem shall be strengthened to support transformation.

MAP 5. Distribution of Population Density and Housing Prices in İzmir



Source: Prepared using data from İBB, TURKSTAT and Endeksa.

Objective 3.1: Urban and rural quality of life shall be improved.

The population of İzmir is concentrated in the metropolitan area, while there is also a significant amount of settlement in areas classified as rural. Key factors influencing quality of life, considering the population density and geographic distribution, include transportation, access to housing, resilience against disasters, living conditions, and social and technical infrastructure standards.

In İzmir, where private vehicle ownership increases by 6% each year, the share of private vehicles among all transportation modes is also on the rise (28%). Congestion during peak traffic hours lengthens travel times, negatively impacting quality of life, carbon emissions and air quality (İBB, 2020). The issue of congestion, stemming from the pressure of private vehicles on the Central Business Area (CBA), is further exacerbated by urban workspaces like industrial and commercial areas that, while originally planned for the outskirts of the city, are now embedded within it.

In this city settled around the bay, maritime transportation has not yet achieved sufficient efficiency. To align maritime transportation with current needs and expectations, solutions that enhance the competitiveness and share of maritime transportation in urban transit must be implemented. Additionally, integrating different transportation systems and promoting the use of innovative methods and tools enabled by digitalization are other key investments that will improve urban transportation. Sustainable development of urban accessibility, including rail systems, must also be ensured.

The function of housing is to fulfill the fundamental right to shelter for society. However, recently, issues related to accessibility in the housing market have been increasing. Measures are needed to mitigate the effects of these issues on society and quality of life. In implementing these measures, İzmir's growing population, the decreasing household size and the resulting higher number of households must be taken into account. Housing production should be considered in conjunction with disaster management, and necessary transformation efforts should be prioritized in areas with irregular construction, old buildings and structures with low resilience to risks.

Population growth, particularly the increase in the elderly population, must be considered when planning infrastructure and human resources for the delivery of health services in İzmir. The number and diversity of spaces needed for the social and cultural renewal of society should also be increased. The creation of quality physical infrastructures, improving the accessibility of cultural services, and transforming idle spaces in the city for public benefit should be considered to strengthen service delivery. The opportunities provided by smart city applications should be utilized in both transportation and the development of other urban services.

The city's growth and population increase highlight the need for more green and open spaces. Currently, green areas in the city are insufficient. Higher standards should be anticipated in new planning efforts regarding green infrastructure, which is one of the fundamental needs for sustainable social and urban development. Existing green spaces must be preserved, and the number and quality of green spaces and other open areas (forests, wooded areas, etc.) that serve the population should be improved across the city. In planning green spaces, water-sensitive design principles, connections between significant areas, and accessibility considerations should be taken into account.

In rural settlements, particularly in districts classified as "rural region" and "intermediate region" in İzmir, efforts to improve the quality of life should be prioritized to prevent population loss, increase the value of agricultural production, and make rural living more attractive by diversifying economic activities. The capacities of institutional structures providing services in rural areas should be enhanced, and policies supporting the sustainability and added value of production should be considered.

In this context, the following measures are recommended for implementation under the objective of "Urban and rural quality of life shall be improved."

Measure 1: *Urban accessibility shall be increased through the widespread use of sustainable transportation infrastructure.*

Measure 2: *Fundamental services that improve urban living quality, secure spaces and housing, and accessible social facility infrastructure shall be developed.*

Measure 3: *Planning and organizational capacity for effective disaster management shall be improved, and infrastructures to reduce disaster risks shall be strengthened.*

Measure 4: *Smart city applications shall be promoted.*

Measure 5: *Living conditions and job opportunities in rural areas shall be improved.*

Measure 3.1.1: Urban accessibility shall be increased through the widespread use of sustainable transportation infrastructure.

The use of efficient, clean-fuel vehicles in urban transportation shall be encouraged towards the aim of reducing carbon emissions. New routes shall be established to expand and increase the use of public transportation, and physical investments shall be made to integrate different transportation modes. Alternative roads and routes shall be planned to reduce the increasing traffic congestion in the city and improve access in emergencies, with a focus on incorporating these routes as part of urban transformation efforts. Parking facilities shall be planned at starting and ending points of major urban corridors to make public transportation more attractive. Roads between rural agricultural production areas and neighboring provinces, such as Manisa and Aydın, shall be improved, especially for districts located in the eastern section of Küçük Menderes Basin.

New routes shall be introduced to increase the share of maritime transport within public transportation. Vessels and piers shall be upgraded to meet changing demand, and vessels of various capacities shall be added to the fleet. To strengthen connections between different areas of the city via maritime transport, new piers shall be constructed, particularly in areas with high demand, such as Bayraklı and Mavişehir. Taking into account the recent urban expansion of the Urla-Güzelbahçe region, ferry services shall be planned to enhance its maritime connection. Special attention shall be given to the phenomenon of secondary homes and the increase in population during summer months in districts such as Foça and Çeşme, and ferry services shall be planned between these districts and other parts of the city (Karşıyaka, Konak, Alsancak). To further enhance the city's interaction with the sea and promote greater use of maritime transport in urban mobility, piers shall be enriched with unique architectural designs reflecting the city's historic port character and shall include additional amenities such as museums, exhibition halls, libraries and book cafes. Green transportation shall be supported, and the use of environmentally friendly technologies, such as electric ships, ferries and sea taxis, shall be promoted.

With the inclusion of the Selçuk and Bergama connections on the İZBAN line, the city's north-south connections will become seamless, improving rural-urban integration. The inclusion of districts with existing rail infrastructure, such as Ödemiş, Bayındır and Tire, into the İZBAN network shall also be considered to enhance regional accessibility. Additionally, to reduce freight traffic within the city, logistics warehouses scattered across the urban area shall be relocated to relevant centers, particularly the Kemalpaşa Logistics Center, and relevant efforts shall be made to increase the capacity of truck parking in major production areas. Strengthening the rail connections between industrial zones, logistics warehouses and ports will reduce freight-related congestion in urban transportation.

Bornova Metro

Konak Ferry Terminal

Pedestrian and bicycle paths shall be increased, and the bicycle paths shall be designed to be safe and uninterrupted, including parking areas. Regulations prioritizing safety shall be implemented for the use of individual electric transportation vehicles within the city, and parking areas shall be created for these vehicles in a way that does not obstruct pedestrian mobility. Approaches aimed at meeting all daily needs within a short distance and walking distance at the neighborhood scale shall be implemented in urban planning.

In the investments to be made for developing sustainable transportation infrastructure, investments shall be prioritized by considering population density and opportunity cost. All transportation infrastructure shall be arranged in accordance with accessibility standards to allow for comfortable travel for people with disabilities, and alternatives that enable more cost-effective urban transportation shall be implemented along with incentives to promote their use.

Measure
Urban accessibility shall be increased through the widespread use of sustainable transportation infrastructure.
Responsible Entities
ESHOT General Directorate İZBAN A.S. İZDENİZ A.S. İzmir Metropolitan Municipality 2nd Regional Directorate of Highways
Associated Entities
District Municipalities TCDD 3rd Regional Directorate Ministry of Transport and Infrastructure

Narlıdere, Bicycle Path

Measure 3.1.2: Fundamental services that improve urban living quality, secure spaces and housing, and accessible social facility infrastructure shall be developed.

Considering the decrease in household size and the increase in the number of households in İzmir, housing production and appropriate financing solutions shall be developed in line with changing housing demand. In districts with touristic characteristics, such as Çeşme and Urla, where housing prices have seen significant increases, specialized practices such as rent assistance, provision of social housing and employee housing shall be implemented to ensure the sustainability of public service delivery.

Urban transformation practices shall be utilized towards the aim of reducing disaster risks. In these practices, functions and designs that enhance the city's livability, do not further increase density and do not segregate urban spaces shall be prioritized in terms of social and technical infrastructure. Approaches suitable for local characteristics, urban aesthetics, and the city's character shall be developed, and environmentally friendly structures and settlements shall be created. Comprehensive urban transformation strategies shall be prepared to make the transformation of risky areas feasible through appropriate urban transformation policies. In this regard, it shall be considered that relevant strategies should be developed together with spatial plans to ensure result-oriented implementation. In order to form the basis for spatial plans, principles to be followed in determining new settlement areas shall be developed to promote disaster- and climate-sensitive planning, along with the necessary design principles and standards. Settlement structure and building typology proposals shall be developed based on the specificity of the location, and the transformation process shall be supported with climate- and disaster-sensitive design, and technical and material research.

The number of qualified urban green areas in the city shall be increased, particularly in districts with the densest urban populations, such as Buca, Karabağlar, Konak and Bayraklı. Besides Kültürpark, the city's largest green space, it shall be a priority to utilize potential areas in and around İzmir that are of reserve quality or have undergone functional

changes, with designs and applications that can contribute to the city's and residents' quality of life. Green spaces and other open areas that serve the population shall be developed throughout the city in terms of both number and quality, and water-sensitive design principles, connections between important areas, and accessibility shall be taken into account in green space planning.

Urban green areas shall be re-examined in terms of quantity and quality with the goal of climate adaptation, and the quality of ecosystem services in these areas shall be enhanced. Solutions shall be implemented to reduce energy consumption in urban areas and prevent the formation of urban heat islands. In cases where industrial zones and small industrial sites located within the city are underutilized or inefficient due to changing conditions, they shall be relocated to the city's new development areas, and the areas vacated after the relocation shall be evaluated for alternatives for public use.

To improve the city's environmental, cleanliness and quality standards, necessary regulations and efforts shall be implemented to ensure proper waste management, and sewer, environmental cleanliness and hygiene standards shall be effectively maintained within the city. Shelter capacities shall be expanded to prevent unwanted impacts that stray animals might have on people, other animals and the environment, and adoption shall be encouraged, all while considering animal welfare.

Libraries meeting international standards and capable of responding to current information demands shall be provided, as well as open and closed event spaces that can host various types and sizes of events. For event and performance centers, the city's underused structures shall be considered as a priority. To prevent the process of urban decay in the city center, the cultural and artistic functions of İzmir's historic city center shall be strengthened. Cultural facilities concentrated in the city center shall also be expanded to districts on the periphery and within the inner urban areas. Especially in themes related to the city's historical geography, such as maritime and commerce, qualified museums shall be established, and capacity shall be developed for organizing cultural events at international standards.

Measure
Fundamental services that improve urban living quality, secure spaces and housing, and accessible social facility infrastructure shall be developed.
Responsible Entities
Provincial Directorate of Environment, Urbanization and Climate Change İzmir Metropolitan Municipality District Municipalities TOKİ (Housing Development Administration of Türkiye)
Associated Entities
Provincial Directorate of Family and Social Services Ministry of Environment, Urbanization and Climate Change Provincial Directorate of Culture and Tourism Provincial Directorate of Health İzmir Development Agency Universities

Bayraklı, New City Center

Measure 3.1.3: Planning and organizational capacity for effective disaster management shall be improved, and infrastructures to reduce disaster risks shall be strengthened.

Reducing existing risks and preventing the formation of new risks related to disasters and emergencies such as earthquakes, landslides, rockfalls, floods, meteorological and climate-related disasters, fires, industrial accidents and maritime accidents, and enhancing resilience shall be addressed as a priority.

In the context of planning, organization and infrastructure strengthening for effective disaster management, a current Earthquake Master Plan for İzmir shall be prepared as a priority. The "İzmir Earthquake Master Plan" will be a roadmap that aims to coordinate the necessary multi-dimensional measures from a long-term perspective, define projects as independent yet complementary operations based on high ownership, address decisions with their physical and spatial dimensions, and most importantly, organize comprehensive action. Risk definitions shall be made for the entire province, and it shall be specified who will reduce the risks, in what timeframe, and which manner. Regional collaborations shall be developed to extend the scope of necessary measures to be taken based on risk types and regional needs.

The "Master Plan" shall consist of three main components. The first is the "Mitigation Plan," which aims to organize all relevant stakeholders through various cooperation models, involving governance structures and local communities to ensure comprehensive and result-oriented action. It shall define authorities, responsibilities, duties, and rewards and establish a follow-up and enforcement infrastructure through various forms of contracts within the framework of relevant sub-actions and projects. This plan shall also include widespread awareness and education activities to increase social resilience to disaster risks, promote local organizations at the apartment, apartment complex and neighborhood level, and encourage voluntary organizations for youth, sports, university clubs and similar communities. The development of social technologies, which provide facilitation and problem-solving in strengthening administrative and social resilience before and after disasters, shall be supported, along with the enhancement of social entrepreneurship and social innovation capacities.

One of the Buildings Collapsed in the October 30, 2020 Earthquake in Izmir

The second component of this "Master Plan" shall be the "Action Plan," to serve as the operational complement to the "Mitigation Plan." This plan shall focus on urban collective transformation and investments in high-risk areas within the existing built environment, with a primary focus on earthquake resilience. The necessary environment and resources, legal and administrative regulations, and continuity of the knowledge and tools required for decision-making and process design within the "Mitigation Plan" and "Action Plan" shall be developed as the third component in the form of Research, Adaptation and Governance Programs.

An additional significant effort to complement the scientific studies that reveal the form and levels of hazards and their associated risks shall be vulnerability analyses conducted across physical, social, economic and administrative dimensions. These analyses shall aim to establish a framework and approach that can also serve as the basis for assessing other types of disasters beyond earthquakes and to identify relevant needs.

Analyses and planning efforts to strengthen disaster preparedness and resilience shall be carried out regarding the fields of "Transportation and Logistics," "Critical Production and Trade Areas and Facilities," "Critical Public Assets and Services," and "Industry and Agriculture," and infrastructure development projects shall be supported. Efforts to enhance the resilience of sectors' production/supply chains against disasters to protect livelihoods and productive assets shall be conducted. The existing knowledge and infrastructure related to disasters and emergencies shall be reviewed, and management and decision support systems shall be adapted within the framework of

the Earthquake Master Plan, leading to the creation of a fully integrated "İzmir Disaster Information and Management System."

In coordination with the development processes of the "Earthquake Master Plan," the Provincial Disaster Risk Reduction Plan (İl Afet Risk Azaltma Planı - İRAP) and the Provincial Disaster Response Plan (İl Afet Müdahale Planı - TAMP) shall be updated, with efforts focused on harmonizing and enhancing them to incorporate multi-disaster scenarios, scenarios with regional impacts, and the organization of comprehensive societal action. The approach and framework outlined in the Türkiye Disaster Risk Reduction Plan (Türkiye Afet Risk Azaltma Planı - TARAP) for the 2022-2030 period will also serve as a significant foundation for these improvement and update efforts.

Measure
Planning and organizational capacity for effective disaster management shall be improved, and infrastructures to reduce disaster risks shall be strengthened.
Responsible Entities
Provincial Directorate of Disaster and Emergency Management (AFAD) Provincial Directorate of Environment, Urbanization and Climate Change İzmir Metropolitan Municipality İzmir Governorship Investment Monitoring and Coordination Directorate Regional Directorate of Forestry
Associated Entities
Ministry of Environment, Urbanization and Climate Change Ministry of Interior Disaster and Emergency Management Presidency (AFAD) District municipalities Ministry of Agriculture and Forestry Universities Chambers, Professional Organizations, Civil Society and Initiatives

Measure 3.1.4: Smart city applications shall be expanded.

The smart transportation system, as an integrated system supported by information and communication technologies, shall be expanded to address the entire city, smart signaling applications shall be widely implemented, and other areas, such as parking density and priority vehicles affecting access to the system, shall be integrated. The necessary technical infrastructure shall be established to ensure that data obtained from the smart transportation system can be shared with other relevant public institutions and utilized in relevant applications. With smart city applications, it will be possible to detect and address road maintenance needs in the city at an earlier stage.

A common digital data platform shall be established by institutions that produce data related to the city, and the data collected shall be uploaded by local administrations and public institutions to the platform, and spatial plans shall be digitized and linked to the data. The system shall be managed to be accessible for institutional use, and data, particularly related to urban transportation, shall be made available to serve urban life quality, accessible to the public and researchers.

Local administrations shall install smart water meters, prioritizing regions experiencing water scarcity, and pilot projects for smart street lighting shall be implemented. Based on the results from these pilot areas, the applications shall be expanded by the end of the planning period. Smart energy applications shall also be implemented, especially in industrial facilities, including organized industrial zones, towards the aim of increasing energy efficiency.

In order to leverage the city's tourism potential, facilitate the mobility of domestic and foreign tourists within the city, and promote tourist locations, existing smart tourism applications shall be further developed, content update efforts shall continue, and new technologies shall be used to enhance the experience of touristic areas.

Measure
Smart city applications shall be expanded.
Responsible Entities
ESHOT General Directorate GDZ Elektrik Perakende A.S., District municipalities İzmir Metropolitan Municipality İZSU General Directorate
Associated Entities
Provincial Directorate of Environment, Urbanization and Climate Change İzmir Development Agency OIZs Universities

Measure 3.1.5: Living conditions and job opportunities in rural areas shall be improved.

The diversity and quality of public services in rural areas shall be increased, and innovative service delivery methods shall be implemented. The rising average age in rural areas and the expectations of the younger population remaining in rural life shall be considered in service delivery. Income supports and social security opportunities shall be developed to ensure the continuation of young people's employment in agriculture and livestock sectors, preventing interruptions in the intergenerational transfer of agricultural knowledge. Transitioning to the production of high value-added, resource-efficient products with high export potential shall be encouraged. Measures shall be taken to prevent practices, such as hobby gardens, that hinder the proper use of agricultural land.

Infrastructure improvements shall be made on internal rural roads and connections between rural areas and urban centers, and public transportation services in rural areas shall be expanded, strengthening the connections between rural and urban areas. Enhancing accessibility will strengthen the flow of goods and services between rural and urban areas, reduce the storage time of produced goods, and expand market access. To increase income diversity and employment opportunities in rural areas, non-agricultural economic activities sensitive to rural life like agritourism and ecotourism shall be supported, and necessary infrastructure and superstructure investments shall be made.

Sports infrastructures serving different disciplines shall be strengthened, with developments such as paragliding in Beydağ, nature sports in Bergama, water sports in Peninsula and İzmir Bay, and hiking routes in Küçük Menderes Basin.

Services for the elderly population, particularly social and healthcare services, shall be improved, and mobile healthcare infrastructure shall be strengthened. The concentration of nursing homes and care facilities in the city center and western parts of the city shall be spread to districts classified as "rural" and "intermediate regions." Internet infrastructure shall be strengthened in districts like Bergama, Kiraz, Kemalpaşa and Ödemiş, where mobile internet access is low. To revitalize social life in rural areas, social and cultural activities shall be expanded, and disused school buildings in rural neighborhoods shall be transformed into "community centers" for shared use.

The quality of education in all levels of formal education serving the rural population shall be improved, schools shall be equipped with necessary technological infrastructure, and physical conditions shall be accordingly enhanced. Necessary planning, guidance and infrastructure work shall be carried out to ensure access to these services in rural neighborhoods or the nearest district centers. Pre-school education units shall be increased and mobile kindergartens shall be expanded in rural areas to support women's employment. Curricula in high schools in rural areas shall be enriched to relate to agricultural production. Initiatives shall be implemented to strengthen relations between those migrating to rural areas and the existing rural population.

The Twelfth Development Plan includes policy priorities for conducting statistical studies to measure the socio-economic and cultural development levels in rural areas and for developing location-specific policies. In connection with national priorities, detailed analysis studies shall be conducted in İzmir to shed light on rural area typologies, and rural development strategies shall be prepared, addressing multiple districts with high rural population density. In this context, priority shall be given to Bayındır, Beydağ, Kiraz and Ödemiş districts, which form a significant part of Küçük Menderes Basin and experienced negative population growth in 2021.

Measure
Living conditions and job opportunities in rural areas shall be improved.
Responsible Entities
Provincial Directorate of Family and Social Services İzmir Metropolitan Municipality Provincial Directorate of Agriculture and Forestry 3rd Regional Directorate of the Ministry of Transport and Infrastructure
Associated Entities
Ministry of Family and Social Services Provincial Directorate of Environment, Urbanization and Climate Change Provincial Directorate of National Education District municipalities District agricultural directorates İzmir Development Agency Ministry of Agriculture and Forestry Ministry of Transport and Infrastructure Universities

Torbalı, Agricultural Land

Objective 3.2: Sociocultural and socioecological transformation shall be supported, and institutions shall be strengthened to respond to this transformation.

The ability of institutions and communities to adapt to cultural, social and economic changes and transformations, improve the services they provide, and enhance the quality of these services has a direct impact on the resilience of the communities and populations they represent or serve.

Diminishing resources has brought the careful use of resources to the forefront for both producers and consumers. Green transformation involves not only industries but also various practical applications that engage society. The 12th Sustainable Development Goal of the United Nations, responsible production and consumption, highlights the importance of implementing sustainable practices, reducing food waste, managing waste in an environmentally responsible manner, and promoting nature-compatible lifestyles while considering the needs of vulnerable groups.

Although İzmir is one of the most developed provinces in Türkiye in terms of socio-economic development rankings, like other metropolises, it faces issues such as rapid urbanization and migration, youth unemployment, an aging population, poverty, intra-regional development disparities and shrinking agricultural lands, which need to be addressed to create a sustainable and resilient society. Social problems and changes particularly exert pressure on vulnerable groups in the city, and specialized efforts are needed to accurately identify the demands and needs of these groups and to consider their capacity to adapt to transformation.

Population projection studies reveal that İzmir, which already has a median age and elderly population rate significantly higher than the national average, will experience further intensification of its aging phenomenon in the future (İZKA, 2022h). Migration, which forms the basis of population growth, along with the emerging aging population and the sociocultural structure, are critical issues in terms of the services that need to be provided. In this context, in-depth analyses focusing on İzmir's population dynamics, particularly regarding aging, migration and related issues such as housing, will be essential in guiding policies, while supporting the healthy integration of vulnerable groups into urban life is crucial for the sociocultural aspect of societal resilience.

In this context, the following measures are proposed for the implementation of the objective "Sociocultural and socioecological transformation shall be supported, and institutions shall be strengthened to respond to this transformation."

Measure 1: *The integration of vulnerable groups into social and economic life shall be increased.*

Measure 2: *The region's awareness, knowledge and competence level regarding responsible consumption and resource use shall be raised.*

Measure 3: *Institutional capacity to support transformation shall be developed.*

Bayındır

Measure 3.2.1: The integration of vulnerable groups into social and economic life shall be increased.

Regional-level analyses shall be conducted to assess the current status of the population arriving through international migration and to support their active participation in social life. Based on the findings, occupational sectors where the migrant population can be employed during the economic transformation process shall be identified, and vocational training and guidance programs shall be implemented. The capacity of related services shall be developed to ensure that migration to İzmir supports the development of high-tech and value-added production sectors, and the necessary infrastructure shall be established by universities, research institutions, and industrial and professional organizations.

Social and cultural centers, recreation, and sports areas that promote the active participation of the elderly population in social life shall be expanded, and programs supporting active aging shall be implemented. Priority shall be given to establishing local service centers in neighborhoods with a high concentration of elderly and low-income residents. Particularly in rural areas, elderly information inventories shall be created, and local administrations and other relevant institutions shall provide support in terms of basic health and care services. The use of software and digital tools that enable real-time remote monitoring of health data for elderly individuals and improve the efficiency of delivering basic health and care services in terms of time and resources shall be expanded. Facilities such as active living centers, nursing homes and barrier-free living spaces that meet accessibility standards shall be established to integrate the aging population and disabled individuals into society and enable them to live harmoniously, while existing structures shall be transformed in accordance with accessibility regulations and improved in terms of capacity and quality.

Guidance, education and employment orientation centers shall be established and developed to support the employment opportunities for people with disabilities. Daycare and full-day care centers shall be expanded to enable the social and professional participation of families with disabled members. Access to education for people with disabilities and vulnerable groups shall be improved, and investments in physical infrastructure and private sector collaborations shall be developed to promote their employment.

Social and cultural services provided by local administrations shall be expanded, targeting women, disabled individuals, the elderly and children in low-income and rural areas. Social assistance and services, vocational training, and entrepreneurship activities shall be prioritized in urban districts with a high concentration of disadvantaged populations, such as Karabağlar, Konak and Buca.

To promote women's employment, the capacity of daycare and childcare services shall be increased, especially in low-income neighborhoods, and capacity-building support shall be provided to women's cooperatives to enable them to offer professional services and create employment opportunities.

Measure
The integration of vulnerable groups into social and economic life shall be increased.
Responsible Entities
Provincial Directorate of Family and Social Services Provincial Directorate of Migration Management Provincial Directorate of National Education İzmir Metropolitan Municipality
Associated Entities
Ministry of Family and Social Services Directorate General of Migration Management of the Ministry of Interior District municipalities İzmir Development Agency Ministry of National Education

Konak Disabled Service Center

Measure 3.2.2: The region's awareness, knowledge and competence level regarding responsible consumption and resource use shall be raised.

Awareness-raising, informational and educational programs shall be conducted to reduce food waste primarily caused by consumer behavior. Priority shall be given to food groups with the highest waste levels, such as fruits, vegetables and bread, and awareness activities shall be carried out on food planning and the proper storage of surplus food. Information and awareness campaigns targeting changes in consumer behavior shall be organized, starting from the pre-school period, with the aim of instilling a culture of avoiding waste, consuming only what is necessary and saving resources in future generations. Incentive tariffs shall be implemented to encourage efficient consumption in electricity, water and natural gas use.

The expansion of food banking systems shall be supported to deliver surplus healthy food from mass consumption points to those in need. Pilot programs shall be implemented to encourage the reduction of household waste originating from households, the retail sector and mass consumption points, and to maximize recycling rates for waste that cannot be reduced. In these programs, incentives provided by local administrations shall support the increase of social and economic benefits. The gains achieved shall be communicated through mass media to raise awareness and knowledge levels in the region. The necessary technical capacity shall be developed through non-formal education programs.

On the producer and industrial side, activities shall be carried out to prevent production waste, optimize the use of water, fertilizers and agricultural chemicals in agricultural activities, and minimize post-harvest losses. The traceability and efficient use of electricity, water, natural gas and raw materials in trade and industrial facilities shall be supported, and efforts shall be made to evaluate the reuse of industrial waste through methods that provide maximum benefit, as well as to promote production practices that minimize waste. Technical support units capable of serving the industrial and agricultural sectors shall be established. Sustainability offices established within municipalities shall carry out activities to support producers and industrialists in their districts in understanding the importance of responsible consumption and resource use, considering its economic benefits and contribution to efficiency, and adopting these practices.

Data-driven awareness applications that compare ideal consumption values shall be developed to reduce household energy and water consumption. Consumers shall be informed about innovative consumption models such as sharing economy platforms, shared use workshops, second-hand markets, and service-based consumption instead of product-based consumption, and such practices shall be promoted in the region.

Measure
The region's awareness, knowledge and competence level regarding responsible consumption and resource use shall be raised.
Responsible Entities
Aegean Region Chamber of Industry GDZ Elektrik Perakende A.S. İzmir Union of Chambers of Tradesmen and Artisans İzmir Commodity Exchange İzmir Chamber of Commerce İZSU General Directorate Provincial Directorate of Agriculture and Forestry
Associated Entities
District municipalities İzmir Metropolitan Municipality İzmir Development Agency OIZs Universities

Bergama Aşağıkırıklar Village

Measure 3.2.3: Institutional capacity to support transformation shall be developed.

Awareness campaigns regarding İzmir's ecological diversity and the environmentally sensitive use of natural resources shall be conducted, starting from the pre-school period. Practices promoting awareness, incentives and usage-based pricing for efficient resource use shall be implemented.

Service capacities of healthcare institutions in rapidly growing and industrializing districts such as Torbalı, Aliağa and Kemalpaşa, as well as Urla, shall be improved, and healthcare delivery shall be made more efficient and effective through the expansion of applications such as digital consultations, home care and mobile services, with a priority on rural areas. The workforce for elderly care services shall be trained, and the service delivery infrastructure shall be strengthened. Social service infrastructure shall be enhanced, and efforts shall be made to ensure widespread access to public services through neighborhood houses, libraries, kindergartens and study centers.

The work processes of umbrella organizations shall be digitized, and new technologies such as blockchain shall be used to increase the efficiency of services provided to both their members and other institutions.

Shared service and training centers shall be established to address the shortage of skilled workforce in rural areas, and capacity-building efforts shall be conducted in line with local needs.

Under the framework of social cooperativism, support shall be provided to the institutional development of formations that include communities at risk of social exclusion and aim to strengthen these communities both economically and non-economically, enabling them to contribute to the economy, social life and societal development.

Measure
Institutional capacity to support transformation shall be developed.
Responsible Entities
Provincial Directorate of Family and Social Services Aegean Region Chamber of Industry Aegean Exporters' Associations İzmir Metropolitan Municipality İzmir Union of Chambers of Tradesmen and Artisans İzmir Commodity Exchange İzmir Chamber of Commerce Provincial Directorate of Agriculture and Forestry Provincial Directorate of Trade
Associated Entities
Ministry of Family and Social Services Provincial Directorate of National Education District municipalities İzmir Development Agency KOSGEB İzmir Directorate OIZs Ministry of Agriculture and Forestry Ministry of Trade

Karaburun Eğlenhoca Village

Objective 3.3: The capacity of the existing workforce shall be increased, and work environments shall be improved.

Green and blue growth refers to a human-centered and sustainable growth model that prioritizes the protection of natural ecosystems, balanced use of resources and enhancement of social welfare. Policies aligned with green and blue growth are expected to trigger structural transformation in national and regional economies, expand employment areas through the increase of green jobs focused on environmental protection, and contribute to the development of human resources with decent jobs. Changes in environmental and climate policies, along with technological advancements, are leading to the emergence of new professions and business models, transforming the content of existing occupations. In line with these processes, profiles of human resources, skill sets and employees' perceptions of jobs and workplaces are likewise evolving. The Twelfth Development Plan aims to take the necessary measures to transform the impacts of green and digital transition processes into opportunities and ensure a just transition.

In terms of occupational accidents and diseases, significant indicators of the quality of employment and decent work, İzmir is a region where effective measures need to be developed due to its high-risk sectors in the industrial sector. According to SGK (Social Security Institution) data for 2020, İzmir ranks third after İstanbul and Ankara in terms of fatal workplace accidents. The increasing share of green economy and blue growth sectors in İzmir's economic activities is expected to bring positive developments regarding occupational accidents and diseases. Supporting decent work is crucial to accelerating this process.

It is necessary to make traditional production methods more efficient and sustainable, especially in strategic sectors such as energy, industry, transportation and agriculture, as well as to develop workforce skills in line with this urgent need. The primary reason employers in İzmir struggle to find employees is seen as the inability to meet the demand for qualified human resources, while it is emphasized that workers remain unemployed due to a lack of skills. In the context of the sustainability-focused social transformation process, the emergence of new jobs and the restructuring of existing ones, especially in green and blue transformation, creative industries and digitalization, will enhance the potential of the workforce to acquire professions and access employment.

Digital transformation, which is replacing human labor with digital technologies and leading to the emergence of new jobs with high labor productivity, is increasing the demand for digital and creative professions. With the rise of creative industries, there is a shift from traditional production structures to modern ones, creating new jobs and employment opportunities and necessitating the acquisition of new skills. Approximately 6% of creative professionals in Türkiye work in İzmir. As one of the regions identified as closest to specialization in the creative economy in Türkiye, the support of creative industries in İzmir presents itself as a policy area that could turn the threats posed by digital transformation to the region's production structure and workforce into opportunities (İZKA, 2021f). It is of great importance to analyze how the existing workforce dynamics and skill expectations in specific sectors will change with the development of green transformation and blue economy, alongside digitalization, and to establish roadmaps for workforce transformation in this context.

The mismatch between the skills possessed by the workforce and the skills the economy will need in the future can be viewed as an opportunity to address inequalities. Particularly, integrating young people into the workforce, employing them in jobs that match their skills, and ensuring their active participation in production processes offers a significant opportunity for economic and social development. For young people, as well as other disadvantaged groups in the labor market, such as women, individuals with disabilities, the elderly and members of rural communities, creating jobs where they can enjoy equal opportunities and treatment is a critical step toward a labor market that contributes to the economic and social development of Türkiye (MoLSS, 2021).

Adapting to the new jobs emerging in the region's sustainability-focused transformation process will only be possible if the workforce's technical capacity is prepared for this transition. In this regard, it is essential to establish vocational education units focused on green and blue jobs, conduct analyses on workforce skills in the areas of green transformation, digital transformation, creativity and sustainability, and improve the technological equipment of educational institutions and the knowledge and skills of educators.

In light of this information, the following measures are proposed under the objective "The capacity of the existing workforce shall be increased, and working environments shall be improved."

Measure 1: *The technical capacity and skill level of the workforce shall be developed to meet the needs and expectations of the green and blue transformation.*

Measure 2: *Work environments shall be strengthened to meet workforce expectations and the requirements of efficient and sustainable production.*

Measure 3: *Occupational health and safety conditions shall be improved in high-risk sectors.*

Measure 3.3.1: The technical capacity and skill level of the workforce shall be developed to meet the needs and expectations of the green and blue transformation.

The concept of "twin transformation," which relies on the mutual support between green and digital transformations, shall guide the design of technical capacity and skill development programs aimed at increasing the use of digital technologies in green and blue growth. In the process of the green transformation of economic activities, strengthening fundamental skills such as management, design, planning and communication, in addition to the necessary technical skills, shall be considered critical elements in the program design. To ensure that women, youth, people with disabilities and members of rural communities can benefit more from the growth driven by green transformation, access to these skill development programs shall be facilitated.

The creation of course content in the areas of green transformation, blue growth, creativity and digitalization, and the provision of professional development support for teachers in these fields, shall be promoted. Activities related to sustainability, green and blue growth, and creative thinking, as well as interactions with industry stakeholders, field visits and workshops, shall be conducted in collaboration with relevant institutions. Vocational and technical education institutions shall be supported in enhancing their capacities and in contributing to curriculum development by sectoral organizations to leverage employment potential linked to green jobs.

A Clean Energy Vocational High School and Clean Energy Vocational School shall be established to implement a specialized and high-quality education program in the clean energy field. Clean energy departments shall be opened in vocational and technical high schools located in areas of İzmir where the clean energy and clean technology sectors are concentrated, and apprenticeship and internship programs shall be provided to allow young people to gain experience following their academic programs. Efforts to strengthen vocational education infrastructure shall focus on centers such as Aliağa, Menemen and Bergama in the north; Torbalı and Ödemiş in the south; and Kemalpaşa in the east, to enhance employment in rural areas and cultivate the qualified workforce required.

In line with efforts to develop the potential of the blue economy, activities shall be conducted to meet the demand for qualified workforce emerging from the development of logistics, port services, fisheries and aquaculture technologies, boat and yacht manufacturing, tourism, and other marine and coastal economy activities.

Measure
The technical capacity and skill level of the workforce shall be developed to meet the needs and expectations of the green and blue transformation.
Responsible Entities
Aegean Region Chamber of Industry Aegean Exporters' Associations
Association of Energy Industrialists and Businesspeople (ENSİA)
Provincial Directorate of National Education
İMEAK Chamber of Shipping İzmir and Aliağa Branches
İzmir Commodity Exchange
İzmir Chamber of Commerce
Technoparks
Turkish Wind Energy Association (TÜREB)
Associated Entities
District municipalities
İzmir Metropolitan Municipality
İzmir Development Agency
Ministry of National Education
OIZs
Ministry of Industry and Technology
Universities
Council of Higher Education

Measure 3.3.2: Work environments shall be strengthened to meet workforce expectations and the requirements of efficient and sustainable production.

Management consultancy programs shall be conducted to strengthen the capacity to address topics such as preparation of corporate sustainability strategies by businesses as to encompass economic, environmental and social dimensions, and observation of the implementation of such strategies. The institutional structures of businesses shall be enhanced to align with the requirements of efficient and sustainable production, and the creation of efficient and appropriate working conditions shall be encouraged through the application of production and management practices that promote employee-employer harmony.

Centers that address the social and cultural needs of employees, as well as continuous training and skill development infrastructures, shall be established in industrial zones through the cooperation of public institutions and professional organizations. Spatial improvements shall be made in industrial zones to increase productivity, urban compatibility and employee satisfaction. An İzmir Resource Efficiency Center shall be established to provide services in resource efficiency, clean technologies, digital transformation and industrial symbiosis, and the center shall be ensured to reach out to a widespread and effective network in the region.

Capacity-building and adaptation programs shall be organized for those currently employed but at risk of losing their jobs due to skill mismatches or deficiencies. In districts such as Aliağa, Torbalı and Kemalpaşa, which are experiencing rapid industrialization, cooperation among public institutions, local administrations, professional organizations and civil society organizations shall be facilitated in order to identify the relevant worker groups and to support the design and implementation of relevant adaptation programs. Starting from secondary education and extending to higher education, practices and internship opportunities that strengthen the relationship between education and working life shall be expanded.

Measure
Work environments shall be strengthened to meet workforce expectations and the requirements of efficient and sustainable production.
Responsible Entities
Aegean Region Chamber of Industry Aegean Exporters' Associations Provincial Directorate of National Education İzmir Chamber of Craftsmen and Artisans İzmir Development Agency İzmir Chamber of Commerce KOSGEB İzmir Directorate Universities
Associated Entities
District municipalities İzmir Metropolitan Municipality KOSGEB Headquarters Ministry of National Education OIZs

Measure 3.3.3: Occupational health and safety conditions shall be improved in high-risk sectors.

Occupational health and safety measures shall be developed, considering the impact of changes brought by green transformation and advancements in new technologies on existing jobs, based on potential risk scenarios. High-risk sectors, such as port services and ship recycling, shall be prioritized in this respect. Preventive strategies shall be developed, improvements shall be made, and work environments shall be reorganized to reduce risks in health and safety, considering service processes such as transportation, installation, maintenance and recycling within the sectors. Special training programs and improvement supports shall be provided to micro and small enterprises facing challenges in accessing occupational health and safety services and allocating resources.

Measure
Occupational health and safety conditions shall be improved in high-risk sectors.
Responsible Entities
Provincial Directorate of Labor and Employment Aegean Region Chamber of Industry Ship Recycling Industrialists' Association Provincial Directorate of Social Security Turkish Port Operators' Association (TÜRKLİM)
Associated Entities
Ministry of Labor and Social Security Provincial Directorate of Environment, Urbanization and Climate Change İMEAK Chamber of Shipping İzmir Branch İzmir Metropolitan Municipality Turkish Lloyd Foundation

Aliaga Ship Dismantling Facility

Objective 3.4: Innovation and technology creation shall be developed, and the entrepreneurship ecosystem shall be strengthened to support transformation.

As a historic center of commerce, İzmir possesses a rich economic diversity and a vibrant commercial culture, as well as strong entrepreneurial spirit. Notably, the region, which experiences positive net migration, receives a significant inflow from İstanbul and Ankara, as well as an influx of educated individuals. The rate of migration involving people with vocational associate school, undergraduate and graduate-level education, increased from 20% in 2010 to 37% in 2021 (TURKSTAT, 2023c).

With 13 operational organized industrial zones, 4 technology development zones, 2 free zones and 4 main commercial ports, İzmir offers an ideal entrepreneurial environment and investment infrastructure. With a foreign trade volume of 30.6 billion USD, İzmir is one of Türkiye's largest trade centers. The city also has the scientific and technological infrastructure and human capital necessary for the development of science and technology, and the transformation of technology into high-value-added products (İZKA, 2023a).

Another significant element in İzmir's entrepreneurial ecosystem is the city's growing strength in the field of creative industries. Notably, sectors such as information and communication technologies (software, gaming, computer programming), advertising and marketing activities, and design activities (fashion design, industrial design, graphic design, interior design) exhibit clustering characteristics within the region (İZKA, 2021f). Accordingly, the area located behind the İzmir Alsancak Port, home to industrial heritage structures, represents a key opportunity to activate the region's entrepreneurial potential by fostering design and creativity-oriented economic activities and attracting creative talent to İzmir.

The entrepreneurial ecosystem in İzmir continues to develop through the contributions and support of various institutions, such as the increasing number of technoparks, technology transfer offices, incubation centers, R&D centers, co-working spaces, angel investor networks and mentorship networks. The number of new companies in İzmir rose from 5,103 in 2010 to 8,136 in 2022. Within the framework of Türkiye 100 Program, organized by TEPAV and TOBB University of Economics and Technology in 2021, nine companies from İzmir were included among Türkiye's fastest-growing 100 companies, a ranking based on two-year revenue growth (TOBB, 2023).

It is observed that companies located in İzmir's technology development zones have also experienced significant increases in export volumes. The export performance, which was 20 million USD in 2016, rose to 48 million USD as of 2021, marking a growth rate of 140% (İZKA, 2022k).

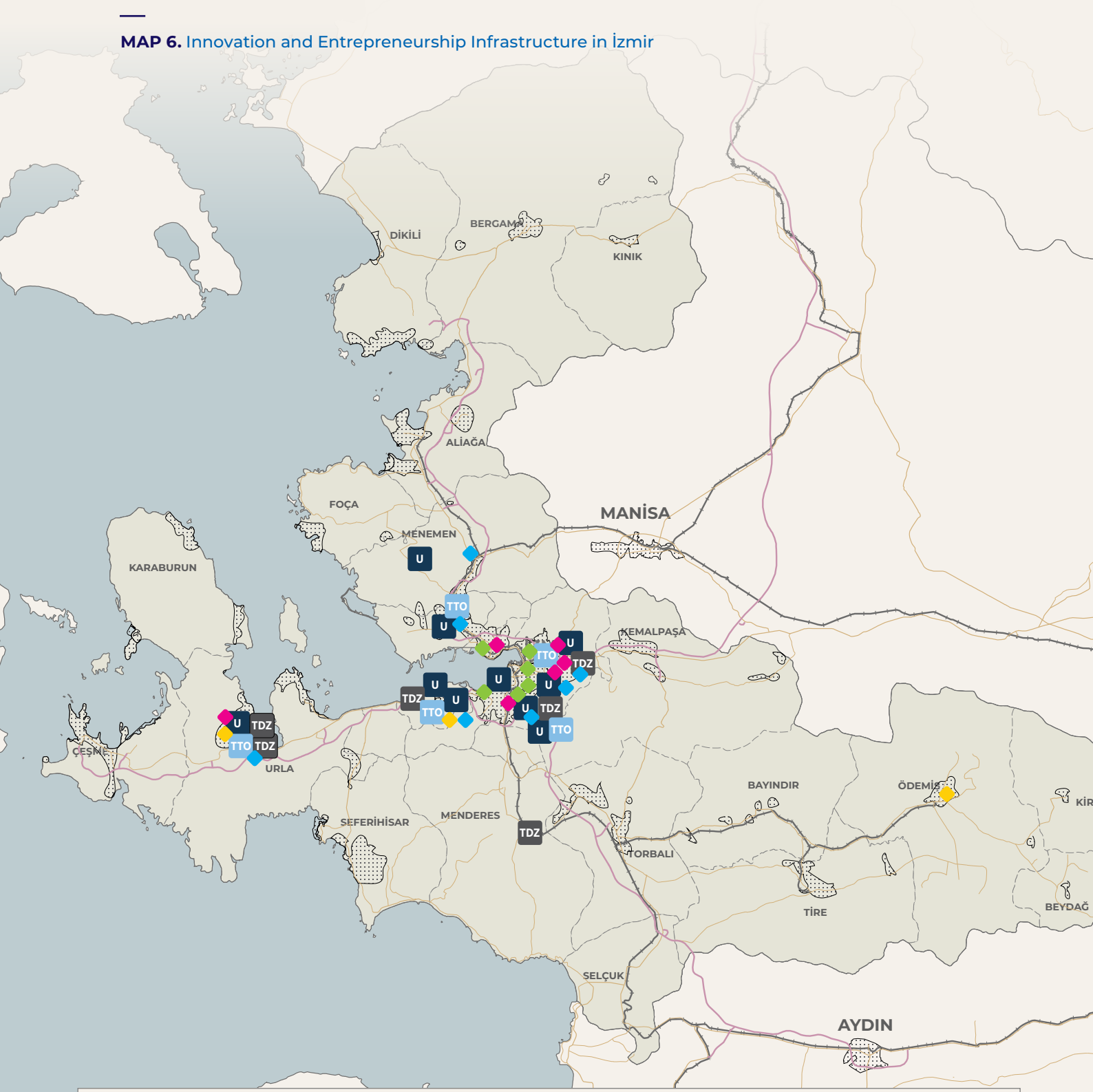
Increasing competitiveness through R&D and innovation activities relies heavily on researchers' ability to produce projects and register patents that can be transformed into commercial products. In İzmir, patent applications increased from 158 in 2010 to 451 in 2022. The number of registered patents grew from 96 in 2016 to 163 in 2022, while commercialized university patents rose from 1 in 2019 to 26 in 2021 (İZKA, 2022k).

Both the number of R&D personnel working in technology development zones and the export volume of companies have significantly increased, with the number of R&D centers established under the "Law No. 5746" by the Ministry of Industry and Technology reaching 98 (MoIT, 2023).

In İzmir, which displays a strong profile regarding its research potential, it is essential to strengthen connections among public institutions, the private sector and universities, as well as to enhance the capacity of umbrella organizations and intermediaries operating in this field. İzmir's share within Türkiye of sectors with high added value and capital intensity is decreasing, and thus, policies to reverse this trend need to be developed. In this context, strengthening technology and R&D activities and infrastructure in İzmir and attracting qualified workforce to the region are expected to advance İzmir's potential.

Programs and projects shall be supported to strengthen innovation, technology creation and the entrepreneurial ecosystem in İzmir and to develop high-value-added and indigenous green technologies. In this regard, financing access and acceleration programs to facilitate commercialization processes for green and blue transformation initiatives are of great significance. Efforts are aimed at strengthening innovative sectors based on knowledge and technology in the region, developing new products and production processes, advancing production at higher technological levels and with greater added value, promoting resource efficiency and industrial symbiosis practices, and supporting entrepreneurship activities with import-substitution characteristics.

MAP 6. Innovation and Entrepreneurship Infrastructure in İzmir



SETTLEMENTS

- Provincial boundary
- District boundary
- Settlement areas

TRANSPORTATION NETWORKS AND LOGISTICS INFRASTRUCTURE

- Highway
- Road
- Railway

LEGEND

- Entrepreneurship Center
- Fab-Lab
- Incubation Center
- Co-Working Space
- TTO Technology Transfer Office
- U University
- TDZ Technology Development Zone

Source: Prepared using data from İBB, İZKA and MoIT.

Accordingly, within the objective "Innovation and technology creation shall be developed, and the entrepreneurship ecosystem shall be strengthened to support transformation," the implementation of the following measures, projects and program is recommended.

Measure 1: *Creation of domestic green technologies needed for the green and blue transformation shall be supported.*

Measure 2: *Development of knowledge and technology-based new sectors and creative industries shall be supported.*

Measure 3: *Training, awareness, and dissemination activities aimed at strengthening the entrepreneurship ecosystem shall be supported.*

Program 1: *İzmir Venture Capital Fund (İzmir Fund)*

Project 1: *İzmir Creative Industries Center Project*

Project 2: *Bearing Production Facility Project*

Project 3: *İzmir Cathode Active Material Production Facility Project*

Project 4: *İzmir Inverter Production Facility Project*

Measure 3.4.1: Creation of domestic green technologies needed for the green and blue transformation shall be supported.

Innovative practices and technology creation required to achieve the region's green transformation and blue economy development goals shall be supported. Support shall be provided for the widespread use of new technologies and localization of technologies currently dependent on imports. In this context, priority shall be given to the development and dissemination of practices that enhance resource efficiency, reduce energy and raw material consumption, and minimize waste production. Support shall be provided for the development of productivity-enhancing techniques, as well as pioneering practices by producers and entrepreneurs and R&D efforts in lean production, automation and green hydrogen technologies. Technology and solutions that have completed their R&D processes shall be given access to suitable financing and commercialization opportunities. The region's entrepreneurial ecosystem shall be supported and developed with sustainable, modern and innovative practices in agriculture and animal husbandry, as well as technologies that reduce water, agricultural chemical and fertilizer use. Entrepreneurs working in maritime technologies shall be supported, and cooperation opportunities shall be enhanced between entrepreneurs working in blue growth areas and port operators, producers, investors, local administrations and other relevant stakeholders in the region.

Measure
Creation of domestic green technologies needed for the green and blue transformation shall be supported.
Responsible Entities
Aegean Region Chamber of Industry Aegean Exporters' Associations İzmir Development Agency İzmir Commodity Exchange İzmir Chamber of Commerce KOSGEB İzmir Directorate Technoparks
Associated Entities
İMEAK Chamber of Shipping, İzmir and Aliağa branches İzmir Metropolitan Municipality Venture Capital Investment Funds Entrepreneurship centers KOSGEB Headquarters Ministry of Industry and Technology TÜBİTAK Turkish Lloyd Foundation Turkish Port Operators' Association

Measure 3.4.2: Development of knowledge and technology-based new sectors and creative industries shall be supported.

Sectors with high technological level and export potential shall be developed, and specialization in these sectors shall be encouraged. The focus of these efforts shall be on the localization of critical products and technologies, offering competitive products and services in the high-tech field, and increasing effectiveness in global value chains through original and innovative production.

In line with the green and blue growth approach, development of knowledge and technology-based sectors shall be supported with high value-added software and digital technologies. In this context, entrepreneurial activities related to the development of digital services, creative industries and advanced technology-based products and systems shall be provided with necessary support. In addition, addressing local needs arising from the digitalization process through locally produced solutions shall be encouraged. Entrepreneurial activities aimed at increasing the use of technology and creating economic value shall be supported.

Opportunities such as trainings, mentoring actions and acceleration camps shall be provided to improve the management, planning and marketing capacities of the region's enterprises. Support activities shall be carried out to accelerate the transition to the design and production stages. Large-scale events with wide participation such as technology meetings, investor meetings and demo days shall be organized for technology and innovation entrepreneurship ecosystem stakeholders.

Measure
Development of knowledge and technology-based new sectors and creative industries shall be supported.
Responsible Entities
Entrepreneurship centers Incubation centers Technology transfer offices Technoparks Universities
Associated Entities
Venture Capital Investment Funds KOSGEB Headquarters Ministry of Industry and Technology TÜBİTAK

Measure 3.4.3: Training, awareness and dissemination activities aimed at strengthening the entrepreneurship ecosystem shall be supported.

The regional innovation and entrepreneurship ecosystem shall be developed in alignment with the regional sustainable development goals and within the frameworks of green and blue growth approaches. Acceleration camps and training programs shall be organized for entrepreneurs to enhance their skills in areas such as management, planning and marketing, which are critical to their needs. In the design of financial and technical support programs, the focus shall be on ensuring that entrepreneurs can benefit more effectively from such supports.

Collaboration between local actors such as universities, private sector organizations and umbrella organizations shall be encouraged in order to develop İzmir's entrepreneurship ecosystem, and relevant activities shall be organized to bring them together. Events like investor-entrepreneur meetings, ideathons and hackathons will increase interactions between investors and entrepreneurs. The ecosystem in the region shall be widely promoted, a promotional content for the entrepreneurship ecosystem shall be prepared, and social media and other promotional platforms shall be actively utilized in this respect.

Measure
Training, awareness and dissemination activities aimed at strengthening the entrepreneurship ecosystem shall be supported.
Responsible Entities
Entrepreneurship centers Incubation centers İzmir Development Agency Co-Working Offices Technology Transfer Offices Technoparks Universities
Associated Entities
Venture Capital Investment Funds KOSGEB Headquarters Ministry of Industry and Technology TÜBİTAK

Program 3.4.1: İzmir Venture Capital Fund (İzmir Fund)

Within the scope of this program, the aim is to establish and develop a venture capital ecosystem in İzmir, attracting more institutional investors to the region. Detailed information regarding the program is available in the “Appendices” section.

Project 3.4.1: İzmir Creative Industries Center Project

The area located in the hinterland of İzmir Alsancak Port, hosting İzmir’s first industrial facilities with industrial heritage value, shall be repurposed to accommodate creative industries, with the İzmir Electric Factory as the focal point. Detailed information regarding the project is available in the “Appendices” section.

İzmir Electricity Factory, Creative Industries Center Project

Project 3.4.2: Bearing Production Facility Project

A facility is planned to produce bearings, of which a significant portion is currently met through imports, and are widely used in sectors such as wind turbines and the automotive industry, among others that involve motion and energy transmission. Detailed information regarding the project is available in the “Appendices” section.

Project 3.4.3: İzmir Cathode Active Material Production Facility Project

In response to the global increase in battery demand due to electrification, a facility is planned to produce cathode active material, a semi-finished product used in battery production. Detailed information regarding the project is available in the “Appendices” section.

Project 3.4.4: İzmir Inverter Production Facility Project

Establishment of a facility to produce inverters for solar energy systems is planned, in order to support the localization of clean energy equipment production. Detailed information regarding the project is available in the “Appendices” section.

Ege University, Observatory

6. Spatial Development

The province of İzmir covers an area of approximately 1.2 million hectares, consisting of a total of 30 districts. The boundaries of the metropolitan municipality, initially encompassing 9 districts in 1984, were expanded in 2004 to a 50-kilometer radius covering 21 districts, and since 2014, the entire provincial boundary, including all 30 districts, has been designated as the metropolitan municipality boundary. The master zoning plans prepared in 1973, 1989, 1996, 2007 and 2012, along with the 1/25,000 scale master zoning plans approved in 2017, have considered the entirety of the province as four planning regions. The *İzmir-Manisa Planning Region 1/100,000 Scale Environmental Plan,* approved by the Ministry of Environment, Urbanization and Climate Change, was prepared to guide social, economic, cultural and spatial development across the provinces of İzmir and Manisa, with a target year of 2025.

Regional plans serve the role of shaping the relationship between national-level policies, plans, and strategies and the activities to be implemented at regional and local levels. In fulfilling this role, the spatial dimension of the Plan consists of addressing the fundamental goals, objectives, and strategies related to the distribution of economic activities and primary infrastructure in the region; the functions and relationships of settlements; the spatial organization of urbanization trends and settlement centers; and the guidance of inter-settlement flows and relationships such as migration, goods, and services.

Within the context of the spatial studies conducted for the *2024-2028 İzmir Regional Plan*, the priorities and objectives for regional development, spatial dimensions, and, moreover, the city's spatial dynamics, needs and priorities were examined comprehensively. In this context, it was intended both to support the spatial dimensions of plan decisions and to provide guidance for spatial planning efforts concerning İzmir's core policies. In developing this structure, sectoral, thematic and spatial analyses conducted during the plan preparation process, feedback from stakeholders, İzmir's historical and geographical assets, existing sub-regional plans, as well as the *Twelfth Development Plan and the 2024-2028 National Regional Development Strategy (BGUS)*, were taken into consideration.

As part of the design for the spatial development structure, a perspective was defined to guide İzmir's spatial development in an integrative manner with the "city region" dynamics and the strategic priorities and objectives of *the Regional Plan*. Linked with the regional vision, İzmir's position and identity at global, national and regional levels are based on the principles of "global integration," "efficiency and harmony," and "cohesion of diversities." In line with this approach and these principles, **3 core policy areas** and a total of **17 spatial development programs** have been developed to guide İzmir's spatial development. Finally, an İzmir Regional Spatial Development Scheme and development schemes for four sub-regions were prepared in accordance with the measures and spatial development programs developed under *the Regional Plan*.

The three core policy areas to guide İzmir's spatial development are as follows:

a. **Collective and Symbiotic Growth:** Developing a polycentric, integrated and mixed-use regional settlement system.

b. **Mobility for Dynamism:** Strengthening regional flows and generating productive dynamism with high-level connectivity and logistics infrastructures.

c. **Transformation for Quality of Life:** Achieving a "Comprehensive Transformation" for a resilient, healthy, inclusive, restorative and innovative İzmir capable of withstanding crises, disasters and climate change impacts.

The "city region" concept, which considers İzmir beyond its administrative boundaries in terms of its relations and interactions, forms the foundation of the spatial approach.

6.1. An Overview of the İzmir City Region

With the increasing urban population and the expanding area required for such population, the redefinition of time and space through transportation and communication advancements, and the varying intensities of social and economic activities within urban and rural areas, it has become challenging to draw clear boundaries between urban and rural zones. The "city region" concept, which addresses cities along with their areas of influence and interactions beyond administrative borders, has evolved through current spatial studies conducted to understand and interpret the variable and dynamic spatial order. The approach developed to define İzmir's city region within the spatial studies of the *2024-2028 İzmir Regional Plan* includes the following elements:

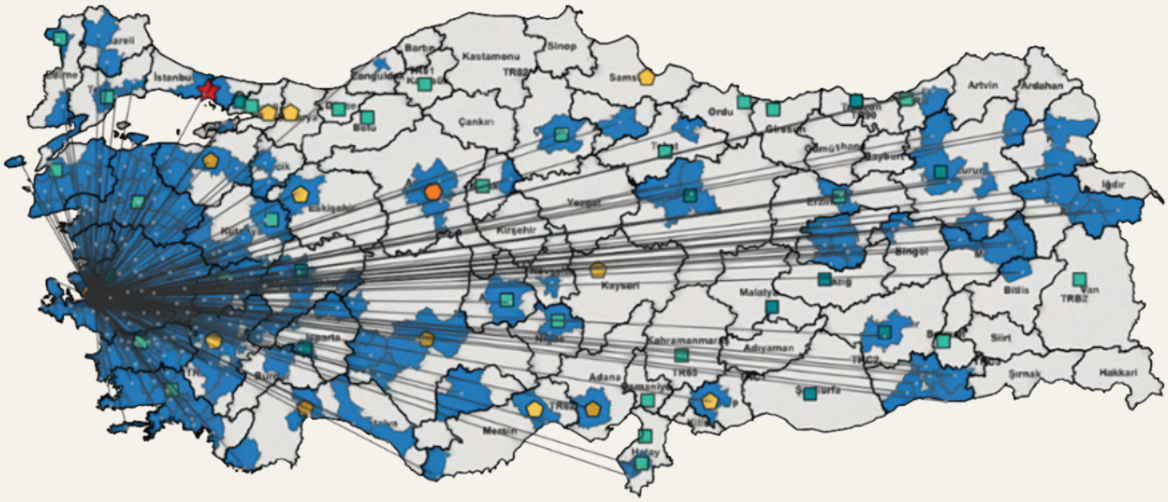
- **Service Relationship:** İzmir's position among the country's service centers
- **Industrial-Logistics Center Relationship:** İzmir's existing and planned transportation connections
- **Human Flows:** The public services provided by İzmir

Flow of Agricultural Products: İzmir's agricultural production relations with neighboring settlements

According to the YER-SIS study's integrated urban service center results, İzmir's central area (6B) ranks as the third-largest urban service center in Türkiye, following Istanbul (7) and Ankara (6A). The settlements served by İzmir, which exceeds the national service provision average of 2%, are predominantly in the Aegean Region, though the city's services are spread nationwide (Map 7). İzmir possesses a spread and clustering structure similar to that of Istanbul, albeit on a smaller scale. This structure represents a significant sub-region of urban settlements comprising İzmir city center, Manisa center, Aliağa, Torbalı, Soma, Akhisar, Salihli, Turgutlu, Kemalpaşa, Söke and Nazilli, supported by the centers of Balıkesir, Çanakkale, Denizli, Uşak, Aydın and Muğla.

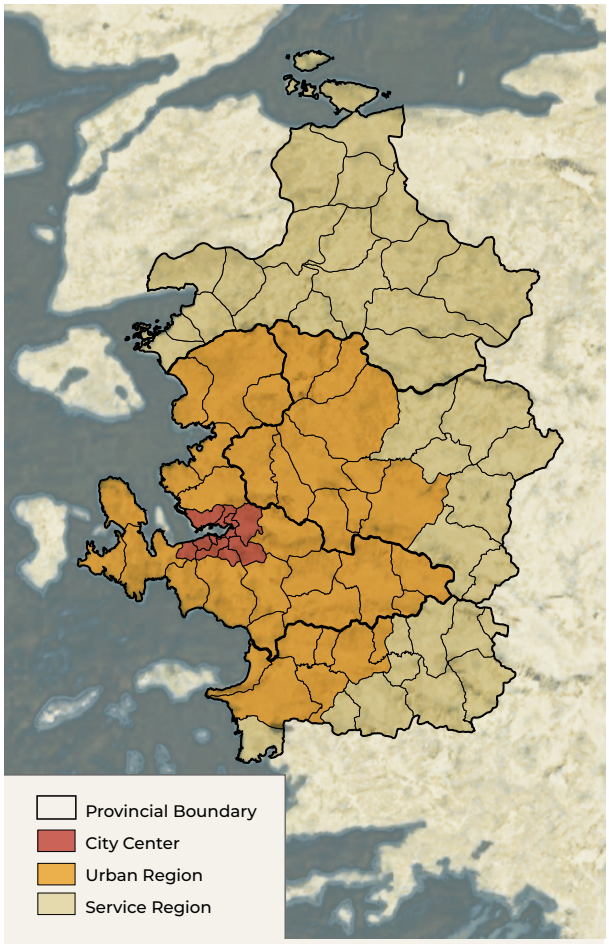
According to YER-SIS data, the **İzmir Service Region** encompasses Aydın, Manisa and Balıkesir, given that these provinces receive services above the average service provision rate of 2% and are neighboring provinces. Within the service region, there is a notable industrial relationship between İzmir and Manisa. Additionally, İzmir-Balıkesir's industrial-logistics relationship is highlighted by new transportation investments, such as the Istanbul-İzmir Motorway to the north, as well as Çandarlı Port, Bandırma Port and Gökköy Logistics Center. The **İzmir City Region**, which prioritizes daily socio-economic interactions, includes Manisa center, Saruhanlı, Akhisar, Kırkağaç, Soma, Gölmarmara, Turgutlu, Ahmetli, Salihli, Aydın center (Efeler), Kuşadası, Söke, Koçarlı, Germencik, İncirliova and Köşk districts, as they receive services above the average service provision rate of 2% and are within a 90-minute daily commute distance (Map 8).

MAP 7. İzmir Center Service Regions



Source: YER-SİS, 2022

MAP 8. İzmir Service Region and City Region

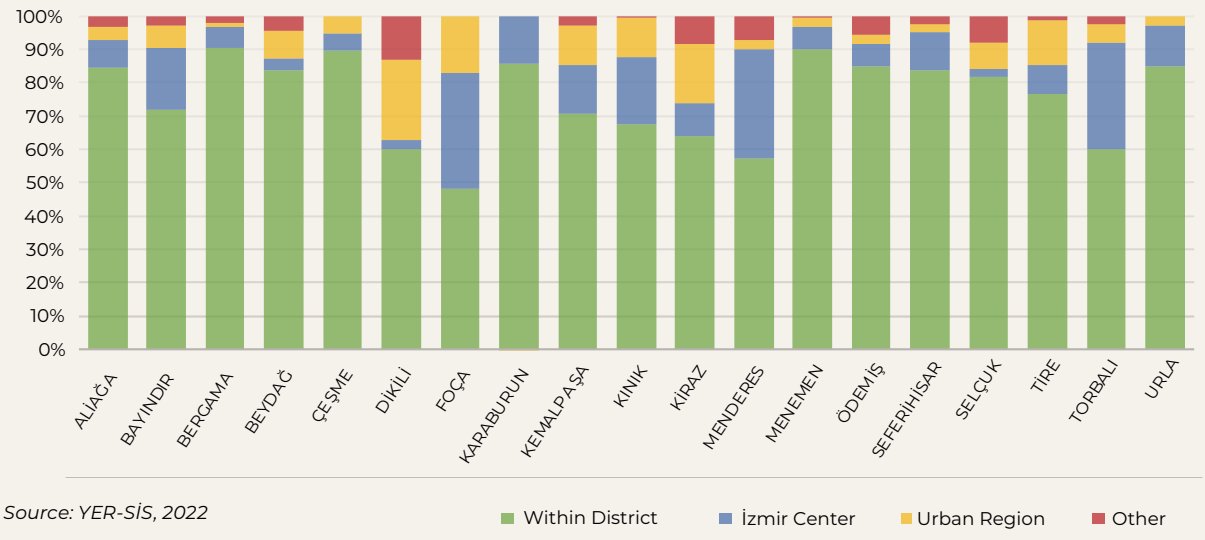


Source: YER-SİS, 2022

The industrial, port, tourism and agricultural relationships between İzmir and neighboring provinces indicate that a broad service region must be considered for relevant policies. The city region shows that daily socio-economic relationships extend beyond İzmir's boundaries, strengthened by increasing transportation infrastructure, and demonstrates İzmir's significant integration with Manisa and Aydın provinces. From a public service perspective, Manisa center receives educational and healthcare services from Aliağa and İzmir center, while Germencik connects similarly with Tire. Germencik, İncirliova, Karpuzlu, Köşk, Kuşadası, Burhaniye, Sındırgı and Manisa center receive healthcare (hospitals, pharmacies, or family health centers) and/or educational services (high schools, vocational schools, secondary schools, or primary schools) from İzmir's settlements (YER-SIS, 2020).

A significant 96.6% of settlements that purchase agricultural products from İzmir are located within the İzmir city region.1 İzmir center holds a 13% share within these purchasing settlements. Notably, the majority of sales (76.4%) occur within settlements located in the same district. Similar to public services, the distribution of settlements purchasing food products from rural areas demonstrates the presence and strength of city region relations (YER-SIS, 2022) (Figure 3).

FIGURE 3. Distribution of Settlements Where Agricultural Products are Sold (%)



Source: YER-SİS, 2022

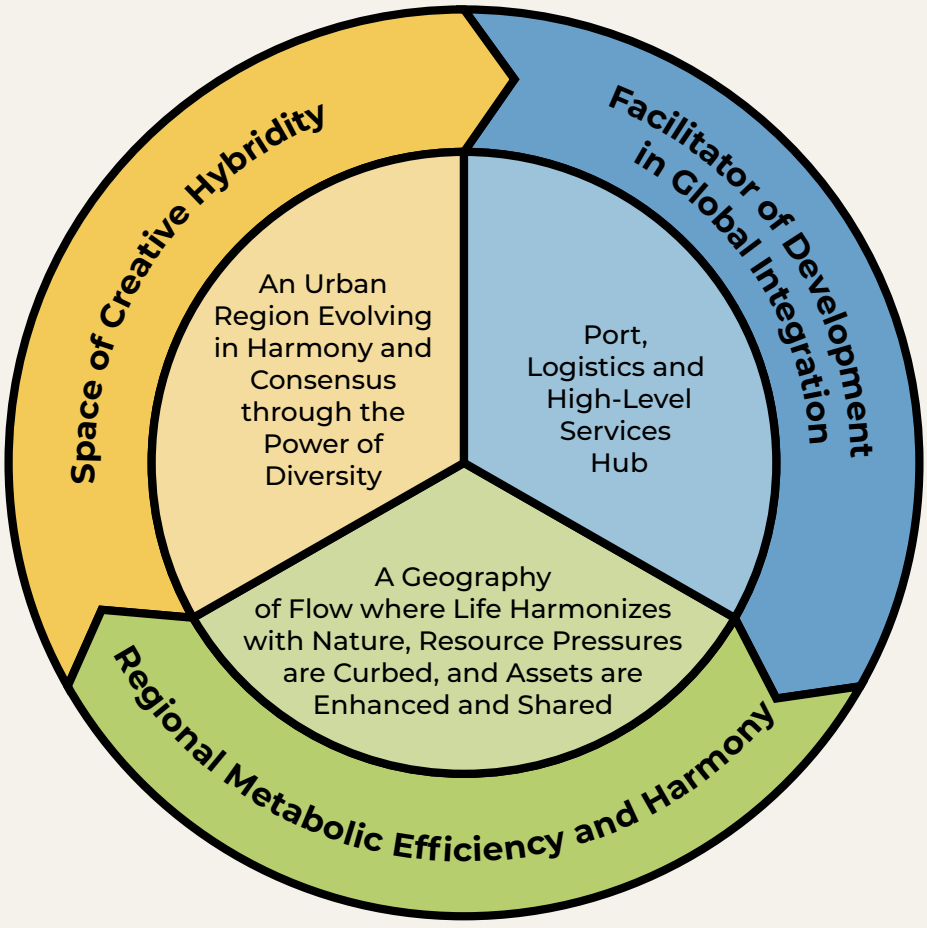
1 The findings are based on responses to the question, *"Please specify the places where the majority of products produced in your village/town/neighborhood are sold, and the percentage of products sold to these places,"* from the YER-SİS (2020) Rural Settlement Survey. The location where the sale occurs refers to the initial purchaser (including wholesalers, merchants and intermediaries).

The regional development vision, established at the national level for 2024-2028 within the scope of the National Regional Development Strategy (BGUS), highlights four main priority areas: global integration, competitiveness, convergence and post-disaster revitalization. İzmir has been identified as a potential global city within the global integration dimension. The aim is to enhance the global competitiveness of potential global cities. In this context, positioning these cities as high-tech production and export centers, strengthening their roles as logistics hubs for exports, expanding their roles as industrial production and service centers to competitive cities, reinforcing their roles as brand cities, and strengthening their transportation connections with each other and İstanbul have been set as objectives. The Twelfth Development Plan prioritizes strengthening the roles of city regions in national and regional development and implementing regional development programs and joint projects. Similarly, the BGUS foresees implementing regional development programs and joint projects, particularly in transportation, industry and logistics, in the İzmir-Manisa, Istanbul-Tekirdağ-Kocaeli, and Adana-Mersin city regions.

6.2. 6.2 Direction of Spatial Development in İzmir

In line with national objectives, regional needs, and projections, İzmir's spatial development in the 2024-2028 period is projected to shape around three primary identity/mission elements (Figure 4).

FIGURE 4. Identity and Mission Elements of İzmir's Spatial Development



Facilitator of Development in Global Integration

Port, Logistics and High-Level Services Hub

With three settlements holding provincial status and a total of 20 district centers directly, and 36 settlements indirectly, İzmir serves as the top-tier settlement providing services to a total of 56 locations. This status establishes İzmir as an undeniable regional center on a national scale.

Benefiting from its physical geography, the advantages of being a port city, diverse economic activities, fertile agricultural lands, temperate climate, and proximity to transportation networks, İzmir stands as one of the world's most livable and investment-friendly metropolitan areas. The completion of planned or ongoing investments in highways, high-speed rail, air and maritime transport infrastructure, anticipated in the short and medium term, will continue to support this status.

As a gateway to the Mediterranean for its hinterland settlements, İzmir holds a net exporter status with a trade structure, extensive knowledge in port and logistics sectors, annual port cargo handling capacity reaching 85 million tons, four container ports offering 220 direct port connections, free zones, organized industrial zones, universities and technology development zones, positioning it as a national-level high-service center. With these capacities, İzmir will continue to play critical roles in integrating its extensive geography with the world.

Regional Metabolic Efficiency and Harmony

A Geography of Flow where Life Harmonizes with Nature, Resource Pressures are Curbed, and Assets are Enhanced and Shared

The changes in life practices, influenced by the Covid-19 pandemic, the increasing impact of natural disasters with climate change, and the uncertainties and crises exacerbated by international political instability have highlighted the concept of "adaptation" more than ever before. The challenging conditions in terms of access to essential urban and public services and meeting basic human needs, especially housing, the weakening of public spaces and practices, the decline in environmental quality, the increase in pollution levels, and irregular migration movements are among the most important trends to be considered in determining the future of cities and regions. In this context, one of the primary goals in establishing the spatial development perspective of the *2024-2028 İzmir Regional Plan* is to develop policies and measures that address the factors threatening urban life quality.

In addition to the impacts of climate change, urbanization, also production styles and construction practices continue to exert pressure on resource stocks and continuity while expanding the destructive/degrading impacts of human activities, including excessive resource consumption and physical interventions, on the natural environment. Consequently, it is likely that significant changes will occur in economic activities and urban life. This issue, which can be regarded as a regional metabolic crisis, has been considered within the scope of the *2024-2028 İzmir Regional Plan*. Factors such as balancing conservation and utilization, carrying capacity, conflicting land uses, mitigating the impacts of urbanization on climate change, and altering or transforming production practices have been addressed within this context.

The increasing pressures in İzmir, particularly along the coasts where pressures are most concentrated, necessitate a more sensitive approach toward natural and cultural assets to ensure sustainable development in the region. Furthermore, the metropolitan built-up area has reached its natural limits, in other words, the boundaries of the city. Considering the construction trends in rural-urban transition areas, it is urgent to establish sustainable land use decisions for the vast majority of İzmir's geographic area.

Space of Creative Hybridity

A City Region Evolving in Harmony and Consensus through the Power of Diversity

Another important area that will shape İzmir's spatial development trajectory is associated with the region's socio-economic development outlook. Becoming an international and regional logistics hub and emerging as a prominent center in the clean energy sector are two fundamental objectives identified in respect to regional identity within the *2024-2028 İzmir Regional Plan*. The logistics hub

identity is, of course, closely linked to the production geography, bringing forth another essential spatial decision regarding the direction of investment locations. While strategic logistics infrastructures are developed in an integrated manner and investments are placed in locations suitable for their rationale, it is essential to establish and implement multi-dimensional evaluations and participatory decision-making mechanisms, as necessitated by İzmir's sensitive natural and cultural geography. In this context, alongside the need for a spatial planning practice that avoids conflicts with activities and lifestyles in rural areas and basins, a special approach and policy framework should be developed for coastal areas where multiple types of development demands, including logistics infrastructure and energy investments, are concentrated in İzmir.

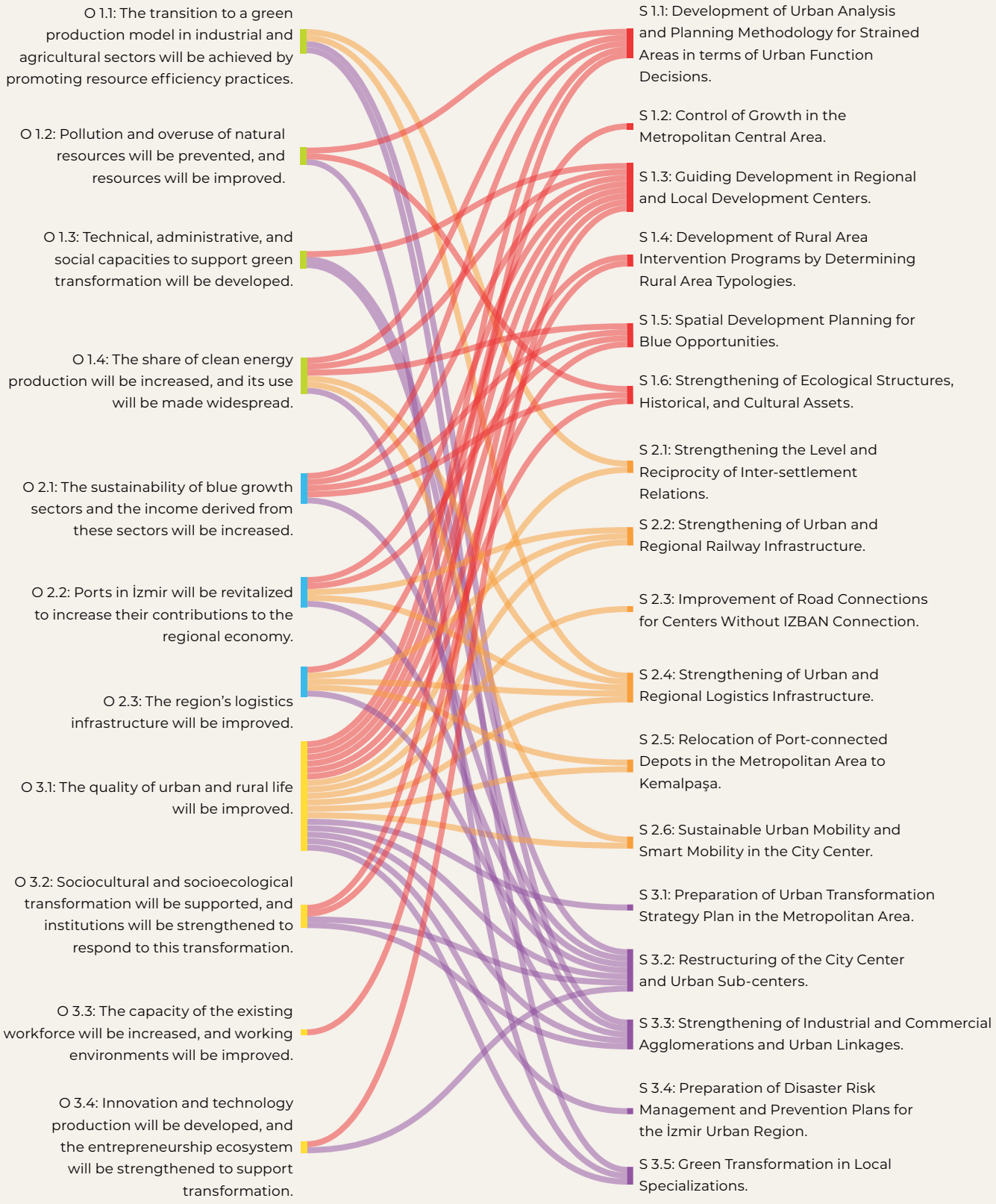
For İzmir's spatial development, an approach that prioritizes consuming less, taking measures to enhance stocks and values, making choices aimed at ensuring efficiency, reducing waste and emissions, promoting functional and design solutions that enable hybrid solutions between new-generation productive and creative activities and traditional practices, and emphasizing these aspects in the spatial organization of activities at the regional level should be prioritized. This approach, which contributes to building a life in harmony with nature, includes developing various spatial development strategies in locations deemed special within this framework.

The framework for the spatial development program envisioned for İzmir is shown below (Figure 5).

FIGURE 5. İZBP Spatial Development Programs

The approach and recommendations determined to guide spatial development present a framework that strengthens the objectives of *the Regional Plan*, designs spatial measures and arrangements aimed at implementation, and aims to establish an agenda for regional and urban spatial research focused on analyzing spatial dynamics. The relationship between the regional development objectives of the *2024-2028 İzmir Regional Plan* and the spatial development programs is shown below (Figure 6).

FIGURE 6. Relationship Between İZBP Objectives and Spatial Development Programs



6.3. Spatial Development Program for the İzmir Region

6.3.1. Collective and Symbiotic Growth: Developing a Polycentric, Integrated, and Mixed-Use Regional Settlement System

The policy of "Collective and Symbiotic Growth," aiming to foster a pattern of settlements in İzmir's spatial geography that establishes strong and amplifying relationships, to repair various accumulated losses and damages experienced over time, and to strengthen sectoral, institutional and metabolic alliances within and among settlements of all scales, was designed with six spatial development programs.

6.3.1.1. Development of an Urban Analysis and Planning Method Set for High-Tension Areas Concerning Urban Function Decisions

Economic activities that rely on fundamental resources or benefit from proximity to certain urban/regional infrastructures can exhibit high demand for specific locations, and such concentration of demand may complicate the planning and implementation of investments in these areas for various reasons. Particularly when these high-demand areas are within or adjacent to sensitive areas with significant natural, historical and cultural qualities, generating physical planning decisions, implementing these decisions accordingly, and maintaining functionality without creating negative externalities becomes challenging. The competitive and conflicting demands and relationships that emerge in such areas may lead to outcomes that are counterproductive, damaging the region's values, hindering the development of social capacities, and causing disruptions in economic and social life due to legal disputes.

In İzmir, where natural and cultural assets as well as protected areas display high diversity and density, decision-making for housing, tourism, industry, transportation and energy investments in high-tension areas, especially in coastal regions with limited resource/location attributes, should prioritize an approach that views the region's assets and their diversity as a source of richness. This approach should seek to generate mixed-use solutions based on harmony and consensus, aiming to establish equitable usage and high-standard living environments for society. This necessitates the interpretation of relevant regulations within this framework, as well as the development of analytical and process management capacities beyond current urban planning and implementation practices. The Twelfth Development Plan includes a policy measure aimed at enhancing governance and risk management in the business and investment environment in connection with this issue. Local models and best practices developed can also contribute to national-level regulations.

In order to develop an urban analysis and planning method set for sensitive and high-tension areas in terms of urban function decisions in İzmir, it is essential to identify areas that have long been subjects of controversy in the region and have become urban issues due to legal and other reasons (such as the old bus terminal area in 9 Eylül Square, İnciraltı, wind energy investments, port and shipyard investments, fish farms), as well as areas where similar tensions may potentially arise. For each typical/unique case, it is crucial to conduct analysis and method development studies involving the relevant stakeholders, and to facilitate the process itself as an opportunity for public discourse by providing all necessary facilitation.

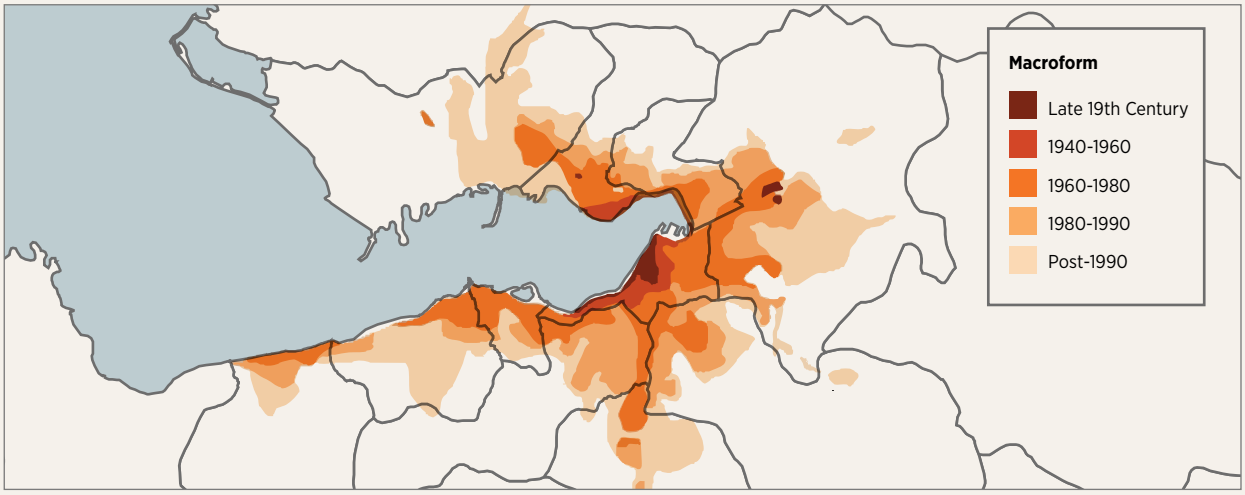
6.3.1.2. Controlling Growth in the Metropolitan Area[2]

Urban development and sprawl, which entail the transformation of the natural environment into the built environment, can alter land use. Without proper planning, such growth may lead to excessive density, low living standards, adverse ecological and environmental impacts, high infrastructure and transportation costs, and increased disaster risks. During its urban development process, İzmir has exhibited a growth resembling a sprawling pattern, encircling the Bay and extending along corridors, absorbing nearby settlements into the main city (Map 9).

The defining elements in İzmir's settlement are the bay, plains, alluvial lowlands, and the surrounding mountain slopes and ridges. The constraint analysis conducted for İzmir reveals that the city has developed along its main transportation axes (Map 10).

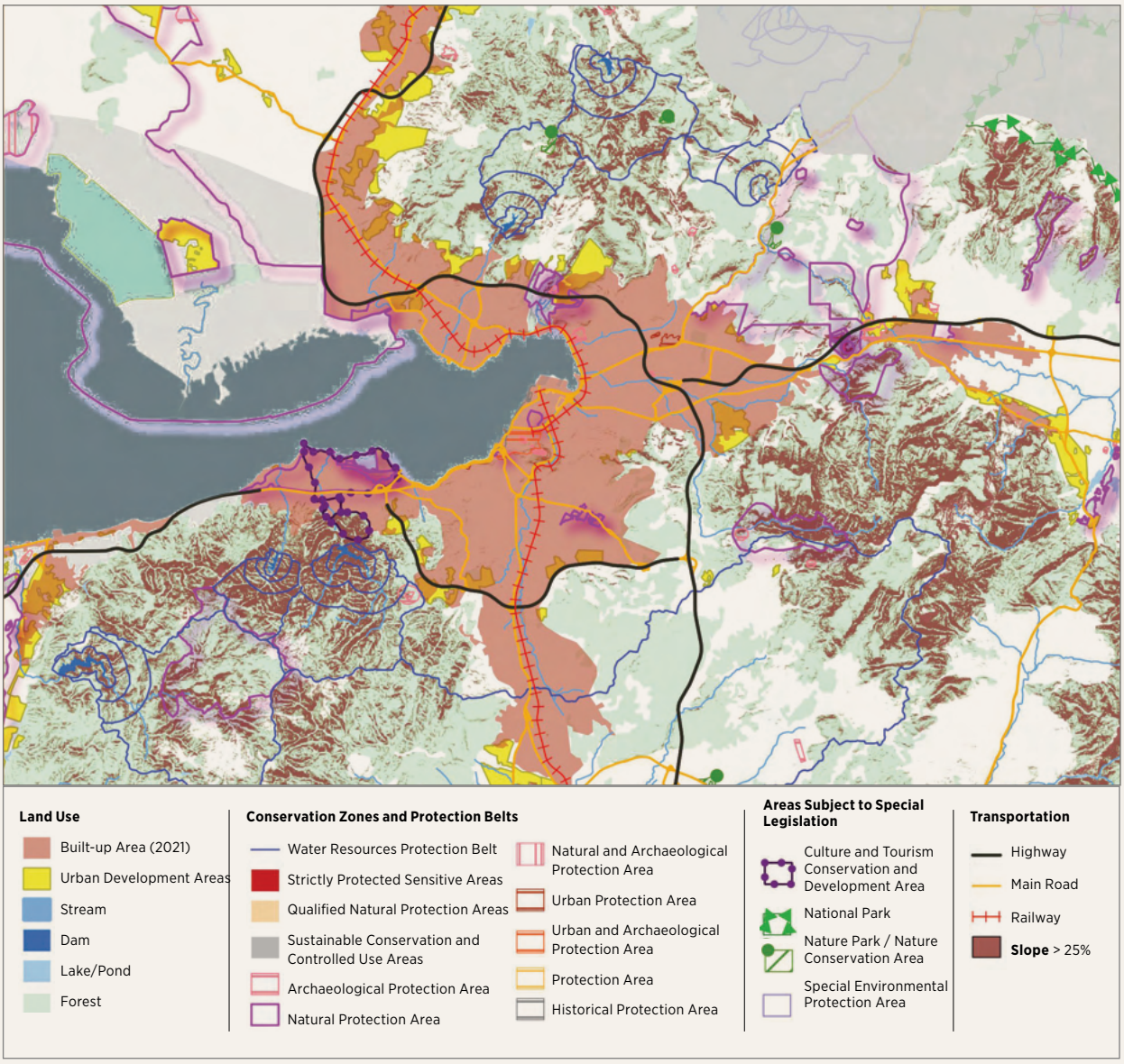
2 İzmir metropolitan core area consists of the districts of Balçova, Bayraklı, Bornova, Buca, Çiğli, Gaziemir, Güzelbahçe, Karabağlar, Karşıyaka, Konak, Menemen and Narlıdere.

MAP 9. Urban Development Process of the Metropolitan Area



Source: Prepared based on Gümüş (2013) and Sevgi (1988).

MAP 10. Urban Development Areas and Constraints

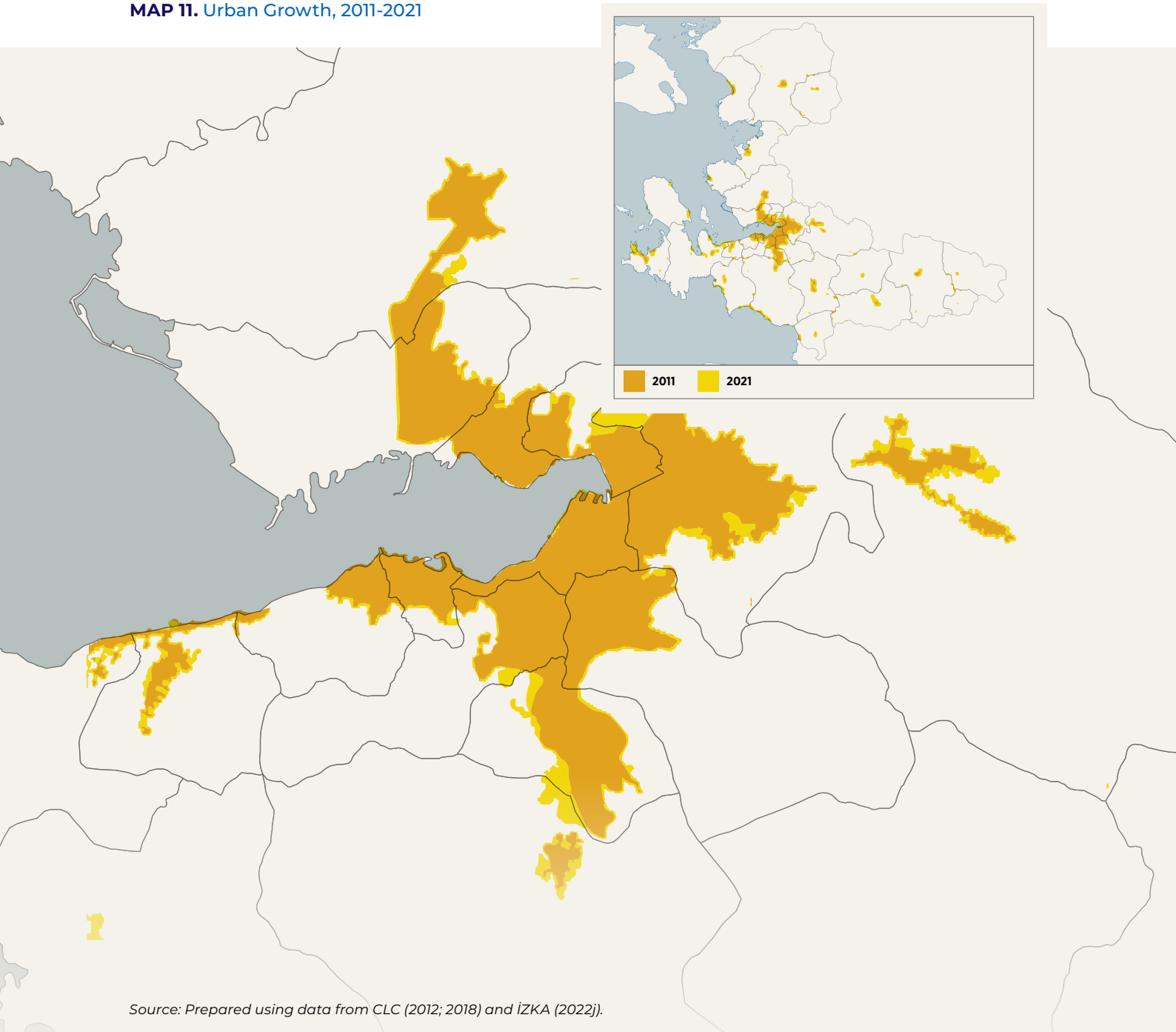


Source: Prepared using data from MoTI (2022), MoEUCC (2022a), CLC (2018), and İZKA (2022j).

It is observed that the built-up area in İzmir, which was 38,000 hectares in 2012, increased by approximately 18% to reach 45,000 hectares as of the year 2018. The city has developed up to the borders of high-slope areas and forest areas in the east, south and north. Built-up areas have spread toward locations with natural and agricultural areas and significant water resources. On the other hand, comparatively, this growth (increase in artificial areas) can still be considered under control. Between 2012 and 2018, the annual artificial area growth rate in EU countries was 0.21%, while the population growth rate was 0.26%. In Türkiye, artificial areas increased annually by 1.20%, while the population grew by 1.35% over the same period. In İzmir, artificial areas grew annually by 0.75% between 2012-2018, while the population increased by 1.27% during this period. In this respect, İzmir achieved a more limited or denser physical growth compared to the EU countries and Türkiye, when considered in line with population.

The limited growth of the city footprint over the past decade reflects a similar outlook across the entire province (Map 11).

MAP 11. Urban Growth, 2011-2021



Source: Prepared using data from CLC (2012; 2018) and İZKA (2022j).

When examining the proposed urban development areas and constraints in the current İzmir-Manisa Planning Region 1/100,000 Scale Environmental Plan (Map 10), it is suggested that a total area of 3,732 hectares, primarily along the boundaries of built-up areas in the east, south, and north, be designated as urban development areas.

Currently, 47% (1,788 hectares) of new development areas are already built-up. Over the past decade, the average population density in built-up areas within the metropolitan area has been 316 persons per hectare (Table 8). Assuming that planned but yet-to-be developed areas are built up at this density, it is estimated that they could accommodate a population of approximately 614,000 people. Considering the population projection for İzmir (İZKA, 2022h), it is estimated that the metropolitan area's population may increase by around 120,000 people over the next five years and by 380,000 by 2050. Therefore, even if it is accepted that the existing stock currently meets the needs, it may be mentioned that there is more additional development area planned than actually required for the İzmir metropolitan area if growth occurs within the assumptions of the population projection. When looking at the entire province, within the different scenarios developed for the population projection, the maximum projected population for 2028 is 4,980,000 people, while the maximum population the province is expected to reach by 2050 is 6,022,285 people. The plan population foreseen in the İzmir 1/25,000 Scale Master Development Plan for 2030 is 6,637,149.

In the İzmir Metropolitan Area 1/25,000 Scale Environmental Plan, with an aim to prevent population concentration in the central city, development areas are proposed as a peripheral settlement belt in the Çiğli-Menemen corridor to the north, Kemalpaşa to the east, the Torbalı axis to the south, and the Urla-Bademler axis to the southwest, with strong links to the central city. However, the developments proposed on the north-south growth axes, in particular, are causing further daily population movement with the central city and expanding the urban macroform, largely following the highways, contrary to the plan's predictions. The primary reasons for this are, of course, the failure of these growth axes to develop their own sub-centers and the inadequacy of rail transportation infrastructure and modal integration. Moreover, even if rail investments are realized, the fact that workplaces are largely spread around the inner bay will continue to negatively impact transportation comfort and access times. This situation indicates that the current traffic pressure in the city center will further intensify, and that relevant measures are urgently needed.

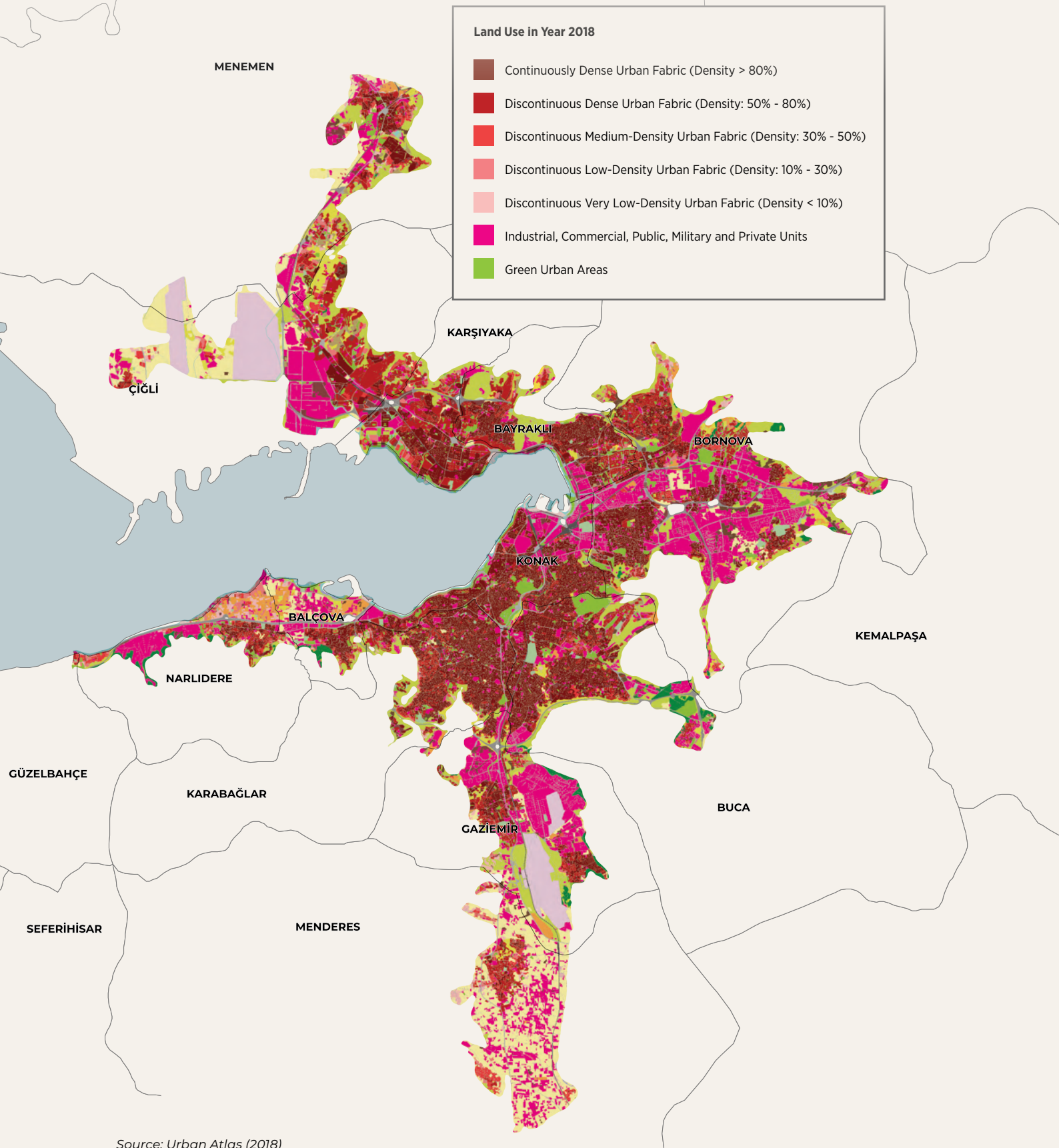
Urban fabric comprises 72.2% of built-up areas in the İzmir metropolitan area. When analyzing İzmir's urban fabric in terms of density, it is observed that approximately 70% of the urban fabric is composed of "continuous dense" urban fabric (Map 12). The "discontinuous dense" urban fabric accounts for 22% of the urban fabric. The shares of other urban fabric types are significantly low. This fact demonstrates that the density of the urban fabric is similar across the entire metropolitan area in İzmir. In terms of urban land use, although urban density is expected to decrease moving from the center to the periphery, the structure in İzmir is different in this regard. In İzmir, the periphery of the city is also densely built-up. This indicates that İzmir is tightly confined within the basin and that the macroform is highly built-up overall. While this type of dense (compact) built-up area has positive effects for sustainable land use, it can lead to chronic stress factors, such as low resilience, air pollution, traffic congestion and deteriorating climate conditions in urban areas, which negatively impact urban quality of life.

TABLE 8. Population Density in Built-up Areas within the Metropolitan Area

Indicator	2011	2021	2011-2021 Change
Area (ha)	6,865.61	7,570.45	704.84
Population	2,868,730	3,091,454	222,724
Population Density (persons/ha)	417.84	408.36	315.99

Source: Calculated using data from TURKSTAT (2022) and İZKA (2022j).

MAP 12. Map 12: Urban Fabric in the Metropolitan Area



Source: Urban Atlas (2018)

In line with the findings, the policy framework developed to be followed within the İzmir Region Spatial Development Perspective for controlling the transformation of the metropolitan urban area into a compact structure and enhancing quality of life and built environment standards is outlined below:

- The growth in the city region will be supported to occur in a highly polycentric structure, particularly in the regional development hubs designated as Kemalpaşa, Aliağa and Torbalı, as well as major attraction centers within the city region such as Manisa center district and Turgutlu.
- Investments in production and new industrial areas will be concentrated in a controlled and organized manner within regional development hubs. By addressing industrial developments together with residential areas and other urban infrastructures, not merely industrial facilities but industry-centered and high-standard living environments will be created, ensuring that industrial development in the metropolitan urban area and along main transportation axes is kept under control.
- Measures will be implemented to actively manage growth at the urban periphery to prevent sprawl.

  (i) Development in rural settlements in the rural-urban transition areas will be designed with a compact approach, while natural and agricultural areas will be developed and preserved to ensure permeability with urban areas.

  (ii) Maintaining the metropolitan area within its existing boundaries will be prioritized. To achieve this, it is recommended to avoid large infrastructure projects, particularly transportation projects, that could stimulate development on the metropolitan urban periphery. Any additional transportation lines that may emerge within the geographical area defined by natural topographic constraints, which also largely delineate the macroform, should be evaluated through multi-dimensional, scientific analysis-based, and participatory assessment processes, particularly if they would increase traffic based on private vehicle usage within the urban area.

- Growth in the city region will be developed based on multimodal transportation and focused on public transit. Dense settlements around stops and transfer stations connecting compact regional settlement hubs will be designed to prioritize high accessibility, especially in a manner conducive to walkability, with the development of micro-mobility. Key investment priorities include strengthening the İZBAN line extending between Aliağa and Torbalı with a third line, and establishing the rail connection between Kemalpaşa, Halkapınar and the TCDD İzmir Port to accommodate both freight and passenger transportation.
- Approaches to quality growth in the urban area will include restorative, integrative and transformative interventions;

A comprehensive transformation program will be developed for vacant areas, areas designated for functional changes or transformations, and areas to be vacated due to regional restructuring, aiming to repair the existing urban fabric and enhance urban capacities within the metropolitan area. Priority will be given to these areas for the implementation of transformative urban projects that support urban services, green infrastructure, next-generation urban functions, and the development of multiple sub-centers. New-generation thematic museums, libraries, open and closed sports and recreational areas, and cultural and arts complexes will be prioritized within the content and design programs developed under this scope, supporting open innovation and creative interactions, and fostering integration across generations and various social groups.

Green corridors between natural green belt conservation areas surrounding the metropolitan center and the urban area will be strengthened, while public open spaces and green areas will be enhanced both in quality and quantity.

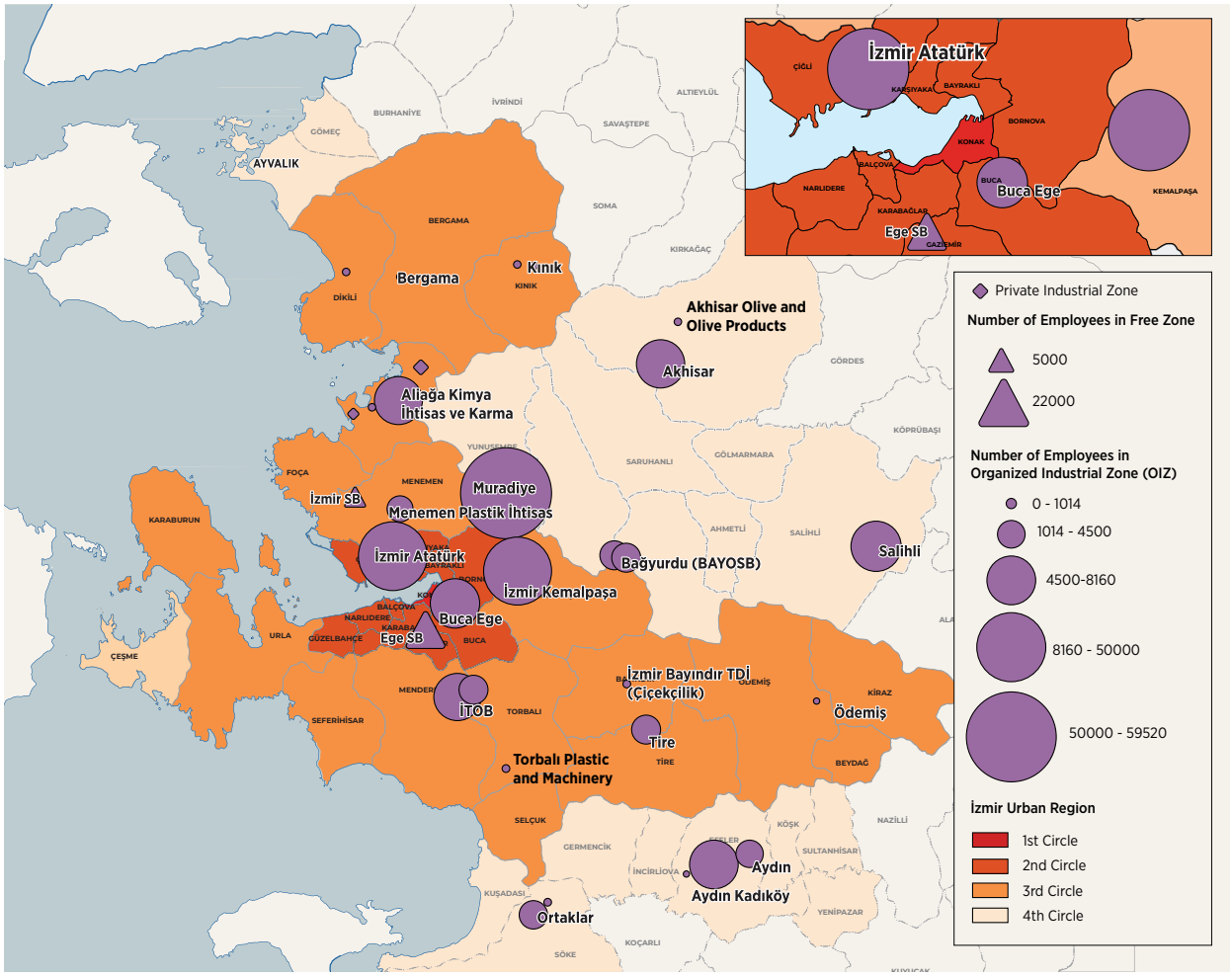
The development of urban sub-centers will be supported, and special urban design studies will be conducted to create high-quality living environments based on principles of mixed functions and land uses, aimed at enhancing micro-mobility and accessibility. Transformation programs will be developed to establish high-quality living environments within the existing urban fabric in terms of design and service standards. Within the transformation program, transformation models and design approaches will be established to enable the provision of accessible, affordable and diverse types of housing.

6.3.1.3. Guiding Development in Regional and Rural Development Hubs

Balanced regional spatial development, which views regional diversity as a significant development potential, can be achieved by strengthening various growth poles to counteract excessive concentration in a single center. Despite the existence of high-order settlements within the İzmir city region, each with diverse and strong potentials, İzmir's metropolitan area functions as a large, single center.

In terms of primary sectors and employment, the distribution within the metropolitan area shows that the agriculture sector3 accounts for 22%, the construction sector for 59%, and the services sector for approximately 80%. These figures highlight the metropolitan area's dominant position within İzmir. The İzmir metropolitan area hosts intensive activities not only in the services sector but also in the industrial sector (Maps 13 and 14). Comprising 12 central districts, the İzmir metropolitan area accounts for approximately 60% of İzmir's industrial employment.

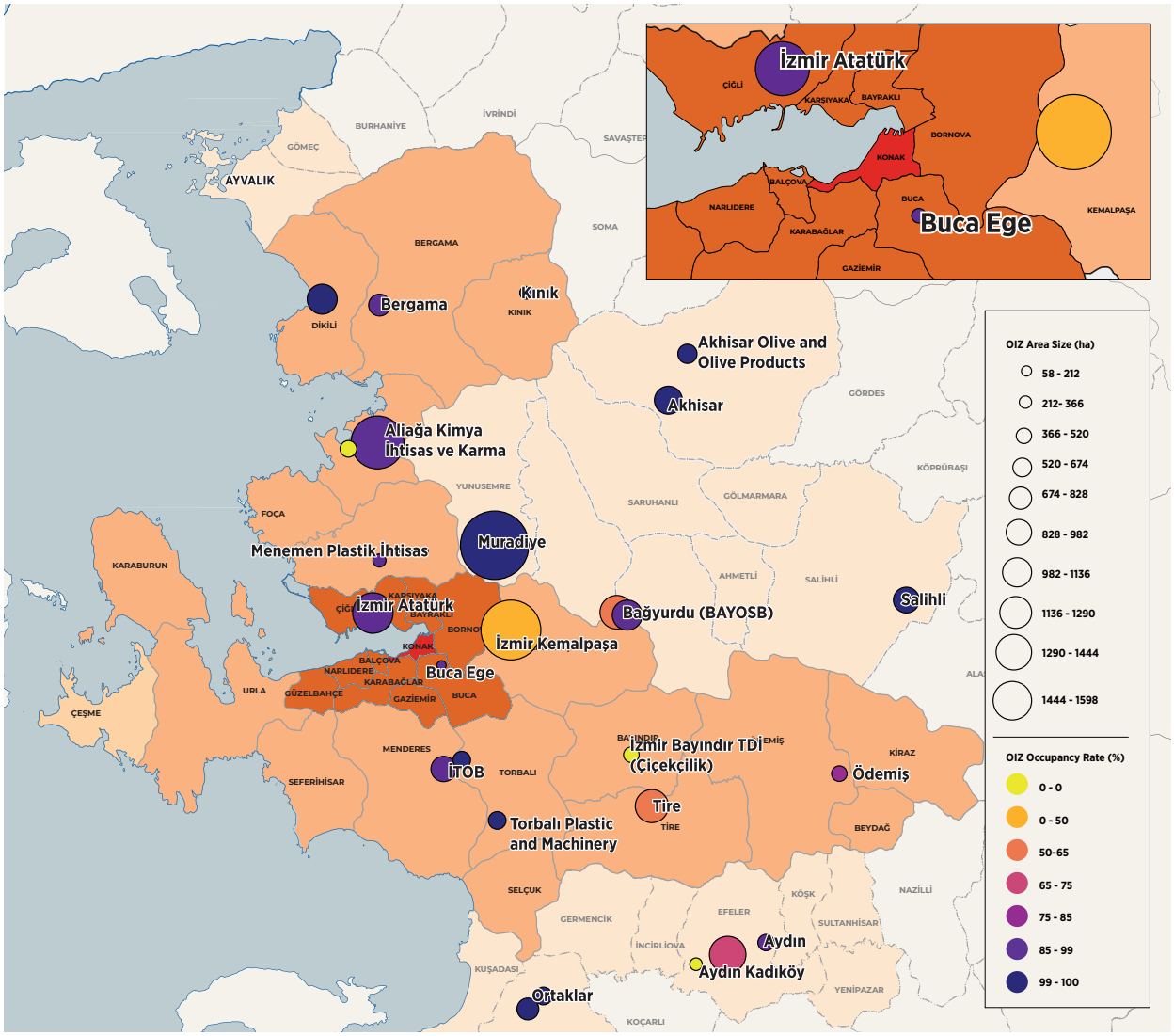
MAP 13. Number of Employees in Free Zones and OIZs



Source: Prepared using data from the Ministry of Industry and Technology (2022) and the Ministry of Trade (2022).

3 The high share of the agriculture sector is largely due to Menemen, included in the metropolitan core area and encompassing an extensive rural geography based on the assumptions of the YER-SİS study.

MAP 14. OIZ Area Size and Occupancy Rates



Source: Prepared using data from the Ministry of Industry and Technology (2022).

Employment data from 2010 and 2021 reveal that industrial employment, both in terms of numbers and proportions, has decreased particularly in Konak district within the metropolitan area, while it has significantly increased in the districts of Aliağa, Kemalpaşa, Menemen and Torbalı. Based on the industrial redistribution index at the İzmir city region level, calculated using 2010 and 2021 industrial employment data, the İzmir metropolitan area and other districts are weakening in terms of industrial activities, while the Manisa center and Turgutlu district are strengthening their positions. This indicates a shift of İzmir's industrial activities from the metropolitan area towards peripheral centers.

The need to strengthen multiple growth poles as a counterbalance to excessive concentration in a single center as a requirement of the balanced growth objective on a regional scale is further necessitated by the fact that the İzmir metropolitan area is constrained by natural, cultural, topographic and geological constraints.

In this context, Aliağa to the north, Kemalpaşa to the east and Torbalı to the southeast have been designated as "Regional Development Hubs" to support İzmir's balanced growth. Additionally, Bergama and Ödemiş will be strengthened as "Local Development Hubs" due to their capacities in agriculture, agriculture-based industries and service functions. Another "Local Development Hub," Urla, is an area open to development but with a rural structure under pressure, due to the increasing demand from investments in higher education and technology development zones on the peninsula, the secondary housing and tourism sector, and day-trip visitation.

Regional and Local Development Hubs

Aliağa, Kemalpaşa and Torbalı hold advantageous positions in terms of workforce and dynamism requirements due to their industrial and transportation infrastructure as well as their young populations. Aliağa hosts ports that handle 14% of Türkiye's cargo as well as two Organized Industrial Zones (OIZs), one active and the other in the establishment phase. In the active Aliağa Chemical Specialization and Mixed OIZ, 78.4% of plots have been allocated. Aliağa also contains two Special Industrial Zones. Kemalpaşa has one OIZ with a total area of 1,318 hectares, where 43.64% of plots have been allocated. Torbalı has two active OIZs, with all plots fully allocated in both. Furthermore, analysis of aerial photographs indicates that the actual occupancy rates in OIZs (calculated as the ratio of developed areas within the total OIZ area) exceed the allocation rate calculated on a plot basis. For example, while the occupancy rate for Kemalpaşa OIZ is 43.6% based on plot allocations, aerial photograph analysis shows that 55.5% of Kemalpaşa OIZ is built up. The occupancy rates of OIZs in the Regional Development Hubs, along with the sizes and locations of vacant plots, indicate a need for additional planned industrial areas to accommodate new investments that require specific conditions for industrial plots and infrastructure quality.

Moreover, an analysis using CLC (2018), MoIT (2022), and MoEUCC (2022a) data reveals that built-up areas in OIZs constitute 41.1% of the total developed industrial areas. When Free Zones, Special Industrial Zones and Small Industrial Sites are included, this ratio reaches 69%. Thus, it is observed that industries developed independently and dispersedly outside these types of industrial zones account for approximately 31% of the total.

In Kemalpaşa and Torbalı, independently operating industrial facilities along the state highway, in addition to the OIZs, negatively impact operational costs, environmental effects, and the efficiency of railway transportation (Map 15). Therefore, it is necessary to develop new areas within the Regional Development Hubs to prevent dispersed industrial formations and to provide planned industrial areas.

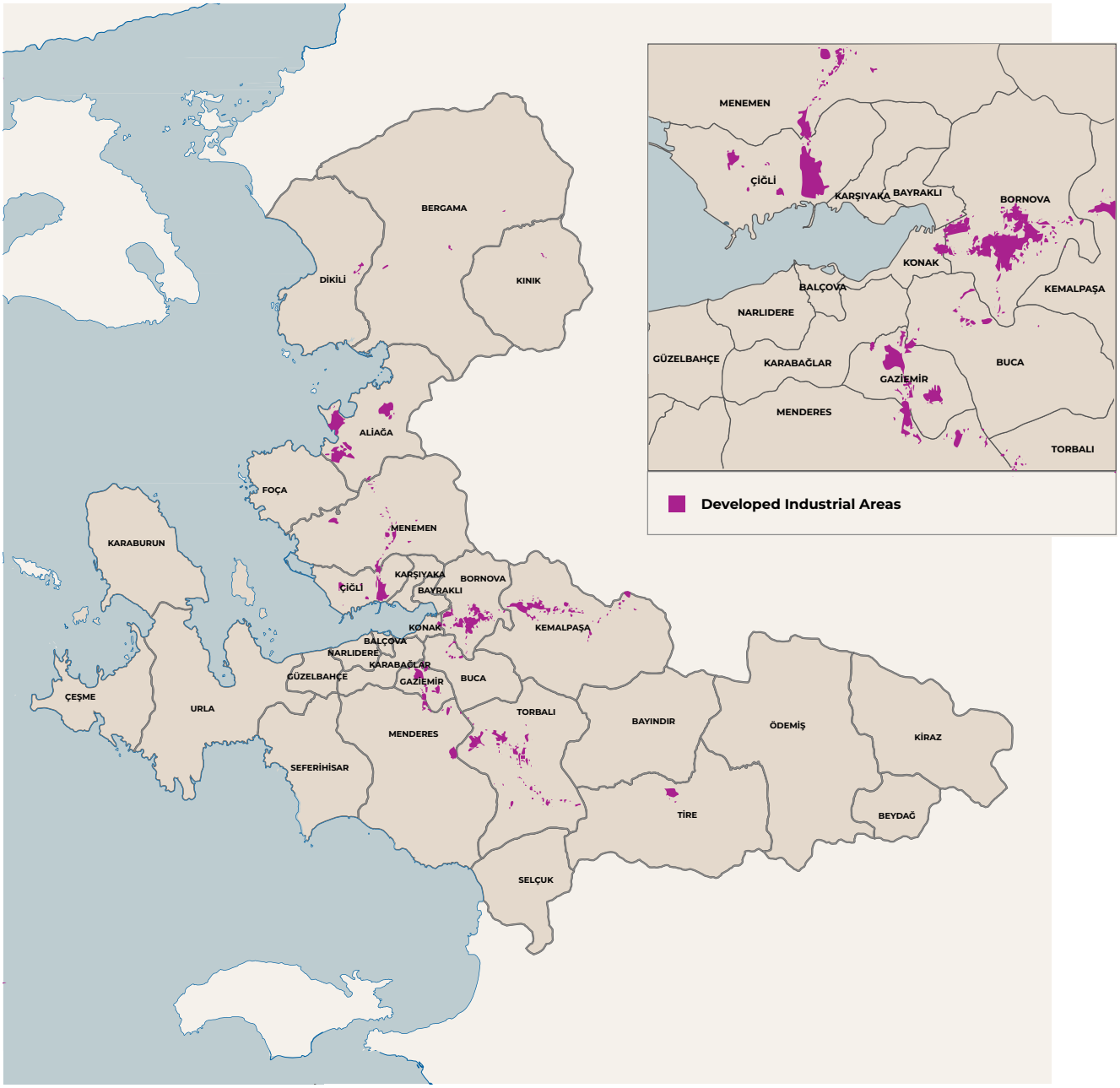
It is intended for these settlements, with populations around 100 to 200 thousand, to grow and strengthen their positions within the urban service hierarchy. The new industrial area capacities to be created through additions and reorganizations in these settlements will be managed with an approach that prioritizes physical and social alignment with urban areas, integrating urban development in these settlements with industrial expansion, and strategically focusing on establishing high-standard built environments and living spaces.

Within the Spatial Development Perspective established for İzmir, it is proposed to establish logistics centers in Çandarlı and Aliağa, a logistics center and an urban logistics hub in Kemalpaşa, and a logistics center and rural product collection center in Torbalı. It is essential to ensure transportation infrastructure access, particularly railway connections, for both existing and new industrial areas and to establish links with current and planned logistics centers.

When considering constraints analysis and urban development areas at the district level, it is observed that Kemalpaşa is constrained by elevations and forest areas (Map 16). Within the scope of the plan, a critical aspect of spatial development in Kemalpaşa is to design the Halkapınar-Kemalpaşa central passenger railway line and the Halkapınar-Kemalpaşa OIZ railway line, as well as the stops and transfer points along this line, as new urban hubs based on mixed land use and compact form principles.

The industrial areas between Menderes and Torbalı districts are stimulating urban development. While there are limited constraints to impede growth in these areas, it may be mentioned that development on the plains presents certain risks. Additionally, in the study titled Measurement of Urbanization Levels of Districts in Türkiye with Population Density and Urban Functions, published by the General Directorate of Development Agencies of the Ministry of Industry and Technology (Sarı et al., 2019), Torbalı is distinguished from the other two Regional Development Centers, Aliağa and Kemalpaşa, by its high population density but low performance in the urban functions index score. In this context, ensuring the necessary capacity gains in urban functions is a primary priority for guiding development in Torbalı. Therefore, in Torbalı, priority should be given to planned, compact and industry-focused urban development to support industrial growth and enhance urban functions, along with implementing projects aimed at designing mixed-use, high-standard living spaces.

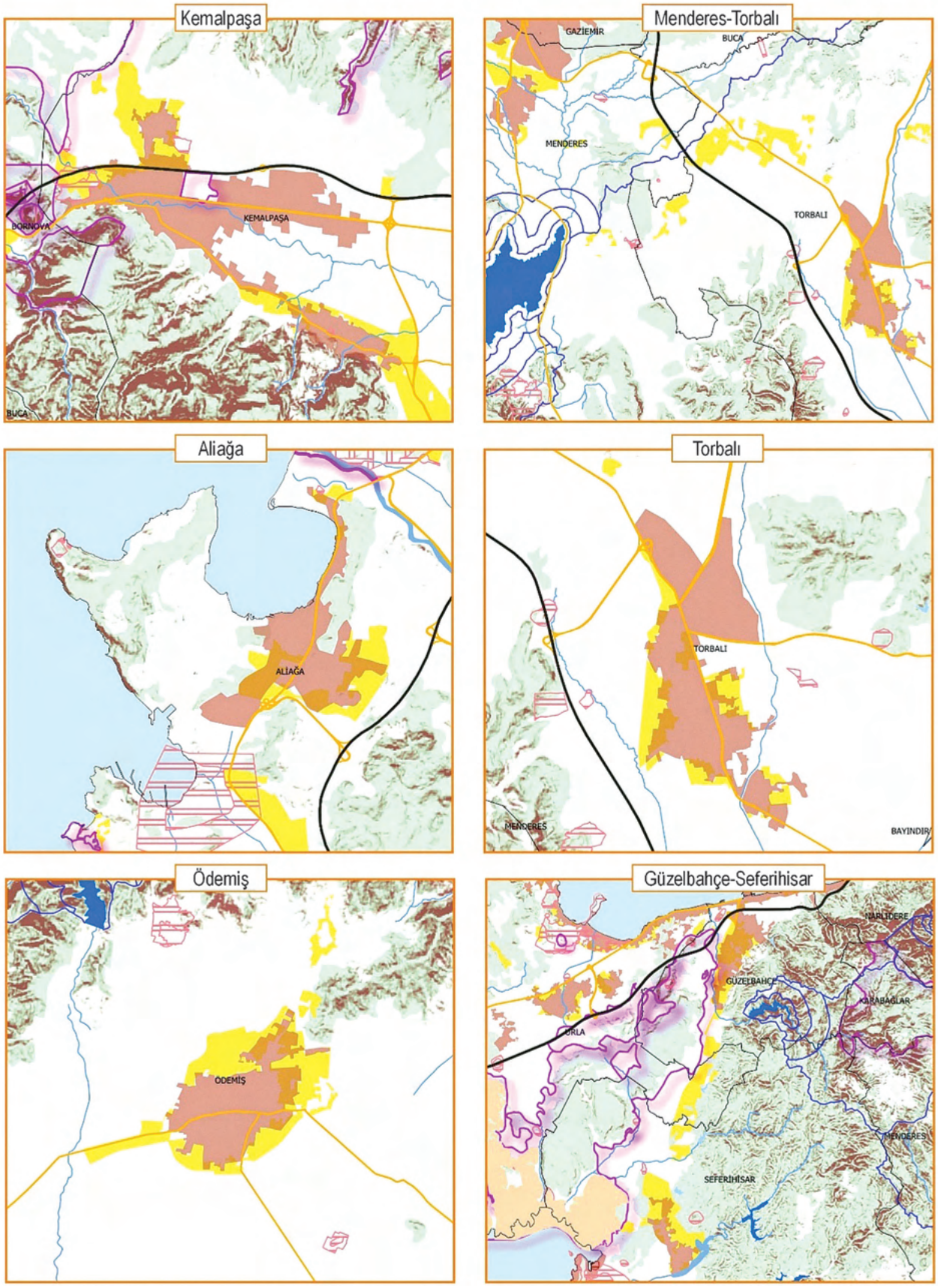
MAP 15. Developed Industrial Areas



Source: Prepared using data from CLC (2018) and MoEUCC (2022a).

While Aliağa district is highly conducive to urban development due to its industrial potential, its position as a coastal settlement at the sea-land interface, along with the presence of protected sites and natural constraints, necessitates controlled planning of development and the establishment of harmonious coexistence among conflicting functions. In the area clustered around Aliağa's ports, primarily engaged in iron and steel industry activities, investments should be made to address transportation and logistics needs, and models should be developed for managing industrial and logistics elements within a clustering approach. In addition to measures aimed at rehabilitating and improving existing unregulated development, it is essential for future developments to proceed with a comprehensive approach that considers the area holistically and in a planned manner. Aliağa is also a development center where extensive studies are required to mitigate industrial accident risks and implement regulatory and remediation measures for various types of pollution. These priorities, directly related to quality of life, are indispensable for guiding the desired development of this center.

MAP 16. Urban Development and Threshold Analysis by District



Source: Prepared using data from MoTI (2022), MoEUCC (2022a), and CLC (2018).

In the districts of Güzelbahçe, Seferihisar and Urla, a pattern of interconnected settlements is emerging. Certain constraints are present around this expansion, and it is anticipated that pressure on these areas will increase in the future. Therefore, in Urla, designated as a Local Development Center, support will be provided for design and implementation efforts aimed at achieving planned development and creating high-quality built environments. Alongside the peninsula's increasing population and demographic diversification, there is a trend of socioeconomic polarization between the area's permanent and temporary residents, as well as between private and public service providers. This requires that essential urban services in the area be developed and diversified to meet the needs and expectations of different social groups. Urla will also be developed to respond to new needs and demands arising from the expansion of higher education institutions and technology zones within the Peninsula Technology Corridor. To address the growing development demands in Urla, particularly housing needs, within the constraints imposed by its sensitive socioecological landscape, an "urban reorganization program" needs to be developed.

In respect to Bergama, where approximately 30% of the population resides in rural areas, it is observed that the district has the highest number of rural settlements and the largest agricultural land area, with 13% of employment in the agriculture sector. Bergama stands out with its strong agricultural and tourism sectors. Additionally, the Bergama OIZ, with an occupancy rate exceeding 95%, and the ongoing establishment of the Western Anatolia Free Zone provide significant opportunities for industrial investments in the region. If the Çandarlı Port Project and the "İzmir Clean Energy Specialized Industrial Zone," planned for approximately 150 hectares in integration with the port, are realized, Bergama will further strengthen its position within İzmir's polycentric city region. Extending the İZBAN line to connect Aliağa with Bergama will also enhance Bergama's potential as a central hub.

In the district of Ödemiş, 55% of the area is composed of agricultural land, making it the second-largest in terms of agricultural land size. Ödemiş has İzmir's largest "remote rural" population (23,715). Strengthening its connections with its rural hinterland, along with implementing a development program that includes neighboring districts—Bayındır, Beydağ and Kiraz, which experienced negative population growth in 2021—will be essential to supporting Ödemiş as a rural regional center. Extending the İZBAN line in the Ödemiş-Bayındır-Torbalı-Halkapınar direction to integrate it with the existing system, along with improving road connections between Kiraz-Ödemiş and Beydağ-Ödemiş, are key investments to reinforce Ödemiş's role as a focal point.

6.3.1.4. Developing Rural Area Intervention Programs through Defining Rural Area Typologies

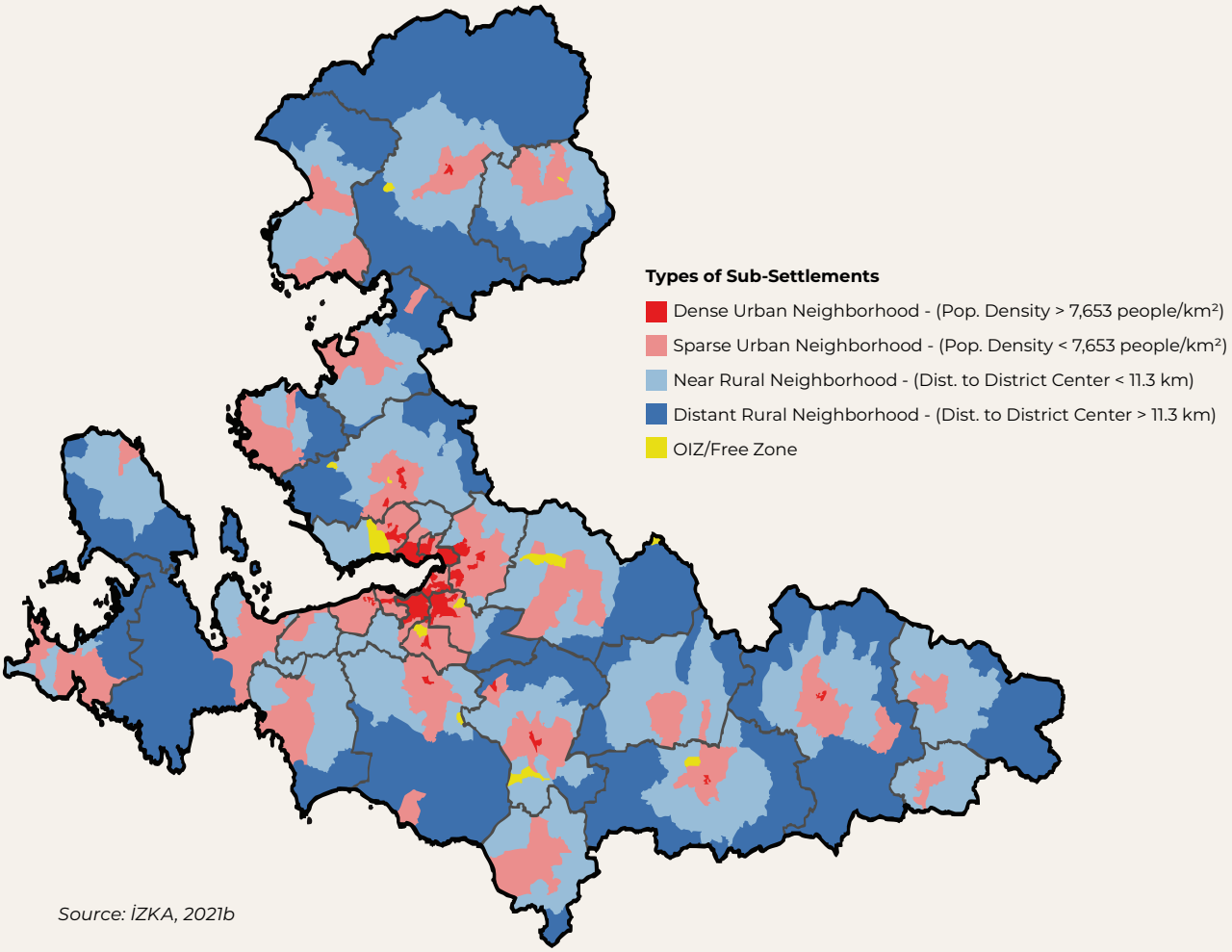
Achieving the goal of developing a polycentric, integrated and mixed-use regional settlement system requires analyzing and prioritizing rural-urban areas and their various transitional forms, as well as developing intervention area types across the regional geography according to prioritized development objectives. International examples show that different rural-urban definitions can be applied to the same locations for different purposes—such as spatial planning, transportation planning, developing place-sensitive economic policies, and planning for education and healthcare service delivery. Settlement patterns are generally remnants of past economic realities. Due to the multi-layered and constantly evolving nature of functional relationships, policies for rural and transitional areas need to be based on high-resolution analysis and interpretation. Developing locally specific policies and accurately analyzing the socioeconomic structure and development dynamics of rural areas cannot be achieved based on low-resolution definitions and classifications.

The study titled Analysis for Identifying Rural and Urban Areas in İzmir Province, published by İzmir Development Agency (İZKA, 2021b), developed a four-tier classification to identify rural and urban neighborhoods4 at the neighborhood level across the province (Map 17). This classification is an example of the "spatial typology" approach, which incorporates a certain level of gradation between rural and urban poles. Defining urban and rural areas using spatial typologies is crucial for determining

4 The study was completed before the "Regulation on Rural Neighborhood and Rural Residential Area," which came into effect on April 15, 2021, and represents a typology different from the 'rural neighborhood' definition within the scope of this regulation.

the types of public services to be provided, the quality of these services, planning the service delivery operation, and organizing development programs and incentive mechanisms.

MAP 17. Spatial Distribution of Urban and Rural Neighborhoods in İzmir



Source: İZKA, 2021b

On the other hand, beyond spatial typologies, there is a need for "performative typologies" in order to interpret the socioeconomic, cultural, institutional and geographic landscape within relevant localities. Rural areas exhibit significant variation from one another not only based on their relationship with urban areas but also in terms of demographic, economic (composition of economic activities) and institutional structures. This differentiation reflects their performance and necessitates the development of typologies that enable the assessment of each locality's dynamics and potential.

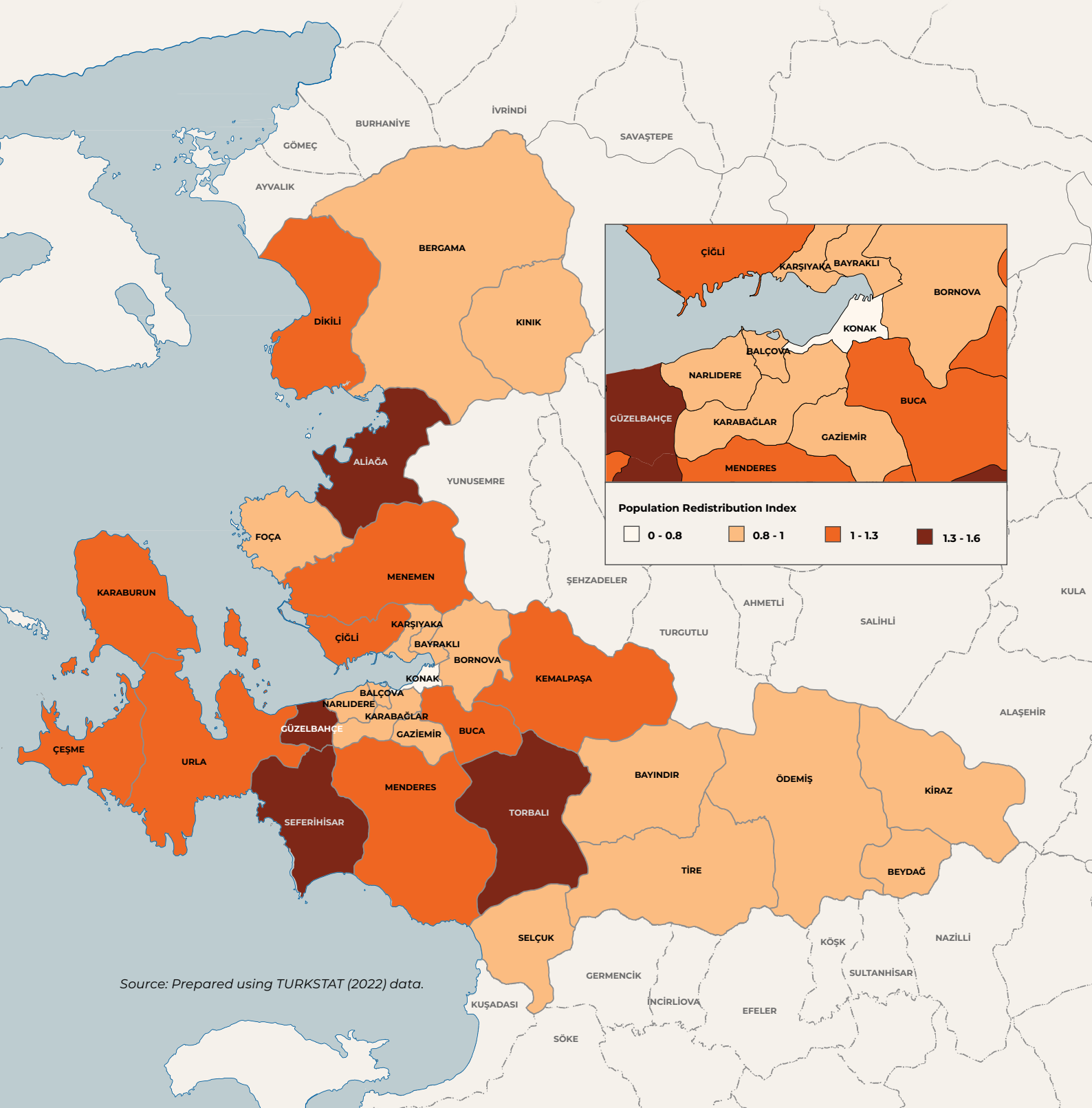
In the Twelfth Development Plan, conducting research and analyses to strengthen decision-support processes during the design and implementation stages of regional development policies has been prioritized for the advancement of regional development. In line with national priorities and regional needs, analysis and planning studies should be conducted to develop rural area typologies, towards fostering the development of collective and symbiotic relationships between settlements within the İzmir city region. Given that this study should function as a horizontal axis within the institutionalization of development and planning—and is not solely within the responsibility of a single institution—it should be designed with a participatory and inclusive approach. Due to the intervention-oriented classification requirement, the study should be open to multiple definitions and typologies, which can adapt based on the prioritized intervention framework.

6.3.1.5. Spatial Development Planning for Blue Opportunities

The total population of İzmir's coastal district settlements was observed to be 2,519,710 in 2000, accounting for 74.8% of İzmir's population. By 2021, the population in coastal settlements had risen to 3,768,304, with this segment's share within the total population increasing to 85.1%. İzmir's settlements are concentrated along the coast, both in terms of population and economic activity.

The population redistribution index measures whether the district's or neighborhood's share of the province's population has been maintained. In settlements growing faster than the metropolitan area—such as Urla, Dikili, Karaburun, Çeşme, Seferihisar and Menderes—population growth is predominantly driven by tourism and secondary housing developments (Map 18).

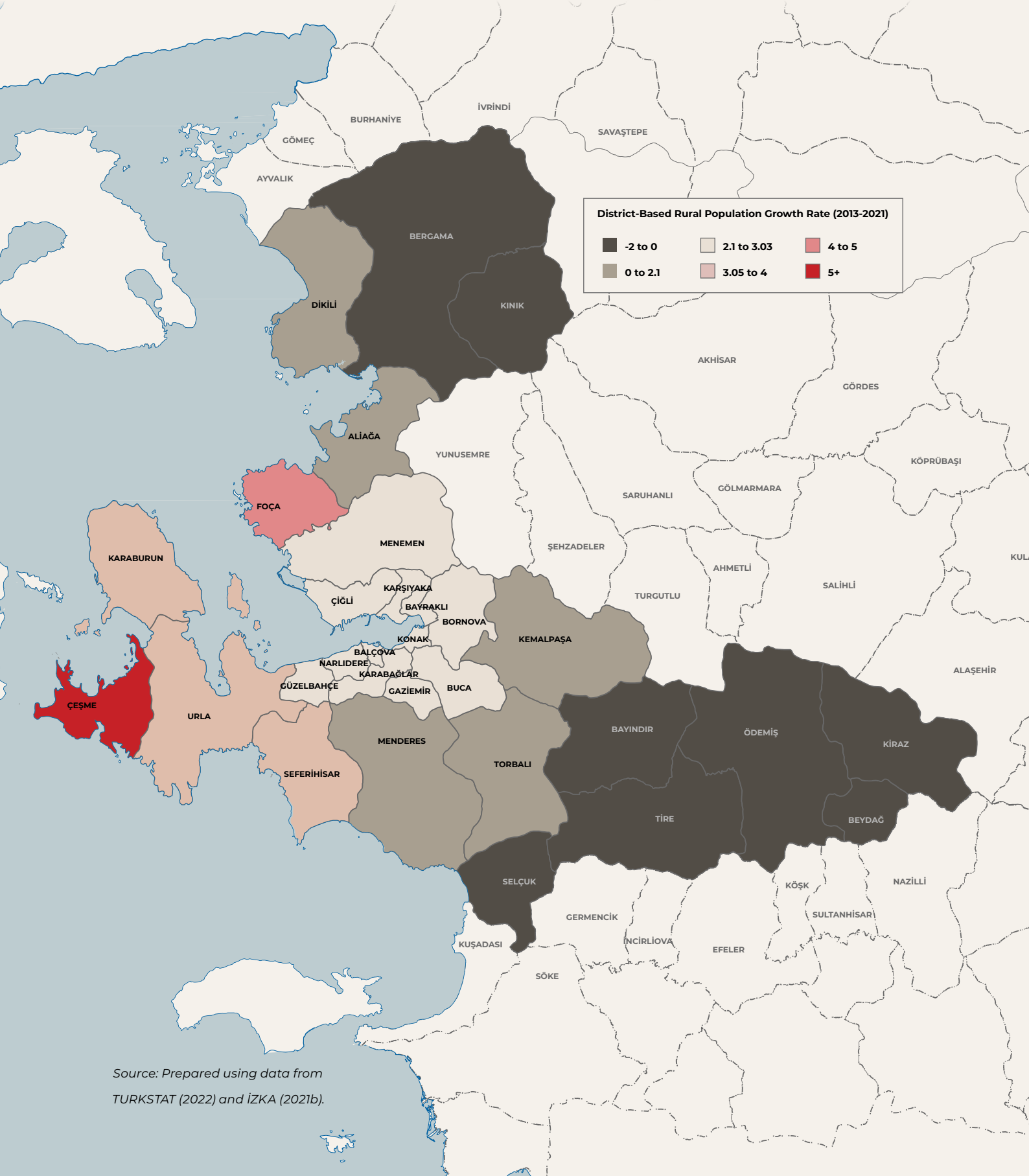
MAP 18. District-Based Population Redistribution Index, 2021



Source: Prepared using TURKSTAT (2022) data.

The rural population growth rate indicates that population growth in coastal districts occurs in the rural areas of these districts and is driven by secondary housing developments outside district centers. The rural population increases observed in the Peninsula districts and Foça support this finding (Map 19).

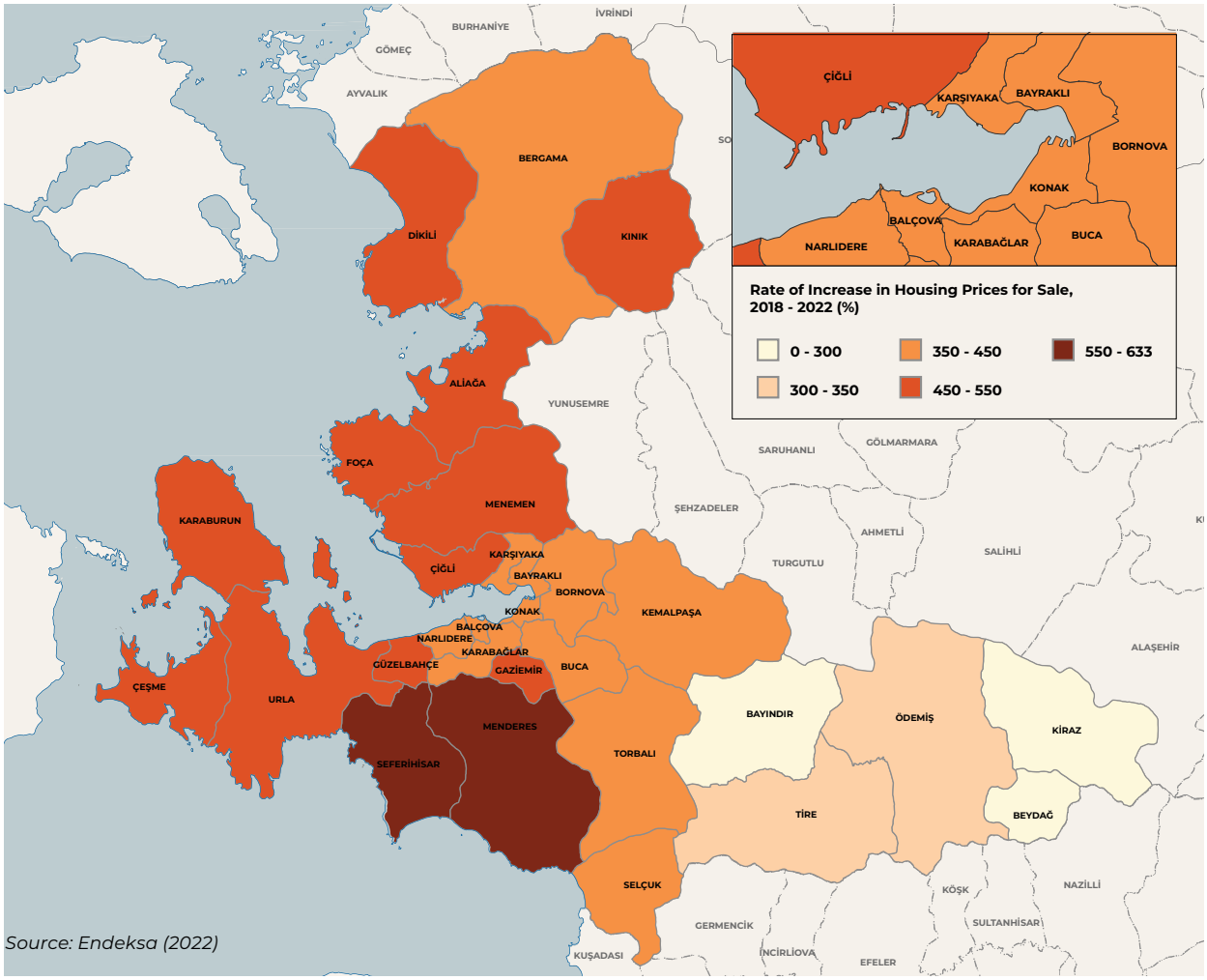
MAP 19. District-Based Rural Population Growth Rate (%), 2013-2021



Source: Prepared using data from TURKSTAT (2022) and İZKA (2021b).

The coastalization trend mentioned is strengthening and increasing following the pandemic and the earthquake that occurred in İzmir in 2020, and the resulting high demand is also reflected in the real estate market of these districts (Map 20). Coastal settlements are becoming particularly attractive for the retired and elderly population. According to the share of age groups within the total population, Karaburun and Dikili are among the districts with the highest proportion of elderly residents.

MAP 20. Rate of Increase in Housing Prices for Sale, 2018-2022 (%)



Source: Endeksa (2022)

The constructions resulting from urban sprawl along the coasts are known to lack adequate technical, transportation and social infrastructure. These developments along the coastal strip necessitate uneconomical solutions for infrastructure provision. The primary issues here relate to waste and water management. Investments in sewer infrastructure and wastewater treatment facilities are crucial. For coastal areas, which serve as public spaces and urban commons, it is necessary to adopt a design approach that is compact, allows for open coastal spaces, and integrates with its hinterland, especially taking critical natural data into account for secondary housing developments planned parallel to the coastal strip. While ensuring the controlled development of coastal settlements, it is also observed that supporting the capacity of urban functions within the scope of the restructuring program for rural service centers is essential.

Coastal areas increasingly serve as regions where a wide variety of activities—ranging from urban uses, industries, energy terminals, shipyards, secondary housing, tourism, recreation, maritime trade and transport, to fishing—compete for space. It can be said that the maritime and terrestrial cross-sections of coastal areas serve as primary locations for many activities identified within the blue growth approach. The well-being of populations in coastal

areas and the continuity of economic activities are closely linked to the environmental state of these areas. Protecting coastal regions is essential to ensure the continuity of ecosystem services, enhance predictability for investors, reduce administrative burdens for authorities, and increase efficiency. For these goals, holistic and long-term management tools, like integrated coastal management, are of significance. According to the approach underlying the EU's coastal areas policy, a sectoral approach may lead to disconnected decisions that risk undermining each other, inefficient resource use, and missed opportunities for more sustainable coastal development.

Coasts are not only a site of conflicting interests but also areas with unique geographical qualities that serve common benefits. While terrestrial areas can be subject to private ownership, individual property rights do not apply to seas. Seas are divided into different sovereignty areas like territorial waters, continental shelf and international waters under international legal frameworks. The shared ownership of seas also necessitates that coastal areas, as transitional zones between land and sea, be regarded as common property in principle; otherwise, access to the seas as a common resource would not be possible.

The integrated implementation of Marine Spatial Planning and Integrated Coastal Zone Management, designed as an area management model, constitutes a key agenda item at the local level for the effective and coordinated planning and management of blue economy activities. Therefore, a model will be developed in İzmir for the integrated implementation of relevant planning efforts aimed at overseeing and directing development in coastal and marine areas, and efforts toward practical implementation will be supported.

6.3.1.6. Strengthening Ecological Structures, Historical and Cultural Assets as a Repertoire of Assets for Development

In our country, large-scale regional/urban projects; industry, mining, and energy investments; as well as market-oriented spatial decisions have increasingly put pressure on significant natural areas and forests, which serve as buffer zones. Processes like uncontrolled urbanization and construction amnesties have led to the loss of a substantial portion of valuable agricultural lands from 1990 to 2020. For İzmir, the city's richness in natural and cultural assets often results in these areas being perceived as constraints that slow down or even hinder sectoral growth. These constraints sometimes emerge as areas of tension among tourism, industry and energy investments. However, these constraints highlight that not every economic activity can be carried out everywhere and underscore the necessity of a certain "carrying capacity." Unfortunately, strict provisions in conservation legislation have not been sufficient to prevent the irreversible damage and loss of natural and cultural assets in the country. On the other hand, sustainable development is only possible if natural and cultural assets are transferred to future generations intact. At this point, it is essential that development and growth be achieved without compromising conservation, and this principle must be adopted as a prerequisite in policies and decision-making processes produced at the national, regional and local levels.

Between 2013 and 2016, various efforts were undertaken in İzmir that embraced a local development approach based on natural and cultural assets. Three different local development strategies were developed, focusing on how to support local development in the Peninsula, Gediz-Bakırçay, and Küçük Menderes basins. As an extension of these efforts, the "Ruritage Project," which began in 2018 as part of the EU Horizon 2020 Program (EU H2020 RURITAGE) and included İzmir as one of the implementation areas, developed practices for preserving rural heritage through the Bergama/Kozak micro-basin in the Bakırçay Basin. Through this project, examples of nature-compatible development using rural and regional heritage were tested, differing from traditional local development approaches, and relevant capacity was built. These examples have provided models of qualified development through local assets and heritage elements as a repertoire of assets. A recent study by the İzmir Development Agency, titled "Ancient Production Basins of İzmir" (2022), also reflects this approach. The study marks the first step in encoding the ancient knowledge of the past as a value for the present and ensuring the transfer of integrated ecological structures and historical/cultural heritage into the future. In this context, the policies to be followed under the İzmir Region Spatial Development Perspective, which will establish continuity with previous regional and urban-scale efforts, are outlined below:

- Sectoral and spatial studies focused on rural heritage shall be supported in the Ödemiş Plain,

Menemen Plain, Bakırçay Plain, and Aliağa Plain, which were designated as "major plains" by the Ministry of Agriculture and Forestry in 2017. Additionally, the scope of the "ancient production basins" study shall be expanded to develop new nature-based green entrepreneurship models through agricultural heritage.

- Efforts aimed to leverage assets like underwater archaeological heritage and to determine marine land use through "marine spatial planning" studies shall be supported, towards developing marine areas within the scope of the blue economy. Programs shall be created for necessary inventory and conservation projects, particularly in the inner bay and bay lagoons.
- Necessary support shall be provided for studies that enable calculating the carrying capacity of clean energy investments, such as wind, solar, geothermal and biogas, with consideration of natural and cultural heritage elements, as well as innovative initiatives, including circular tourism and circular agriculture.
- Efforts to uncover heritage elements along the İzmiras routes and to preserve natural heritage elements in urban areas, such as Kültürpark, shall be supported, towards the aims of fostering urban tourism and integrating rural and urban cultures.
- - In line with İzmir Historic Port City's UNESCO World Heritage List candidacy, efforts and organization shall be expanded with a regional heritage focus, primarily to encompass Bergama, Çeşme, Dikili (Çandarlı), Foça and Tire, by developing cultural infrastructure, organizational and economic models.
- Efforts to preserve and repurpose industrial heritage, particularly within the metropolitan center, shall be supported.
- Green and blue entrepreneurship initiatives based on biological and cultural heritage shall be encouraged in the Gediz Delta Ramsar Site, as well as Foça and Karaburun Special Environmental Protection Areas.
- Development efforts for the İda-Madra Geopark, where both geological and biological heritage are preserved, shall be supported, enhancing inter-provincial coordination and collaboration with Balıkesir and Çanakkale, in this regard.

6.3.2. Mobility for Dynamism: Strengthening regional flows and generating productive dynamism with high-level connectivity and logistics infrastructures

The policy to strengthen regional flows and foster productive vibrancy through high-level connectivity and logistics infrastructures focuses on the region's connections and nodes. Connections between nodes are established through railways, highways and national/state roads. At the regional level, industrial areas (especially organized industrial zones) and logistics centers (logistics villages, freight transfer centers, urban logistics centers, rural product collection centers, truck parks, container storage areas) are considered critical nodes. Ports and airports serve as both nodes where various connections intersect and as connections linking the nodes. These connections and nodes constitute İzmir's essential transportation infrastructure.

Additionally, İzmir's location as the country's westernmost point, acting as a "border" and a "gateway," intensifies the need for a transportation infrastructure that is fast, reliable, integrated and diversified. The full impacts of the recently completed North Aegean Motorway and İzmir-Istanbul Motorway on economic activities and settlement patterns have yet to fully materialize. Upon completion of the Aydın-Denizli Motorway and the Ankara-İzmir High-Speed Rail connection, both currently under construction, the region's terrestrial transportation capacity and accessibility will be further enhanced. The Twelfth Development Plan supports İzmir's goals of expanding its sphere of interaction and improving integration between its transportation-logistics infrastructures, hence emphasizing the development of logistics infrastructure connecting the Çandarlı and İzmir Ports to facilitate access to international markets for the Aegean Region's prominent textile, weaving, petrochemical and agriculture-based industrial products.

The spatial development policy to strengthen regional flows and foster productive vibrancy through high-level connectivity and logistics infrastructures comprises six interrelated programs.

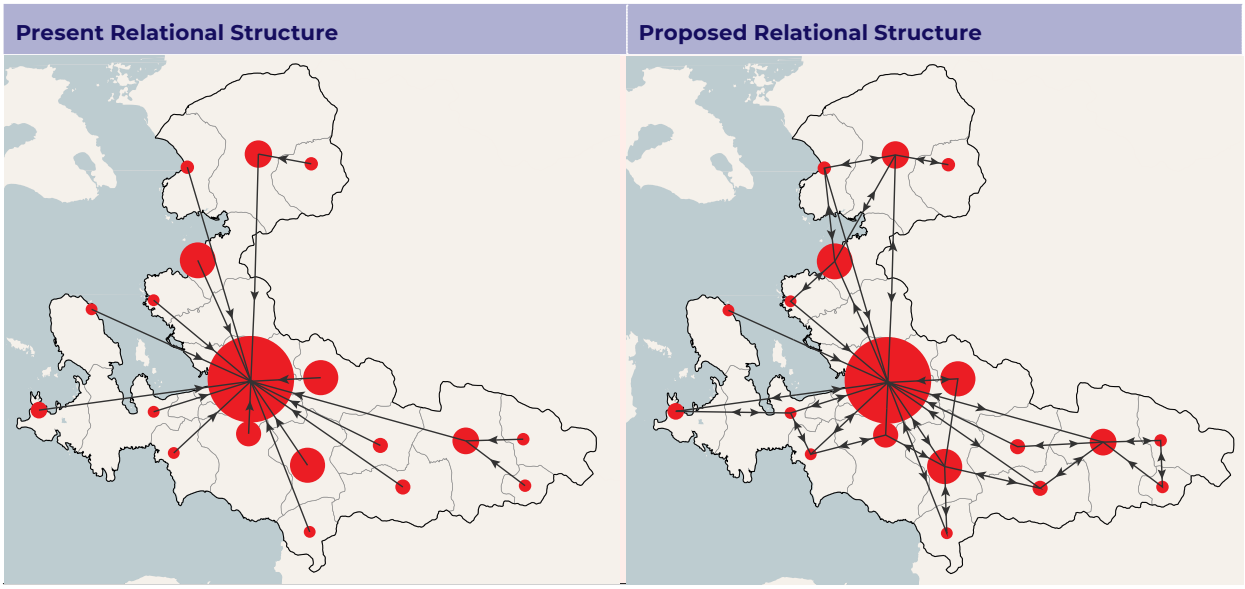
6.3.2.1. Strengthening Interaction and Reciprocity Between Settlements

As the İzmir metropolitan area grows, along with regional development centers (Kemalpaşa, Aliağa, and Torbalı) and local development centers (Bergama, Ödemiş, Urla), it is aimed to strengthen relationships between settlements, increase interactions and replace one-sided relationships -a reflection of a hierarchical structure- with mutual partnerships and collaborations between settlements.

It is evident that the İzmir metropolitan area presently is and will continue to be the focal point of spatial interaction. Population growth in settlements and the acquisition of new and complementary functions will enable diversification and intensification of relationships between settlements. In this context, the interaction between regional and local development centers and the metropolitan area, which serves as the central hub, is expected to increase. Strengthening relationships between development centers and the settlements in their hinterlands is also aimed. Relationships between settlements will be established through flows of agricultural products, industrial goods (raw materials, finished and semi-finished products), and services, logistics, consultancy and information flows.

İzmir metropolitan area will strengthen its central functions serving the İzmir province and the İzmir city region, enhancing its expertise as a facilitator in integrating capacities developed in the growth centers into global markets (Figure 7).

FIGURE 7. Present and Proposed Settlement Relationship Structures



The primary infrastructure needed to evolve the relational structure into a two-way form and to increase the intensity of relationships is the transportation and communication infrastructure. Transportation infrastructure that can accommodate both freight and passenger traffic is crucial to ensure that relationships are not affected by time and cost factors.

İzmir metropolitan area, and especially the regional development centers, currently possess a robust transportation infrastructure, including the Istanbul-İzmir, İzmir-Aydın and Menemen-Aliağa-Çandarlı Motorways, as well as the railway infrastructure. In the coming period, further development of these connections with the Ankara-İzmir High-Speed Rail Line and the İzmir-Aydın-Denizli-Antalya Motorway is expected to strengthen İzmir's position within Türkiye's economic geography.

There is a need to reinforce urban and regional railway infrastructure in İzmir and to improve highway connections between centers without an İZBAN connection and those with one, as part of the development of road and rail infrastructure.

6.3.2.2. Strengthening Urban and Regional Railway Infrastructure

Enhancing railway connections to ports and production centers (OIZs, FZs, SIZs)

Currently, İzmir enjoys a highly advantageous position regarding railway connections. İzmir has railway connections to South Marmara, Central Anatolia and the Southern Aegean regions. TCDD İzmir Port is directly connected by rail, while the ports in Nemrut Bay (Aliağa) are connected through the Biçerova and Çakmaklı stations. This supports the ports' competitiveness over a large area and enables them to serve a broad hinterland. However, only NemPort among the ports in Nemrut Bay has a connection line. Although TCDD İzmir Port is directly connected to the railway, the İZBAN line, which operates for passenger transport on the north-south axis during the day, restricts freight transport on this line. Additionally, important production areas in İzmir (OIZs, SIZs, FZs) currently lack railway connections. MOS Logistics, integrated with the Manisa Organized Industrial Zone, provides container transportation services from Manisa to İzmir through regular train services between TCDD İzmir Port and Biçerova Terminal.

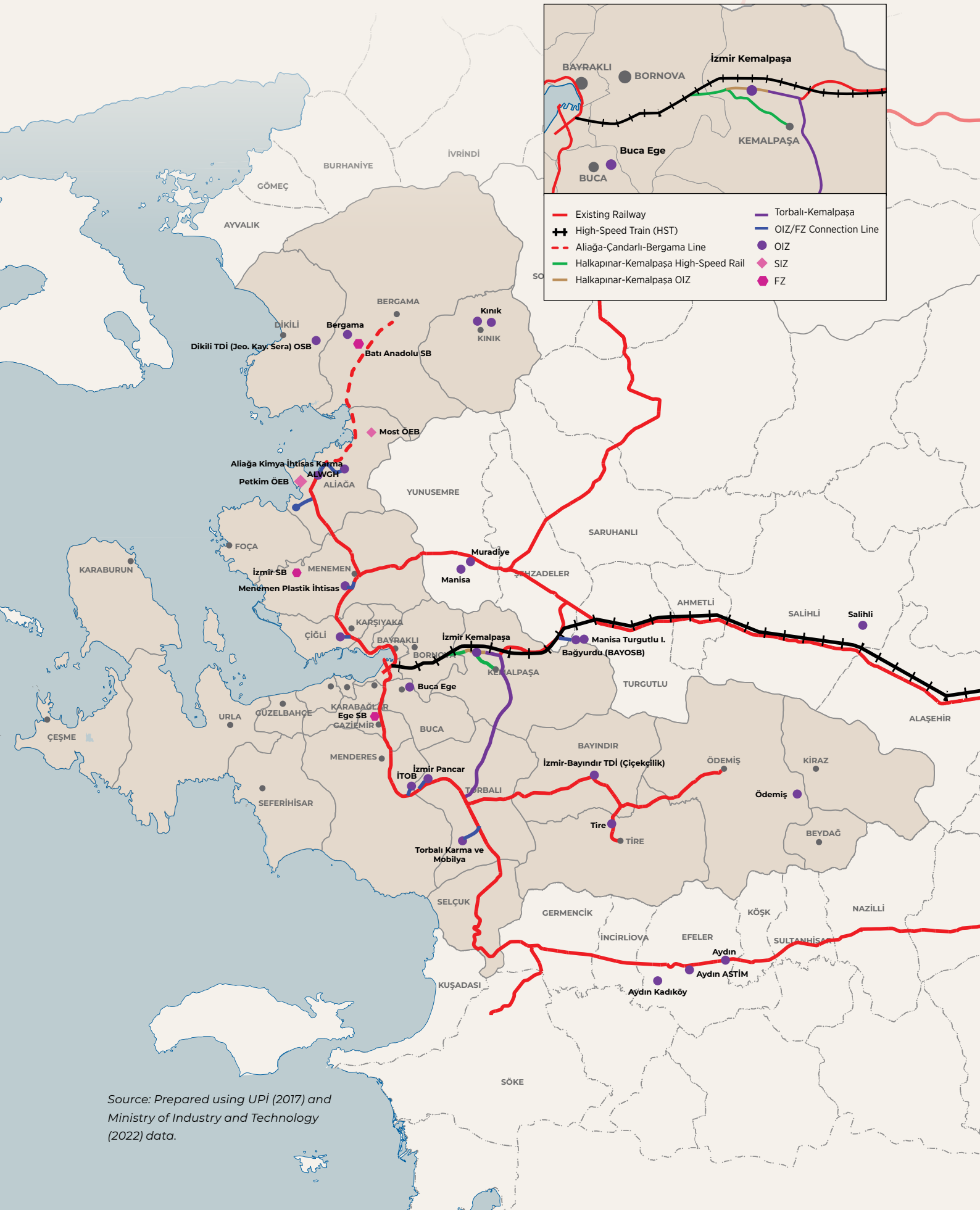
İzmir is also in an advantageous position regarding highway connections. Istanbul-İzmir Motorway connects significant metropolitan areas, agricultural and industrial production areas, and logistics centers to İzmir. Menemen-Aliağa-Çandarlı (North Aegean) Motorway strengthens the connections to the northern part of the province. In the northern region of the city, there are Aliağa ports, Çandarlı port under construction, major iron-steel and petrochemical industrial facilities, and agricultural production areas. As such, the door-to-door transportation system needs to be strengthened to increase the share of railway transport. As a practical and short-term solution, in alignment with the National Strategy for Regional Development (BGUS) projections, connecting lines to organized industrial zones and industrial regions are prioritized. This would facilitate the transfer of freight from road to rail and reduce urban road traffic. In this context, connecting lines to Aliağa ports, Çandarlı Port, Torbalı Mixed and Furniture OIZ, Menemen Plastic Specialized OIZ, Aliağa Chemical Specialized and Mixed OIZ, ITOB, İzmir Pancar OIZ, and İzmir Atatürk OIZ, as well as to the İzmir and Aegean free zones, is essential for strengthening connections between industrial production areas and logistics centers.

Kemalpaşa OIZ, logistics center and settlement are not directly connected to the metropolitan area or the port by rail. To enhance Kemalpaşa's relationship with the metropolitan area and facilitate more efficient freight movement, Halkapınar-Kemalpaşa central passenger and Halkapınar-Kemalpaşa OIZ railway lines need to be implemented as indicated in the İzmir Transportation Master Plan.

The current railway line terminates at Aliağa in the north. A joint investment decision by İzmir Metropolitan Municipality and TCDD exists to extend the line approximately 48 km from Aliağa Station to the district of Bergama in the north. However, the proposed route does not provide access to Aliağa OIZ and Bergama's district center. Therefore, efforts to include this investment in the program and make necessary adjustments to the route to ensure access, especially to Aliağa OIZ, Çandarlı Port and Bergama's center, are deemed critical.

To establish a Logistics Center and Rural Product Collection Center with railway connections in Torbalı, which would serve as a hub for the Denizli and Aydın axes, the construction of the Torbalı-Kemalpaşa railway connection (approximately 40 km) is also of importance (Map 21).

MAP 21. İzmir Transportation Infrastructure and Proposed Railway Connections



Source: Prepared using UPİ (2017) and Ministry of Industry and Technology (2022) data.

- **Differentiation of Freight and Passenger Transport Infrastructure and Strengthening Passenger Transport Infrastructure**

Currently, İZBAN operates as an intra-city passenger transport line on two north-south tracks, also used by freight trains. This necessitates that freight transportation to occur outside of scheduled passenger service hours, which in turn reduces the line's freight-carrying capacity. To reduce road traffic within the city, it is essential to increase the share of rail in port-targeted and port-originated freight transport by adding a third track, exclusively for freight operations, parallel to the two existing passenger tracks.

The purpose of the suburban line is to provide direct or transfer access to settlements and travel hubs, such as Organized Industrial Zones (OIZ), university campuses and similar destinations. Currently, the İZBAN line operates between Selçuk5 in the south and central Aliağa in the north, with a maximum frequency of 6 trips per hour at intervals of up to 10 minutes. Work on extending the line's route continues in the northern section. Extending this route is essential for establishing a north-south backbone line across the entire province. This route is significant not only for relations between urban centers but also for promoting accessibility in rural areas and strengthening the connection between rural settlements and the city center.

The north-south transportation backbone provided by İZBAN is crucial for efficiency, speed, and comfort in public transportation. Integrating Ödemiş, Bayındır and Tire—currently excluded from the İZBAN line despite existing rail infrastructure—should be considered to increase regional accessibility and strengthen inter-settlement connections. In this context, the routes Ödemiş-Bayındır-Torbalı-Halkapınar and Tire-Bayındır-Torbalı-Halkapınar should be evaluated. These connections will also bolster Küçük Menderes Basin's position in cultural tourism.

6.3.2.3. Improving Road Connections of Centers Without İZBAN Access

The districts of Kınık, Beydağ and Kiraz are İzmir's least developed in terms of socio-economic advancement. These districts have low populations, relatively high rural populations, slow population growth, low young population ratios and slow aging rates. According to the 2022 SEGE study, the urbanization levels of these districts—determined using principal component analysis based on socio-economic development indicators reflecting urban functions—are observed to fall in Level 3 (moderate) category. Their greatest disadvantage is their distance from the city and weak transportation links to the center.

To strengthen the connection of these remote rural settlements to Local Development Hubs, it is necessary to improve road connections between Kiraz-Ödemiş and Beydağ-Ödemiş.

6.3.2.4. Strengthening Urban and Regional Logistics Infrastructure

Currently, two operational logistics centers with rail connections to İzmir's ports exist. The first is the Balıkesir Gökköy Logistics Center6, and the second is MOS Logistics7, operating within the Manisa OIZ. Construction activities for Kemalpaşa Logistics Center are ongoing. Kemalpaşa Logistics Center is connected to the Aliağa ports and TCDD İzmir Port via Manisa. In other words, Kemalpaşa lacks a direct rail link to the metropolitan area.

Additionally, efforts are underway to establish logistics centers in Uşak and Kaklık (Denizli) with rail connections to İzmir's ports and to bring these centers to full capacity.

In this regard, the following actions are considered;

- Establishing Çandarlı Logistics Center, which will operate in coordination with the İzmir Clean Energy Specialized Industrial Zone proposed under the Regional Plan and the ongoing BASBAŞ establishment

5 Selçuk services are operated with a transfer at Tepeköy station.

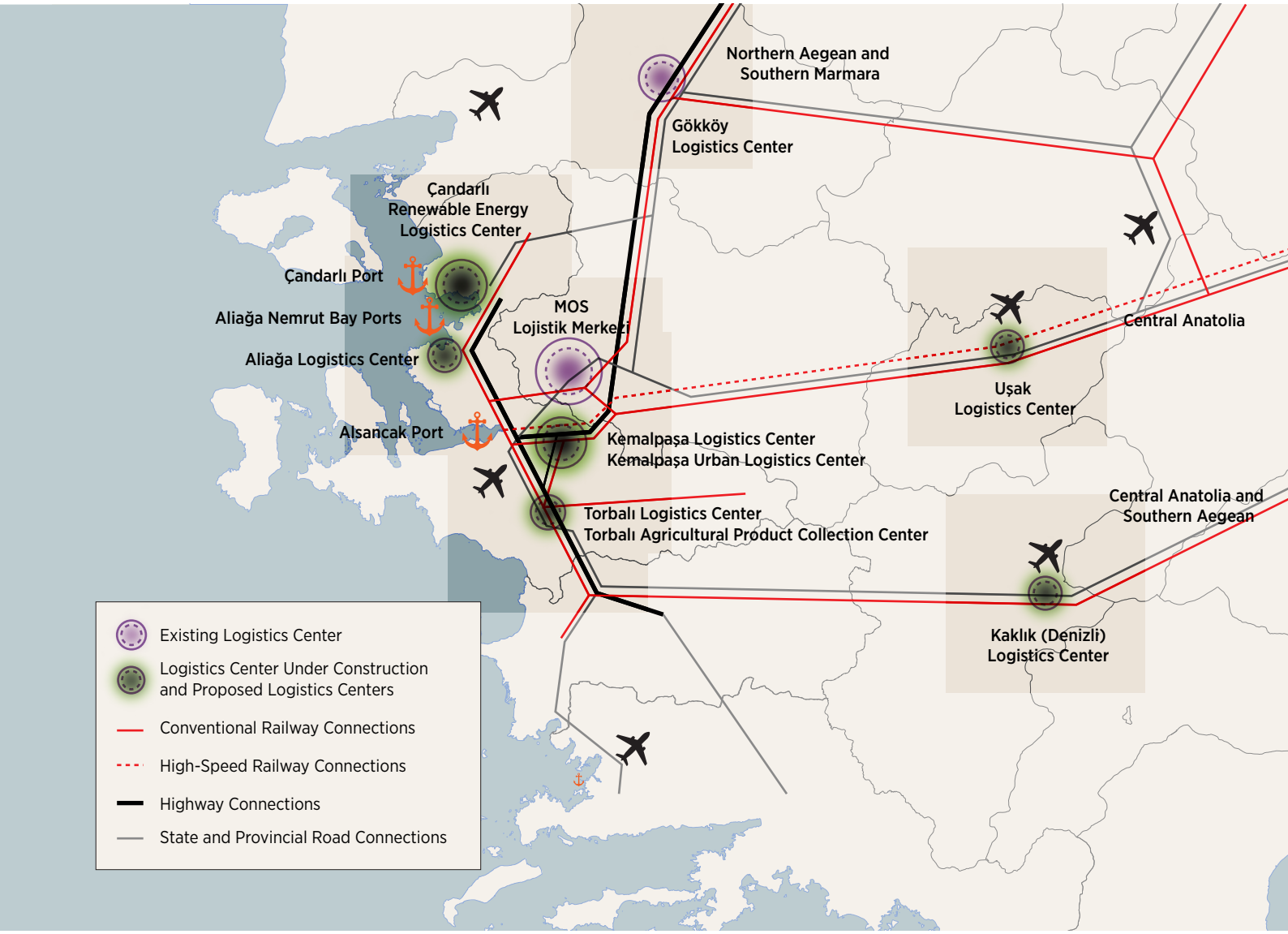
6 Gökköy Logistics Center operates with both İzmir ports and Bandırma Port.

7 The distance from Manisa OIZ to TCDD İzmir Port is 32 km, from Kemalpaşa OIZ is 23 km, and from Torbalı OIZ is 57 km. Additionally, two daily trips are operated from MOS Logistics located in Manisa OIZ to the Aliağa ports area and TCDD İzmir Port, transporting approximately 300 containers daily.

- Creating a logistics center/truck park in the Aliağa port hinterland to improve port efficiency and reduce traffic in the port's hinterland
- Establishing container storage areas in Aliağa and Kemalpaşa
- Constructing a truck park in Işıkkent to ensure that trucks arriving to collect cargo only enter the city when the cargo is ready
- Establishing an Urban Logistics Center in Kemalpaşa and relocating scattered storage areas in the TCDD İzmir Port hinterland to Kemalpaşa
- Establishing a rail-connected logistics center and rural product collection center in Torbalı, serving as a consolidation point for the Denizli and Aydın axes, as well as establishing a rail link between Torbalı and Kemalpaşa, approximately 40 km in length
-

Considering İzmir's broad service region, Kemalpaşa Logistics Center, İzmir ports, Bandırma Port, and Gökköy, Uşak and Kaklık logistics centers form significant logistics corridors (Figure 8). These development axes, along with rail connections, create an industrial corridor that includes Balıkesir, Kütahya, Afyonkarahisar and Isparta, which supports the balanced distribution of industry within Türkiye and fosters regional convergence. To complement infrastructure improvements, strengthening the regional port and logistics ecosystem, increasing rail's share in transportation, and encouraging private sector participation in the rail sector, including private sector rail operations, should also be supported.

FIGURE 8. Existing and Proposed Regional Logistics Infrastructure Scheme of İzmir



6.3.2.5. Relocating Port-Connected Warehouses from the Metropolitan Area to Kemalpaşa

Port-connected warehouses in the metropolitan area, occupying valuable lands for low-value-added activities, lead to truck and lorry traffic entering the metropolitan area. Repurposing these lands concentrated in the port hinterland—especially in the city center—will enable restorative, integrative and transformative interventions, supporting the quality growth approach in strengthening the metropolitan city center. Therefore, after establishing a rail connection between Kemalpaşa and TCDD İzmir Port, it is planned to relocate the port-connected warehouses in the metropolitan area to Kemalpaşa with appropriate planning.

6.3.2.6. Sustainable Transportation and Smart Mobility in the City Center

Among the primary factors that directly impact urban quality of life are ease of urban transportation and accessibility. İzmir has developed in a sprawling, dense pattern, leading to issues such as limited public spaces, challenges and inadequacies in public service provision, traffic congestion, and low accessibility. Considering İzmir's population size and existing urban structure, approaches focusing solely on rubber-tired transportation modes for urban transit are insufficient. In recent years, infrastructure investments at various scales (tramway, metro, İZBAN) have positively contributed to urban transit. However, in a metropolis of İzmir's scale, the share of rail systems in urban transportation must be increased.

Undoubtedly, the more routes from different transportation modes, including maritime transport, intersect, the easier and more attractive transfers between modes become. For the system to function in an integrated and efficient manner, it is necessary not only to add new routes but also to increase and enhance the number of transfer points between various transportation modes.

Within this framework, transfer points for rail systems, sea routes, and rubber-tired public transport will be developed, ensuring these points are accessible and of high quality, particularly for individuals with mobility limitations, such as the elderly and handicapped people. Public transportation stops should be designed according to Transit-Oriented Development (TOD) principles as both transfer points (for pedestrians, cyclists, rubber-tired, and rail systems) and as accessible, mixed-use neighborhood centers. Sustainable access options to the Traditional City Center (Konak) will be strengthened, supporting the objectives for revitalizing the center.

Sustainable access options at the city and regional levels should be provided to the New City Center-CBD (Konak-Bayraklı), which serves İzmir's city region. On the other hand, to reduce demand on the existing city center and ensure that daily needs can be met within close proximity, sustainable access opportunities to sub-centers will be strengthened.

6.3.3. Transformation for Quality of Life: Achieving 'Comprehensive Transformation' for a Healthy, Inclusive, Restorative and Innovative İzmir, Resilient to Crises, Disasters and Climate Change Impacts

Planning for the transformation of unsustainable elements in a multidimensional and inclusive manner requires considering the comprehensive integration of transformations in economic, social, cultural and spatial contexts—from the regional scale to the smallest units of life, such as housing units—and their interrelated transformative impacts. While there is a priority in İzmir for repairing, improving, adapting and revitalizing the metropolitan area, an intervention approach involving avoidance, restraint, restructuring and strengthening is emphasized at the regional scale. In this context, 5 program areas have been developed for the policy priority of "Transformation for Quality of Life."

6.3.3.1. Preparing the Urban Transformation Strategy Plan in the Metropolitan Area

Urban development in İzmir began along the coastal strip and later expanded into the plains, foothills and slopes along its river basins. While urban development on the plains was planned, development on the foothills and slopes occurred in an unplanned manner. Over time, the city has grown in a sprawling pattern, absorbing the surrounding settlements along corridors. In the 1940s, İzmir was a relatively smaller city along the Konak and Karşıyaka coastlines, however, between 1960 and 1980, development expanded north to Çiğli, south to Gaziemir, east to Bornova and west to Güzelbahçe.

Unplanned settlements (slums - gecekondu) that emerged on the slopes surrounding İzmir Bay became legalized and permanent through various amnesties. While such unplanned and unregistered construction played a major role in meeting the housing needs of low-income groups, housing needs for middle-income groups were met through mass housing initiatives.

The net population density in İzmir's urban areas (population density within the urban fabric) is higher compared to both the Türkiye and EU averages. As of 2018, the urban fabric population density in EU countries was 32.38 people/ha, while it was observed to be 83.44 people/ha in Türkiye and 119.36 people/ha in İzmir. Accordingly, the urban fabric in İzmir is 43% denser than the Türkiye average.

The city's form and the density of its urban fabric directly affect service delivery costs and accessibility. Cities with dense urban fabric are considered positive urban models from a sustainability perspective due to their smaller spatial footprint. In such development types, the delivery of infrastructure and transportation services is less costly. However, the primary issue in compact cities that are not developed in a proper and controlled manner can be the lack of adequate and accessible open and public spaces, as well as deficiencies in urban infrastructure and standards.

Public spaces such as parks, recreation areas, urban parks, gardens and squares, as well as the built areas spread along streets and avenues, occupy an average share of 13.56% across Türkiye (TURKSTAT, 2022). In this regard, the province with the highest share is İstanbul at 21.1%, and the lowest is Bingöl at 6.2%. In İzmir, the share of built areas is 16.34%. Although this rate is above the Türkiye average, it is inadequate in İzmir, given the population density within its urban fabric.

İzmir is a high-risk area for a variety of disasters, including earthquakes, landslides, rockfalls, floods, meteorological and climatic hazards, fires, and industrial accidents, due to its geographical location, urbanization patterns and the speed of development. Analyses conducted using Natural Hazard (2022) earthquake hazard maps and data on buildings that have not received engineering services or were constructed illegally, as well as information on construction timelines, indicate that 180,784 buildings in İzmir's metropolitan area fall into the very high-risk category. These are structures built before the year 2000, those without engineering services, or those that developed illegally in areas with high seismic risk. Buildings in the very high-risk category make up 93% of the total building stock in the metropolitan area. Flood risk is also concentrated in the metropolitan area, with particularly high risk along a line stretching from Konak to Bornova and in the districts of Karşıyaka-Çiğli. Areas with very high flood risk cover 5,094 hectares, while areas with high flood risk span 930 hectares.

In alignment with these findings and the Twelfth Development Plan's mandate for mandatory urban transformation strategy documents, transformation must be approached comprehensively, integrated with spatial planning processes throughout İzmir, and priority should be given to transforming high-risk urban zones in the metropolitan area and areas that have reached the end of their economic life or require functional changes, within a structured program. It is essential to enhance spatial quality and increase the amount of limited open and public spaces alongside the transformation.

Urban transformation is a tool to reduce disaster risks, enhance the quality of the built environment, and enable the regeneration of urban spaces to align with changes in land use or function within the city. The following principles and approaches should be considered for sustainable, feasible and community-supported urban transformation. A comprehensive and integrated "Urban Transformation Strategy and Action Plan" should be developed for İzmir, in conjunction with the İzmir Earthquake Master Plan outlined in Measure 3.1.3. İzmir Urban Transformation Strategy and Action Plan should take into account the following key aspects:

- Urban transformation projects should not focus solely on individual structures or parcels, nor should they be limited to physical transformation; they must incorporate social, economic and spatial strategies.
- During the transformation design process, housing stock to meet temporary accommodation needs should be identified, and relevant regulations to prevent speculative activities in the housing market should be implemented.
- Urban transformation projects should aim to

develop sustainable infrastructures alongside physical structures.

- The needs and expectations of various social groups should be considered in urban transformation, along with risks related to displacement, exclusion and gentrification that affect the social fabric.
- Sustainable and scalable financing models should be developed to reduce dependency on external funding, enabling self-sustaining transformation using internal capacities.
- Property owners should be encouraged to establish transformation partnerships for purposes of project development, construction and operation.
- Tenants should also be taken into account in transformation efforts, and housing models that protect the rights of renters should be developed.
- Special seismic designs and construction standards compliance methods should be developed to ensure the safety of buildings and the environment.
- Policies such as "Transfer of Development Rights" should be implemented, to reduce density when necessary in areas designated as "transfer zones".
- Transformation should proceed within a specific spatial program in a controlled manner, including operation planning, regulations, incentives and sanctions to prevent negative impacts on the city's functionality, quality of life, environment and public health.

6.3.3.2. Restructuring İzmir City Center and Urban Sub-centers

The core activities driving the formation of central business areas are business services, especially producer services8. When comparing the size of the services sector relative to the population and examining the share of sub-sectors within the services sector in comparison to Ankara and İstanbul, it is observed that İzmir stands out with higher proportions in the sub-sectors of "wholesale and retail trade," "repair of motor vehicles and motorcycles," and "accommodation and food service activities." However, İzmir has a lower share in high-level services, such as finance and insurance activities, as well as professional, scientific and technical activities.

When analyzing the adequacy of İzmir's central functions or services sector, it should be considered not only as a center serving İzmir province but also the İzmir city region, and beyond this, as a center serving approximately 11% of the country's population according to findings from the YERSİS study. Functions oriented towards finance and service production are regarded as indicators of a city's level of globalization; the greater the share of service functions in a city, the more globalized it is (Sassen 2001).

According to sectoral employment data (SGK, 2022), Konak and Bornova are the districts in İzmir with the highest employment in the services sector. However, a notable decline in the share of the services sector was observed in both districts from 2010 to 2021. This transformation is even more pronounced in financial services. While more than half (54.3%) of finance and insurance activities were located in Konak in 2010, the district's share dropped to 40.8% by 2021. Bornova, which ranked second after Konak in 2010, lost its position, with Gaziemir and Bayraklı in the metropolitan area emerging as the preferred districts for finance and insurance activities. Similarly, while the share of Konak and Bornova decreased in the sub-sector of professional, scientific and technical activities, Bayraklı's share increased during the same period. This shift indicates a movement of the central business area to the north, and such spatial restructuring aligns with the İzmir New City Center Plan.

The metropolitan center in İzmir continues to retain its importance as the dominant center. However, within this structure, the metropolitan center has limited capacity to attract the high level professional and financial services necessary for serving as the service center for the city region (Eraydın et al., 2013). To alleviate pressure on the city's historic center, a 550-hectare area between Turan and İzmir Port has been designated in the 1/5000 scale İzmir New City Center Master Zoning Plan, prepared by İzmir Metropolitan Municipality, which envisions the future city center of İzmir. In this plan, the coastal areas and surroundings of Konak and Bayraklı districts have been designated as central business areas and functionally defined as the New City Center

8 Business services include Financial Services (finance, insurance, real estate investment consulting) and Professional Services (accounting, software activities, legal consulting, advertising, engineering, architecture, research and development activities).

in lower-scale plans. This area, envisioned as a hub for specialized service and commercial functions catering to İzmir city and its sphere of influence, presents an attractive prospect for management and financial institutions.

The choice to redevelop the area behind the port, where old industrial buildings are concentrated, with a focus on innovation, entrepreneurship and creativity supports the aims of strengthening CBA connections and functions and of increasing finance-insurance activities, as well as professional, scientific and technical activities. In this context, the area behind TCDD İzmir Port is envisioned as a "creativity hub" in the spatial development scheme, with the İzmir Creative Industries Center positioned as a project to reinforce this hub. Together with the port hinterland and the new city center, it is designated as a "Global Hub," aimed at enhancing İzmir's potential as a global city. This hub will bring forward high-quality urban services, creative industries, office uses, city (and cruise) tourism, and the adaptive reuse of industrial heritage, transforming it into an attraction point with connections to TCDD İzmir Port, Halkapınar Transfer Center and Kemalpaşa Logistics Center.

To support the development of urban sub-centers, transformative urban programs and projects will be developed to enhance urban quality of life, reinforced through blue and green entrepreneurship programs, with the "Blue Economy Hub" and the "Nature and Climate-Based Green Entrepreneurship Hub" established to serve such purpose. Areas that offer potential for enhancing urban infrastructure capacities yet remain underutilized due to uncertainties or deadlock should be evaluated as urban opportunity areas. For such urban sections, inventory and preliminary feasibility studies should be conducted to identify opportunity areas, and possibilities for developing mixed-use public service campuses (elderly, child, and handicapped care homes, healthcare, and education, etc.), next-generation thematic museums, thematic amusement parks, libraries, indoor and outdoor sports and recreation areas, and cultural and arts complexes should be explored in the context of their potential to contributing significantly to urban life quality.

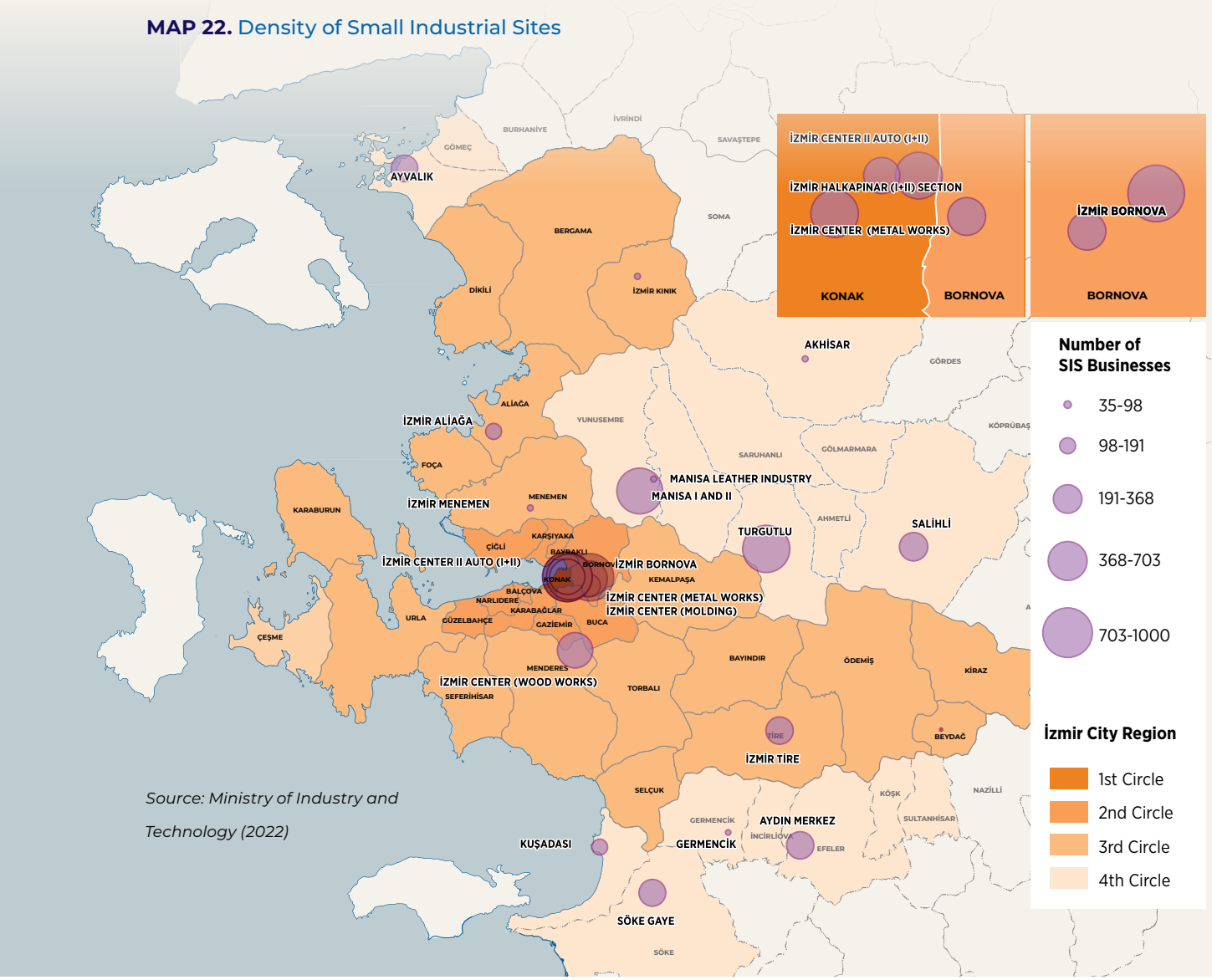
In settlements with a dynamic urban development system, the development of sub-centers reduces pressure on the main center, increases quality of life by providing services closer to residential units, and reduces traffic within the city. In İzmir, it has been observed that sub-centers are beginning to form in districts like Karşıyaka, Bornova, Buca and Gaziemir. This approach will support the development of secondary and tertiary sub-centers that serve both their respective settlements and areas of interaction.

6.3.3.3. Transformation of Industrial and Commercial Agglomerations and Strengthening Their Connections with the City

Digitalization and automation in production are transforming activities in organized industrial zones, and introducing next-generation production setups like "dark factories." These trends indicate a shift in the workforce profile, particularly within Organized Industrial Zones (OIZ) and Free Zones, toward more skilled blue- and white-collar jobs. As production is reorganized and workforce profiles change, expectations are rising for enhanced spatial quality standards, improved social infrastructure and increased accessibility within industrial areas. In this context, spatial improvement and transportation programs need to be developed for areas with agglomerations of medium- and large-scale industrial activities.

Small industrial sites and marketplaces hold special functions within the urban fabric (Map 22). Their presence within urban areas brings them under consideration for improvement, transformation or relocation, warranting an in-depth analysis of their connections. Planning initiatives for these areas should adopt a holistic approach, alongside other urban segments identified within urban transformation programs, to diversify functions that ensure physical and social integration with the city, increase accessibility, and design transport and circulation systems tailored to the specific logistics needs of each area. Making arrangements to accommodate new generation production and creative activities compatible with capacities such as manufacturing, repair, spare parts supply, and storage—along with promoting R&D and office use—will be crucial for fostering skills in collaborative work and living. Spatial quality in industrial sites and marketplaces should be enhanced to support hybrid functions, integrating recreational and other social infrastructure.

MAP 22. Density of Small Industrial Sites



Another factor that will alter production and its spatial organization is the aim for green transformation. Spatial adjustments required for reconstructions that meet green industrial zone standards should be carried out in medium- and large-scale as well as small-scale industrial zones and agglomeration areas. In İzmir, planning studies, urban design and concept competitions, feasibility studies, and surveys concerning the scope, content and form of these adjustments will be supported.

To foster resilience and creative hybridity within the socio-spatial and economic geography of the region, spatial programs that avoid anti-diversity, single-function zoning and instead encourage permeability and cultural interaction should be developed. Thematic approaches such as “industry-oriented urbanization” and “urban food planning” provide opportunities to propose and test models for the new forms that “productive cities” of the future will take. Initiatives and efforts to leverage these opportunities will be supported throughout the plan period.

6.3.3.4. Enhancing Disaster Risk Management and Preparing Precautionary Plans in İzmir Metropolitan Region, Including the Impacts of Climate Change

The United Nations Office for Disaster Risk Reduction (UNDRR) defines resilience as the ability of a system exposed to hazards to protect its core structures against hazard impacts, and withstand, absorb, adapt, transform and manage risks effectively and efficiently, including during reconstruction.

İzmir is located in a high-risk region for various types of disasters. Due to limitations in the capacity of its current structures, İzmir has weaknesses in its resilience against such high risks, making it vulnerable to threats from disasters.

Urban areas that develop without proper planning, adherence to plans, engineering services, and inspections are known to carry higher risk regarding natural disasters. This type of development creates fragile conditions when combined with non-building-specific urban risks, such as settlement patterns and the transportation/circulation system.

Analyses based on aerial photographs reveal that informal housing areas are concentrated within the metropolitan area, and that outside the metropolitan area, they are most prevalent in Kemalpaşa, Bayındır and Tire districts. Approximately 25% of the informal housings, covering a total area of 1,106 hectares, are located in Karabağlar, 21% in Buca, 16% in Bayraklı, 11% in Konak, and 8% in Bornova.

In the year 2018, the Ministry of Environment, Urbanization and Climate Change launched the zoning amnesty initiative to register unlicensed buildings or those in violation of permits and annexes, receiving 811,000 applications from İzmir. Relative to its population, İzmir ranked as the province with the highest number of amnesty applications in Türkiye. The district with the highest concentration of applications in İzmir was Bornova, with 15.9%, followed by Buca at 10.9% and Karabağlar at 7.8%. Approximately 4.3%, or about 34,000, of the applications were from Bayraklı, the district most severely affected by the 2020 earthquake.

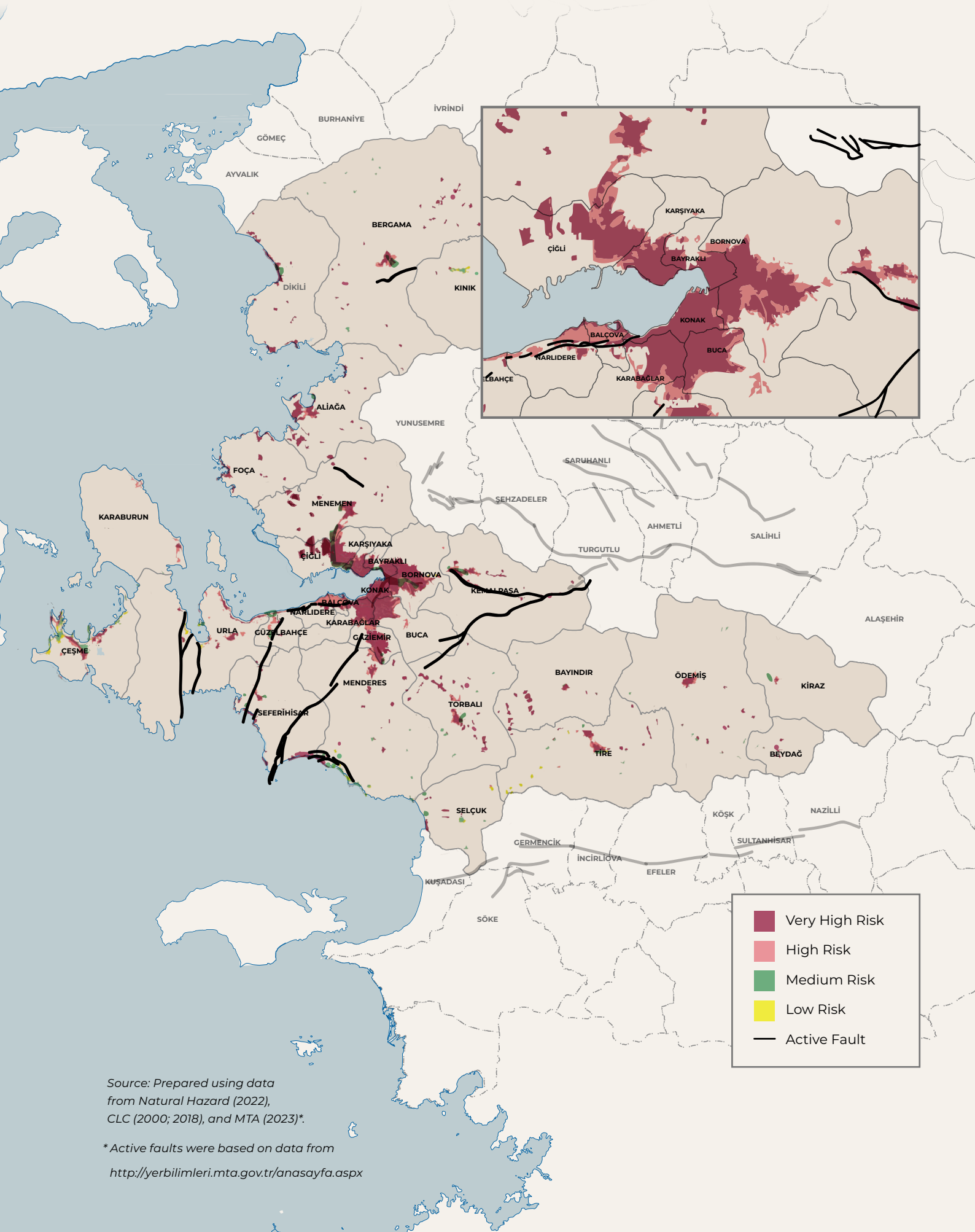
Following the 1999 Marmara earthquakes, regulations were implemented to address the disaster's effects, mitigate its adverse consequences and establish planning, construction and insurance systems as future preventive measures. Therefore, buildings constructed after 2000 should be considered a distinct category in terms of disaster risk. Additionally, given that a building's physical lifespan is assumed to be 50 years, structures in İzmir built before 1975 are known to be at higher risk than other buildings.

The risks associated with natural and human-induced disasters that threaten İzmir have been spatially mapped through the analyses conducted. Earthquake risk is observed to be particularly high in urban areas (Map 23). The entire metropolitan area, along with the coastal areas of Aliağa and Foça, Ödemiş, the coastal areas of Çeşme, Seferihisar and Menderes, and the district centers of Tire and Torbalı, are identified as the most vulnerable areas to earthquakes. Analyses indicate that 180,784 buildings in İzmir's metropolitan area are in the very high-risk group.

To ensure effective disaster management, an up-to-date Earthquake Master Plan will first be developed for İzmir, within the context of planning, organization and infrastructure strengthening actions. "İzmir Earthquake Master Plan" will serve as a roadmap, aiming to coordinate the multifaceted precautions necessary with a long-term perspective, defining projects within an overarching and cohesive framework. This plan will encompass decisions that address physical and spatial dimensions, while, most importantly, organizing comprehensive mobilization.

The "Master Plan" will consist of two fundamental, complementary plans: the "Precautionary Plan" and the "Action Plan." In the "Earthquake Precautionary Plan," risk definitions will be established, specifying who will mitigate the risks, within what timeframe, and how. Regional considerations that need to be addressed for different types of risks will as well be identified, and regional partnerships to expand the scope of these efforts will be developed. In the "Earthquake Action Plan," urban renewal and investments to improve earthquake resilience will be designed, primarily focusing on high-risk areas within the existing built environment.

MAP 23. Spatial Distribution of Earthquake Risk

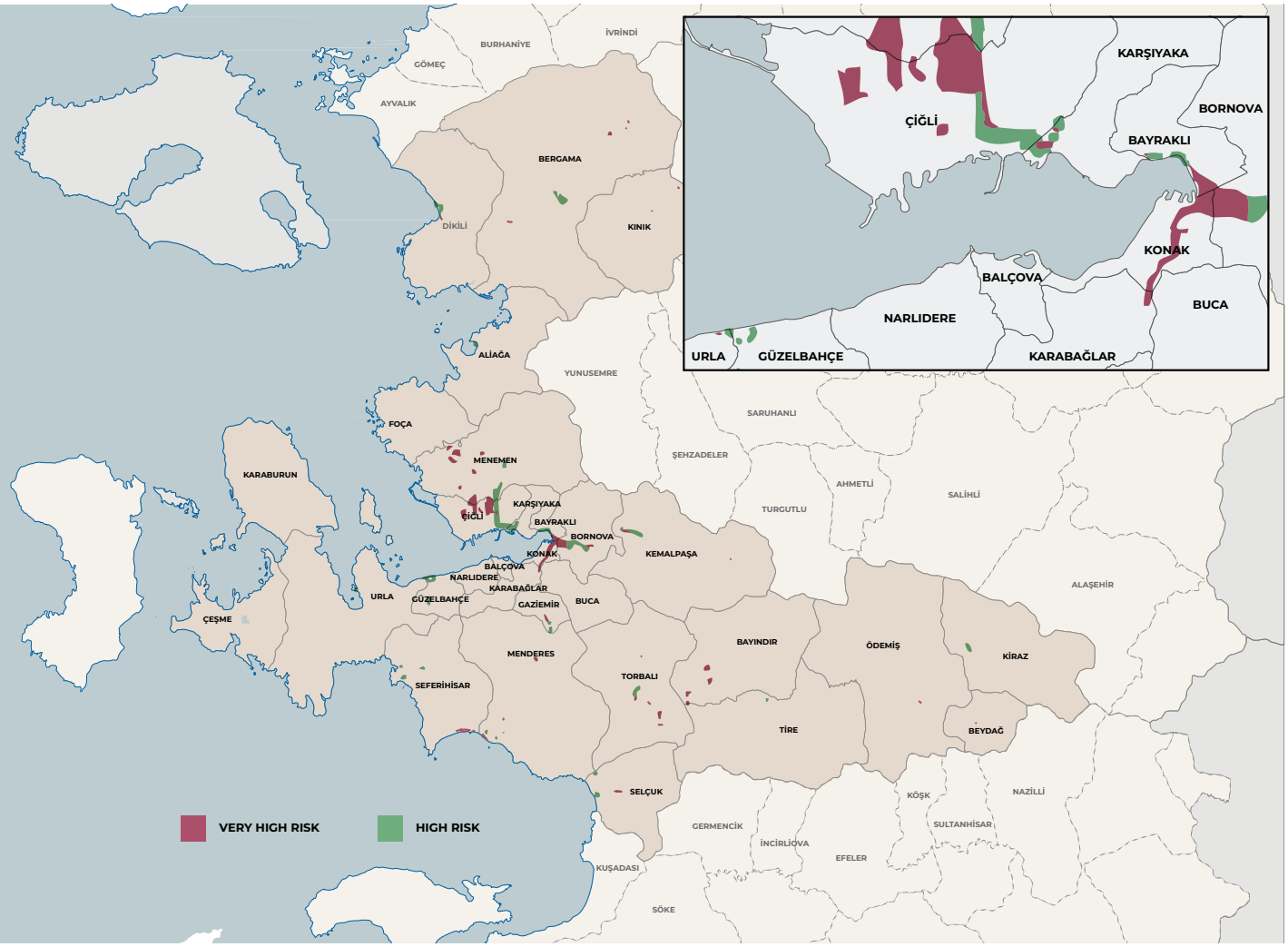


Source: Prepared using data from Natural Hazard (2022), CLC (2000; 2018), and MTA (2023).*

** Active faults were based on data from http://yerbilimleri.mta.gov.tr/anasayfa.aspx*

Flood risk is also concentrated within the metropolitan area. A corridor extending from Konak to Bornova and the Karşıyaka-Çiğli districts display high risk levels (Map 24). Additionally, 102,062 hectares of agricultural land could potentially be affected by flood hazards. Approximately 26,000 hectares of these at-risk areas are located within Gediz Delta, while around 40,000 hectares in the agricultural corridor stretching from Torbalı to Kiraz are also vulnerable to flood risk (Natural Hazard, 2022; CLC, 2000 and 2018).

MAP 24. Spatial Distribution of Flood Risk in Built Areas

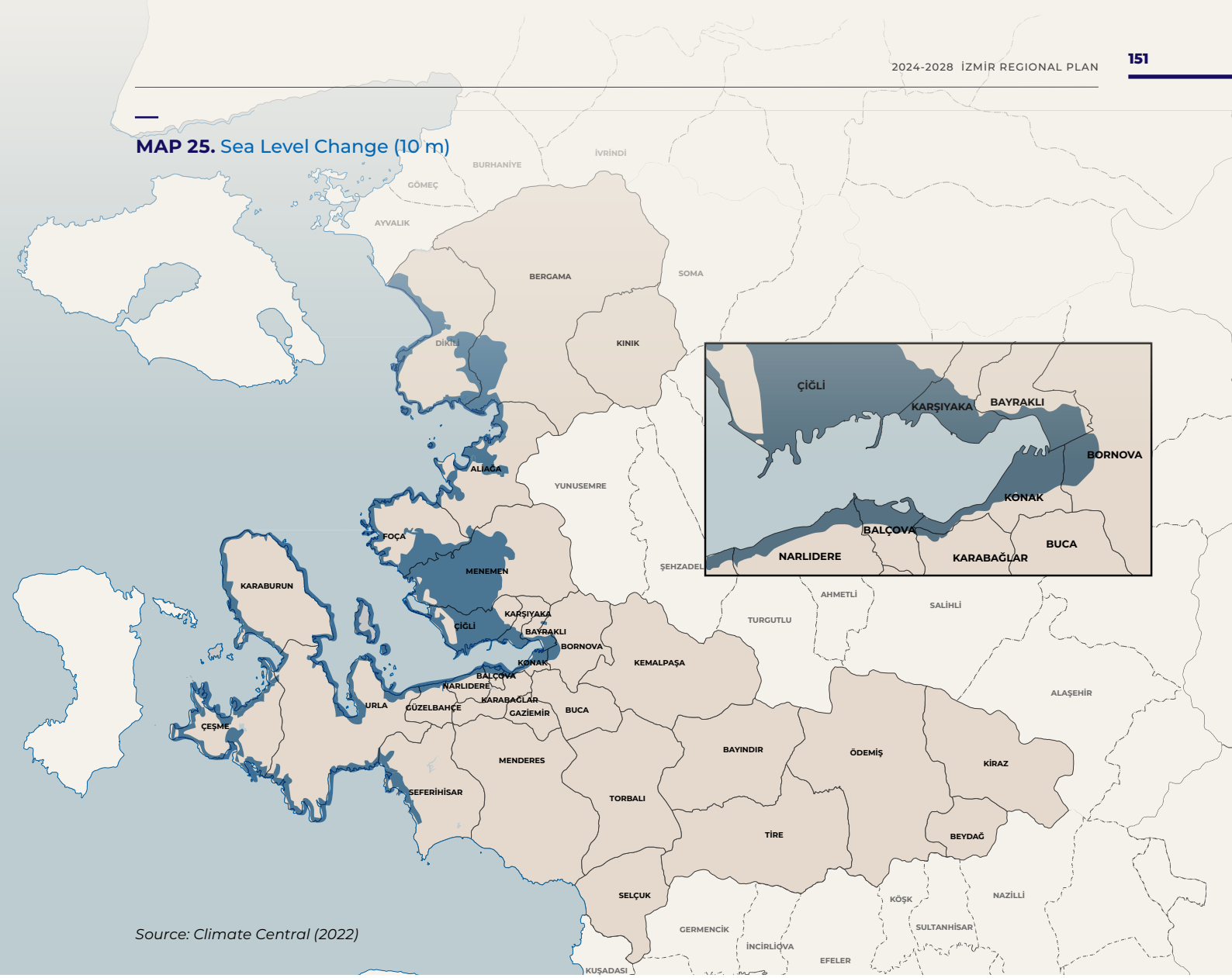


Source: Prepared using data from Natural Hazard (2022) and CLC (2000; 2018).

Rising water and sea levels due to climate change cause flooding in terrestrial areas. Analyses by Climate Central reveal a significant flood risk in İzmir, particularly in the inner bay area and Gediz Delta area within the Karşıyaka-Çiğli districts (Map 25).

The IRAP (2021) report predicts that a tsunami resulting from an earthquake could cause severe damage in İzmir. According to such assessments, coastal structures, infrastructure, residences, parks and disaster assembly areas located up to 500 meters inland in the districts of Karaburun, Foça, Aliağa, Urla, Narlıdere, Balçova, Konak, Bayraklı, Karşıyaka, Çiğli and Menemen are at risk depending on the characteristics of the coastline. Additionally, strategically important sites such as the Üçkuyular Ferry Terminal, Konak Pier, TCDD İzmir Port, Alaybey Shipyard, Karşıyaka Pier, Bostanlı Ferry Terminal, and post-disaster assembly areas along the coast are also identified as potentially vulnerable to damage.

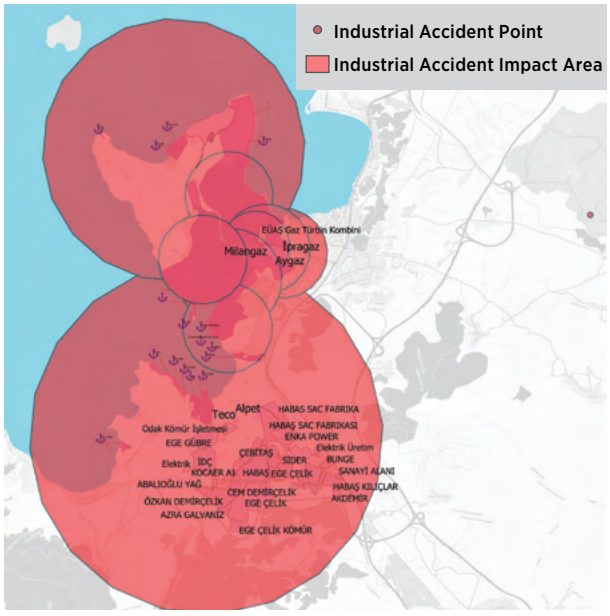
MAP 25. Sea Level Change (10 m)



Source: Climate Central (2022)

Aliağa is the most at-risk district in İzmir for industrial accidents, which could result in fatalities, production losses and infrastructure damage. In the event of an explosion and subsequent chain reactions, the risks could escalate to impact the entire district (Map 26). İzmir hosts 25 upper-tier establishments (under the "Regulation on the Prevention and Mitigation of Major Industrial Accidents" [BEKRA]) that contain, use or store hazardous substances; 15 of these are located in Aliağa.

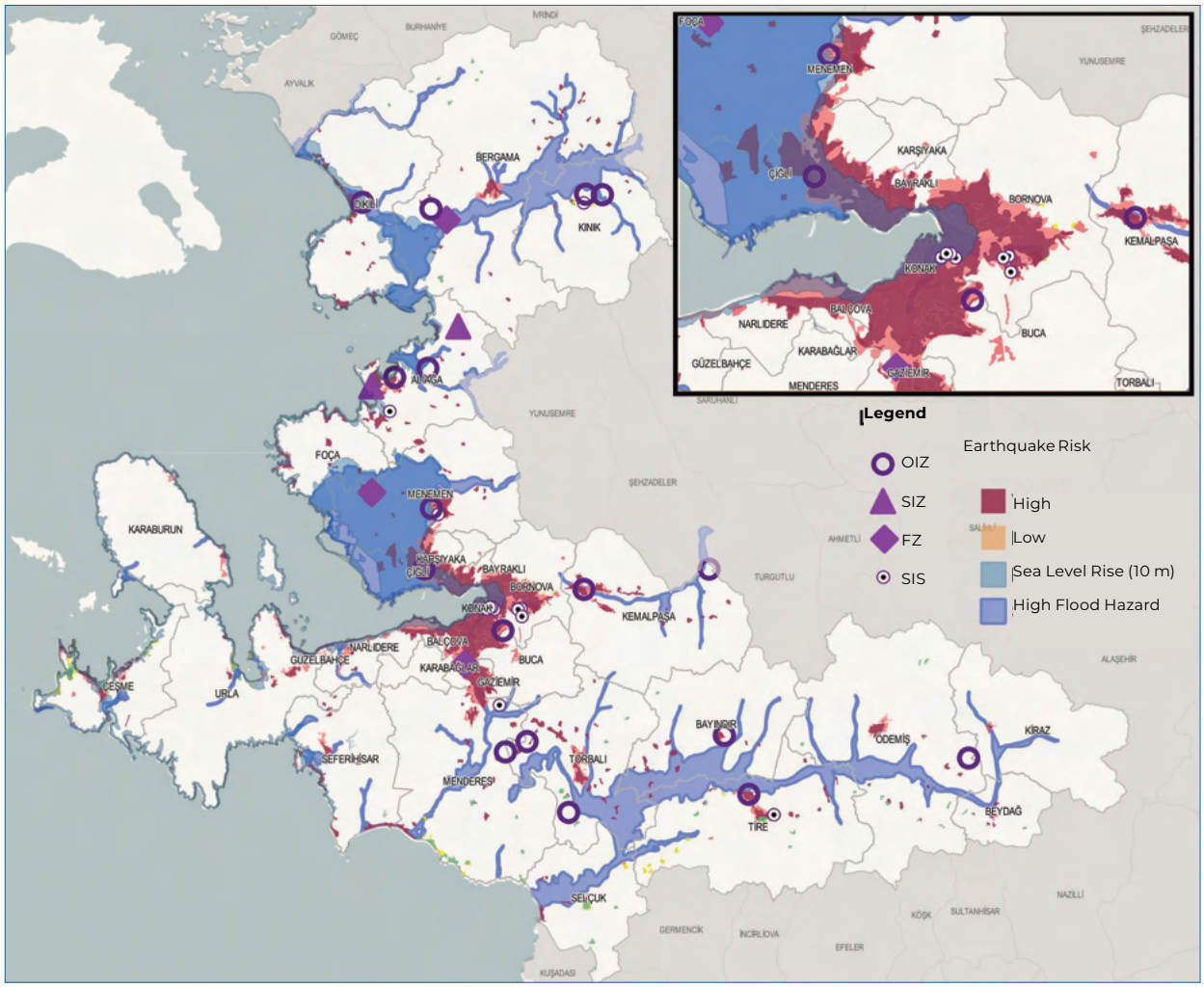
MAP 26. Explosion Impact Distances of Industrial Facilities in Aliağa District



Source: Prepared using data from AFAD (2021).

Analyses of disaster risk indicate that not only residential areas but also production areas and critical infrastructure at the regional level are at risk (Map 27). İzmir province is home to petrochemical facilities, oil refineries and production plants of national significance. Moreover, analyses reveal that a significant portion of organized industrial zones and free zones are also at risk of earthquakes and floods.

MAP 27. Disaster Risk and Production Infrastructure



Source: Prepared using data from Natural Hazard (2022), CLC (2000; 2018), Climate Central (2022), and Ministry of Industry and Technology (2022).

As aforementioned, İzmir faces high risks not only from earthquakes but also from disasters and emergencies such as landslides, rockfalls, floods, meteorological and climatic disasters, fires, and industrial accidents. Therefore, it is essential to prepare mitigation plans that evaluate all types of risks for the city-region, particularly focusing on the metropolitan area and regional critical infrastructure in İzmir. These mitigation plans will not only combine information about disaster hazards and land use but will also assess physical, social and economic data to define a scope covering incident magnitude, relevant priorities and strategies for risk reduction. The risk areas proposed to be covered in the plans include the following (Balamir, 2007):

- Risks associated with urban fabric (buildings, lots, floor area ratio, road width, parking, densities, etc.)
- Risks related to macro-form and growth trends
- Hazardous uses (storage and filling of flammable, explosive, chemical substances, LPG, fuel stations, etc.)
- Incompatible uses (incompatibilities at area and building unit scale)
- Risks of productivity loss (industry, buildings, inputs, outputs, workforce, infrastructure)
- Inadequacy risks for open spaces (proximity, continuity, adequacy)

- Emergency facilities (hospitals, schools, etc.)
- Risks related to loss of building stock and infrastructure
- Special risk areas (valleys, slopes, coastlines, reservoir downstream areas)
- Special cultural heritage structures (historic monumental buildings and surroundings)
- Administrative insufficiencies (untrained personnel, unorganized volunteers, lack of drills)
- External factors (accidents, terrorism, sabotage)
- Social inaction risks (constraints on participation and local organization)

The precautionary plans to be developed will aim to create strategies for excluding, reducing and distributing urban risks. In this context, it is essential to define actions with respect to timing, responsible stakeholders and resource allocation, and to establish a connection between such effort and the identification and prioritization of transformation areas, thereby integrating it with the "preparation of a metropolitan urban transformation strategy plan." Efforts to improve disaster risk management and planning, including against the impacts of climate change, will be conducted in alignment with national policy priorities, particularly under the "Resilient Living Spaces Against Disasters, Sustainable Environment" and "Logistics and Transportation" objectives of the Twelfth Development Plan.

6.3.3.5. Green Transformation in Local Specializations

In the context of green transformation in production, two primary axes arise that bring forth a local restructuring and adaptation program. The first axis concerns localities expected to undergo significant transformations within the established economic and social framework in terms of resource consumption, pollution generation and climate change adaptation measures. A comprehensive local restructuring and adaptation program is required, including transforming local economies based on mining activities, primarily the coal economy in Kınık and Soma (Manisa), rehabilitating former mining areas, creating new economic sectors within these sites and broader local geographies, and ensuring the necessary skills transformation for these activities.

Another transition under the green transformation and adaptation scope may occur in the dairy industry, a dominant economic activity chain in Küçük Menderes Basin. The local economy, centered on bovine livestock production, is advancing unsustainably in terms of fodder production and water consumption, as well as soil and water pollution from livestock activities. The livestock activities, mostly conducted by small producers and their cooperative structures, along with food industry enterprises of various scales integrated into these operations, create an entrenched and challenging-to-transform socio-economic structure. For the transformation anticipated in this multi-actor and multi-dimensional structure to be successful, comprehensive, phased, inclusive and participatory development programs must be designed and implemented.

In addition to these two major local restructuring programs, an approach emphasizing "regulation," "restoration" and "reconciliation of diversity" should be developed for localities where sectoral growth demands and investments are concentrated. Particularly in the Peninsula area, conservation and development programs should be developed to prevent the erosion and deterioration occurring in the established socio-economic landscape and capacities due to tourism investments and settlement demands from urban residents, thus ensuring the compatibility of rural areas as both spaces of consumption and production. These programs should not only enable sectors to reorganize themselves in line with green principles but also include social adaptation and capacity-building measures. The preservation of ecosystem values and historical and cultural assets in these areas and their positioning as central to development shall form the fundamental axis of local programs.

A further sensitive area in terms of growth management is the coastal band between Aliağa-Bergama and Dikili, where sensitivity is associated with aligning industrial, logistics/transportation and tourism investments with the local environment. Within this area, which contains special ecosystems and agricultural lands, measures should be developed to ensure the cohabitation of the established and the new, as well as preventing hyper-agglomeration processes that do not allow coexistence. These measures should also utilize the methodological capacities acquired from the program "developing an urban analysis and planning methods toolkit for sensitive and tension-prone areas regarding urban functional decisions."

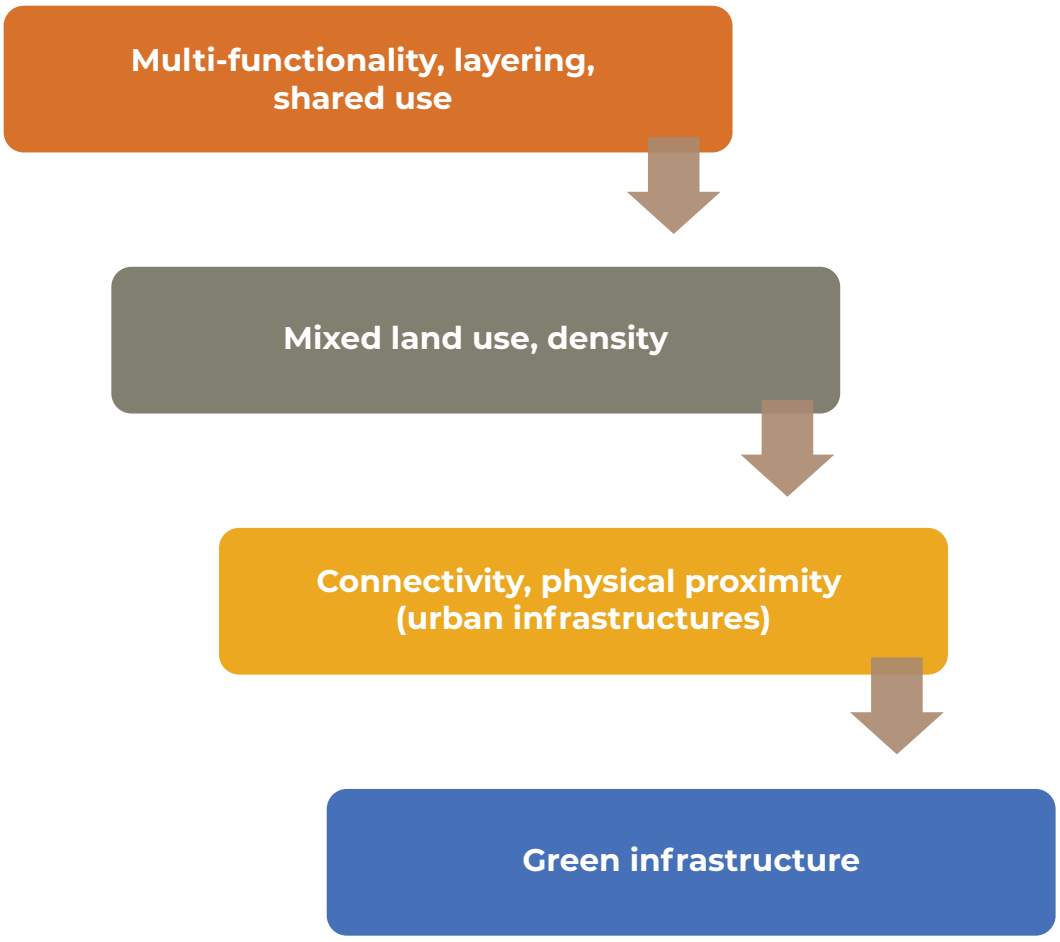
6.4. Method and Approach to Regional Spatial Development Schemes

The concepts forming the strategic approach of the *2024-2028 İzmir Regional Plan*—"green transformation," "blue economy" and "social transformation"—encompass issues such as changes in production-consumption practices, the balance between conservation and use, carrying capacity, conflicting land uses, reducing the impacts of urbanization on climate change, and transforming production practices. In developing a spatial approach for such a developmental framework, the "regional metabolism approach" was adopted, focusing on analyzing resource efficiency in a pattern based on flow and connectivity.

6.4.1. Regional Metabolism and Core Principles

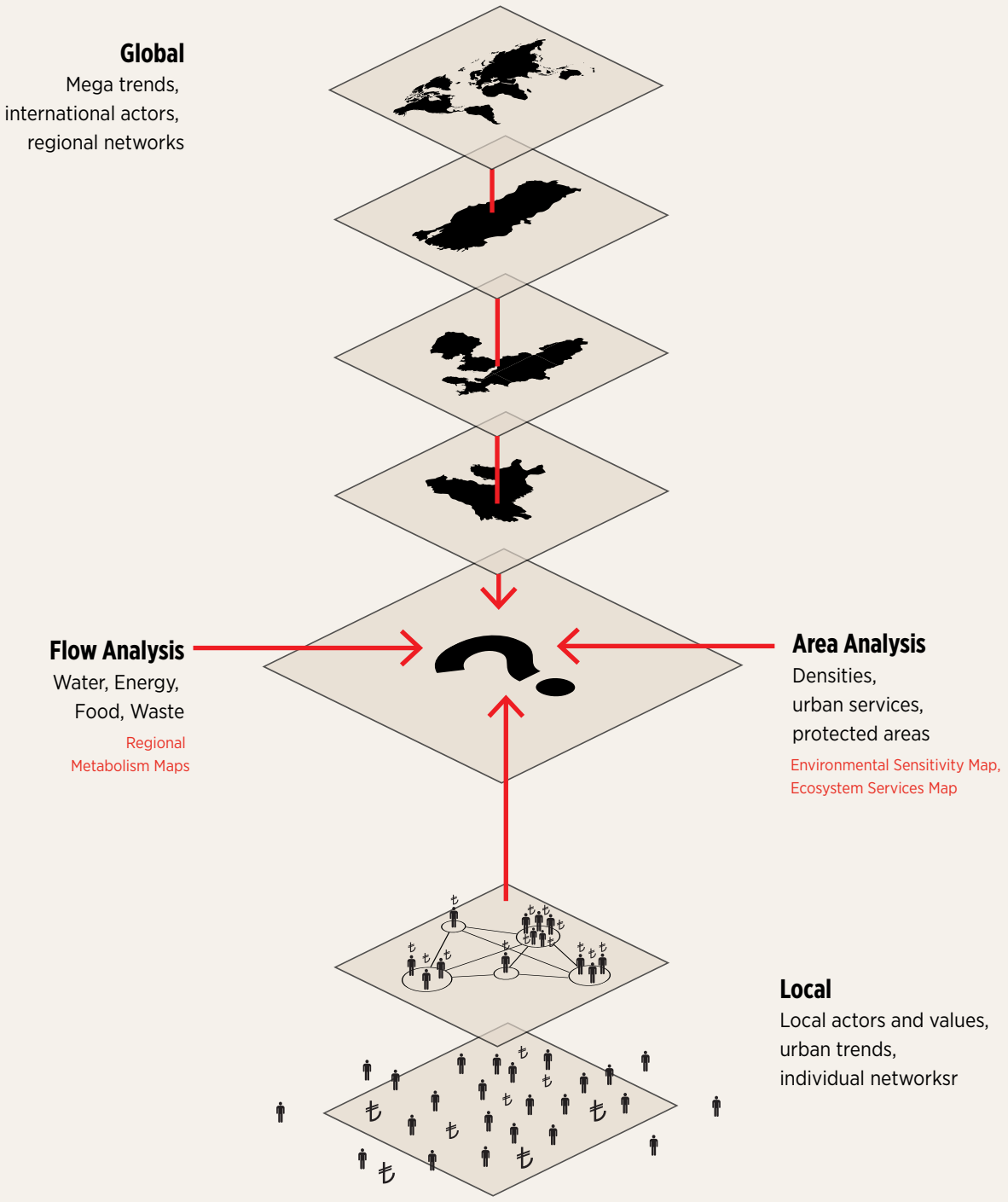
Regional metabolism envisions a shift from a linear to a networked and cyclical perspective to reduce the city's dependency on its hinterland for resources, evaluating processes related to material, energy, human and information flows from an ecosystem perspective. In the literature on the regional metabolism approach, principles have been recommended to decision-makers for implementing the concept in land use and normative planning decisions. In alignment with approaches formulated around resource efficiency (Musango et al., 2017) and detailed in "Spatial Development Programs," the core principles shaping the spatial development approach of the *2024-2028 İzmir Regional Plan* were established (Figure 9).

FIGURE 9. Integration Principles for Flows and Forms



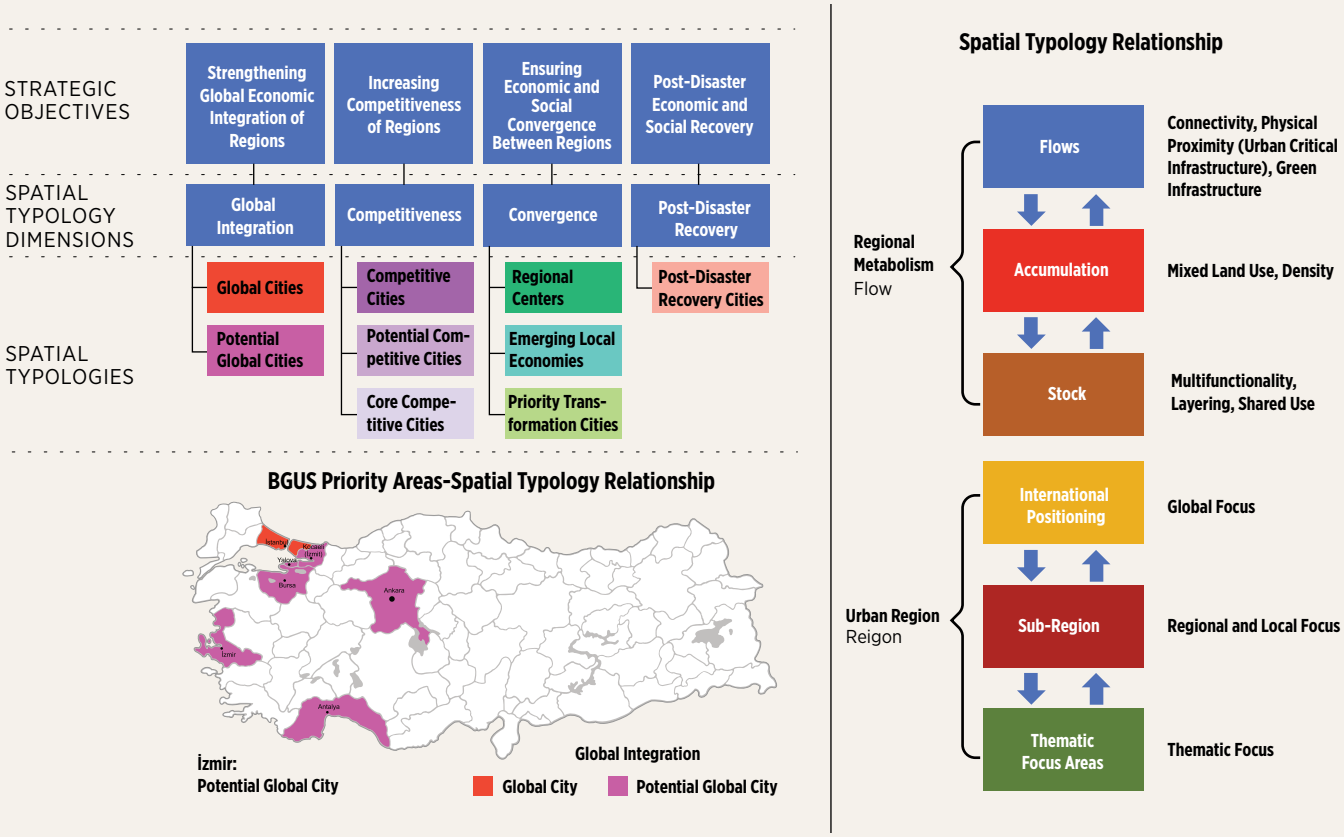
At the macro level, instead of adopting a regional plan that perceives space as homogeneous and abstract, a region plan language has been chosen that includes projects, programs and spatially specific interventions, examining the global and local contexts and their spatial interactions, and analyzing spatial data and plans relevant to İzmir. Through the "İzmir Natural Structure Inventory Synthesis Workshop" held with expert participation, opinions were gathered regarding the main flows defining regional metabolism—water, food, energy and waste—and the data infrastructure related to these thematic areas was evaluated and interpreted (Figure 10).

FIGURE 10. Natural Structure Synthesis Evaluation Framework



By analyzing the region plan goals and measures alongside the National Strategy for Regional Development (BGUS), a spatial typology relationship has been established for the *2024-2028 İzmir Regional Plan* (Figure 11). The regional metabolism in the spatial typology has been proposed to establish flows, connections and corridors among spatial focal points within the city-region. Connectivity and physical proximity are essential in organizing flows. Accumulation areas formed at the intersections of these flows can be evaluated as potential local thematic sectoral focuses or density areas supported by mixed land use for urban development. Stocks or raw materials are supported by the multifunctional and diversified sectoral capacity of the İzmir metropolitan area. Bringing this capacity together in a shared and multi-layered way (e.g., using natural and agricultural stocks for ecotourism) will strengthen the respective stock.

FIGURE 11. Alignment of National and Local Regional Plan Spatial Typology Relations



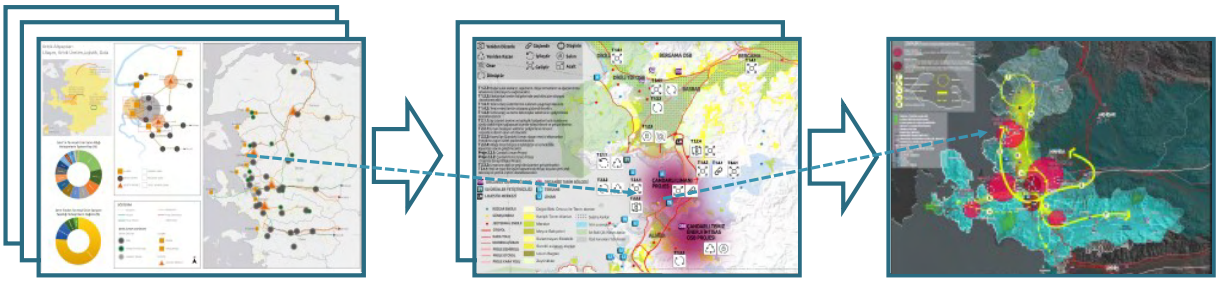
Global, regional and local focal points are structures that reinforce the "spatial" positioning of the city-region. The **Global Focus**, centered around TCDD İzmir Port, İzmir Creative Industries Center Project, and Halkapınar Transfer Center, is designed as a location where various urban and public uses to be relocated outside the city and subjected to functional transformation will be reassessed. The aim is to develop urban transformative projects and activities that enable functional transformation, integrated transportation and logistics solutions. This area is intended to strengthen and complement the development of İzmir's Central Business Area (CBA) through advanced urban services, creative industries, office spaces and next-generation production facilities. **Regional Focuses** are sub-regional centers planned for development around Aliağa in the north, Torbalı in the south, and Kemalpaşa in the east, forming a system of settlements with high access to collective, balanced and essential urban service capacities. **Local Focuses** are development centers that will play a central role in guiding and managing local development, strengthening rural-urban integration, and enhancing urban functions and capacities. These Local Focuses are planned as Bergama, Ödemiş and Urla districts. **Thematic Focuses,** which consist of specific interventions at the regional scale, are locations where transformative projects, activities and investments designed around particular sectors and themes will be implemented, thereby guiding urban and regional development.

6.4.2. Layering

The Region Plan includes various types of representations and interventions at three layers, in addition to the spatial typology relations of spatial schemes (Figure 12).

- **Thematic Maps:** Key uses related to transportation networks, logistics structures, critical urban and regional infrastructures, and energy, which will form the basis of representations and interventions, are indicated along with the main axes of the Region Plan: blue, green, and social axes.
- **Sub-Regional Spatial Schemes:** Specific areas with high value-added activities, concentrated in certain sub-regions, have been detailed, showing the basis for interventions, taking into account the Region Plan axes, measures, projects, and upper-scale physical plans examined.
- **Regional Spatial Development Scheme:** Positioned as the main scheme, it illustrates the regional development framework based on focal points, connections and corridors.

FIGURE 12. Layering Approach of Spatial Schemes in the Regional Plan

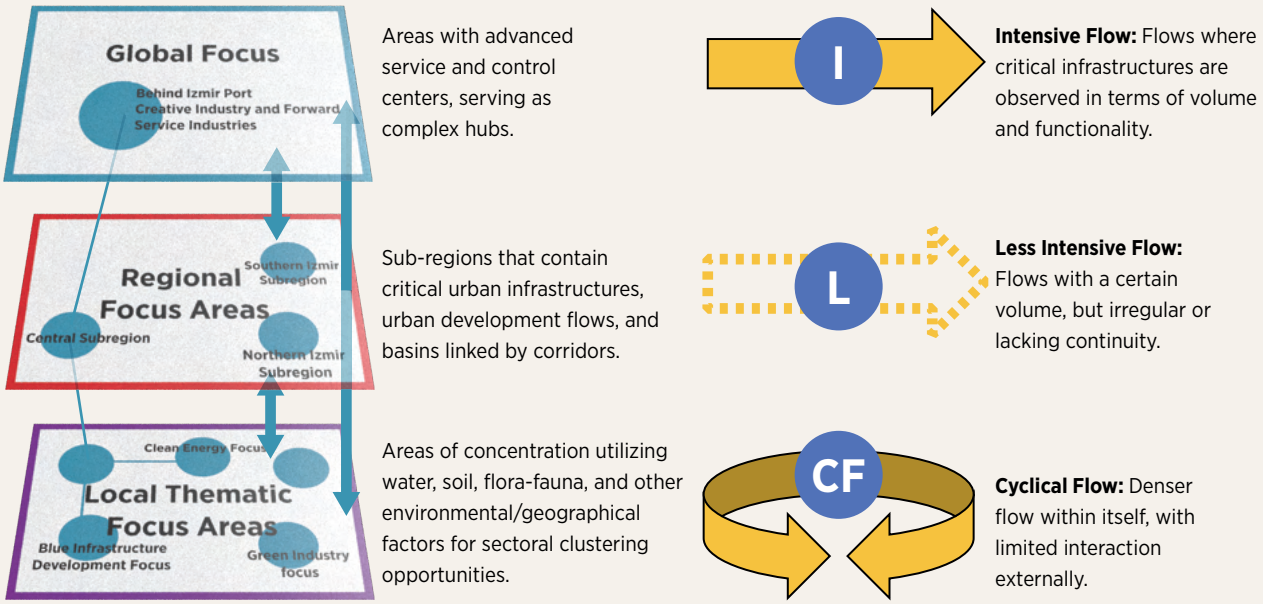


Thematic Maps | **Sub-Regional Spatial Schemes** | **Regional Spatial Development Scheme**

The spatial focuses used in the regional spatial development scheme are defined as global/regional/local thematic focuses, developed considering BGUS' designation of İzmir as a "potential global city."

Metabolic flows are categorized in three different ways: as dense, less dense and cyclical, in the forms of relationships and corridors (Figure 13).

FIGURE 13. Relationships with Focuses and Positioning of Corridors in the Regional Spatial Development Scheme



6.4.3. Types of Interventions

The representation language in the regional spatial development schemes consists of spatial representations, which include focuses, as well as metabolic representations that depict relationships and corridors. The intervention types for these representations are based on a cyclical metabolism perspective that incorporates a sustainable ecosystem viewpoint, along with fundamental principles established under this framework. Each intervention type is also linked to spatially relevant measures, projects and programs in *the Regional Plan* (Figure 14). For instance, the issues arising from the metabolic thematic analyses regarding water use in Küçük Menderes Basin are stated in the measure coded M 1.2.2 as "transition to an agricultural crop pattern that will reduce irrigation water needs," with the intervention type specified as "regenerate" in the sub-regional scheme.

The ten types of interventions contained in the regional spatial development schemes, along with their descriptions, are provided below:

FIGURE 14. Intervention Types in the Regional Spatial Development Scheme and Links with Plan Measures

REORGANIZE: To be used for areas that have sprawled and developed irregularly in their current state, where there is congestion in the relationships among the different functions within the area.

REINFORCE: To be used for areas where the main function, sectoral focus or identity/character trait will be enhanced.

RESTRAIN: To be used to control areas that have developed rapidly and irregularly due to rapid urbanization and/or sectoral clustering.

REPAIR: To be used to improve areas where environmental pollution, habitat quality or quality of life has deteriorated.

RECYCLE: To be used for large-scale uses that produce or have the capacity to produce high volumes of waste.

REGENERATE: To be used for areas, such as urban transformation zones, where the existing stock will be reorganized from scratch due to economic/environmental obsolescence, disasters or other high risks.

REFRAIN: To be used for areas where measures will be developed to address certain threats, disaster risks and climate change risks.

REDUCE: To be used for areas where the pace of development needs to be slowed due to adverse social and environmental impacts of sectoral and urban growth.

RESTORE: To be used for any intervention that will improve the quality of life.

DEVELOP: To be used to cover the provision of infrastructure and facilities to meet urban development and sectoral clustering needs, such as accessibility and connectivity.

İzmir Atatürk Organized Industrial Zone

6.5. 2024-2028 İzmir Regional Plan Spatial Development Scheme

The spatial development framework depicted in the spatial development scheme of the İzmir region includes measures aimed at strengthening various focal points of differing strength and quality, as well as enhancing the connections and flows between them, in line with the approach and decisions determined by the spatial development program.

For the central city, it is planned to reprogram the functional area behind TCDD İzmir Port in conjunction with the development of the new city center, positioning it as a **global focus**. Within this focal area, efforts will be made to connect TCDD İzmir Port with Kemalpaşa Logistics Center, relocate various functions, implement additional supportive arrangements, repurpose industrial heritage structures, and develop advanced urban services, creative industries, office spaces and similar uses, thereby transforming the area into an attractive hub. In Kemalpaşa, the regional hub of **eastern İzmir**, transit rail connections and the establishment of a logistics center are planned. The **northern and southern regional** hubs of İzmir, highlighted by rail and highway corridor development since the *1973 Environmental Plan*, have served as sub-centers with sectoral specialization. Accordingly, regional hubs are also envisioned for spatial development in the north and south.

In addition to this, the historical/tourism corridors, which feature the region's historical and cultural assets, the routes and connections between them, and the industrial/logistics corridors, are structured accordingly, aligned with the region's industrial concentration and new investment decisions. Furthermore, strengthening the connections between İzmir city center, Kemalpaşa, Manisa, and Aliağa, increasing Torbalı's connectivity with İzmir city center and Kemalpaşa, and enhancing transportation and logistics capacities along the Uşak-Afyon and Aydın-Denizli corridors will bolster İzmir's aspirations as a city-region by integrating industrial areas. Meanwhile, the Peninsula corridor is projected to develop with a focus on history/tourism, blue economy and technology development. The agricultural production areas concentrated in Dikili and Bergama in Küçük Menderes, Gediz and Bakırçay basins define the directions of agricultural corridors, characterized by their agricultural output and diversity (Map 28).

Within the six defined types of thematic hubs, projects and investments targeting specific sectors and themes are intended to steer urban and regional development with transformative power. The spatial regulation implications of the measures developed under *the Regional Plan* are addressed in sub-region schemes.

Settlements
Large Basin Boundaries
Important Tourism Areas
Planned Highway
Existing Highway
Planned Railway
Existing Railway

OSB Organized Industrial Zone
OSB Organized Industrial Zone (Planned)
OSB Organized Industrial Zone (Proposed)
SB Free Zone
SB Free Zone (Planned)
TDİ Agricultural-Based Specialized OIZ (Planned)
OÇB Floristry Specialized Industrial Zone (Planned)

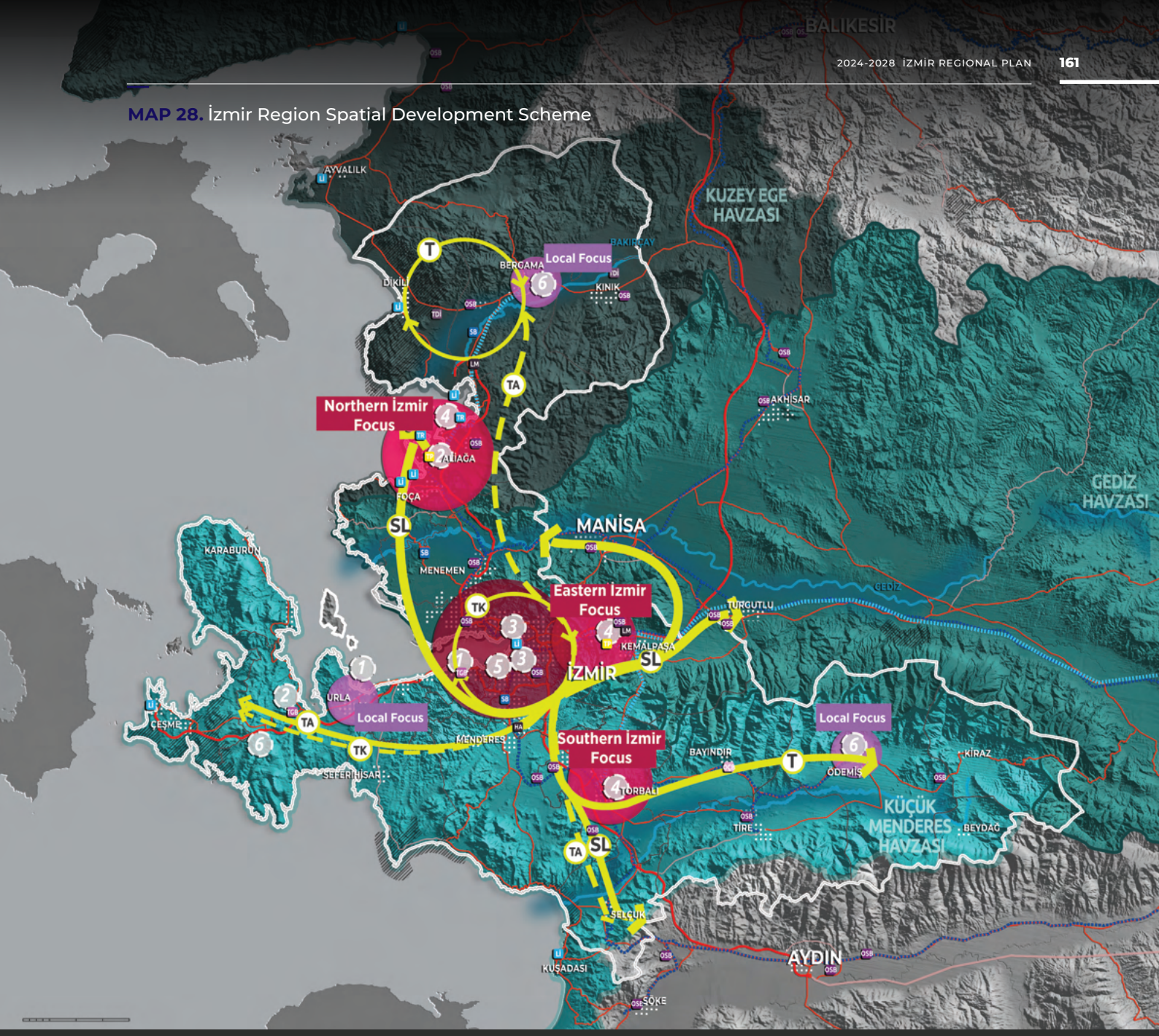
TGB Technology Development Zone
Lİ Port
TR Shipyard
LM Logistics Center (Planned)
LM Logistics Center (Proposed)
HA Airport
TP Truck Park

CONNECTIONS AND CORRIDORS

T Agricultural Corridor
SL Industrial/Logistics Corridor
TA Historical/Tourism Corridor
TK Technology Corridor

Cyclical
Intensive
Less Intensive

MAP 28. İzmir Region Spatial Development Scheme



Thematic Focus Areas

1. **Blue Economy Focus** Area: Areas where marine growth sectors and their corporate structures are strengthened, with activities such as R&D, innovation, learning, conservation, and recreation intensified in line with the "urban transformative intervention" approach.
2. **Clean Energy Focus Area:** Areas designated for the production, R&D, logistics, and learning activities will be focused on for the development of clean energy sectors, including wind, solar and hydrogen energy.
3. **Green Entrepreneurship Focus Area:** Areas where R&D, innovation, learning, conservation, and recreational activities are concentrated with a focus on nature and climate resilience, aiming to achieve objectives in ecological agriculture, clean energy, and climate-sensitive design, guided by the "urban transformative intervention" approach.
4. **Logistics Focus Area:** Areas integrated with main logistics hubs, notably the Kemalpaşa Logistics Center, connected to significant industrial zones and transit points to support and enhance the region's urban logistics infrastructure.
5. **Creativity Focus Area:** Area located in the area surrounding the TCDD İzmir Port, including the emerging "Creative Industries Center," designed to become a focal point for the concentration of cultural and creative industries, utilizing a mixed-use space for office and residential purposes.
6. **6) Eco-Tourism Focus Area:** Areas such as Urla-Kuşçular, Ödemiş-Birgi-Bozdağ, and Bergama-Kozak, where local values, natural ecosystems, and agricultural potential will be developed by integrating them with a responsible tourism approach.

Global Focus

This is the area centered around TCDD İzmir Port, İzmir Creative Industries Center Project, and Halkapınar Transfer Center, where various urban and public uses to be relocated outside the city, along with the re-evaluation of industrial heritage, where urban transformation projects and activities aimed at fostering integrated transport and logistics solutions will be implemented; and advanced urban services, creative industries, office uses, and new-generation production spaces that will support and complement İzmir's CBA development will be designed.

Regional Focus Areas

These are sub-centers programmed to form a collective, balanced and highly accessible urban services system, with development focused around Aliağa to the north, Torbalı to the south and Kemalpaşa to the east.

Local Focus Areas

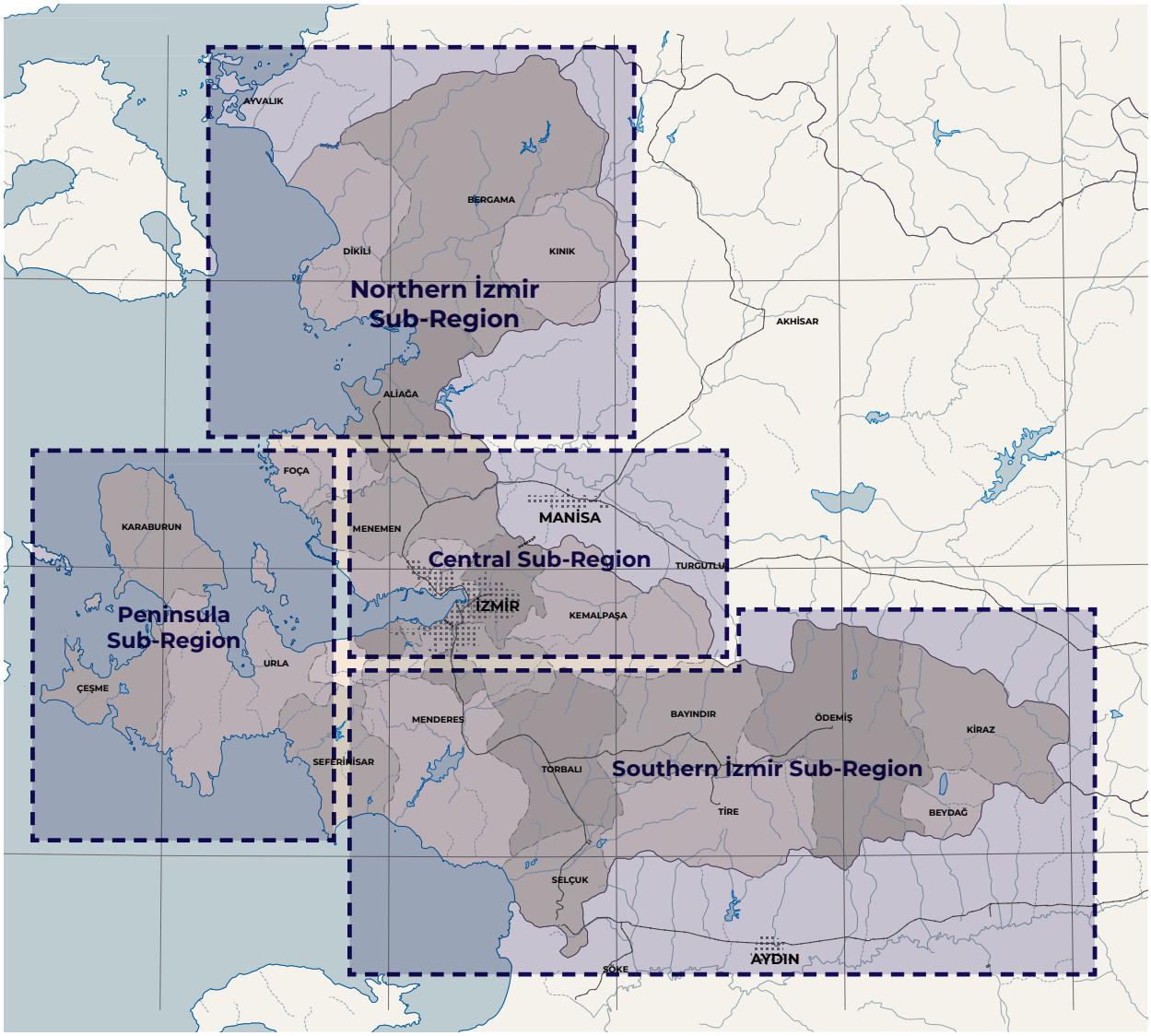
These are development areas playing a central role in guiding local development, strengthening rural-urban integration, and expanding capacities for urban functions and services. Local Focus Areas are planned as Bergama, Ödemiş and Urla.

6.6. İzmir Region Sub-Regional Spatial Development Schemes

While the regional development scheme lays out the spatial development approach for the province as a whole and its relational dynamics with its surroundings; the morphology of the city, the functional division of labor and relationships between settlements were also addressed under four specific sub-regions, considering the intensity of program areas and measures developed within the scope of *the Regional Plan* (Map 29).

These regions are: the "Central Sub-Region," where İzmir's development as a potential global city is supported by designated thematic focuses, transportation and logistics interventions, and spatial development programs, integrating the central city with the eastern growth corridor; the "Peninsula Sub-Region," prioritizing growth focused on blue growth, clean energy and regional cultural heritage, where knowledge and technology, as well as natural and cultural assets, are concentrated; the "Northern İzmir Sub-Region," where balanced, mixed land-use and compact development are envisioned, supported by strengthened transportation and logistics infrastructure, focusing on the development of blue growth sectors, primarily ports, and the clean energy sector, as well as rural-urban integration; and the "Southern İzmir Sub-Region," where rural economic diversity is reinforced, with a concentration of transportation and logistics investments in Torbalı, designated as the regional development focus for the integration of the agriculture and food sectors within the eastern growth corridor, while restorative interventions are foreseen in Küçük Menderes Basin. The development of sub-regional schemes was aligned with investment programs, and especially with lower-scale physical planning decisions.

MAP 29. TR31 İzmir Region Sub-Region Coverage



6.6.1. Central Region Focus

In line with the spatial development programs of "Reconstruction of İzmir City Center and Urban Sub-Centers" and "Strengthening Urban and Regional Railway Infrastructure," a "develop" intervention is proposed for the city center, along with strengthening green corridors connecting natural areas on the city periphery with urban areas (Map 30). The **Creativity Focus**, including the TCDD İzmir Port and surrounding former storage and production areas playing a key role in the city's industrial development, along with the new city center, is positioned as a potential global focus. This region presents an opportunity to repurpose old, deteriorated and idle industrial structures and areas, along with public spaces that can undergo functional change, for mixed-use focused on intensifying technology initiatives, creative and cultural industries, thereby revitalizing the city center. On the other hand, Halkapınar Transfer Area and its surroundings, envisioned as an important urban transfer center, also provide significant potential for the reprogramming of the CBA. However, some incompatibilities arise due to the current sub-scale plans designating this area as the new financial center. The growth proposal focused on creativity has been considered alongside the "reorganize" and "reinforce" interventions to enhance the potential of the city center, maintain economic vitality and improve quality of life.

Additionally, interventions have been developed for the central city through thematic focuses designated as the "Blue Economy Focus" and the "Nature and Climate-Based Green Entrepreneurship Focus." The **Blue Economy Focus** includes İzmir Marina, İnciraltı Tourism Center Expansion Plan, and areas designated as urban forests for recreational purposes in the 1/25,000 scale Environmental Plan (EP). In alignment with physical planning decisions, the Blue Economy Focus aims to intensify R&D, innovation, learning, conservation and recreational activities to strengthen blue growth sectors and institutional structures, and develop them with a "transformative urban intervention" approach. In this area, the "reinforce" intervention strengthens efficient and effective resource use, while the "repair" intervention supports the protection of sensitive ecosystems, such as Çakalburnu Lagoon. Plan measures within this scope are also linked to the interventions.

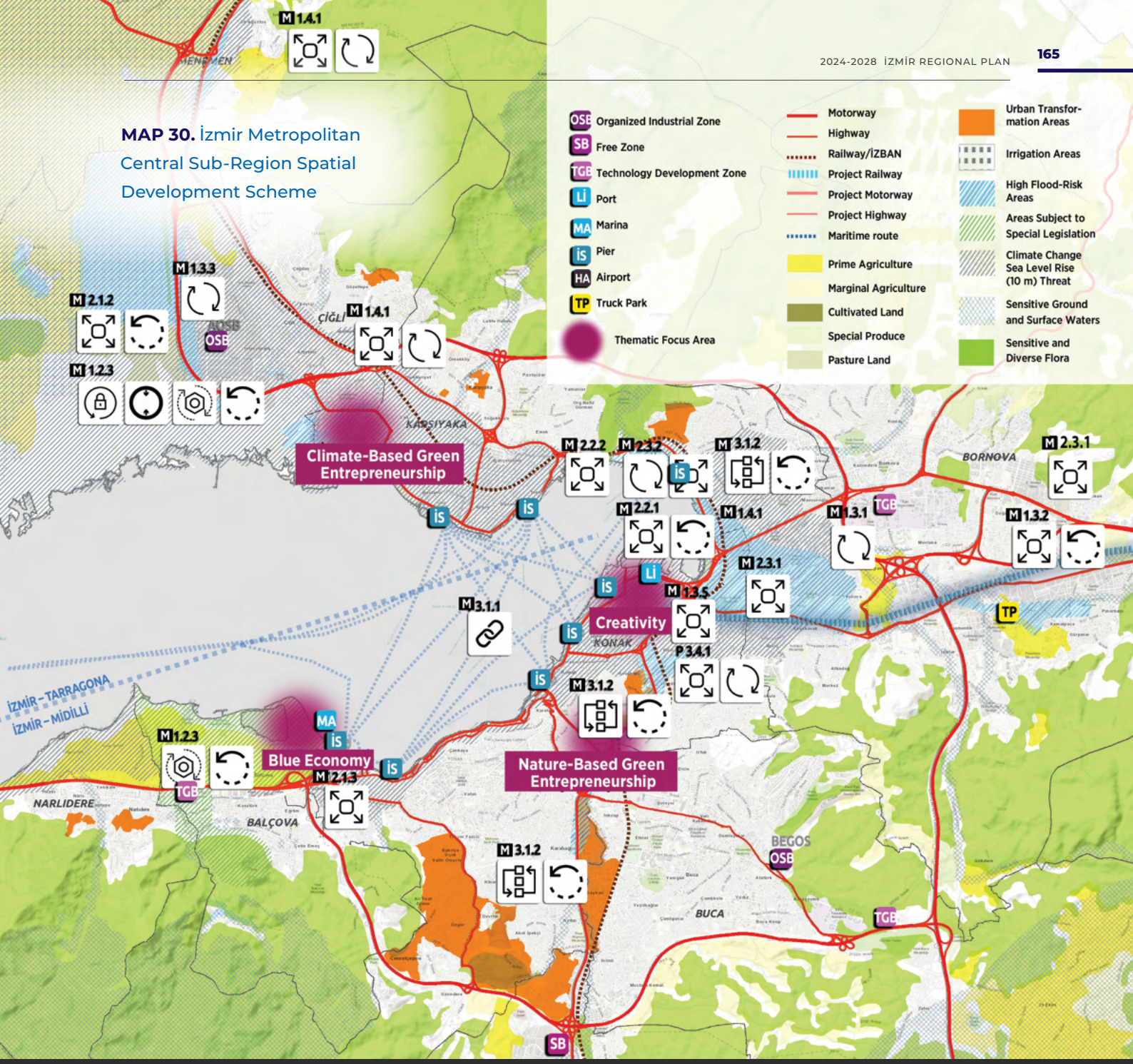
Green Entrepreneurship Focuses are designated as places to be developed through the approach of "urban transformation intervention", where nature and climate-based R&D, innovation, learning, conservation and recreational activities will be intensified, aiming for integration with nature, resilience against crises and achieving targets in fields such as ecological agriculture, clean energy and climate-sensitive design.

Nature-Based Green Entrepreneurship Focus envisions the development of sustainable green spaces and ecosystems within the city center. Transformative projects with leverage potential, such as the Garden EXPO on the city's agenda, can serve as a catalyst for the area. Given that the region encompasses urban transformation areas, sensitive ecosystems and cultural heritage areas, green and circular initiatives can emerge through new nature-based solutions to be developed.

Climate-Based Green Entrepreneurship Focus is proposed for the area in Sasalı, designated as a natural site area in the *1/25,000 scale İzmir Environmental Plan and the 1/5,000 scale Çiğli Master Development Plan*. This area is also one of the most vulnerable to sea level rise due to climate change. Thematic strategies like "Green Transformation and Blue Opportunities Perspective in İzmir," "Living in Harmony with Nature İzmir Strategy," and "Izmir Sponge City Project" offer climate-sensitive, innovative application opportunities in the central sub-region. Additionally, green infrastructure-supportive uses such as the "Sasalı Climate-Sensitive Agriculture Training and Research Institute," a recreational urban forest, and the "Peynircioğlu Stream Ecological Corridor Projects" in the same region, also bring climate-based interventions to the fore. The widespread use of clean energy systems towards strengthen the climate-based green entrepreneurship theme in the region falls under the "develop" intervention, while nature-based uses limiting uncontrolled urban sprawl incorporate the "reorganize" and "restore" interventions.

Due to urban density, interventions aimed at improving urban life quality, developing safe housing and social facility infrastructure in the city center include "restore," "reorganize," and "develop" interventions. Measures related to the central city include increasing the use of the bay for urban transportation purposes towards enhancing sustainable transport and increasing the share of maritime transport. Other interventions designed for the central city include developing TCDD İzmir Port, establishing Kemalpaşa Logistics Center connection, and implementing smart and green transformation measures.

MAP 30. İzmir Metropolitan Central Sub-Region Spatial Development Scheme



Relevant Spatial Development Programs

S.1. Collective and Symbiotic Growth:

S.1.2. Controlling Growth in the Metropolitan Area

S.1.3. Guiding Development in Regional and Local Development Hubs

S.1.5. Spatial Development Planning for Blue Opportunities

S.1.6. Strengthening Ecological Structures, Historical and Cultural Assets

S.2. Mobility for Dynamism:

S.2.1. Strengthening Interaction and Reciprocity Between Settlements

S.3. Transformation for Quality of Life:

S.3.4. Enhancing Disaster Risk Management and Preparing Precautionary Plans in İzmir Metropolitan Region

S.3.5. Green Transformation in Local Specializations

Reorganize
Recycle
Repair
Regenerate
Reinforce
Restore
Develop
Restrain
Refrain
Reduce

Relevant Measures and Projects

M 1.2.3: Practices aimed at improving natural wetlands, lagoons, natural forests and afforestation areas shall be supported.
M 1.3.1: Waste management infrastructure and processes shall be improved.
M 1.3.2: Continuous and high-quality secondary raw material production for priority value chains shall be supported by increasing value-added recycling.
M 1.3.3: Green transformation infrastructure in industrial production zones shall be supported.
M 1.3.5: Green entrepreneurship practices shall be promoted.
M 1.4.1: The use of clean energy systems shall be expanded.
M 2.1.2: Development of marine recreation and ecological tourism shall be supported.
M 2.1.3: Blue entrepreneurship practices shall be promoted.
M 2.2.1: Sectors supporting the İzmir region's ports shall be developed to enhance port capacity utilization rates.
M 2.2.2: The capacity and share of TCDD İzmir Port in cargo handling shall be increased.
M 2.3.1: Railway connections of Kemalpaşa Logistics Center, particularly with TCDD İzmir Port, shall be established.
M 2.3.2: Ports' transition to smart technologies and green transformations shall be actualized.
M 3.1.1: Urban accessibility shall be increased through the widespread use of sustainable transportation infrastructure.
M 3.1.2: Fundamental services that improve urban living quality, secure spaces and housing, and accessible social facility infrastructure shall be developed.
P 3.4.1: İzmir Creative Industries Center Project

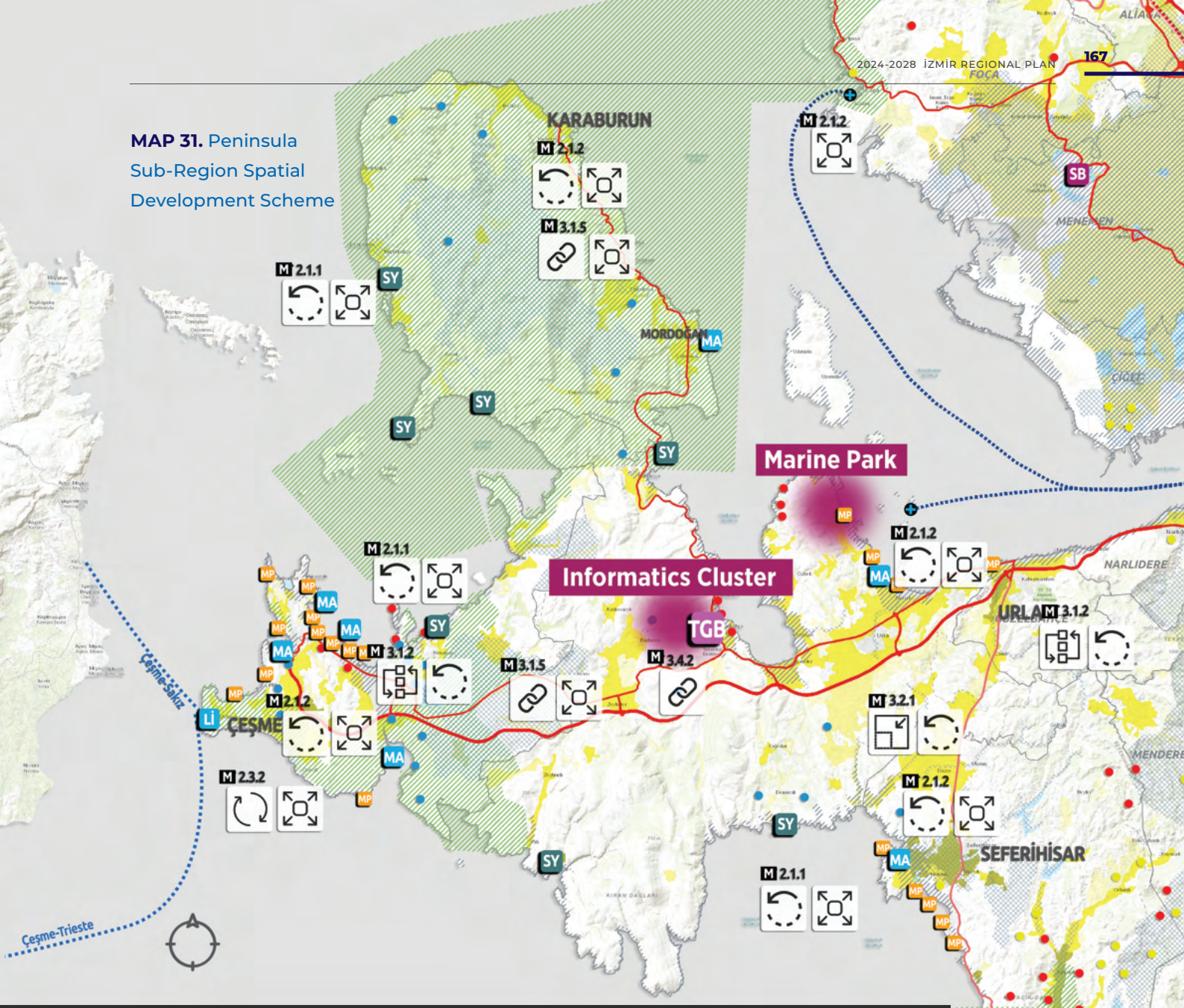
6.6.2. Peninsula Focus

In the development scheme for the Peninsula sub-region, priority is given to knowledge and technology, natural and cultural values, blue growth, clean energy, and regionally-focused cultural heritage development. Predominantly, the intervention types of "restore" and "develop" have been proposed for the region. The Urla-Çeşme-Karaburun area is identified as a potential intervention area for blue growth, and the measure to enhance the marine ecosystem is of particular importance (Map 31).

Urla is proposed as a local focus area that will play a central role in strengthening rural-urban integration and developing urban functions, services and capacities. Improvements are proposed for Urla's tourism activities in line with the measure for developing marine recreation and ecological tourism. A Marine Conservation Park is proposed near Urla Çiçek Islands as part of efforts to enhance marine recreational uses. The concentration of institutions such as the İzmir Institute of Technology, Technopark İzmir, the recently initiated Informatics Valley, and the anticipated İzmir University of Economics Güzelbahçe Campus in Urla highlights its development as a thematic focus on science and technology. The measures to promote and expand the use of clean energy in Urla include the intervention types "recycle" and "restore." To improve the urban and public service capacity within the Peninsula sub-region, particularly prioritizing the Urla Local Focus, the intervention types "reorganize" and "restore" have been proposed.

The marine recreation, ecological tourism, aquaculture production, and fishing activities in Karaburun Peninsula are addressed with the intervention types "restore" and "develop." For Çeşme area, measures related to port use have been proposed, with the intervention types "regenerate," "recycle," "reduce," and "develop." Throughout the Peninsula, and especially in Çeşme area, it is essential for the region that public investments and planning efforts guiding these investments prioritize sustainability while considering economic development. Thus, rather than approaches that only produce spatial land-use decisions, it is necessary to prioritize an integrated approach that considers the impacts of development on resource utilization, the resulting private and public costs, long-term planning, carrying capacity analyses, and the protection and enhancement of local elements that provide essential value to the region. The "reduce" intervention proposal envisages reducing the rate of growth, particularly concerning current and potential developments in the tourism sector.

MAP 31. Peninsula Sub-Region Spatial Development Scheme



- Wind Energy
- Solar Energy
- Geothermal Energy
- Motorway
- Highway
- Maritime Transport
- High Flood-Risk Areas
- Areas Subject to Special Legislation
- Climate Change Sea Level Rise (10 m) Threat
- Sensitive Ground and Surface Waters
- Prime Agriculture
- Marginal Agriculture
- Cultivated Land
- Special Produce
- Pasture Land
- TGB Technology Development Zone
- SB Free Zone
- SY Aquaculture Area
- MP Blue Flag Beach
- MA Marina
- Lİ Port
- Thematic Focus

Relevant Spatial Development Programs

S.1. Collective and Symbiotic Growth:

S.1.2. Controlling Growth in the Metropolitan Area

S.1.3. Guiding Development in Regional and Local Development Hubs

S.1.5. Spatial Development Planning for Blue Opportunities

S.1.6. Strengthening Ecological Structures, Historical and Cultural Assets

S.2. Mobility for Dynamism:

S.2.1. Strengthening Interaction and Reciprocity Between Settlements

S.3. Transformation for Quality of Life:

S.3.4. Enhancing Disaster Risk Management and Preparing Precautionary Plans in İzmir Metropolitan Region

S.3.5. Green Transformation in Local Specializations

- **Reorganize**
- **Recycle**
- **Repair**
- **Regenerate**
- **Reinforce**
- **Restore**
- **Develop**
- **Restrain**
- **Refrain**
- **Reduce**

Relevant Measures

M 2.1.1: Fisheries production and fishing activities shall be improved and developed in ways that ensure the sustainability of fish stocks.

M 2.1.2: Development of marine recreation and ecological tourism shall be supported.

M 2.3.2: Ports' transition to smart technologies and green transformations shall be actualized.

M 3.1.2: Fundamental services that improve urban living quality, secure spaces and housing, and accessible social facility infrastructure shall be developed.

M 3.1.5: Living conditions and job opportunities in rural areas shall be improved.

M 3.2.1: The integration of vulnerable groups into social and economic life shall be increased.

M 3.4.2: Development of knowledge and technology-based new sectors and creative industries shall be supported.

6.6.3. Northern İzmir Focus

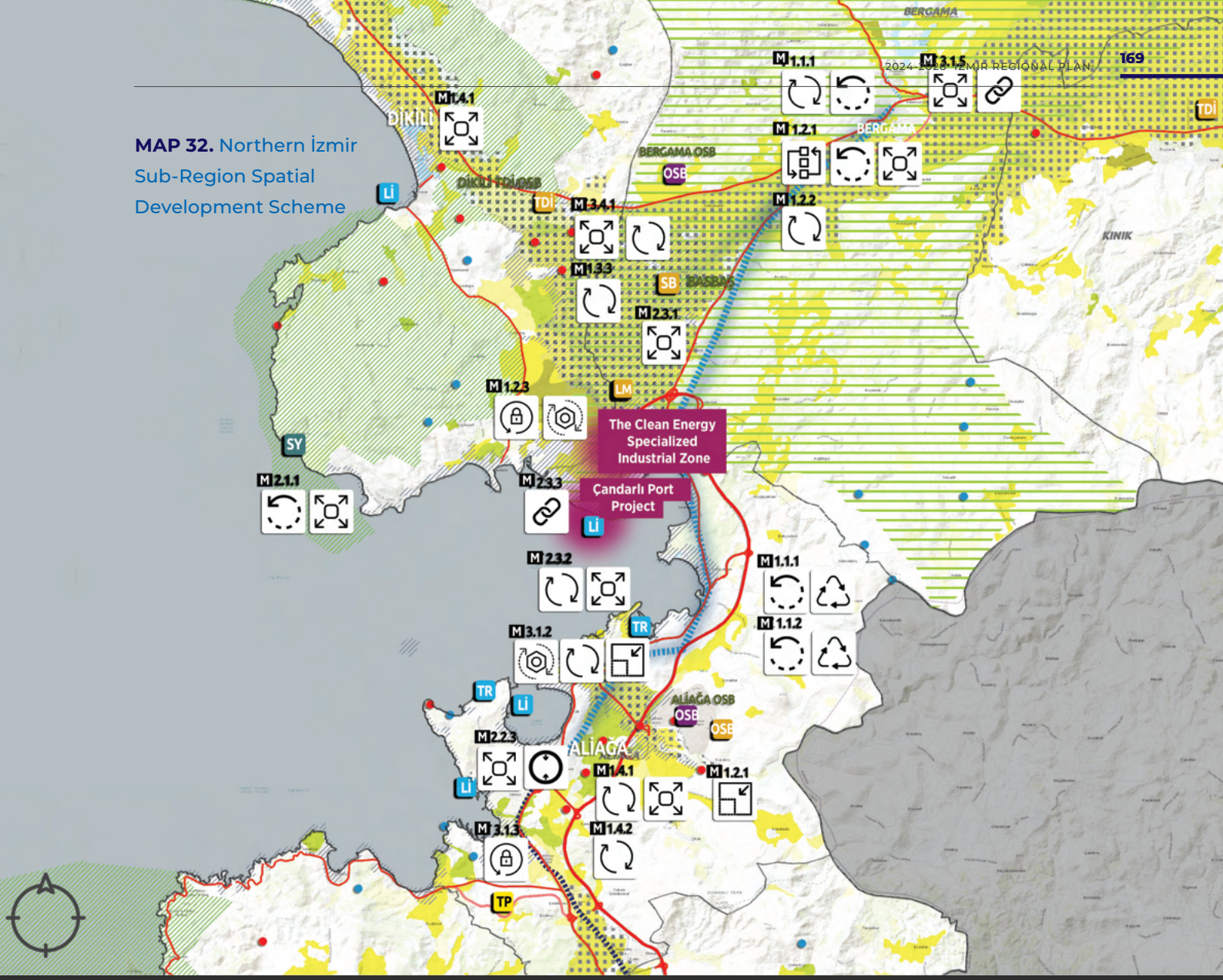
This sub-regional development scheme is structured around the themes of green industry, blue infrastructure and clean energy in the Northern İzmir focus. Within this framework, intervention decisions considering physical and thematic plan decisions have been developed for the area encompassing Aliağa, Bergama, Dikili and Kınık districts. Towards strengthening the industrial and logistics center function in Aliağa, the Clean Energy Specialized Industrial Zone, the Green Hydrogen Technologies Center, and the Çandarlı Port project and programs are of great significance. Furthermore, due to the strong development dynamics in the area, the sub-region scheme includes various intervention types, such as "develop," "regenerate," "refrain," "repair," "reorganize," "reinforce" and "recycle." Based on the "develop" and "reinforce" intervention types, it is envisaged that Çandarlı Port is to be reorganized to facilitate the export of wind energy equipment, supporting the Çandarlı Port Project and regional planning decisions. Within the focus on strengthening the Aliağa port region, increasing connections between the ports and industry, providing infrastructure investments to enhance competitiveness, establishing a logistics center in the hinterland of the Nemrut ports, and promoting strategic partnerships and communication among the ports through clustering are important goals for the sub-region (Map 32).

Clean energy is one of the most significant target areas in the *2024-2028 İzmir Regional Plan*. The high clean energy potential in the province of İzmir and the location of industries producing wind energy equipment in Northern Aegean underpin the specialization of Çandarlı Port in wind energy logistics. In addition, the "reinforce" and "develop" interventions are planned in the region to support the expansion and production of clean energy systems. v and the Green Hydrogen Technology Center projects aim to develop the region with a focus on clean energy.

Through the "regenerate" intervention for the development of green transformation infrastructure in industrial production areas, the aim is the development and transformation of agriculture-based industries in the agricultural corridor along Dikili and Bergama. Additionally, the presence of areas designated for agricultural conservation in the region necessitates a Green Industry Focus, with restrained development interventions. In Aliağa Çaltılıdere, the investment aimed at boat and yacht manufacturing is supported by the "develop" intervention in order to strengthen its connectivity within the transportation system and to mitigate its burden on transportation infrastructure, while the "reduce" intervention is aimed at monitoring the environmental and social impacts of the investment and preventing possible adverse effects.

In addition to the measures to protect and restore natural areas in Aliağa, "refrain" and "repair" interventions are proposed in the north within the requirements of disaster risk management. As in the Peninsula region, environmental sustainability-oriented development of aquaculture is proposed as well for this area. Bergama will serve as a local focus with a central role in strengthening rural-urban integration and in developing urban functions, services and capacities.

MAP 32. Northern İzmir Sub-Region Spatial Development Scheme



- Wind Energy
- Solar Energy
- Geothermal Energy
- Motorway
- Highway
- Railway/İZBAN
- Project Railway
- Geopark
- Irrigation Areas
- High Flood-Risk Areas
- Areas Subject to Special Legislation
- Climate Change Sea Level Rise (10 m) Threat
- Sensitive Ground and Surface Waters
- Prime Agriculture
- Marginal Agriculture
- Cultivated Land
- Special Produce
- Pasture Land
- OSB Technology Development Zone
- OSB Organized Industrial Zone (Planned)
- TDİ Agriculture Specialized OIZ (Planned)
- SB Free Zone (Planned)
- SY Aquaculture Area
- Lİ Port
- TR Shipyard
- LM Logistics Center (Planned)
- TP Truck Park
- Thematic Focus

Relevant Spatial Development Programs

S.1. Collective and Symbiotic Growth:

S.1.3. Guiding Development in Regional and Local Development Hubs

S.1.5. Spatial Development Planning for Blue Opportunities

S.1.6. Strengthening Ecological Structures, Historical and Cultural Assets

S.2. Mobility for Dynamism:

S.2.1. Strengthening Interaction and Reciprocity Between Settlements

S.2.2 Strengthening Urban and Regional Railway Infrastructure

S.2.3 Improving Road Connections of Centers Without İZBAN Access

S.2.4 Strengthening Urban and Regional Logistics Infrastructure

S.3. Transformation for Quality of Life:

S.3.3 Transformation of Industrial and Commercial Agglomerations and Strengthening Their Connections with the City

- **Reorganize**
- **Recycle**
- **Repair**
- **Regenerate**
- **Reinforce**
- **Restore**
- **Develop**
- **Restrain**
- **Refrain**
- **Reduce**

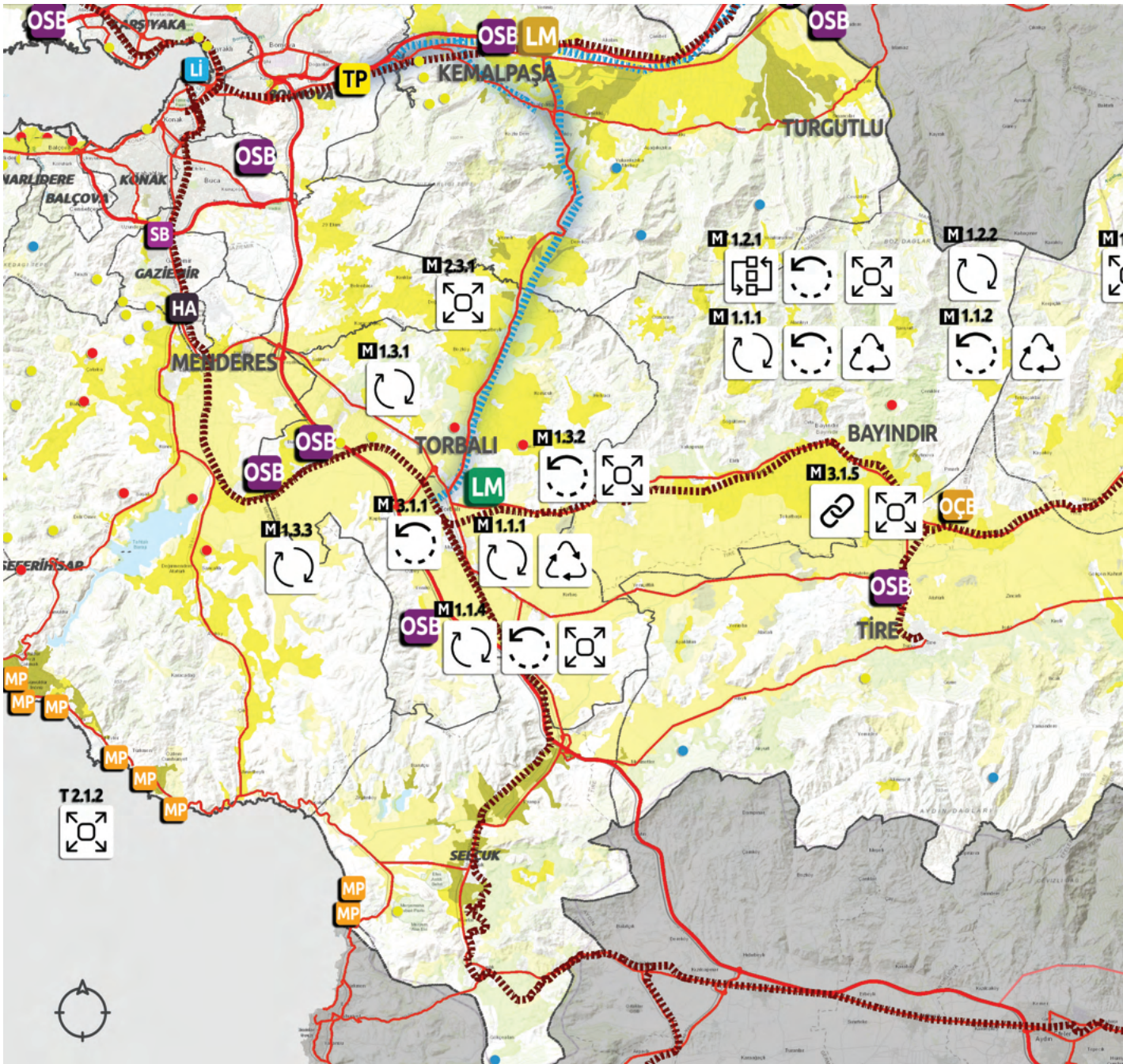
Relevant Measures

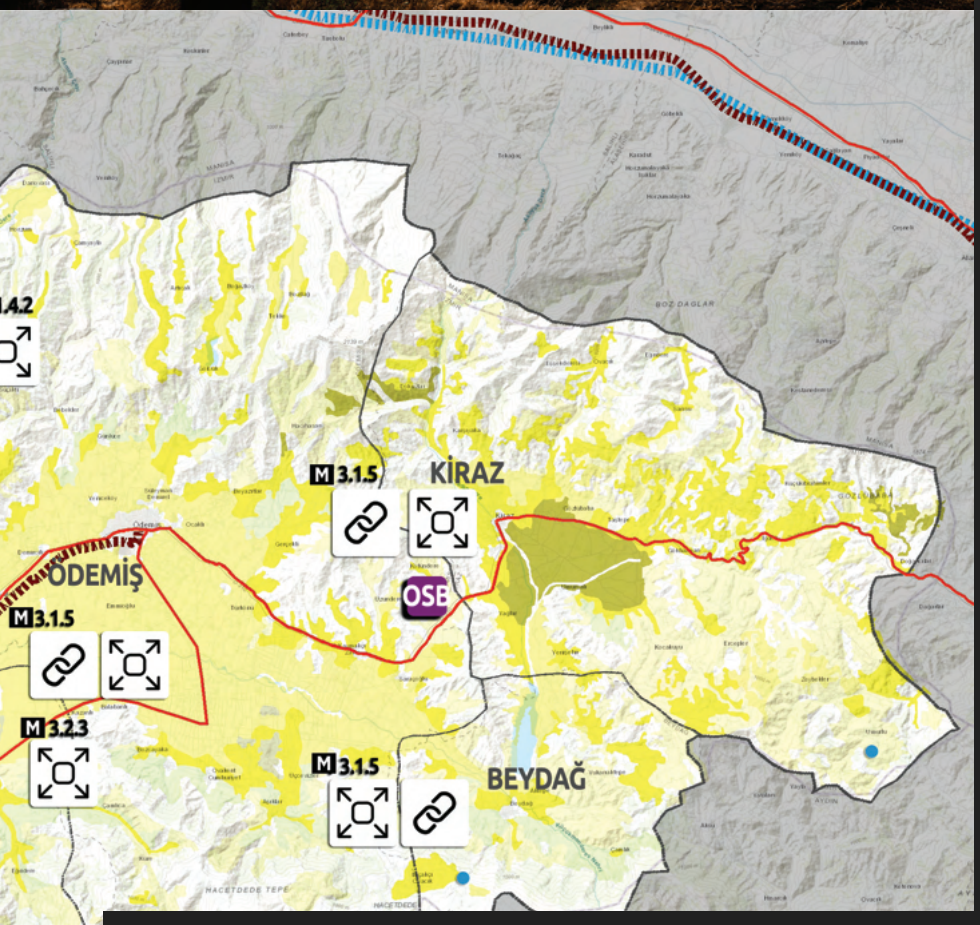
M 1.1.1: Efficiency in the use of energy, water, and raw materials shall be increased.
M 1.1.2: Practices aimed at increasing the use of secondary and alternative resources in industry and agriculture shall be supported.
M 1.2.1: Pollution loads from industrial and agricultural production shall be reduced.
M 1.2.2: Transition to a crop pattern that reduces irrigation water needs in Küçük Menderes, Gediz and Bakırçay basins shall be planned.
M 1.2.3: Practices aimed at improving natural wetlands, lagoons, natural forests and afforestation areas shall be supported.
M 1.3.3: Green transformation infrastructure in industrial production zones shall be supported.
M 1.4.1: The use of clean energy systems shall be expanded.
M 1.4.2: Clean energy production infrastructure shall be strengthened.
M 2.1.1: Fisheries production and fishing activities shall be improved and developed in ways that ensure the sustainability of fish stocks.
M 2.2.3: The accessibility and cooperation capacity of the Aliağa port cluster shall be improved.
M 2.3.1: Railway connections of Kemalpaşa Logistics Center, particularly with TCDD İzmir Port, shall be established.
M 2.3.2: Ports' transition to smart technologies and green transformations shall be actualized.
M 2.3.3: The investment in connection roads to the Çandarlı Port motorway shall be realized.
M 3.1.2: Fundamental services that improve urban living quality, secure spaces and housing, and accessible social facility infrastructure shall be developed.
M 3.1.3: Planning and organizational capacity for effective disaster management shall be improved, and infrastructures to reduce disaster risks shall be strengthened.
M 3.4.1: Creation of domestic green technologies needed for the green and blue transformation shall be supported.

6.6.4. Southern İzmir Focus

Within the scope of the development scheme of Southern İzmir sub-region, which includes the district of Torbalı and Küçük Menderes Basin, industrial and agricultural corridors come to the forefront (Map 33). A structure has been developed where transportation and logistics investments are concentrated in Torbalı to integrate the agricultural and food sectors along the eastern development corridor, while restorative interventions are proposed in Küçük Menderes Basin. Along the basin, there are measures to ensure efficient use through the energy-water-food nexus, reduce pollution from agriculture, improve rural quality of life and support cooperatives. In this direction, the "reorganize," "restore" and "develop" interventions are proposed. Within Southern İzmir, measures to improve rural living conditions and strengthen and enhance employment opportunities in the districts of Ödemiş, Bayındır, Kiraz, Tire, Beydağ and Menderes, and to develop sustainable food systems centered around the enterprises concentrated in Torbalı are included. While Torbalı strengthens its position as a regional focus with the development of the projected industrial and logistics elements, Ödemiş will be supported by investments and activities to reinforce its role as a service center for urban functions within its local hinterland, especially the remote rural areas. It is envisaged that eco-tourism will be developed in places such as Ödemiş-Birgi-Bozdağ, with rural-urban integration achieved through responsible agriculture and responsible tourism approaches.

MAP 33. Southern İzmir Sub-Region Spatial Development Scheme





- Wind Energy
- Solar Energy
- Geothermal Energy
- Motorway
- Highway
- Railway/İZBAN
- Project Railway
- Irrigation Areas
- High Flood-Risk Areas
- Areas Subject to Special Legislation
- Climate Change Sea Level Rise (10 m) Threat
- Sensitive Ground and Surface Waters
- Prime Agriculture
- Marginal Agriculture
- Cultivated Land
- Special Produce
- Pasture Land
- OSB Organized Industrial Zone
- SB Free Zone
- OCB Floristry Specialized OIZ (Planned)
- MP Blue Flag Beach
- LI Port
- LM Logistics Center (Planned)
- LM Logistics Center (Proposed)
- TR Truck Park
- HA Airport

Relevant Spatial Development Programs

S.1. Collective and Symbiotic Growth:

S.1.3. Guiding Development in Regional and Local Development Hubs

S.1.6. Strengthening Ecological Structures, Historical and Cultural Assets

S.2. Mobility for Dynamism:

S.2.1. Strengthening Interaction and Reciprocity Between Settlements

S.2.2 Strengthening Urban and Regional Railway Infrastructure

S.2.3 Improving Road Connections of Centers Without İZBAN Access

S.2.4 Strengthening Urban and Regional Logistics Infrastructure

S.3. Transformation for Quality of Life:

S.3.4 Enhancing Disaster Risk Management and Preparing Precautionary Plans in İzmir Metropolitan Region, Including the Impacts of Climate Change

S.3.5 Green Transformation in Local Specializations

Relevant Measures

M 1.1.1: Efficiency in the use of energy, water, and raw materials shall be increased.

M 1.1.2: Practices aimed at increasing the use of secondary and alternative resources in industry and agriculture shall be supported.

M 1.1.4: Food losses shall be reduced, and food security shall be strengthened by establishing sustainable food systems.

M 1.2.1: Pollution loads from industrial and agricultural production shall be reduced.

M 1.2.2: Transition to a crop pattern that reduces irrigation water needs in Küçük Menderes, Gediz and Bakırçay basins shall be planned.

M 1.3.1: Waste management infrastructure and processes shall be improved.

M 1.3.2: Continuous and high-quality secondary raw material production for priority value chains shall be supported by increasing value-added recycling.

M 1.3.3: Green transformation infrastructure in industrial production zones shall be supported.

M 1.4.2: Clean energy production infrastructure shall be strengthened.

M 2.1.2: Development of marine recreation and ecological tourism shall be supported.

M 2.3.1: Railway connections of Kemalpaşa Logistics Center, particularly with TCDD İzmir Port, shall be established.

M 3.1.1: Urban accessibility shall be increased through the widespread use of sustainable transportation infrastructure.

M 3.1.5: Living conditions and job opportunities in rural areas shall be improved.

M 3.2.3: Institutional capacity to support transformation shall be developed.

- **Reorganize**
- **Recycle**
- **Repair**
- **Regenerate**
- **Reinforce**
- **Restore**
- **Develop**
- **Restrain**
- **Refrain**
- **Reduce**

7. Relationship of Regional Plan Objectives with Sustainable Development Goals (SDG)

The relationship between the *2024-2028 İzmir Regional Plan* objectives and the UN Sustainable Development Goals and related indicators is shown in the table below:

TABLE 9. Sustainable Development Goals and Indicators Associated with the 2024-2028 İzmir Regional Plan

Regional Plan Strategic Priorities and Objectives		1 NO POVERTY	2 ZERO HUNGER	3 GOOD HEALTH AND WELL-BEING	4 QUALITY EDUCATION	5 GENDER EQUALITY	6 CLEAN WATER AND SANITATION
S.P. 1: Ensuring the Green Transformation of Existing Economic Activities in İzmir	O 1.1: The transition to a green production model in industrial and agricultural sectors shall be achieved by promoting resource efficiency practices.		2.1.2. 2.3.1. 2.4.1. 2.a.2. 2.c.1.				6.3.2. 6.4.1. 6.4.2 6.5.1. 6.6.1.
	O 1.2: Pollution and overuse of natural resources shall be prevented, ensuring the improvement of resources.	1.5.2.	2.3.1. 2.4.1. 2.5.2. 2.a.2.				6.3.1. 6.3.2. 6.4.1. 6.4.2. 6.5.1. 6.a.1.
	O 1.3: The technical, administrative, and social capacities to support green transformation shall be developed.				4.4.1.		6.3.1. 6.3.2.
	O 1.4: The share of clean energy production shall be increased, and its use shall be made widespread.						
S.P. 2: Leveraging the Potential of the Blue Economy	O 2.1: Sustainability of blue growth sectors and the income derived from these sectors shall be increased.						6.6.1.
	O 2.2: Ports in İzmir shall be revitalized to increase their contributions to the regional economy.						
	O 2.3: The region's logistics infrastructure shall be improved.						
S.P. 3: Enhancing Social Resilience on the Basis of Sustainability	O 3.1: Urban and rural quality of life shall be improved.	1.5.1. 1.5.2. 1.5.3. 1.5.4.		3.1.1. 3.6.1. 3.8.1. 3.9.1. 3.9.1. 3.b.3.			6.1.1. 6.3.1.
	O 3.2: Sociocultural and socioecological transformation shall be supported, and institutions shall be strengthened to respond to this transformation.	1.2.1. 1.2.2. 1.3.1. 1.a.1. 1.a.2.	2.3.2.		4.1.1. 4.5.1.	5.1.1.	
	O 3.3: The capacity of the existing workforce shall be increased, and work environments shall be improved.				4.4.1. 4.7.1.		
	O 3.4: Innovation and technology creation shall be developed, and the entrepreneurship ecosystem shall be strengthened to support transformation.						

Source: SDG (2020)

	7 AFFORDABLE AND CLEAN ENERGY	8 DECENT WORK AND ECONOMIC GROWTH	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	10 REDUCED INEQUALITIES	11 SUSTAINABLE CITIES AND COMMUNITIES	12 RESPONSIBLE CONSUMPTION AND PRODUCTION	13 CLIMATE ACTION	14 LIFE BELOW WATER	15 LIFE ON LAND	16 PEACE, JUSTICE AND STRONG INSTITUTIONS	17 PARTNERSHIPS FOR THE GOALS
	7.2.1. 7.3.1.	8.1.1. 8.2.1. 8.4.1. 8.4.2.	9.2.1. 9.4.1.		11.6.2.	12.2.1. 12.2.2 12.3.1. 12.4.2. 12.5.1.	13.2.1. 13.2.2. 13.3.2.				17.7.1. 17.14.1.
	7.2.1.	8.1.1. 8.2.1.			11.4.1.	12.2.1. 12.2.2 12.4.1. 12.7.1.	13.2.1.	14.1.1. 14.2.1.	15.1.1. 15.2.1. 15.3.1.		
		8.1.1. 8.2.1. 8.4.1. 8.4.2.	9.2.1. 9.4.1. 9.b.1.		11.6.1.	12.2.1. 12.2.2 12.5.1.	13.2.1. 13.3.2.				17.11.1.
	7.1.2. 7.2.1. 7.a.1.		9.4.1. 9.b.1.			12.1.1. 12.6.1. 12.a.1.					17.6.1. 17.7.1. 17.17.1.
		8.2.1 8.9.2.						14.4.1. 14.5.1. 14.6.1. 14.7.1. 14.a.1.			
	7.1.2. 7.2.1. 7.3.1. 7.a.1. 7.b.1.	8.2.1.	9.1.2.				13.2.1.				
	7.2.1. 7.3.1. 7.a.1. 7.b.1.	8.1.1. 8.2.1.	9.1.2. 9.4.1.		11.6.2.		13.2.1.				
					11.1.1. 11.5.1. 11.5.2. 11.6.2. 11.7.1.						17.8.1.
		8.5.1. 8.5.2. 8.6.1.		10.1.1. 10.2.1. 10.7.2.	11.1.1.					16.6.2.	
		8.5.2. 8.6.1. 8.8.1.				12.6.1. 12.8.1.	13.3.1.				
	7.2.1.	8.1.1. 8.2.1.	9.2.1. 9.2.2. 9.3.1. 9.3.2. 9.4.1. 9.5.1. 9.5.2.		11.6.1.	12.2.2 12.4.2. 12.5.1.	13.3.1. 13.3.2.	14.2.1.			17.7.1.

İzmir Serbest Bölgesi

8. Coordination, Monitoring and Evaluation

Effective reflection of objectives and priorities determined in strategic documents such as plans and programs in implementation requires the involvement of stakeholders, not only in the preparation process but also in the implementation phase of such documents. It is also crucial for the plan to be traceable, and assessable in terms of progress and outcomes, and for these processes to be well-designed. The plan document must maintain a dynamic structure and continue communicating with the public during the implementation phase. The most critical performance indicator for the plan is its consideration by relevant institutions and organizations during the preparation of their own plans and programs.

İzmir *Regional Plan* Local Communication Platform shall be established towards achieving these goals. This platform shall be managed through an internet portal and have member institutions and organizations focused on thematic titles like digital transformation, ports and logistics, and resource efficiency (in agriculture and industry). Three meetings shall be held each year with the participants of the platform on each thematic title.

İzmir Development Agency shall coordinate this platform, ensuring active communication with all relevant institutions throughout the plan's implementation period. Platform activities will be evaluated annually and reported by the İzmir Development Agency for public sharing. These reports shall include items such as developments on various topics under the plan and the levels of achievement obtained for the defined performance indicators.

Participants shall be informed about the progress of *the Regional Plan*, and the plan shall be considered as a set of criteria for evaluation purposes in studies conducted by local administrations, relevant institutions/organizations, and civil society organizations.

9. Performance Indicators

Objective	Performance Indicator	Data Description
Strategic Priority 1: Ensuring the Green Transformation of Existing Economic Activities in İzmir	Amount of Grid Water Consumed in Industry	Annual grid water consumption of manufacturing enterprises in İzmir
	Amount of Energy Consumed in Industry	Annual electricity consumption of manufacturing enterprises in İzmir
	Amount of Water Consumed in Agriculture	Amount of water consumed from underground and surface sources in İzmir's agricultural production activities
O 1.1: The transition to a green production model in industrial and agricultural sectors shall be achieved by promoting resource efficiency practices.	Number of Industrial Symbiosis Collaborations	Number of enterprises collaborating within the İzmir Industrial Symbiosis Program
	Number of Businesses Joining the Industrial Symbiosis Network	Number of enterprises included in the İzmir Industrial Symbiosis Program
	Number of Reuse, Repair and Maintenance Centers to be Established	Number of centers established for repairing and maintaining items like furniture and electronics for reuse
	Number of Businesses Adopting Resource Efficiency Practices	Number of manufacturing enterprises in İzmir investing in raw material, energy, and water efficiency within the scope of the Resource Efficiency Program
O 1.2: Pollution and overuse of natural resources shall be prevented, ensuring the improvement of resources.	Number of Companies Transitioning to Clean Production	Number of manufacturing enterprises in İzmir investing in clean production practices
	Number of Specialized Bovine Livestock Production Facilities	Number of specialized production facilities enabling joint production for small-scale bovine livestock enterprises in İzmir
	Number of Rehabilitated Wetlands	Number of wetlands rehabilitated in İzmir through measures to prevent drought and pollution
O 1.3: The technical, administrative, and social capacities to support green transformation shall be developed.	Amount of Waste Generated by the Recycling Sector	Amount of waste produced by enterprises in İzmir's waste processing, recovery and recycling sectors
	Amount of Waste Generated Per Capita	Daily municipal waste generated per person in İzmir
	Packaging Waste Recycling Rate	Proportion of recycled packaging waste out of the total packaging waste produced in İzmir
	Number of OIZs Initiating Green Transformation Investments	Number of Organized Industrial Zones in İzmir initiating investments in resource efficiency, waste management, and clean energy for transition to Green OIZs
	Number of Programs for Enhancing Compliance Capacity with the "Green Deal"	Number of education and awareness programs for improving compliance capacity with the "Green Deal" in İzmir

	Unit	Year Data Collected	2023* (Current Situation) / Value as per the Year Data Collected	2028 (Target Year)	Data Source
	m^3/year	2019	7,114,000	6,047,000	İZSU, OIZ subscription data
	MWh/ywear	2021	11,536,376	11,033,900	TURKSTAT
	m^3/year	2022	256,573,000	219,459,700	İzmir Provincial Environmental Status Report
	count	2023	0	20	İZKA Activity Report
	count	2023	50	300	İZKA Activity Report
	count	2023	-	1	Institution Activity Reports
	count	2023	0	40	Institution Activity Reports
	count	2023	-	15	Institution Activity Reports
	count	2023	0	1	Provincial Directorate of Agriculture and Forestry
	count	2023	0	1	İZSU
	Ton/year	2019	4,287	3,000	MoEUCC
	Kg/day	2021	1.46	1.36	TURKSTAT
	%	2022	12	20	MoEUCC, TURKSTAT
	count	2023	2	5	MoIT
	count	2023	-	10	Institution Activity Reports

Objective	Performance Indicator	Data Description
O 1.4: The share of clean energy production shall be increased, and its use shall be expanded.	Installed Capacity of Onshore Wind Energy	Maximum capacity of onshore wind power plants generating electricity
	Installed Capacity of Offshore Wind Energy	Maximum capacity of offshore wind power plants generating electricity
	Installed Capacity of Solar Energy	Maximum capacity of solar power plants generating electricity
	Installed Capacity of Biomass Energy	Maximum capacity of biomass power plants generating electricity
	Installed Capacity of Geothermal Energy	Maximum capacity of geothermal power plants generating electricity
	Number of Pilot Projects for Green Hydrogen Production	Number of pilot projects producing green hydrogen
	Number of Clean Energy Vehicles in Public Transport	Number of electric and hydrogen-powered buses introduced through projects
	Number of Hydrogen Valleys	Centers for R&D, experience, and technology in green hydrogen in İzmir
S.P. 2: Leveraging the Blue Economy Potential	Export via Specialized Port in the Clean Energy Sector	Clean energy equipment exports from Çandarlı Port
	Share of İzmir Ports in Container Handling	Share of İzmir ports in total container handling in Türkiye's ports
	Share of İzmir Ports in Total Cargo Handling	Share of total cargo in İzmir ports within Türkiye's total cargo handling tonnage
O 2.1: Sustainability of blue growth sectors and the income derived from these sectors shall be increased.	Number of Universities Specialized in Maritime Studies	Number of universities specializing in the sustainable management of seas and economic valuation of marine resources
	İzmir's Share in Türkiye's Aquaculture Production	İzmir's aquaculture production volume as a percentage of Türkiye's total aquaculture production
O 2.2: Ports in İzmir shall be revitalized to increase their contributions to the regional economy.	Number of Ports Specialized in the Clean Energy Sector	Number of ports providing specialized services to clean energy sectors, primarily wind energy
	Number of Clean Energy Specialized Industrial Zones	Number of industrial zones specialized for clean energy sectors, primarily wind energy
	Exports via İzmir Ports in the Clean Energy Sector	Exports from İzmir ports in the clean energy sector
	Annual Container Handling Volume at İzmir Ports	Indicator name as listed
	Container Handling Capacity	Container handling capacity of İzmir Ports
O 2.3: The region's logistics infrastructure shall be improved.	Number of Logistics Centers in İzmir	Number of centers established under the "Regulation on Logistics Centers"
	Capacity of Logistics Centers in İzmir	Capacity of logistics centers established under the "Regulation on Logistics Centers"
	Number of Green Ports in İzmir	Number of ports in İzmir with Green Port Certification
	Number of Ports Connected to Kemalpaşa Logistics Center via Railway	Number of railway lines connecting Kemalpaşa Logistics Center to ports/port regions

	Unit	Year Data Collected	2023* (Current Situation) / Value as per the Year Data Collected	2028 (Target Year)	Data Source
	MW	2022	1,887	2,830	MoENR
	MW	2022	0	200	MoENR
	MW	2022	322.80	620	MoENR
	MW	2022	92.60	180	MoENR
	MW	2022	12	25	MoENR
	count	2022	0	5	MoENR
	count	2022	20	250	İBB
	count	2022	0	1	İZKA
	Dollars	2022	0	1 Billion	MoTI, TÜREB, İZKA
	%	2022	15	20	MoTI
	%	2022	17	21	MoTI
	count	2023	0	1	YÖK
	%	2022	12.7	15	TURKSTAT
	count	2022	0	1	MoTI
	count	2022	0	1	MoIT
	Dollars	2022	750 Million	1.5 Billion	MoTI, TÜREB, İZKA
	TEU	2021	1.9 Million	2.5 Million	MoTI
	TEU	2022	2.6 Million	4 Million	MoTI, TÜRKLİM, Port Operators
	count	2022	0	1	MoTI
	TEU	2022	0	1 Million	MoTI
	count	2022	1	2	MoTI
	count	2022	0	3	MoTI

Objective	Performance Indicator	Data Description
S.P. 3: Enhancing Social Resilience on the Basis of Sustainability	Unemployment Rate in İzmir	Ratio of unemployed within total population in İzmir
	Green Area per Capita	Amount of green area per capita in İzmir
	Share of Maritime Transport in Urban Public Transport	Share of maritime transport in urban public transport trips
	Regional Productivity	Gross value added per worker
O 3.1: Urban and rural quality of life shall be improved.	Length of Urban Rail System	Length of rail system lines used for urban public transport
	Share of Rail Systems in Urban Public Transport	Share of urban public transport using rail systems
	Proportion of Population Served by Drinking and Utility Water Treatment Facilities	Proportion of population served by drinking and utility water treatment facilities within the municipal population
	Proportion of Population Served by Wastewater Treatment Plants	Proportion of municipal population served by wastewater treatment plants
O 3.2: Sociocultural and socioecological transformation shall be supported, and institutions shall be strengthened to respond to this transformation.	Youth Unemployment Rate in İzmir	Unemployment rate among 15-24 age group in İzmir
	Poverty Rate in İzmir	Proportion of İzmir's population at risk of poverty based on equivalent household disposable income
O 3.3: The capacity of the existing workforce shall be increased, and work environments shall be improved.	Number of Established Clean Energy Vocational High Schools	Number of vocational high schools directly linked to jobs in the clean energy sector
	Employment in the Clean Energy Sector	Total employment in clean energy companies
	Employment in the Software and Information and Communication Technology Sector	Employment in the software and ICT sector
	Number of Established Software Training Centers	Number of centers established to train the workforce required in the software sector
O 3.4: Innovation and technology creation shall be developed, and the entrepreneurship ecosystem shall be strengthened to support transformation.	Number of R&D Centers	Number of R&D centers established under "Law No. 5746"
	Number of Universities on the Innovation and Entrepreneurship Index	Number of universities in İzmir listed on the Entrepreneurial and Innovative University Index by TÜBİTAK
	Total Number of Registered Patents	Total number of patent applications registered by the Turkish Patent and Trademark Office
	Number of Projects Submitted to TÜBİTAK (ARDEB)	Total number of project applications from İzmir to TÜBİTAK
	Acceptance Rate of Projects Submitted to TÜBİTAK (ARDEB)	Ratio of TÜBİTAK-supported projects to total applications from İzmir
	Number of R&D Project Applications to TÜBİTAK-TEYDEB	Total number of project applications from İzmir to TÜBİTAK-TEYDEB
	Number of R&D Project Supports by TÜBİTAK-TEYDEB	Number of projects supported by TÜBİTAK-TEYDEB

	Unit	Year Data Collected	2023* (Current Situation) / Value as per the Year Data Collected	2028 (Target Year)	Data Source
	%	2022	13.0	10	TURKSTAT
	m2	2021	8.31	12	İBB
	%	2022	3	5	İBB, ESHOT
	Thousand TL	2022	378	500	TURKSTAT
	Km	2022	177	250	İBB, MoTI
	%	2022	36	45	İBB, ESHOT
	%	2020	72	80	TURKSTAT
	%	2020	99	100	TURKSTAT
	%	2022	24.4	20	TURKSTAT
	%	2022	21.3	18	TURKSTAT
	count	2022	0	1	MEB
	person	2022	10,000	25,000	İZKA, ENSİA, TÜREB, BEST For Energy Portal
	person	2019	5,779	20,000	İZKA, SGK
	count	2022	0	1	İZKA, YABİSAK
	count	2022	97	125	MoIT
	count	2022	5	7	TÜBİTAK
	count	2022	163	300	TÜRKPATENT
	count	2022	927	1,100	TÜBİTAK
	%	2022	23.30	25	TÜBİTAK
	count	2022	184	300	TÜBİTAK
	count	2022	112	300	TÜBİTAK

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Bergama, Village Wedding

11. APPENDICES

Profiles of Sample Investment Opportunities and Project Ideas:

1. İzmir Resource Efficiency Center Project
2. İzmir Hydrogen Valley Project
3. Floating Offshore Wind Turbine Platform Production Facility Project
4. İzmir Maritime University Project
5. Çandarlı Port Clean Energy Sector Adaptation Project
6. İzmir Clean Energy Specialized Industrial Zone Project
7. İzmir Creative Industries Center Project
8. Agricultural Waste Cellulose Production Facility Project
9. Sustainable Aviation Fuel (SAF) Production Waste Oils Preprocessing Facility Project
10. Bearing Production Facility Project
11. International Geothermal Energy Research and Application Center Project
12. Furniture Waste Reuse and Recycling Center Project
13. İzmir Cathode Active Material Production Facility Project
14. High Economic Value Industrial Dairy Products Production Facility Project
15. İzmir Inverter Production Facility Project

Profiles of Sample Program Ideas:

1. Green and Blue Entrepreneurship Acceleration Program
2. İzmir Venture Capital Fund (İzmir Fund)

PROFILES OF SAMPLE INVESTMENT OPPORTUNITIES AND PROJECT IDEAS[9]

PROFILE 1

Project Name	İzmir Resource Efficiency Center Project
Project Theme	Resource efficiency, clean production, industrial symbiosis, clean energy, digital transformation
Project Summary	This project aims to establish a center in İzmir to support businesses in resource efficiency, clean production, industrial symbiosis and digital transformation during İzmir's green transition. The center shall provide businesses with the necessary technical support, training, consultancy, survey/test/analysis, and networking services in these areas.
Sector	72. Scientific research and development activities 74. Other professional, scientific, and technical activities 71. Architectural and engineering activities; technical testing and analysis activities
Project Objective	The primary objective of the project is to enhance the region's technical, managerial and social capacity to accelerate the green transition of businesses in İzmir's agriculture and industry sectors. Through the project, it is aimed to: • Establish, coordinate and support long-term, systematic industrial symbiosis collaborations among businesses by implementing an industrial symbiosis structure unique to İzmir • Promote practices that increase the production and use of clean energy • Accelerate businesses' digital transformation processes
Significance for the Region	The project holds importance in developing the regional infrastructure needed to expand sustainable production practices, aligning with İzmir's green transition goals. The green transition introduces shifts in production and consumption patterns, digitalization and the use of new technologies, as well as adaptation to international frameworks such as the "Green Deal." Supporting businesses in meeting these changes necessitates holistic process management, along with the establishment of regional capacity and expertise. The İzmir Resource Efficiency Center shall address this need by creating local structures that identify needs, offer solutions, develop capacity, provide consultancy and technical infrastructure services, and facilitate access to financing for businesses. Additionally, the center represents an essential step in standardizing and improving the quality of consultancy services offered in this field within the region.
Scale of Investment/ Facility (Capacity)	The project is designed to operate along three main axes: industrial symbiosis, clean energy and digital transformation. The 3,000-square-meter indoor area shall include office spaces, laboratories and training halls. Planned Services in the Center: • Number of businesses receiving consultancy services: 100 per year • Number of research and testing services: 100 per year • Number of industrial symbiosis collaborations to be established: 200 per year • Number of collaboration workshops to be organized: 5 per year • Number of training sessions to be held in the center: 10 per year • Number of individuals to be trained: 200 per year • Number of clean production/digital transformation/LCA studies to be prepared: 20 per year

9 These investment opportunities and project ideas have been developed as examples with relevant stakeholders within the framework of the socio-economic analyses and field studies conducted as part of the Regional Plan; they do not encompass all projects required for the implementation of regional plans. Additionally, these projects may only be implemented upon the fulfillment of necessary prerequisites, such as permits, approvals, consultations and licenses, within the framework of the legislation applicable to the project topic.

Project Name	İzmir Resource Efficiency Center Project
Project Executing Body	İzmir Development Agency, in collaboration with relevant OIZs, chambers and exchanges
Implementation Location	İzmir-Konak
Total Project Budget/Fixed Investment Amount	5,240,000 USD
Projected Additional Employment	30 people (permanent employment)
Project Implementation Duration	24 months
Project Target Group	The target group includes businesses in the industrial and agricultural sectors, umbrella organizations, sectoral associations, universities and academics, entrepreneurs, students, and consultancy service providers.
Relation to Sustainable Development Goals	SDG 7 – Affordable and Clean Energy SDG 8 – Decent Work and Economic Growth SDG 9 – Industry, Innovation, and Infrastructure SDG 12 – Responsible Consumption and Production SDG 13 – Climate Action SDG 17 – Partnerships for the Goals
Relation to the Regional Plan	Strategic Priority 1: Ensuring the Green Transition of Existing Economic Activities in İzmir Objective 1: Transition to a green production model in the industrial and agricultural sectors shall be ensured by promoting resource efficiency practices.

PROFILE 2

Project Name	İzmir Hydrogen Valley Project
Project Theme	Renewable energy
Project Summary	This project aims to establish a center that operates based on financing and cooperation, where various scale projects will be implemented in collaboration with public, private sector, academia, and civil society stakeholders with the objective to support the transition from a carbon economy to a hydrogen economy by enabling the production, storage, distribution and transportation of green hydrogen, its end-use in hard-to-decarbonize sectors such as transportation and iron and steel industry, and the establishment of the related value chain and knowledge base, thereby creating a hydrogen ecosystem operating within a clustering approach. Through the established structure, pilot projects for hydrogen production and the development of related equipment, as well as projects for sustainable mobility applications, will be developed in the initial phase. In the medium term, transformation-oriented projects will be developed to facilitate the transition of local refineries and the iron and steel industry to green hydrogen. In the long term, the focus will be on large-scale, long-distance logistics transformation projects targeting the transformation of maritime and land route transportation to meet international supply-demand connections.
Sector	20: Manufacture of chemicals and chemical products 72: Scientific research and development activities
Project Objective	The project's objective is to contribute to Türkiye's participation in the globally expanding green hydrogen economy and to position İzmir as a pioneering region implementing unique and exemplary practices in the transition from a carbon economy to a hydrogen economy.
Significance for the Region	İzmir holds significant potential to become a hub for green hydrogen production and distribution, considering its renewable energy resources, particularly wind energy, existing hydrogen demand, and port and trade infrastructure. Analyses suggest that hydrogen demand in Türkiye will likely be highest in İzmir, as its regional distribution parallels that of electricity and natural gas consumption. Increased hydrogen demand in İzmir's northern sub-region, where Türkiye's key refineries and petrochemical facilities are located, presents substantial opportunities for the use and production of green hydrogen.
Scale of Investment/Facility (Capacity)	All project activities will focus on the production and use of green hydrogen, along with the development of necessary equipment, technology and services in this area. The center's facility components will include a research, testing, and application center, a training center, and offices designated for entrepreneurs. Planned Services in the Center: • Number of Research and Testing Services to be Provided: 100 per year • Number of Trainings to be Held in the Center: 15 per year • Number of Individuals to be Trained: 200 per year • Number of Open Innovation Events to be Organized: 2 per year • Number of Children's Events to be Organized: 20 per year • Number of Visitors for Experiential Purposes: 500 per year • Number of Offices Allocated to Entrepreneurs: 20

Project Name	İzmir Hydrogen Valley Project
Project Executing Body	The project will be implemented by establishing a governance mechanism through a partnership of the public, private sector, universities and CSOs. Potential stakeholders and their responsibilities within the project are as follows: İzmir Development Agency: Strategy development, coordination, and implementation of the financial support program Relevant Local Administrations: Ensuring green hydrogen transformation in new investments, especially in transportation investments Relevant Civil Society Organizations: Ensuring active participation of sector firms in the project as part of a clean energy cluster organization Relevant Public Institutions: National-level coordination of the project and guidance within Türkiye's Hydrogen Strategy framework Relevant Private Sector Entities: Application and direction of developed technologies within the project, positioning themselves as pioneering industrial organizations in green hydrogen Relevant Organized Industrial Zones: Provision of implementation areas for green hydrogen industrial applications Relevant Public-Interest Civil Society Organizations: Promoting the project among members representing the private sector, such as chambers of commerce and industry Relevant Universities: Conducting university-industry cooperation, R&D, and innovation activities within the project
Implementation Location	İzmir/Aliağa
Total Project Budget/Fixed Investment Amount	22,700,600 USD
Projected Additional Employment	50 people (permanent employment)
Project Implementation Duration	36 months + 24 months
Project Target Group	Academics and Scientific Researchers: Will have opportunities to develop solutions through scientific approaches tailored to sectoral needs. Relevant SMEs: Will find opportunities to expand their activities in hydrogen technologies. Relevant Start-ups: Will be assisted to reduce costs and enhance efficiency through supported R&D opportunities. Relevant Businesses Operating in Aliağa: Will have opportunities to achieve green hydrogen utilization targets. Relevant Stakeholders in the Transportation Sector: Will contribute to businesses' green transformation processes. General Public: Will be among the target groups directly benefiting from project outcomes.
Relation to Sustainable Development Goals	SDG 7 – Affordable and Clean Energy SDG 9 – Industry, Innovation and Infrastructure SDG 11 – Sustainable Cities and Communities SDG 12 – Responsible Consumption and Production SDG 13 – Climate Action SDG 17 – Partnerships for the Goals
Relation to the Regional Plan	Strategic Priority 1: Ensuring the Green Transformation of Existing Economic Activities in İzmir Objective 3: The technical, administrative, and social capacities to support green transformation shall be developed. Objective 4: The share of clean energy production shall be increased, and its use shall be expanded.

PROFILE 3[10]

Project Name	Floating Offshore Wind Turbine Platform Production Facility Project
Project Theme	Renewable energy
Project Summary	Offshore wind energy is emerging as a focal area in the energy transition with the application of developing technologies. As wind energy targets increase globally, expectations for the commercialization of floating offshore wind turbine platforms are positioning wind energy investments as a cost-effective option in many regions and supporting the development of floating offshore wind turbines. In addition to having the highest installed capacity in wind energy in Türkiye, İzmir stands out as a prominent region for equipment production in this field. Promoting local equipment manufacturing is among the most critical components in developing renewable energy policies. The project envisions the establishment of a production facility for floating offshore wind turbine platforms. Through this facility, it will be possible to produce floating platforms locally for use in deeper waters where fixed-base platforms are not feasible or economical, thereby supporting the development of the offshore wind energy value chain.
Sector	30.11 – Building of ships and floating structures
Project Objective	The objective of the project is to promote local manufacture of equipment for renewable energy and to encourage the local creation of technologies related to offshore wind energy.
Significance for the Region	The existing infrastructure in İzmir for onshore wind energy also holds potential for offshore wind energy. With the establishment of this facility, processes for implementing offshore wind energy investments will be developed, enabling the integration of İzmir's wind ecosystem into offshore wind energy. The project will contribute to reducing the current account deficit through equipment exports, support the utilization of Türkiye's existing production capacities in high-value-added areas, and contribute to the establishment of an environmentally conscious economy. Additionally, new production skills will be introduced to the region and the country, qualified workforce development will be supported, and new job opportunities will be created.
Scale of Investment/Facility (Capacity)	Number of floating platforms produced at the facility: 25 units/year
Project Executing Body	Private sector
Implementation Location	İzmir

10 Detailed information regarding the investment opportunity in question can be accessed at https://www.yatirimadestek.gov.tr/ .

Project Name	Floating Offshore Wind Turbine Platform Production Facility Project
Total Project Budget/Fixed Investment Amount	91,100,000 USD
Projected Additional Employment	250 people (permanent employment)
Project Implementation Duration	24 months
Project Target Group	Wind industry equipment manufacturers Manufacturers of equipment and technology for the offshore wind industry Wind industry companies producing large equipment such as blades, towers and generators New investors entering the clean energy sector Manufacturers of floating structures and companies involved in production and installation for offshore wind power plants Logistics companies (especially those handling heavy freight transport)
Relation to Sustainable Development Goals	SDG 7 – Affordable and Clean Energy SDG 9 – Industry, Innovation and Infrastructure
Relation to the Regional Plan	Strategic Priority 1: Ensuring the Green Transformation of Existing Economic Activities in İzmir Objective 4: The share of clean energy production shall be increased, and its use shall be expanded. Strategic Priority 2: Leveraging the Blue Economy Potential Objective 1: Sustainability of blue growth sectors and the income derived from these sectors shall be increased.

PROFILE 4

Project Name	İzmir Maritime University
Project Theme	Marine and maritime (blue growth)
Project Summary	The project aims to establish a university that will conduct research and development studies to support the development of existing blue growth sectors (such as logistics, shipbuilding, ship recycling, aquaculture, etc.) as well as relatively new fields within the blue economy, including blue biotechnology, seabed mining, marine-based clean energy, and seawater extraction, offer graduate-level education, and conduct research, and house a technopark specializing in marine technologies.
Sector	85.42 – Higher education 03.1 – Fishing 03.2 – Aquaculture 30.11 – Building of ships and floating structures 33.15 – Repair and maintenance of ships and boats 38.31.01 – Dismantling of ships and floating structures for scrap material recovery 49.20 – Freight rail transport 49.41 – Freight transport by road 50.10 – Sea and coastal passenger water transport 50.20 – Sea and coastal freight water transport 52.10 – Warehousing and storage 52.21 – Service activities incidental to land transportation 72.11 – Research and experimental development on biotechnology
Project Objective	The project's objective is to support the multidisciplinary and applied scientific studies needed by the region, focusing on the blue economy sectors, which are integral to İzmir's identity as a port city and which contribute most significantly to the country's total sectoral output and added value. Graduate-level knowledge production, marine-centered technology entrepreneurship, and cluster-based institutional collaborations will be pursued. In line with the United Nations' "Life Below Water" goal, efforts will be made to protect marine and coastal ecosystems and to manage them sustainably.
Significance for the Region	The project is designed as a local development initiative centered on the marine and maritime sectors in İzmir, one of the country's leading port cities. The project's notable and distinctive feature lies in fostering and conducting multidisciplinary, application-based studies essential for the sustainable management of marine resources, as well as in uncovering the economic value of these resources and promoting relevant R&D activities.
Scale of Investment/Facility (Capacity)	Total Open Area: 1,000,000 m^2 Total Closed Area: 100,000 m^2

Project Name	İzmir Maritime University
Project Executing Body	Relevant public institutions
Implementation Location	İzmir
Total Project Budget/Fixed Investment Amount	52,356,000 USD
Projected Additional Employment	300 people (permanent employment)
Project Implementation Duration	60 months
Project Target Group	Academics, researchers, entrepreneurs, and businesses in Türkiye and İzmir engaged in blue economy fields or interested in focusing on these areas
Relation to Sustainable Development Goals	SDG 4 – Quality Education SDG 8 – Decent Work and Economic Growth SDG 11 – Sustainable Cities and Communities SDG 14 – Life Below Water SDG 17 – Partnerships for the Goals
Relation to the Regional Plan	Strategic Priority 2: Leveraging the Blue Economy Potential Objective 1: The sustainability of blue growth sectors and the income derived from these sectors shall be increased. Objective 2: Ports in İzmir shall be revitalized to increase their contributions to the regional economy. Strategic Priority 1: Ensuring the Green Transformation of Existing Economic Activities in İzmir Objective 4: The share of clean energy production shall be increased, and its use shall be expanded. Strategic Priority 3: Enhancing Social Resilience on the Basis of Sustainability Objective 2: Sociocultural and socioecological transformation shall be supported, and institutions shall be strengthened to respond to this transformation. Objective 4: Innovation and technology creation shall be developed, and the entrepreneurship ecosystem shall be strengthened to support transformation.

PROFILE 5

Project Name	Çandarlı Port Clean Energy Sector Adaptation Project
Project Theme	Renewable energy
Project Summary	The size of clean energy equipment produced today is continuously increasing, and accordingly, the international logistics of such equipment requires specialized transportation operations. With this in mind, Çandarlı Port, located east of Çandarlı Bay in İzmir's Bergama district and initially planned by the Ministry of Transport and Infrastructure as a main container port with an annual capacity of 4 million TEU, has been redesigned based on current needs to facilitate the logistics and export operations of wind turbine equipment manufacturers, particularly those located in İzmir and surrounding areas. In addition to serving primarily as an export hub for wind turbine equipment, the port will also be available for offshore wind energy installations planned in the Aegean and Mediterranean Seas. Additionally, green hydrogen and green ammonia investments, which will contribute to the maritime industry's decarbonization process, may be situated in the port and its hinterland in the coming years.
Sector	52: Warehousing and support activities for transportation
Project Objective	The Çandarlı Port Clean Energy Sector Adaptation Project aims to provide Türkiye and İzmir with a specialized port infrastructure dedicated to handling wind industry equipment of unusual and ever-growing sizes, along with other sensitive project cargoes that require specialized logistics processes. By repurposing the port in line with the prepared feasibility study to specialize in the clean energy sector, the project will enable precise operations expected by clean energy sector producers, particularly those in the wind industry, and reduce logistics costs, thereby increasing the sector's added value. The project aims to attract new investments in the wind industry and expansion investments from companies with existing facilities in the region. Together with the planned specialized industrial zone in the port's hinterland, the project envisions the establishment of integrated industrial areas, similar to successful examples abroad, creating an infrastructure capable of supporting the increasingly significant offshore wind investments in the global energy sector, including installation and production services. Additionally, green hydrogen and green ammonia investments that will contribute to the maritime industry's decarbonization process may be situated at the port in future years, with the port potentially used for the filling, transfer and transportation of green hydrogen and green ammonia.
Significance for the Region	The Çandarlı Port Clean Energy Sector Adaptation Project will accelerate sectoral investments, contributing significantly to İzmir's development as a globally important production hub in this field, and enhance the export and employment capacity of the sector. With the realization of the Çandarlı Port and the İzmir Clean Energy Specialized Industrial Zone investments in the port's hinterland, it is anticipated that by 2025, 22,500 jobs and 2.5 billion USD in exports will be achieved in the clean energy sector.

Project Name	Çandarlı Port Clean Energy Sector Adaptation Project
Scale of Investment/ Facility (Capacity)	The Çandarlı Port Clean Energy Sector Adaptation Project is designed in two phases. The feasibility study for the first phase, covering approximately 1 million square meters, has been completed. Based on this feasibility study, the facility's specifications are as follows: Port Technical Specifications and Capacity for the First Phase: • Dock Length: 500 m • Dock Depth: 18 m • Ground Resistance: 5 tons/m^2 • Loading + Storage Area: 1,092,767 m^2 • Blade and tower storage and handling area: 500,000 m^2 • Number of incoming vessels: 200 vessels (starting from 2025) • Project cargo vessels that can be served simultaneously: 3 vessels, each 150 m long • Piloting/Towing services: 2 tugboats, 1 mooring boat, 1 pilot boat Primary Operational Equipment for Wind Industry Equipment: • 4 mobile dock cranes with a lifting capacity of 300 tons for dock operations • 4 truck-mounted or crawler cranes with a lifting capacity of 180 tons for stacking operations • 4 transfer vehicles with a carrying capacity of 50 tons for transfer operations (tractor units) • 4 forklifts for transfer and stacking of parts within the port area
Project Executing Body	Relevant public institutions and investor organizations Potential Partners and Affiliates: Relevant civil society organizations and OIZs
Implementation Location	İzmir/Bergama District/Çandarlı Area
Total Project Budget/Fixed Investment Amount	148,350,000 USD
Projected Additional Employment	Employment in port management and operations: 170 people (permanent employment) by 2025 (The assumption is that the first phase of the port will be operational by 2025.)
Project Implementation Duration	24 months
Project Target Group	Wind Industry Equipment Manufacturers Companies producing large and sensitive project cargoes Companies that require coastal production/installation (floating structure manufacturers, offshore wind power plant producers, and installers) Companies producing sensitive equipment for other clean energy sectors Port investors Logistics companies (especially heavy load carriers)
Relation to Sustainable Development Goals	SDG 7 – Affordable and Clean Energy SDG 9 – Industry, Innovation, and Infrastructure SDG 11 – Sustainable Cities and Communities SDG 12 – Responsible Consumption and Production
Relation to the Regional Plan	Strategic Priority 2: Leveraging the Blue Economy Potential Objective 2: Ports in İzmir shall be revitalized to increase their contributions to the regional economy.

PROFILE 6

Project Name	İzmir Clean Energy Specialized Industrial Zone Project
Project Theme	Clean energy, industrial zone
Project Summary	Specialized industrial zones integrated with ports are being established globally to accommodate clean energy equipment that is increasingly large and, therefore, requires appropriately sized industrial areas for production and logistics. For this purpose, a Clean Energy Specialized Industrial Zone has been designed behind Çandarlı Port. The project aims to create investment areas of adequate size for the sector's needs and to establish a production infrastructure integrated with the port in the country. By structuring Çandarlı Port for clean energy equipment exports and establishing the İzmir Clean Energy Specialized Industrial Zone to operate in integration with the port, the project will contribute significantly to accelerating sectoral investments and advancing İzmir's transformation into a globally significant production hub in this field.
Sector	23 – Manufacture of Other Non-Metallic Mineral Products (includes Carbon Fiber Manufacturing) 25 – Manufacture of Fabricated Metal Products, except machinery and equipment (includes Manufacture of metal towers and lattice masts) 26 – Manufacture of Computer, Electronic, and Optical Products (includes Manufacture of photovoltaic solar panels, solenoids, switches, and power converters for electronic applications) 28 – Manufacture of Machinery and Equipment Not Elsewhere Classified (includes Manufacture of turbines and turbine parts, such as wind, gas, water, and steam turbines, as well as water wheels and their parts) 32 – Other Manufacturing (includes Glass Fiber Manufacturing) 46 – Wholesale Trade, except motor vehicles and motorcycles (includes Wholesale trade of wind turbines, capacitors, electric insulators, AC/AD/DC motors, generators, insulated coil wires, and similar electrical machinery, equipment, and instruments) 70 – Activities of Head Offices; Management Consultancy Activities
Project Objective	The project aims to establish a zone with industrial facilities that provide an investment environment for domestic and international investors in the clean energy and clean technologies sector and ensure clean energy-port integration. In this context, it is expected that: • A specialized industrial zone with large parcels will be created for new investors entering the clean energy sector and for producers unable to find adequate investment locations to expand in the sector. • Producers in the clean energy sector will be clustered in one region, with production integrated with the port. • The region will facilitate the production and/or expansion of production of large-scale and heavy equipment used in offshore energy applications, which need to be manufactured directly at or near the port. • Export processes for wind turbine component manufacturers will be streamlined.
Significance for the Region	The project will create a new investment area to foster clean energy sector investments in the region, significantly contributing to İzmir's transformation into a global production hub in this field and increasing the sector's export and employment capacities. With the realization of this specialized industrial zone and the Çandarlı Port investments, it is anticipated that by 2025, the clean energy sector will generate 22,500 jobs and 2.5 billion USD in exports.

Project Name	İzmir Clean Energy Specialized Industrial Zone Project
Scale of Investment/ Facility (Capacity)	According to the feasibility study prepared for the area, the total surface area is 2,655,003.46 m², with the following details: • Production areas: 1,431,958.65 m² (34 industrial parcels ranging from 26 to 93 decares) • Storage and logistics facilities: 99,536.56 m² • Wind Power Plant (WPP): 95,481.68 m² (2 units) • Solar Power Plant (SPP): 37,868.18 m² (1 unit) • Training Facility: 19,408.86 m² • Administrative Service Area: 39,471.39 m²
Project Executing Body	The project will be implemented by relevant sector organizations through a public-private sector-CSO partnership following the determination of the region's status. Potential Partners and Affiliates: Relevant public institutions, chambers, exchanges and professional associations
Implementation Location	İzmir/Bergama
Total Project Budget/ Fixed Investment Amount	104,700,000 USD
Projected Additional Employment	2025: 7,500 people (permanent employment) (The assumption is that production in the industrial zone will begin in 2025.)
Project Implementation Duration	24 months
Project Target Group	New investors entering the clean energy sector Existing producers in the clean energy sector seeking locations for expansion Wind industry companies producing large equipment such as blades, towers, and generators Equipment manufacturers for other clean energy sources, such as solar, geothermal, bioenergy, and green hydrogen Storage technology manufacturers Sustainable mobility equipment and technology manufacturers Manufacturers of equipment and technology for the offshore wind industry
Relation to Sustainable Development Goals	SDG 7 – Affordable and Clean Energy SDG 9 – Industry, Innovation, and Infrastructure SDG 11 – Sustainable Cities and Communities SDG 12 – Responsible Consumption and Production
Relation to the Regional Plan	Strategic Priority 2: Leveraging the Blue Economy Potential Objective 2: Ports in İzmir shall be revitalized to increase their contributions to the regional economy.

PROFILE 7

Project Name	İzmir Creative Industries Center Project
Project Theme	Creative industries
Project Summary	The project entails establishing a center that will provide accelerator and incubation programs to meet the ecosystem's needs in creative industries, along with office, workspace and event areas designed to enhance interaction and collaboration.
Sector	62 – Computer programming, consultancy, and related activities 70 – Activities of head offices; management consultancy activities 73 – Advertising and market research 74 – Other professional, scientific, and technical activities 59 – Motion picture, video, and television program production activities; sound recording and music publishing activities 60 – Programming and broadcasting activities 58 – Publishing activities
Project Objective	The area within the hinterland of İzmir Alsancak TCDD Port, which holds significance as industrial heritage and was once home to İzmir's first industrial facilities, will be adapted to host creative industries, with İzmir Electric Factory serving as its focal point. As an initial step, the aim is to preserve the Historical Electric Factory as an industrial cultural heritage asset with public benefit, transforming it into an iconic structure and establishing a creative center within İzmir's urban landscape.
Significance for the Region	İzmir is a leading region in Türkiye for information and communication technologies, design, advertising and marketing, and it also has the potential to offer spatial transformation opportunities in the city center that support colocation for these sectors. The project will address the spatial needs of entrepreneurs and creative professionals, fostering sectoral development while enabling the restoration of inactive cultural heritage buildings in the city center that require urgent intervention.
Scale of Investment/ Facility (Capacity)	Area Behind TCDD İzmir Port: 1 million m^2 Phase 1 – Transformation of İzmir Electric Factory into a Creative Center İzmir Electric Factory Total Open Area: 11,260 m^2 İzmir Electric Factory Total Closed Area: 9,475 m^2
Project Executing Body	İzmir Development Agency

Project Name	İzmir Creative Industries Center Project
Implementation Location	İzmir-Konak
Total Project Budget/ Fixed Investment Amount	15,700,000 USD
Projected Additional Employment	75 people (permanent employment)
Project Implementation Duration	24 months
Project Target Group	The target group includes enterprises, businesses and freelancers in İzmir's leading creative industry sectors, including Information and Communication Technologies (Software and Computer Services), Specialized Design Activities (Graphic Design, Fashion Design, Industrial Design, Interior Architecture), Film, TV, Video, Radio and Photography production, and Advertising and Marketing services. Based on 2017 data, the target group directly encompasses the 12,971 individuals employed in İzmir's creative industries.
Relation to Sustainable Development Goals	SDG 8 – Decent Work and Economic Growth SDG 11 – Sustainable Cities and Communities SDG 17 – Partnerships for the Goals
Relation to the Regional Plan	Strategic Priority 3: Enhancing Social Resilience on the Basis of Sustainability Objective 4: Innovation and technology creation shall be developed, and the entrepreneurship ecosystem shall be strengthened to support transformation.

PROFILE 8

Project Name	Agricultural Waste-Based Cellulose Production Facility Project
Project Theme	Manufacturing industry
Project Summary	Agricultural waste such as roots, stalks, straw, leaves and husks is known to be a source of cellulose and can serve as an alternative to raw materials currently used as cellulose sources. This project aims to establish a cellulose production facility that will add value to agricultural waste by utilizing it in a productive manner.
Sector	20 – Manufacture of chemicals and chemical products
Project Objective	The project aims to utilize agricultural waste generated by agricultural activities. Cellulose is the largest cost component in the paper industry, and due to limited industrial forest resources in Türkiye, the paper industry relies heavily on imported substitutes. Cellulose production facilities that recycle agricultural waste containing varying levels of cellulose for use as secondary raw materials are crucial for the sustainability and competitiveness of the sector.
Significance for the Region	Given the substantial availability of agricultural waste that can be used as cellulose raw material in İzmir, particularly in districts with intensive agricultural production in Küçük Menderes Basin, along with its proximity to industrial facilities involved in paper production, İzmir has the potential to become an ideal production hub for cellulose manufacturing. Additionally, İzmir has a strong sectoral infrastructure and diversity to support the production of cellulose and its derivatives.
Scale of Investment/Facility (Capacity)	Cellulose production: 25,000 tons/year
Project Executing Body	Private sector
Implementation Location	İzmir
Total Project Budget/Fixed Investment Amount	19,230,000 USD
Projected Additional Employment	60 people (permanent employment)
Project Implementation Duration	24 months
Project Target Group	Agricultural enterprises Paper and chemical industry enterprises
Relation to Sustainable Development Goals	SDG 9 – Industry, Innovation and Infrastructure SDG 12 – Responsible Consumption and Production
Relation to the Regional Plan	Strategic Priority 1: Ensuring the Green Transformation of Existing Economic Activities in İzmir Objective 1: Resource efficiency practices shall be expanded to facilitate a transition to green production models in the industrial and agricultural sectors.

PROFILE 9

Project Name	Sustainable Aviation Fuel (SAF) Production Waste Oils Preprocessing Facility Project
Project Theme	Manufacturing industry
Project Summary	In line with the relevant regulations of both the European Union and Türkiye, it has become mandatory to supply jet fuel with at least a 1% blend of Sustainable Aviation Fuel (SAF) for airline flights. Waste vegetable oils serve as the primary raw material for SAF production. This project aims to establish a preprocessing facility to collect waste vegetable oils and bring their physical and chemical properties to meet the criteria required for use as feedstock in refining facilities.
Sector	20 – Manufacture of chemicals and chemical products
Project Objective	The project aims to create infrastructure for the production of domestic feedstock required for SAF and to economically integrate waste vegetable oils, Türkiye's most critical feedstock for SAF production. By using sustainable aviation fuels produced from these wastes, the project will reduce the carbon footprint and support the manufacture of fuels compliant with European Union standards.
Significance for the Region	The vegetable oils to be used in the project include oils derived from seeds of oil crops such as olive, sunflower, corn, cotton, soybean, canola and safflower. İzmir has a high agricultural production potential for these products. Through the establishment of a preprocessing facility, waste vegetable oils that pose risks to public health and the environment will be efficiently collected and reintegrated into the economy. Additionally, İzmir is home to some of Türkiye's most significant refineries in the petrochemical sector, housing processing and filling facilities for petroleum and its derivatives. The manufacturing and recycling of chemical substances and products is "a sector with both high forward and backward linkages in İzmir's economy, marking it as a priority investment sector and key industry candidate."
Scale of Investment/Facility (Capacity)	Preprocessed Waste Vegetable Oil: 200,000 tons/year
Project Executing Body	Private sector
Implementation Location	İzmir
Total Project Budget/Fixed Investment Amount	20,250,000 USD
Projected Additional Employment	100 people (permanent employment)
Project Implementation Duration	24 months
Project Target Group	Agricultural enterprises Petrochemical industry enterprises Aviation enterprises
Relation to Sustainable Development Goals	SDG 9 – Industry, Innovation, and Infrastructure SDG 12 – Responsible Consumption and Production SDG 13 – Climate Action
Relation to the Regional Plan	Strategic Priority 1: Ensuring the Green Transformation of Existing Economic Activities in İzmir Objective 1: The transition to a green production model in industrial and agricultural sectors shall be achieved by promoting resource efficiency practices. Objective 2: Pollution and overuse of natural resources shall be prevented, ensuring the improvement of resources. Objective 3: The technical, administrative, and social capacities to support green transformation shall be developed.

PROFILE 10[11]

Project Name	Bearing Production Facility Project
Project Theme	Manufacturing industry
Project Summary	The project involves establishing a facility that will primarily produce bearings from the 6000 series.
Sector	28- Manufacture of machinery and equipment n.e.c.
Project Objective	The project aims to establish a facility for bearing production. Bearings, which are essential components in all fields where motion and energy transmission occur, are critical elements in machinery manufacturing. A significant portion of Türkiye's bearing demand is currently met through imports. Given the broad application range of bearings, domestic demand is expected to increase over time, making the establishment of a production facility to nationalize this production and reduce imports essential for the machinery and equipment manufacturing industry.
Significance for the Region	Bearings are used in a wide range of micro and macro equipment that produce motion, from wind turbines to automotive applications, robotics to micro-surgical equipment, household appliances to trains, fans to bicycles, and clocks to motors. They are thus a fundamental input of the manufacturing industry, with a wide range of applications. These sectors are also among those with a significant presence in İzmir in terms of workplaces and employment. In Türkiye, 476 companies operate under NACE code 28.15, which includes bearing production, 64 of which are located in İzmir. With the targeted industrial and manufacturing structure, İzmir stands out as an advantageous location for establishing a bearing production facility.
Scale of Investment/Facility (Capacity)	Bearing production (primarily 6000 series): 30 million units/year
Project Executing Body	Private sector

11 Detailed information regarding the investment opportunity in question can be accessed at https://www.yatirimadestek.gov.tr/ .

Project Name	Bearing Production Facility Project
Implementation Location	İzmir
Total Project Budget/Fixed Investment Amount	96,100,000 USD
Projected Additional Employment	850 people (permanent employment)
Project Implementation Duration	24 months
Project Target Group	Enterprises producing all types of machinery
Relation to Sustainable Development Goals	SDG 9 – Industry, Innovation and Infrastructure
Relation to the Regional Plan	Strategic Priority 3: Enhancing Social Resilience on the Basis of Sustainability Objective 4: Innovation and technology creation shall be developed, and the entrepreneurship ecosystem shall be strengthened to support transformation.

PROFILE 11

Project Name	International Geothermal Energy Research and Application Center Project
Project Theme	Clean energy, research and development
Project Summary	An innovative research center will be established in İzmir, a city with high geothermal energy potential and diverse application areas, in order to provide R&D and consultancy services at an international level. This center will conduct laboratory and field tests, support relevant institutions, organizations, and enterprises in innovative applications and sustainability, and serve as a pioneering research hub for geothermal energy studies.
Sector	72 – Scientific research and development activities 74 – Other professional, scientific, and technical activities 71 – Architectural and engineering activities; technical testing and analysis activities
Project Objective	The project aims to address issues within the geothermal energy sector, from geothermal fluid extraction to its usage, through an R&D-focused and innovative approach, and seeks to enhance the sustainability and efficiency of geothermal energy utilization while supporting Türkiye's development as an international hub for geothermal energy. The project will involve: ▸ Establishing laboratory infrastructure ▸ Setting up a Sample Preparation and Characterization Laboratory ▸ Conducting drilling activities ▸ Establishing an Energy Systems Application Laboratory ▸ Establishing a Modeling, Simulation, and Smart Monitoring Laboratory ▸ Creating the UJEM Center and integrating it into the Integrated Research Centers (TAM) System
Significance for the Region	Geoscientific data for İzmir highlight a high geothermal potential in the region, suggesting that the city could become a global model for geothermal resources. For the benefit of the regional economy and environmental sustainability, it is essential to use geothermal resources more effectively and responsibly. Conducting essential tests and analyses in the geothermal energy sector will support the efficient and responsible use of this energy type. This project will directly contribute to reducing import dependence, preventing foreign currency losses, and enhancing the production efficiency and competitiveness of domestic firms to the level of their international counterparts. In 2023 alone, over 1 billion TL was spent in the geothermal energy sector just on inhibitors. Developing these applications and reducing the costs of inhibitors, which are burdensome for the sector, is crucial. Additionally, effective use of residual heat energy will provide economic benefits to the sector. Furthermore, the development of drill pipes with innovative materials (such as composite materials) through this center is expected to contribute millions of dollars to both the regional and national economy.

Project Name	International Geothermal Energy Research and Application Center Project
Scale of Investment/ Facility (Capacity)	The center will include a 315 m² laboratory and a 25 m² office area. Additionally, geothermal energy application areas and research wells will be established as living laboratories, with the capacity and expertise to provide training, R&D and certification services to enterprises and organizations operating in geothermal fields both in Türkiye and internationally. Planned services to be provided at the center include: ▸ Number of enterprises bringing products to market through center services: 20 enterprises/ year ▸ Number of participants achieving "specialization" through Training Activities: 10 individuals/ year ▸ Number of enterprises achieving production increases in geothermal energy applications: 10 enterprises/year ▸ Number of companies accessing data to improve financing in geothermal application planning: 5 companies/year ▸ Number of enterprises reducing maintenance and repair expenses in geothermal applications due to preventive tests and analyses related to fluid characterization factors: 15 enterprises/year
Project Executing Body	Relevant universities
Implementation Location	İzmir
Total Project Budget/ Fixed Investment Amount	8,030,000 USD
Projected Additional Employment	10 people (permanent employment)
Project Implementation Duration	24 months
Project Target Group	The target group includes sectors generating energy from geothermal sources, sectors producing materials/equipment and developing technology for geothermal energy, companies needing qualified personnel in the geothermal field, entrepreneurs, researchers, academics and students.
Relation to Sustainable Development Goals	SDG 4 – Quality Education SDG 7 – Affordable and Clean Energy SDG 9 – Industry, Innovation, and Infrastructure SDG 13 – Climate Action SDG 17 – Partnerships for the Goals
Relation to the Regional Plan	Strategic Priority 1: Ensuring the Green Transformation of Existing Economic Activities in İzmir Objective 3: The technical, administrative and social capacities to support green transformation shall be developed. Objective 4: The share of clean energy production shall be increased, and its use shall be expanded.

PROFILE 12

Project Name	Furniture Waste Reuse and Recycling Center Project
Project Theme	Resource efficiency, waste management
Project Summary	A center will be established in İzmir's Karabağlar district, where the production of office, home and kitchen furniture is concentrated, to repurpose large-scale furniture wastes, items that have economic value yet involve high costs in collection, transport, recycling and disposal due to their complex composition and large size.
Sector	31. Manufacture of furniture 38. Waste collection, treatment, and disposal activities; materials recovery
Project Objective	The project aims to establish networks and infrastructure for collecting and refurbishing furniture waste, delivering it to households in need, processing unused parts and industrial waste, converting them into alternative raw materials, and developing capacity for furniture recycling.
Significance for the Region	Furniture production is concentrated particularly in the Karabağlar district of İzmir, where significant gaps exist in the processes of collecting, transporting, recycling and disposing of furniture waste. Collecting and refurbishing furniture waste, reusing items wherever possible, and especially providing them to individuals and families in need, along with processing unused parts and industrial waste to create alternative raw materials, will yield economic and social benefits for the region and set an example of best practices.
Scale of Investment/ Facility (Capacity)	The center will be established in a total enclosed area of 1,000 m^2, including workshops, working offices, and training halls.
Project Executing Body	Relevant local administrations
Implementation Location	İzmir
Total Project Budget/ Fixed Investment Amount	3,490,000 USD
Projected Additional Employment	50 people (permanent employment)
Project Implementation Duration	24 months
Project Target Group	The project's target group includes furniture manufacturing companies operating primarily within the Karabağlar district, furniture companies across all districts of İzmir, and individuals/families in need.
Relation to Sustainable Development Goals	SDG 1 – No Poverty SDG 9 – Industry, Innovation, and Infrastructure SDG 11 – Sustainable Cities and Communities SDG 12 – Responsible Consumption and Production
Relation to the Regional Plan	Strategic Priority 1: Ensuring the Green Transformation of Existing Economic Activities in İzmir Objective 1: Resource efficiency practices shall be expanded to promote a green production model in the industrial and agricultural sectors. Strategic Priority 3: Enhancing Social Resilience on the Basis of Sustainability Objective 3: The existing workforce capacity shall be increased, and working environments shall be improved.

PROFILE 13

Project Name	İzmir Cathode Active Material Production Facility Project
Project Theme	Manufacturing industry
Project Summary	Batteries are now used as an energy source in a wide range of devices, from wristwatches to mobile phones, laptops, and mobile vehicles. This project aims to produce cathode active material (CAM), a semi-finished product for battery manufacturers.
Sector	27 – Manufacture of electrical equipment
Project Objective	The objective of this project is to establish a facility for producing cathode active material, which serves as a semi-finished product in battery production. Recently, the global increase in electric vehicle sales has led to a rise in battery demand, highlighting the need for investment in this field.
Significance for the Region	Developing domestic capacity for mobile and stationary energy storage systems and achieving national self-sufficiency in production and design have become essential. Therefore, domestic production and nationalization of cathode active material, a key semi-finished battery product, is crucial. Given İzmir's comparative advantage in the clean energy and clean technology sectors, its R&D and production capabilities in electric transportation vehicle manufacturing and energy storage systems, and the chemical industry's regional concentration, this investment holds high potential for successful implementation.
Scale of Investment/ Facility (Capacity)	Cathode active material production: 10,000 tons/year
Project Executing Body	Private sector
Implementation Location	İzmir
Total Project Budget/ Fixed Investment Amount	47,200,000 USD
Projected Additional Employment	145 people (permanent employment)
Project Implementation Duration	12 months
Project Target Group	Battery manufacturers and all sectors utilizing batteries in their production processes
Relation to Sustainable Development Goals	SDG 9 – Industry, Innovation, and Infrastructure
Relation to the Regional Plan	Strategic Priority 3: Enhancing Social Resilience on the Basis of Sustainability Objective 4: Innovation and technology production shall be developed, and the entrepreneurship ecosystem shall be strengthened to support the transformation.

PROFILE 14[12]

Project Name	İzmir High Economic Value Industrial Dairy Products Production Facility Project
Project Theme	Manufacturing industry
Project Summary	Tthis project aims to produce high-value-added, economically significant dairy bioactive medium products, which are currently either not produced or only partially produced in Türkiye, as alternatives to traditional dairy products, in response to evolving dietary habits, food and health requirements, and technological advancements.
Sector	10 – Manufacture of food products
Project Objective	The objective is to establish a facility for producing products such as rennet casein, acid casein and whey protein concentrate, which are widely used in industries including sports nutrition, enteral nutrition and the food sector.
Significance for the Region	The growing global trend toward healthy and natural nutrition has fueled the expansion of the functional food market in recent years. According to TURKSTAT data, İzmir is Türkiye's third-largest region for milk production potential, with Küçük Menderes Basin possessing a particularly high raw milk production capacity. İzmir also ranks first in Türkiye in terms of government support for milk production. Establishing this facility is anticipated to substantially increase the value-added derived from dairy products in the region and enable access to a market with significant export potential.
Scale of Investment/ Facility (Capacity)	Industrial dairy products: 36,500 tons/year
Project Executing Body	Private sector
Implementation Location	İzmir
Total Project Budget/ Fixed Investment Amount	6,600,000 USD
Projected Additional Employment	94 people (permanent employment)
Project Implementation Duration	24 months
Project Target Group	Dairy product manufacturers, athletes, and individuals prioritizing healthy and natural nutrition
Relation to Sustainable Development Goals	SDG 3 – Good Health and Well-being SDG 9 – Industry, Innovation, and Infrastructure
Relation to the Regional Plan	Strategic Priority 1: Ensuring the Green Transformation of Existing Economic Activities in İzmir Objective 1: Efficiency in resource use shall be promoted to facilitate the transition to green production models in the industry and agriculture sectors.

12 Detailed information regarding the investment opportunity in question can be accessed at https://www.yatirimadestek.gov.tr/ .

PROFILE 15[13]

Project Name	İzmir Inverter Production Facility Project
Project Theme	Manufacturing industry, clean energy
Project Summary	Inverters are intermediate components widely used in clean energy investments. This project aims to produce inverters specifically for solar energy systems.
Sector	27- Manufacture of electrical equipment
Project Objective	The objective of the project is to establish a facility that will produce inverters for solar energy systems. For Türkiye, it is crucial to produce clean energy with domestically developed equipment. The primary purpose of this investment is to increase the share of domestically produced equipment in renewable energy systems. Producing such equipment with domestic engineering capabilities is of strategic importance for maximizing localization and reducing foreign dependency.
Significance for the Region	The clean energy and clean technology sectors hold strategic significance for İzmir. It is the only province in Türkiye with installed capacity across all four clean energy sub-sectors (wind, solar, geothermal and biogas). İzmir is also home to numerous firms and research centers focused on clean energy and technology. Its natural potential, coupled with its clustered clean energy sector, logistical and R&D infrastructure, skilled workforce, and the presence of major international companies, makes İzmir an ideal location for this investment. The establishment of a local inverter production facility of this scale is anticipated to positively impact numerous sectors by supplying inverters for renewable energy systems and various electric-powered applications.
Scale of Investment/ Facility (Capacity)	Inverter production: 960 MW/year
Project Executing Body	Private sector
Implementation Location	İzmir
Total Project Budget/ Fixed Investment Amount	5,215,000 USD
Projected Additional Employment	239 people (permanent employment)
Project Implementation Duration	12 months
Project Target Group	Businesses producing clean energy (particularly solar energy) systems
Relation to Sustainable Development Goals	SDG 7 – Affordable and Clean Energy SDG 9 – Industry, Innovation and Infrastructure
Relation to the Regional Plan	Strategic Priority 1: Ensuring the Green Transformation of Existing Economic Activities in İzmir Objective 4: The share of clean energy production shall be increased, and its use shall be expanded. Strategic Priority 3: Enhancing Social Resilience on the Basis of Sustainability Objective 4: Innovation and technology production shall be developed, and the entrepreneurship ecosystem shall be strengthened to support the transformation.

13 Detailed information regarding the investment opportunity in question can be accessed at https://www.yatirimadestek.gov.tr/ .

PROFILES OF SAMPLE PROGRAM IDEAS[14]

PROFILE 1

Program Name	Green and Blue Entrepreneurship Acceleration Program
Program Theme	Technology entrepreneurship
Program Objective	The program aims to facilitate new collaborations by connecting startups that develop or localize innovative techniques, technologies, processes, materials, automation solutions, software, and services in green and blue technologies with corporate actors who use these technologies. Through this program, a conducive environment is created to support various types of collaborations—ranging from joint R&D projects, service/product sales, and investments to technology licensing—between corporate actors and startups. Accepted startups participate in an online entrepreneurship boot camp and are then brought together with corporate actors such as large companies, investors, public institutions, municipalities and organized industrial zones at a demo day to present their innovative products/services.
Significance for the Region	The program will reinforce İzmir's established position as a successful cluster in clean energy and clean technologies and contribute to the transformation of İzmir into an attraction center for innovative technologies and entrepreneurs. Enhanced capacities and technological readiness among supported enterprises will positively impact the region's high-tech exports, while internationalization and networking activities will further bolster İzmir's profile. By focusing on green and blue growth, the program will support regional increases in R&D, innovation capacities, patenting, and the commercialization of patents, thus accelerating sustainable transformation through the expanded knowledge base. Through interactions and site visits with target markets identified through analysis, startups will experience increased capacity in accessing international finance, sales and marketing.
Program Priorities	Priority 1: Strengthening the innovation and entrepreneurship ecosystem in İzmir Priority 2: Reinforcing İzmir's position as a region that produces and exports sustainable technologies Priority 3: Establishing İzmir as a hub for technology entrepreneurs
Program Location	İzmir
Program Duration	60 months
Program Executing Body	İzmir Development Agency
Implementing Institutions/ Organizations	TÜBİTAK-TEYDEB: Partner within the GCIP Phase II Program TTGV: Collaboration within the HIT Program KOSGEB: Program announcement to entrepreneurs Technoparks / TTOs / TEKMERs / Incubation Centers: Program announcement to entrepreneurs Co-working spaces: Program announcement to entrepreneurs

14 These program concepts have been developed as examples with relevant stakeholders within the framework of socio-economic analyses and field studies conducted under the regional plan; however, they do not encompass all programs required for the implementation of the regional plans. Additionally, this program can only be implemented upon obtaining the necessary approvals within the scope of the applicable regulations governing the program topic.

Program Name	Green and Blue Entrepreneurship Acceleration Program
Support Types and Components	Participation support for Boot Camp and Demo Day (İzmir Development Agency) Grant support (İzmir Development Agency) Training and mentoring support (İzmir Development Agency) Legal and financial consultancy support (İzmir Development Agency) Academic entrepreneurship support (İzmir Development Agency) Office support (Technoparks, TEKMERs) Access to angel investors and venture capital networks (İzmir Development Agency)
Program Budget	1,745,000 USD
Relation to Sustainable Development Goals	SDG 7: Ensure access to affordable, reliable, sustainable, and modern energy for all SDG 8: Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all SDG 9: Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation SDG 11: Make cities and human settlements inclusive, safe, resilient, and sustainable SDG 12: Ensure sustainable consumption and production patterns SDG 13: Take urgent action to combat climate change and its impacts SDG 14: Conserve and sustainably use the oceans, seas, and marine resources for sustainable development SDG 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development
Relation to the Regional Plan	Strategic Priority 1: Ensuring the Green Transformation of Existing Economic Activities in İzmir Objective 3: The technical infrastructure, managerial, and social capacities to support green transformation shall be developed. Strategic Priority 2: Leveraging the Potential of the Blue Economy Objective 1: The sustainability of blue growth sectors shall be ensured, and the income derived from these sectors shall be increased. Strategic Priority 3: Enhancing Social Resilience on the Basis of Sustainability Objective 4: Innovation and technology production shall be developed, and the entrepreneurship ecosystem shall be strengthened to support the transformation.

PROFILE 2

Program Name	İzmir Venture Capital Fund (İzmir Fund)
Program Theme	Venture Financing
Program Objective	Venture capital is a collective investment tool used by investors aiming to achieve returns by investing in high-growth potential ventures through a professional fund manager. To increase venture capital investments, public institutions at both national and regional levels are establishing support programs using different models. To create and foster a venture capital ecosystem in İzmir, a comprehensive program will be designed. Within this framework, a regional venture capital fund (İzmir Fund) will be established, allowing corporate investors who meet specific criteria to participate. To encourage investor interest, financial interface models will be developed to facilitate public funds' direct or indirect (through "funds of funds") participation in the venture capital fund.
Significance for the Region	Venture capital funds in our country largely focus their investments in İstanbul, and İzmir currently lacks a comprehensive venture capital fund. However, İzmir hosts numerous technology ventures—particularly in blue and green technologies—that have surpassed the prototype stage yet face challenges in accessing finance for scaling and internationalization. By facilitating investment access for these early-stage ventures, the venture capital fund will encourage the formation of technology-focused clusters in İzmir, attract creative talent, foster knowledge and experience transfer, and increase employment.
Program Priorities	Priority 1: Establishing and developing a venture capital ecosystem in İzmir Priority 2: Positioning İzmir as an attractive destination for venture capital investors
Program Location	İzmir
Program Duration	60 months
Program Executing Body	İzmir Development Agency

Program Name	İzmir Venture Capital Fund (İzmir Fund)
Implementing Institutions/ Organizations	KOSGEB: Provide fund support to the program İzmir Metropolitan Municipality: Provide fund support to the program Technopark management companies: Provide fund support to the program Professional associations with public institution status: Provide fund support to the program Holdings/Companies: Provide fund support to the program Civil Society Organizations: Provide fund support and promotion/ announcement Banks, investors, venture capital investment partnerships, funds, and portfolio management companies: Provide fund support and professional fund management
Support Types and Components	▸ Financial support for establishing venture capital funds (İzmir Development Agency) ▸ Technical and financial support to prepare high-growth and export-potential entrepreneurs for investment (İzmir Development Agency, relevant local governments, technoparks, companies and civil society organizations) ▸ Technical and financial support to attract professional teams capable of establishing and managing venture capital funds to the region (İzmir Development Agency)
Program Budget	20,945,000 USD
Relation to Sustainable Development Goals	SDG 8: Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all SDG 9: Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation SDG 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development
Relation to the Regional Plan	Strategic Priority 3: Enhancing Social Resilience on the Basis of Sustainability Objective 4: Innovation and technology production shall be developed, and the entrepreneurship ecosystem shall be strengthened to support the transformation.

Bu kitabın basımında FSC® sertifikalı kağıt kullanılmıştır.

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