

FOR SMART SPECIALIZATION  
**East Marmara REGIONAL INNOVATION STRATEGIES**  
2014-2018

Kocaeli  
Sakarya  
Düzce  
Bolu  
Yalova

[www.dogumarmarabolgeplani.gov.tr](http://www.dogumarmarabolgeplani.gov.tr)



**MARKA**

DOĞU MARMARA  
KALKINMA AJANSI

***East Marmara Regional Innovation  
Strategies for Smart Specialization  
2014-2018***

[www.dogumarmarabolgeplani.gov.tr](http://www.dogumarmarabolgeplani.gov.tr)

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## Regional Vision

### **A Region of BRAND**

*IN SUSTAINABLE DEVELOPMENT AND GLOBAL COMPETITION*

*that capitalizes on its cooperation networks and its strategic location, and that is value generating with its diversified economy, and that shapes the future with its rich human potential, and that makes difference with the quality of life achieved therein, and that is innovative as well as human and knowledge oriented.*





### ***East Marmara Development Agency (MARKA)***

***is a typical Public Institution, vested with a special legal entity, prepares regional development strategies with providing coordination and cooperation between public sector, private sector and non-governmental organizations in its comprising five provinces (Kocaeli, Sakarya, Düzce, Bolu, Yalova), conducts works for the purpose of proper and effective use of resources and potentials of the region to accelerate the development of East Marmara and to strengthen its situation in global competitiveness.***

***Governors, Mayors, Provincial General Council Presidents and Chamber of Industry and Commerce Presidents of the provinces in the region, effectuate the Executive Board.***

***Development Council consists of the representatives of universities, public institutions, private sector and non-governmental organizations in the region and act as the Executive Board's advisory body.***

***Secretariat General, is the executive body of the Agency, carries out activities by qualified staff who has expertise in their fields, good command of foreign language and experienced public and private sector.***

***Provides coordination and cooperation among public sector, private sector, non-governmental organization and universities with the advantage of the legal basis and the power.***

***Prepare regional plan, determine regional development strategies, plans the regions future within the framework of the national development plan.***

***Provides financial support to entrepreneurs in line with these strategies.***

***Provides technical support for the development of public institutions and civil society organizations.***

***Guide entrepreneurs who want to invest in the region, follows the process in one-stop by the Investment Support Offices.***

***Promotes potentials, business and investment opportunities of the region on national and international platforms, directs investments to the region.***

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03





# 01

## Introduction

**Although logistic predominance and production costs has lost their significance in global production and value chain, innovative products and brand equities are always predominating elements.**

Dependence on location loses its significance rapidly in product and service flow throughout the world with the developing communication, transportation infrastructure and facilities. Competitive advantages and compatibility of labor markets arising from location of regions gradually give their place to improvement in production, technology, R&D and innovation.

Global trends such as increase of service sector share in developing countries, increase of demand for technological products, becoming prominent of healthcare field as a lifestyle and reverse of brain drain requires technological production, innovation in production and improvement of R&D and contributes importance to implementation of such activities at local level.

Although logistic predominance and production costs has lost their significance in global production and value chain, innovative products and brand equities are always predominating elements. Rather than the fact that the world has become smaller and every product has become producible everywhere, most innovative companies and leagues that produce a product in the best way have the most advantageous positions.

A single company remains incapable to become the most innovative and quickest manufacturer for a product or intermediate good. Instead, the fact that a region has clustered and specialized in a specific subject, in other words, that it hosts its manufacturers, Researchers and Developers, academy, competent public authorities and consultant organizations smartly specializes that region along with the demands and factor conditions.

### **Justification for Regional Innovation Strategy** **Regional Innovation Strategy is sub-strategy of East Marmara Regional Plan 2014 - 2023**

Increasing importance of information and creativity day by day in global production and value chain has required improvement of innovation and improvement of innovation has required a strategy framework. On the other hand, competitiveness of the regions around the world, particularly in the European Union, is in the agenda in the recent years. "Maintaining Regional Development" is adopted as one of the economic and social development axes in 9th Development Plan in Turkey and Development Agencies has been established on basis of level 2 regions. With the contribution of importance by these developments to regional development and planning activities, intersection of these two subjects has initiated development of regional strategies.

Global actors such as Europe, America, China, and India have pioneer positions in shaping the world economy. Competitive strategy of China and India basing on low-cost labor and view of America and Europe the strategies focusing on informatics, energy efficiency and bio- and nanotechnology as the primary areas directly affect production strategies of developing countries.

Innovation is deemed as the key factor of economic and social development by the international platform, particularly United Nations, World Bank and European Union. Main risks while allocating resources for innovation on regional and national basis are the consideration for the sectors with powerful lobbies and the sectors defined in environments where differentiation cannot be ensured due to patterning the strategies of other regions or countries.

To prevent this, innovation strategies that analyze international trends well, that well know and interpret the preferences of the region, expanded and adopted by participation of all shareholders are a requirement for management of efficient resource management and a must for benefiting from foreign funds.

In line with all these inputs, providing smart specialization and development of pioneer sectors within a sustainable innovation system in East Marmara Region appears to be a requirement. For this reason, East Marmara Region Innovation Strategy has been prepared.



## Conceptual Framework

### Smart Specialization

Smart specialization has settled in the center of economic development and growth policies in the European countries in the recent years. This concept is regarded by the European Commission as the mainmast of Europe 2020 strategy. Smart specialization, suggested by Dominic Foray and Bart van Ark for the first time to fill in the blanks in transatlantic productivity, has been developed by expert group of "Knowledge of Growth", particularly by Paul David and Bronwyn Hall. Smart specialization has two main approaches away from standard economic growth models; first is innovation logic and the other is system mechanism.

Smart specialization according to OECD is a concept that does not fit to the leading information regions but to the regions where SMEs are dominant rather than international companies where the sector is relatively less apparent. On the other hand, smart specialization at regional scale and determination of policies depending on it in non-internationalized and isolated regions will have limited effect<sup>2</sup>.

### Innovation

Innovation is defined in Oslo Manual as "the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations."

1911, Schumpeter:

Innovation is the propulsive force for economic development...

### Regional Innovativeness

Many sectors that cannot come into prominence at the national scale and cannot be addressed as a whole holistically at the regional scale can be addressed by means of smart specialization by handling at regional level. Although sectoral aggregations are independent from administrative borders, regions in the locations even where their regions are not identified with administrative borders can be more outward oriented than countries, particularly Turkey.

Smart specialization is related to potentials of the region and which of the potentials will be implemented and is regarded as the key factor of Regional Policies in the European Union. US President Obama also state that growth strategies of his country will be location-based (21 June 2010), this subject has been put into agenda of OECD and regions have been separated as information regions, production regions, and not science and technology oriented regions.

### Scope

East Marmara TR42 Region (Kocaeli, Sakarya, Düzce, Bolu and Yalova) is the area where regional innovation strategy is planned. All financial branches that are active in the region and their relations with each other have been assessed in determination of strategic sector and specialization area. On the other hand, organizations and businesses outside the region that affect innovation ecosystem of East Marmara have also been dealt within the system.

### Method

Roadmap recommended in Manual "Regional Research and Innovation Strategy (RIS3)" within the scope of European Union Regional Policies draws the basic framework of East Marmara Innovation Strategy. The process has been performed in the following steps:

- 1-Analysis of Regional Conditions and Innovation Potential
- 2-Governance: Provision of Participation and Possessiveness

- 3-Preparation of Comprehensive Vision for the Future of the Region
- 4-Determination of Priorities
- 5-Preparation of Intercompatible Policy, Roadmap and Action Plan
- 6-Integration of Monitoring and Evaluation Mechanisms

### 1-Analysis of Regional Conditions and Innovation Potential

Presenting regional differences is in the center of strategy creation process. Information and data are compiled and innovative infrastructure of the region, problems and obstacles, potentials and opportunities are tried to be presented by means of desk researches, questionnaires with broad participation, interviews and meetings, and evaluation of workshops and previously implemented similar activities.

As potential and preferences of the region as well as international positioning are deemed as the requirement of smart specialization, they are addressed on the basis of the region and sectors.

Firstly, existing situation analyses and sectoral priorities are tried to be detected by considering all bodies included in the innovation ecosystem on national and regional basis in determination of innovation indicators and the data produced by them.

In this scope, following data and information have been compiled and analyzed:

### Ministry of Science, Industry and Technology

- \* Information related to the projects applied to and approved by SANTEZ program
- \* Information and employee numbers of private sector R&D centers
- \* Information related to technology development regions
- \* Information related to projects benefiting from techno-initiative capital support
- \* Information related to projects supported by EIP program
- \* Efficiency Statistics (VGM)
- \* Information related to projects supported within the scope of CIP program



<sup>1</sup>Philip McCann and Raquel Ortega-Argilés, *Smart Specialisation, Regional Growth and Applications to EU Cohesion Policy*, 2011, pg 5

<sup>2</sup>Philip McCann and Raquel Ortega-Argilés, *Smart Specialisation, Regional Growth and Applications to EU Cohesion Policy*, 2011, pg 18

<sup>3</sup><http://s3platform.jrc.ec.europa.eu/s3pguide>



### **East Marmara Development Agency**

- \* Region Plan statistics
- \* Information related to the projects supported in R&D and Innovation Financial Support Program

### **Ministry of Economy**

- \* Direct foreign capital inflow and sectoral distribution
- \* Investment incentive certificate statistics and sectoral distribution
- \* Sectoral export statistics

### **KOSGEB (Small and Medium Industry Development Organization)**

- \* Number of applications to – approvals by R&D, innovation and industrial implementation support in the region and sectoral distribution of them
- \* Distribution of organizations applying for support and benefiting from the support according to provinces and sectors

### **Ministry of Finance**

- \* Number of Taxpayers Benefiting from R&D Discounts and Amount of Discount

### **OSBÜK (Senior Institution for Organized Industrial Zones)**

- \* Information related to organized industrial zones
- \* Sectoral distribution in organized industrial zones

### **Social Security Institution**

- \* Employment statistics and sectoral distribution
- \* Workplace statistics and sectoral distribution

### **TÜBİTAK (Scientific and Technological Research Council of Turkey)**

- \* General R&D and innovation indicators
- \* Information related to R&D, technology and innovation projects implemented with support of TUBITAK in the region
- \* Statistics of researches registered to ARBİS
- \* Information related to TEYDEB projects (budget, subject, sector)
- \* Information related to TEYDEB R&D projects
- \* Information related to projects supported within the scope of framework programs

### **Turkish Patent Institute (TPE)**

- \* Patent statistics and sectoral distribution
- \* Useful model statistics and sectoral distribution
- \* Geographical marking statistics
- \* Brand statistics

### **Turkish Exporters Assembly**

- \* Sectoral export statistics

### **Turkish Statistical Institute**

- \* Regional indicators
- \* R&D and Innovation statistics

### **Turkish Foundation for Development of Technology**

- \* Information related to the projects supported in the region

### **Universities and YÖK (General Directorate of Higher Education Credit and Hostels Institution)**

- \* Area-subject distribution and numbers of Academic units (Department, Faculty, Institute, College, Vocational High School)
- \* Area-subject distribution of the students
- \* Area-subject distribution of number of academicians
- \* Distribution of European Commission, DPT, BTSB, MARKA, CFCU, Municipality, etc. supported technology, R&D and innovation projects prepared or partnered by the university
- \* Sectoral distribution of publications issued addressing the university

(article, letter, meeting abstract, proceedings paper, review)

- \* Index distribution of foreign scientific publications issued addressing the university according to faculties
- \* Information related to research centers and laboratories of universities
- \* Share allocated for scientific research projects
- \* Information related to common activities implemented with private sector
- \* Information relating to technology transfer offices
- \* Information related to technology development regions of universities

### **Other**

- \* Central and State Institutes and Research Centers in the Region (GTHB)
- \* IT companies in the region (TÜBİDER)

## **2-Governance: Ensuring Participation and Ownership**

Most important subject that will ensure a realistic and applicable regional innovation strategy is well establishment of governance. Quadruple helix structure was adopted that includes the society into the process rather than triple helix model was used in the preparation process.

Opinions of the actors outside the region that have interdisciplinary knowledge and experience in comparison of opinions of persons competent in their specialization fields were benefited in building governance.

Universities, technology development areas, technology transfer offices, research centers and institutes as well as trade and industry chambers that are settled in the region and that create the basis of innovation were addressed as the main elements of governance. Regional Innovation Committee and Regional Innovation Advisory Committee were established by participation of the representatives from these organizations.





## Regional Innovation Strategy Senior Advisory Board

Institution	Title	Name
Gebze Institute of Technology	Vice Rector	Prof.Dr. Arif ERGİN
Kocaeli University	Vice Rector	Prof.Dr. Ali DEMİRCİ
Sakarya University	Rector Vice Rector	Prof.Dr. Muzaffer ELMAS Prof.Dr. Fatih ÜSTEL
Düzce University	Consultant to Rector Academician	Doç.Dr. Serkan SUBAŞI Yrd.Doç.Dr. Arif ÖZKAN
Bolu İzzet Baysal University	Vice Rector Vice Rector Academician	Prof.Dr. Cabir TERZİOĞLU Prof.Dr. Kenan GÜMÜŞTEKİN Prof.Dr. İbrahim ÇAKIR
Yalova University	Chief of Dept of Energy Sys.	Prof.Dr. Fikret YÜKSEL
Regional Directorate of TurkStat	Specialist Specialist	Muzaffer AKINCI Ensari CEYLAN
Kocaeli Chamber of Commerce	Member of Board Member of Board	Halil KODAL Zihni YILMAZ
Kocaeli Chamber of Industry	Vice Secretary General	Elif BİLGİSU
Sakarya Chamber of Commerce and Ind.	Manager of Industry - SME - R&D	Fikret YURTSEVER
Yalova Chamber of Commerce and Ind.	Secretary General	Taner ERİŞ
Düzce Chamber of Commerce and Ind.	Secretary General	Tuncay YÜKSEL
East Marmara Development Agency	Secretary General	Dr. Fatih AKBULUT

## Technical Committee Meeting for Regional Innovation Strategy

3 meetings were held by participation of the organizations that work on innovation in the region to discuss the progress method of the process and data sets in TÜBİTAK and MARKA.

Institution	Title	Name
TÜBİTAK* UEKAE**	Researcher	Dr. Salih ERGÜN
TÜBİTAK	Prog. Manager for EU Projects	Alper KANAK
Sakarya Technopark Inc.	General Director	Tunahan KIRKTEPELİ
TÜBİTAK Bilgem***	Tech. Transfer Office Director	Yücel BİCİL
Sakarya University	Academician	Yrd.Doç.Dr. Yavuz SOYDAN
Kocaeli University	Tech. Transfer Office Director	Prof.Dr. Zafer Bingül
Kocaeli University	Tech. Transfer Office Director	Araş.Gör. Cenk ERKİN
East Marmara Development Agency	Head of Unit	Candan Umut ÖZDEN
East Marmara Development Agency	Specialist	Hüseyin Özgür ÜNSAL

\*The Scientific and Technological Research Council of Turkey

\*\*National Research Institute of Electronics and Cryptology

\*\*\*Informatics and Information Security Research Center



### **Regional Innovation Questionnaire**

Regional innovation questionnaire was conducted at different platforms to increase participation. The segment represented in the questionnaire, region positioning, holders of innovation potential among prioritized sectors, subjects recommended to focus for scientific research, important problems of the region in terms of R&D, technology and innovation and matters negatively affecting innovation capacities of the organizations were asked as the suggested subjects that need to be addressed firstly.

### ***3-Production of a Shared Vision About the Future of the Region***

Creating a vision that establishes a future fiction for the desired region and ensuring adoption of this vision by managers and all shareholders constitutes the upper scale step for implementation of strategies. Importance was imposed on presentation of opinions of all segments in creation process in line with the realities revealed by the data. In addition to region vision, an innovation vision was created considering the activities performed by SRI in 2012.

### ***4-Determination of Priorities***

Priorities have been determined in compliance with the upper scale plan and policies and in line with the region potentials according to the defined vision. Implementable strategies based on specific sector and technology and oriented to implementation have been created. Predominant sectors and region-specific general subjects were considered when determining the priorities.

### ***5-Definition of Coherent Policy Mix, Roadmaps and Action Plan***

Each strategy should be put into practice by determining a roadmap. Action plan and pilot projects are important issues in putting the strategies into practice. Implementation power and financing facilities should be paid attention in this step. Besides, monitoring and evaluation of successes and effects of pilot projects are also compulsory in terms of each general strategy. Intercompatible policy and roadmap have been prepared considering these issues.

### ***6-Integrating of Monitoring and Evaluation Mechanisms***

Activities performed in each step and for each step should be monitored and reported to evaluate implementation of the strategies. Attention is paid in this stage for using the lessons learnt from previously performed activities.





# Regional Infrastructure Analysis for Innovation Based Differentiation

**Policies on innovation are generated in almost all of the international organizations and unions intensively affected by Europe and America and this subject is evaluated as the most critical element in terms of economic development.**

When analyzing the innovation infrastructure in the region, R&D, technology and science production and use and innovation infrastructure as well as these practices focused on which subsectors and science branches have been examined. The reason for it is to ensure stepping forward of the region in the fields in which it is superior or it has the potential to be superior, in other words to ensure its smart specialization.

In this framework, various data analyses have been performed in accordance with international, national and regional plans, policies, programs and strategies. On the other hand, targets of the fields which will become prominent by means of internationally positioning of the region have been tried to be revealed.

All these inputs have been designed as a guide for the strategies that have been determined commonly in the region by public and local governments, universities and related research units and private sector representatives that are outstanding in R&D, technology and innovation fields

## Upper Scale Policies

Many plans, programs and roadmaps obtained from global, Europe, Turkey and East Marmara Region scales have been effective in creation of the requirement for and establishing systematic of Regional Innovation Strategy.

### *International Plans and Policies*

Policies on innovation are generated in almost all of the international organizations and unions intensively affected by Europe and America and this subject is evaluated as the most critical element in terms of economic development.

#### *World Bank*

Innovation Policy document prepared by the World Bank in 2010 draws a conceptual framework for supporting development by means of improvement of innovation in developing countries. Public organizations and governments are defined as gardeners in development of regions and countries and it is suggested that they should play the leading role in shaping innovation policies. Informatics and R&D are regarded as the most important recovery tool in eliminating economic crises.

#### *Organization for Economic Cooperation And Development (OECD)*

OECD examines innovation structures of regions and is more interested in outputs of the regions at international scale and usage areas of products and services produced in that regions. When performing these activities, it analyzes the regions through local teams, performs SWOT analyses, has negotiations with local public and private sector representatives and evaluates regional strategies. At the end of the process, it develops suggestions both for the region and for global-scale companies and carries on activities for expanding examples of good practice.



### *Lisbon Strategy*

Strategies for addressing information and research as the locomotive of economic development of Europe and for shaping structural funds were adopted with the document put into practice in 2000 as the development plan that determines restructuring of the economy of the EU and general perspective the EU

### *EU Cohesion Policies, Europe 2020 Strategy, Horizon 2020 and Smart Specialization Forum*

Its main purpose is to promote establishing interregional learning relations and creating regional innovation systems rather than sectors. It was prepared as the general strategy of Europe as the roadmap for implementing smart, sustainable and comprehensive growth. Europe 2020, which provides a strategic and integrated approach to innovation, aims to maximize research and development potential of Europe. After putting "Innovation Union Flagship" initiative in 2010 into practice, innovation strategy of Europe has been addressed through the foundation of smart specialization. It is aimed to establish coordination and cooperation between different countries and regions of Europe by evaluating the capacities of these countries and regions with participation of all actors on national and regional basis for this holistic purpose.

It is stated in the strategy document that **"regions should position themselves in Europe scale and global economy setting off with their superiorities and it is required to create regional innovations strategies that help them how to enter into cooperation and collaboration with which regions and in which subjects"**. In the same document, smart specialization is regarded as the key for innovation policies.

It is suggested as ex-ante that funds of European Regional Development Fund (ERDF) will be allocated for use in R&D, technology and innovation, supporting SMEs, energy efficiency and renewable energy fields with ratios of 80% in developed regions and 50% in less developed regions, relatively.

### **National Plans and Policies**

#### *10th Development Plan (2014–2018)*

One of the main topics of Tenth Development Plan has been determined as "Innovative Production, Steady Growth". Following policies have been designed in R&D and innovation fields in the plan:

- \*Research centers within universities and public organizations will be transformed into sustainable structures that operate in close cooperation with private sector, have qualified workforce, provide uninterrupted service for all researchers and are managed effectively.

- \*R&D and innovation programs that will reveal new competitive sectors, products and brands with high added value at international level will be put into practice.

- \*Innovation system will be transferred into a structure that centers cluster approach and entrepreneurship.

- \*Coordination will be ensured in R&D supports and existing support programs will be reviewed by means of impact analysis. R&D activities will be supported in holism approach pursuing the market conditions in a way that will include commercialization within the framework of common targets to be created in the prioritized areas.

- \*R&D and innovation activities oriented at development of technologies and high value added green products that will ensure effective use of natural resources and prevention of environmental deteriorations particularly in

energy and manufacturing industry will be supported.

- \*Efficiency of structure and operation of technology development areas will be increased to maximize university – industry cooperation, inter-organizational common R&D and innovation activities and innovation entrepreneurship.

- \*It will be endured that research centers, incubator centers, technology transfer and innovation centers and technology development regions will be focused on specific areas and will operate in integration with each other and support of these structures to relevant cluster activities will be encouraged.

- \*Precautions will be taken and interfaces will be created to ease and promote the cooperation between universities and private sector. In this framework, encouraging R&D and entrepreneurship activities of academic members and students will be paid attention in restructuring the higher education.

- \*Number and quality of researcher manpower will be increased more and promoting employment of researchers in the private sector will continue.

- \*Training of competent researchers in basic and social sciences will be supported, and number and quality of the researches in these fields within the bodies of universities and public institutions will be increased.

- \*Public procurement system will be improved in a way that it will promote innovation, localization, environmental awareness, technology transfer and innovative entrepreneurship.

- \*Capacities of public organizations towards routing R&D activities and implementing results of such activities in cooperation with private sector will be strengthened.

- \*Regional and global cooperation will be developed in terms of R&D activities, research infrastructures and researcher manpower. In this scope, attention will be paid to easing and internalizing transfer of critical technologies and developing it competitively with similar technologies in the world.

#### *9th Development Plan (2007–2013)*

In the Ninth Development Plan, "Improvement of R&D and Innovation" strategy is defined under the axis of improvement of competitiveness among economic and social development axes. The trend towards the structures that brings information-orientation and high added value in goods and service production as one of the global developments and trends and the necessity to develop the human and technological infrastructure in parallel with this are mentioned in this plan. It is detected in the plan that nano and biotechnologies become prominent specifically.

Scarcity of effective cooperation between industry and academy, low share in R&D spending, lack of adequate support for interdisciplinary projects and low benefiting rate from R&D projects stand out as the main identifications in this field.

Increasing the share allocated for R&D, spreading academic studies on industry needs, supporting technology-oriented entrepreneurship, developing research and development infrastructure, strengthening human resource and increasing cooperation at international level are aimed. Nanotechnology, biotechnology, new generation nuclear technologies and hydrogen and fuel cell technologies, defense industry, vaccine and anti-serum, information and communication as well as space technologies are determined as the prioritized areas.

In addition, the necessity to increase innovation culture and infrastructure in SMEs and in the public mentioned in the Report of Industry Policies and Regional Development Specialization Commission are presented as inputs to this plan.

<sup>4</sup>Innovation Union Flagship



## National Science, Technology and Innovation Strategy 2011-2016

The strategy document that presents the vision of “Turkey that can transform the information it generates and technologies it develops into products, processes and services for the benefit of the country and humanity” covers scientific, technological and innovation strategy of the country as a follow-up of BTP-UP. Strategic purposes of the plan are as follows:

### Vertical Axes

- \* Target-Oriented Approaches in the Areas where R&D and Innovation Capacities are Strong
- \* Need-Oriented Approaches in the Areas where R&D and Innovation Capacity should gain speed
- \* Bottom-to-up Approaches in Development of R&D and Innovation Capacity

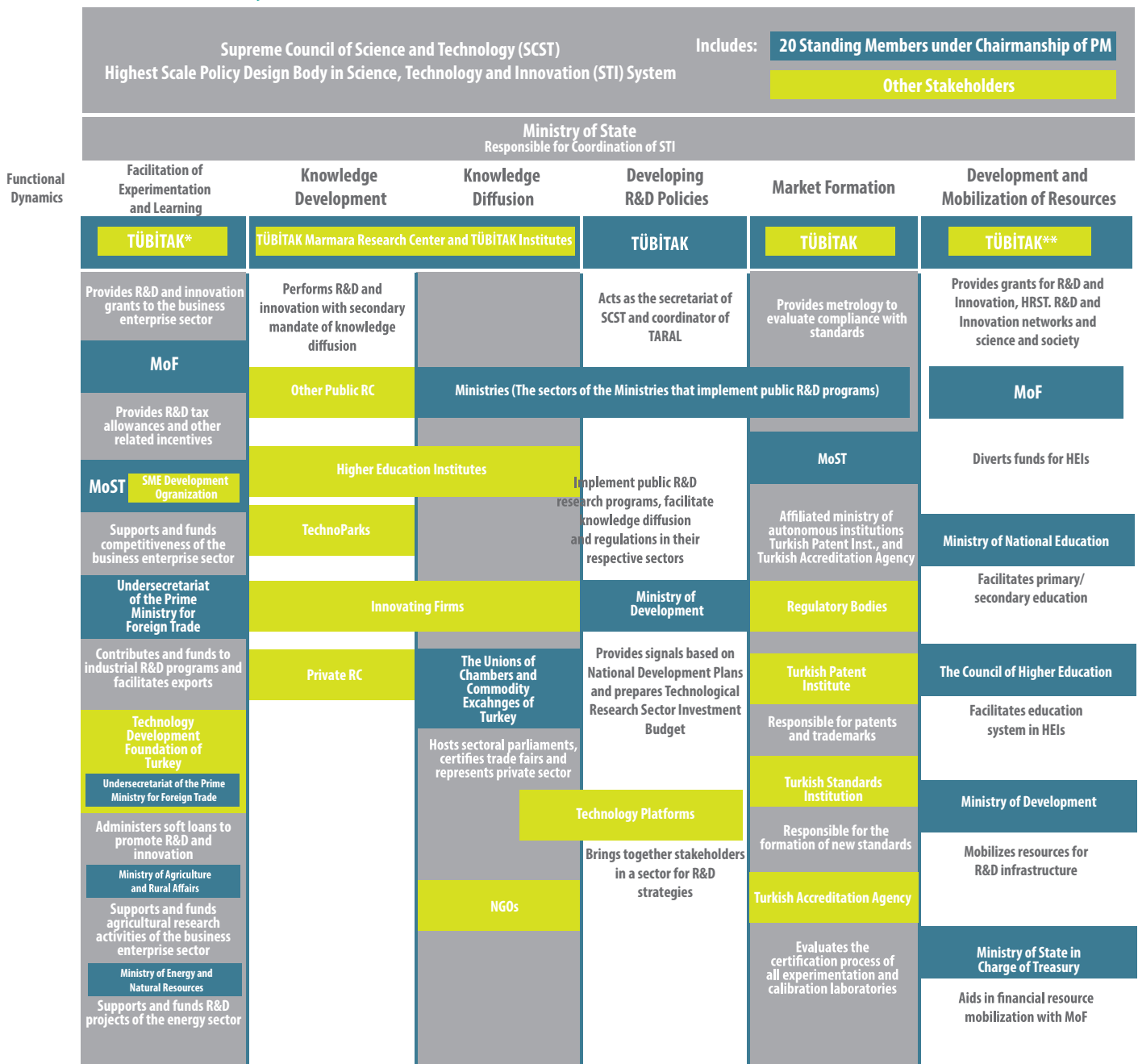
### Horizontal Axes

- \* Developing BTY Human Resources
- \* Promoting Transformation of Research Results into Commercial Products and Services
- \* Spreading Multi Partnered and Multi-Disciplinary R&D Cooperation Culture
- \* Strengthening the Roles of SMEs in National Innovation System
- \* Increasing Contribution of Research Infrastructures to Information Generating Power of TARAL
- \* Activating International BTY Cooperation in line with the Benefits of our Country

Primary fields in which R&D and innovation capacities are strong in the region are listed as “Motor Vehicles and Trailers Manufacturing (Automotive)”, “Manufacture of machinery and Equipment Not Elsewhere Classified” and “Information and Communication Technology (ICT)”.

Figure 1

## Structuring of R&D and Innovation System of Turkey according to Fundamental Dynamics



Source: National Science, Technology and Innovation Strategy, 2011-2016 – TÜBİTAK

SCST Permanent Member Other Stakeholders



In this strategy document prepared by TÜBİTAK, all bodies taking place in the innovation ecosystem are defined and they are categorized according to their tasks and functional dynamics. In this ecosystem, Ministry of Finance; Ministry of Science, Industry and Technology and KOSGEB; Ministry of Economy and TTGV as well as TÜBİTAK provide support and incentive for easing experiments and learning. TÜBİTAK MAM and other institutes, university and technoparks, private sector and R&D centers of them carry out activities in production of information. Universities, private sector and TOBB and NGOs are also active in spreading generated information. Ministry of Development and development agencies and technology platforms take role in determination of R&D and innovation policies on national and regional basis besides TÜBİTAK. Ministry of Science, Industry and Technology and its sub-bodies alt and TÜBİTAK UME and regulative organizations take place in setting up the market. TÜBİTAK, Ministry of Finance, Ministry of Development and Ministry of National Education carry out activities in terms of making resources effective.

### Higher Education Strategy of Turkey

It has been prepared as a frame for higher education of the country by recognizing the global trends by Council of Higher Education (YÖK). Importance of raising manpower for significance of information society and knowledge economy and setting up the programs according to the long range requirements in the scale of the region in compliance with the innovation systems is defined in the strategy. Importance of technoparks and technology development regions in terms of innovation and recommendations that support activities of universities towards industry needs are included in the document.

### Science and Technology Human Resource Strategy 2011-2016

Following strategies are defined in the document that has the vision of "Turkey that has high competitiveness in terms of IT Manpower in international arena and has become center of attraction":

- \* Increasing IT-HR Number and Improving Sectoral Distribution
- \* Improving Research Culture and Skills and Experiences of Researchers
- \* Improving Working Environments of IT-HR Personnel
- \* Increasing Circulation of Researchers
- \* Improving Employment Capacity of R&D Personnel

### SME Strategy 2011-2013

Strategy and Action Plan (KSEP) has been prepared within the framework of the provision "Development and Implementation of a national SME strategy compliant with Europe Small Business Act and Multi-Year Program for Business and Entrepreneurship" included related to SMEs in the Accession Partnership Document. 4th purpose of the strategy is defined as "Development of R&D and innovation capacity of SMEs" and following targets have been determined:

- \* Raising awareness and supporting activities of SMEs in terms of R&D, innovation and design
- \* Creating support mechanisms through commercializing of R&D and innovation projects
- \* Increasing cooperation between SMEs and Large Scale Enterprises and universities

### Industry Strategy of Turkey 2011-2014

Long-term vision of Turkey Industry Strategy has been determined as "to be the manufacturing base of Eurasia in terms of medium and high technology products". Within the framework of this vision, main purpose of Turkey Industry Strategy covering the years 2011-2014 is determined as "increase competitiveness and efficiency of Turkish industry and, by this means, to speed up transformation into a structure that has more share from world export, where high value added and advanced technology products are manufactured predominantly, that has qualified labor and that is sensitive to society and environment."

In this strategy where the approach for information and technology oriented industry production and R&D and innovation encouraging is adopted, automotive, machinery, white appliances, electronics, iron and steel, wood processing, paper and furniture as well as chemical industry are prioritized, and it is aimed to be manufacturing center of Turkey particularly in automotive, white appliances, machinery and electronics industries.

### Regional Plans and Policies

#### East Marmara Region Plan 2014-2023

Sub-zones are created in 3 different characteristics on the basis of districts within the region in 2014-2023 Region Plan. Global Sub-Zone where production is performed with high added value, export oriented and medium-advance technology level, Dynamic Sub-Zone where low labor is predominant and production is performed with less added value, and Environmental Sub-Zone of which basic characteristic is rural area have been defined. Various strategies have been defined under Learning Region, Livable Region and Competitive Region axes at different priority levels in these sub-zones.

Purposes of "Ensuring Smart Specialization" and "Switching to High Value Added, Innovative and Technology Oriented Products and Services" are among the purposes of Competitive Region axis among the defined strategies. Firstly, the strategies that are planned for implementing in the Dynamic Sub-Zone are given in the figure 2.

Figure 2

#### Purposes and Tools of Competitive Region

AXIS 2. COMPETITIVE REGION (CR)				
AIM 1. ENSURING SMART SPECIALIZATION				
TOOLS	CR.1.	Focusing on prominent sectors in the Region	Global	Prior Sub-Regions
	CR.2.	Shaping tourism over regional potentials and target groups	Surround	
	CR.3.	Ensuring branding and innovation in regional agricultural products	Surround	
	CR.4.	Developing collaboration and clustering in prominent fields	Global	
	CR.5.	Accelerating target market based internationalization	Global	
	CR.6.	Determining promising new production, service and employment areas	Dynamic	
AIM 2. TRANSITION TO HIGH VALUE ADDED, INNOVATIVE AND TECHNOLOGY BASED PRODUCTS AND SERVICES				
TOOLS	CR.7.	Increasing R&D and innovation activities and developing technopreneurship	Global	Prior Sub-Regions
	CR.8.	Promoting academia - industry cooperations	Global	
	CR.9.	Developing innovation management sector	Global	
	CR.10.	Transition to clean production and ensuring green growth	Global	
	CR.11.	Increasing intersectoral interactions	Global	
	CR.12.	Supporting local brandization, increasing intellectual, industrial and commercial property right ownership	Global	
	CR.13.	Ensuring yieldance and high quality in agriculture	Surround	

Source: East Marmara Region Plan 2014-2023



### East Marmara Region Plan 2010-2013

BRegion Plan is the plan that has been prepared to determine the correlation between national policies, plans and strategies and the activities that will be implemented at regional and local level; reinforce cooperation and coordination between organizations and enterprises; improve cooperation between public section, private section and nongovernmental organizations; speed up and ensure sustainability of regional development; provide correct and effective usage of resources; actualize local potential; and form a basis for regional programs and projects, and that determines socioeconomic development trends and development potential of settlements at regional level. It has been prepared by East Marmara Development Agency with the authorization granted by the Ministry of Development as per Article 8 of Physical Development Planning Law No. 3194.

In the plan, clustered sectors in terms of added value and efficiency and added value – growth rate of these sectors are determined.

In purpose 1.2 of the plan, “Increasing competitiveness of enterprises by means of innovation, advanced technology usage and developing quality” is adopted. In this scope, it is aimed to increase production capacity and efficiency and to raise production, management and service quality up to international standards by means of encouraging technology usage, R&D and innovation activities of the sectors carrying out business in the region.

In addition, it is planned to prioritize the projects basing on cooperation between goods and service producing organizations and information generating organizations by developing R&D and innovation activities in the detected clusters. Finally, product quality and variety, new product creation, new model design and obtaining patent are defined in the Plan where international standardization activities will be supported.

<b>Turkey</b>	<b>0.85 %</b>
<b>Romania</b>	<b>0.48 %</b>
<b>Bulgaria</b>	<b>0.53 %</b>
<b>Hungary</b>	<b>1.15 %</b>
<b>Russia</b>	<b>1.18 %</b>
<b>China</b>	<b>1.54 %</b>
<b>EU average</b>	<b>2.01 %</b>
<b>France</b>	<b>2.21 %</b>
<b>US</b>	<b>2.77 %</b>
<b>Germany</b>	<b>2.82 %</b>
<b>Japan</b>	<b>3.44 %</b>
<b>Finland</b>	<b>3.93 %</b>
<b>Israel</b>	<b>4.27 %</b>

**Figure 3**  
**Share of R&D Expenditures in GDP**

### ■ Innovation Indicators

#### Performance of Turkey

When ratio of R&D expenditures to gross domestic product is analyzed, Turkey is far behind EU average and countries such as Japan, Israel and USA with a rate of 0.85%.

<b>Turkey</b>	<b>10.2 %</b>
<b>Romania</b>	<b>7.9 %</b>
<b>Bulgaria</b>	<b>5 %</b>
<b>Hungary</b>	<b>5.9 %</b>
<b>Russia</b>	<b>6.2 %</b>
<b>China</b>	<b>17.7 %</b>
<b>EU average</b>	<b>2.5 %</b>
<b>France</b>	<b>1.3 %</b>
<b>US</b>	<b>2.4 %</b>
<b>Germany</b>	<b>2.1 %</b>
<b>Japan</b>	<b>3.4 %</b>
<b>Finland</b>	<b>3.3 %</b>
<b>Israel</b>	<b>2.8 %</b>

**Figure 4**  
**Increase in Share of R&D Expenditures in GDP**

However, when the increase in shares of R&D expenditures is analyzed, Turkey shows a quite rapid improvement and is the second country after China with the rapidest improvement among the others. Additionally, a period of 25 years is required to reach 3% with current increase rates.



<b>Turkey</b>	<b>41.0 %</b>
<b>Romania</b>	<b>34.8 %</b>
<b>Bulgaria</b>	<b>30.6 %</b>
<b>Hungary</b>	<b>46.4 %</b>
<b>Russia</b>	<b>26.6 %</b>
<b>China</b>	<b>N/A %</b>
<b>EU average</b>	<b>54.8 %</b>
<b>France</b>	<b>50.7 %</b>
<b>US</b>	<b>67.3 %</b>
<b>Germany</b>	<b>67.3 %</b>
<b>Japan</b>	<b>78.2 %</b>
<b>Finland</b>	<b>68.1 %</b>
<b>Israel</b>	<b>79.5 %</b>

**Figure 5**  
**Share of Private Sector in R&D Expenditures**

When sources of R&D expenditures are analyzed, a percentage of 41% in Turkey is performed by the private sector. This share is between 55% and 80% in other countries and EU average.

Macro and meso data are evaluated to examine infrastructure and determine niche areas of East Marmara Region. Sectors and breakdowns in which the region is strong in the field of innovation were tried to be determined in line with the data such as sectors clustered in the region, growth rates of these sectors, added value and efficiency relations, R&D and innovation indicators, R&D budget shares, foreign trade and foreign R&D relations, personnel structure, academic indicators, R&D shares in public investment and expenditures, benefiting status from R&D and innovation supports.





## General Indicators

According to data of 2008, East Marmara Region has Location Quotient of 7.52 in R&D sector, one of the sectors that will set up innovative technical infrastructure. In other words, it can be said that share of personnel working in R&D sector within the regional employment is three times more than the share in Turkey. Same ratio is 1.48 for Ankara, 0.98 for İzmir and 2.99 for Bursa-Eskişehir-Bilecik region. In this respect, East Marmara Region is by far the densest area in terms of R&D personnel in Turkey. The ratio of 0.55 for İstanbul is regarded as a significant size when its population is considered and

the sector is in correlation with the region due to closeness of the distance. East Marmara Region bears the qualification to become an important actor thanks to evaluation of the potential in the field of advanced technology, closeness to world market in the field of production and infrastructure requirement of high volume industry in the field of service. The region is a strong region in innovation infrastructure in terms of its labor, industrialization and potential, and transportation opportunities.

Regional Statistics		Year
Area (sq km)	20.122 km <sup>2</sup>	
Population	3.315.463	2012
Population Density (person / sq km)	164,768	2012
Gross Domestic Product per Capita (€)	17.676	2011
Increase in Gross Domestic Product per Capita (€)	8,5	2011
Full Time Employee Number	1.210.000	2011
Increase of Employment	14,9	2011
Long Term Unemployment Rate	28,6	2011

Source: Regional Research Agenda of East Marmara Transportation Cluster, 2012

## Agglomeration Analysis

**Agglomeration–Added Value – Growth Rate Correlation Analysis**  
 “Agglomeration Analysis” has been referred to capture the economy of East Marmara Region and to determine the position of the sectors of the region in Turkey. First phase of the analysis is sectors of clustering. Sectoral clusters were compared with the added value created by that sector for the analysis to go beyond detecting the sectors that carry out business densely in the region. Growth rate in East Marmara Region of each sector was included in the analysis and trends of the sectors were revealed.

Location Quotient is calculated by proportioning the weight of a sector in the regional economy to the weight of the same sector in Turkish economy. According to NACE classification, location quotients were calculated for 26 two-digit sectors in East Marmara Region. A unit of measurement indicating the volume of the sector must be used in identifying the weight in the regional economy. Sector’s total turnover, number of employees and the amount of accrued tax are the measurement units that can be used to size of the sector. In agglomeration analysis of East Marmara Region, the number of workers employed in the sector is used in order to achieve the most realistic results.

In the event that Location Quotient is close to 1, it can be said that inter-regional share of that sector is close to the average of Turkey. In case the quotient is higher than 1, it can be interpreted that the related sector shows denser activity than Turkey. If the quotient is lower than 1, it means that weight of the sector in the regional economy is very low.

Although agglomeration does not mean precisely clustering, volume is also large in the sectors where agglomeration is high in a region, clustering is expected to occur.

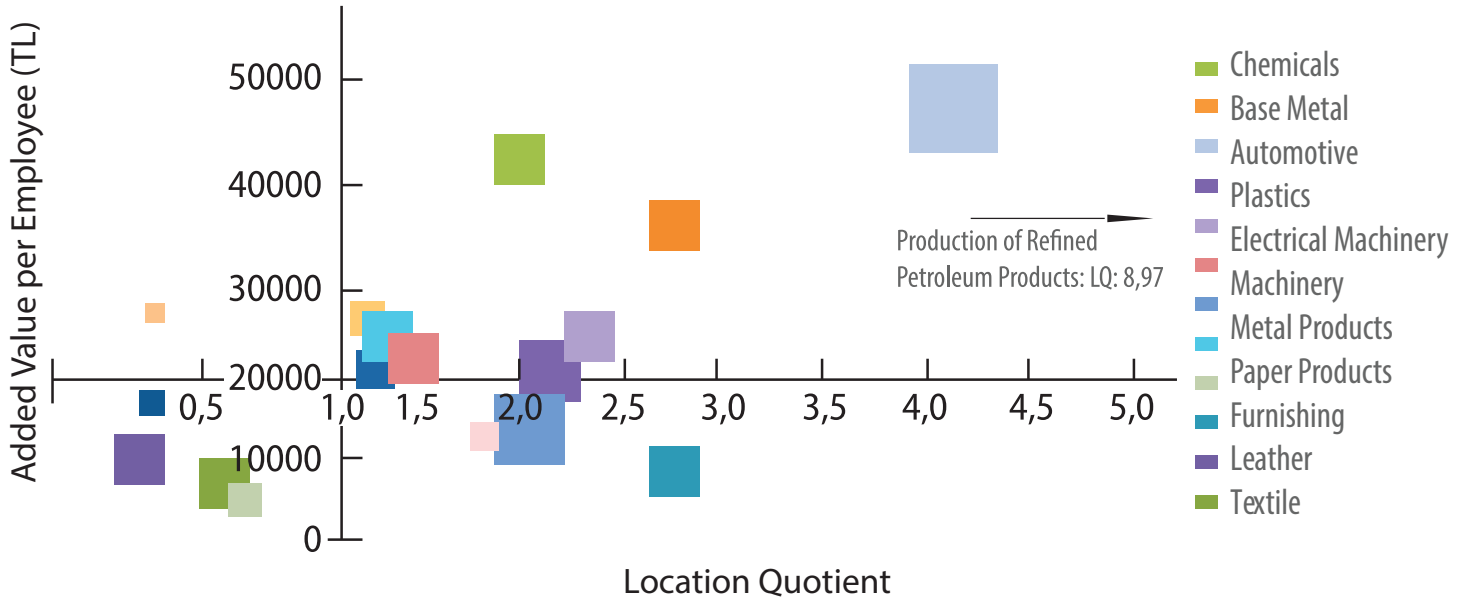
For the sectors where agglomeration is high and low in East Marmara Region to make sense, added value data per employed person created by that sector was included in the analysis. Added value is the difference between input and output in production process and is equal to the sum of wages of employees and profit, and also indicates increase in value in the product resulting as a result of the information contributed to raw materials. Since sectors with higher volume will have more added values, “added value per employed person” data was used in the analysis. Preferred value of added value per employed person is taken as 20,000 TL and above.

Each circle in the graphic represents a sector and size of the circles demonstrates the size of that sector in terms of number of employees. Since petroleum products sector, nonmanufacturing sector and R&D sector among the manufacturing sectors have higher Location Quotient values compared to other sectors, these mentioned sectors are not included in the graphic illustration to ease readability of the graphic. In the graphic, right area represents the sectors where agglomeration is high and upper area represents the sectors where added value is high. Towards top right on the graph, agglomeration and added value increase.



Figure 6

### Agglomeration-Added Value Correlation Analysis (Manufacturing Sectors)



1 Location Quotient values are calculated based on the last current business statistics of TÜİK dated 2006. 2005 values of National Productivity Center were used for the data of added value per employed person. Added value data mean the added value generated around Turkey by that sector.

2 To facilitate readability, sector data of "manufacture of coke, refined petroleum products and nuclear fuel manufacturing" were not included in the graphic. Location Quotient of this sector is 8.97; Added Value Per Employed Person is 245.435 TL, Number of Employees is 3.369.

In East Marmara Region manufacturing sector, the sector with the highest agglomeration is refined petroleum products manufacturing sector ( $LQ = 8.96$ ). At the same time, this sector has the highest added value per employed person in Turkey ( $LQ = 8.96$ ). Automotive sector has the second highest agglomeration in the region and it is represented by the circle in the upper right ( $LQ = 4.27$ ,  $AV = 45,456$  TL). Automotive sector is also the sector that provides the highest employment with 28,000 employees, excluding the trade sectors. Location Quotient of basic metal industries sector is 2.78 and added value is 34,500 TL and number of employees is 13,000. While wood products manufacturing sector also has similar location quotient, it takes place in the lower part of the graph as it generates low added value ( $AV = 9,800$  TL).

The sectors where agglomeration is higher than the average of Turkey in East Marmara Region are electrical machinery, plastic and rubber products, chemicals, fabricated metal products, and other transportation means manufacturing sectors, relatively. Other transportation means sector mainly comprises shipbuilding industry. Chemicals manufacturing sector has the highest added value in this category ( $AV = 40,000$  TL), and fabricated metal products manufacturing sector has the lowest added value ( $AV = 12,000$  TL). Fabricated metal products sector is among the sectors with high employment with a number of 20,000 employees and transportation means manufacturing sector has low employment with 4,200 employees in East Marmara Region.

It is observed that Location Quotients are close to average of Turkey and, therefore, the sectors where agglomeration is not observed in East Marmara Region are machinery, mineral products, food products and beverages as well as paper products manufacturing sector. In addition, food products sector has the highest employment rate with 20,000 employees, while paper products sector of which added value is higher ( $AV = 30,000$  TL) has an employment rate of 2,200 persons. Added value average and number of employees of the sectors other than the above are 20,000 TL and 12,000 persons, respectively.

Furniture, clothing, reproduction of recorded media, medical instruments, communications equipment manufacturing sectors in East Marmara Region have low agglomeration. Employment is high in textile, clothing and furniture sectors where added value is too low, while presence of communication equipment sector that generates 50,000 TL added value per employed person is quite small in the region. Reason of low agglomeration in textile and furniture sectors in the region despite of high employment is because they have large volumes around Turkey. "IT Valley" that is planned to be established in East Marmara Region will increase the volume and location quotient of telecommunications sector.

#### Agglomeration-Added Value Correlation Analysis

Research and development services activities sector has the highest agglomeration after petro-chemistry and automotive sectors in East Marmara Region with a quotient of 3.69. Added value of R&D sector per employed person is higher than the added value of automotive sector with 70,000 TL against 45,000 TL, respectively.

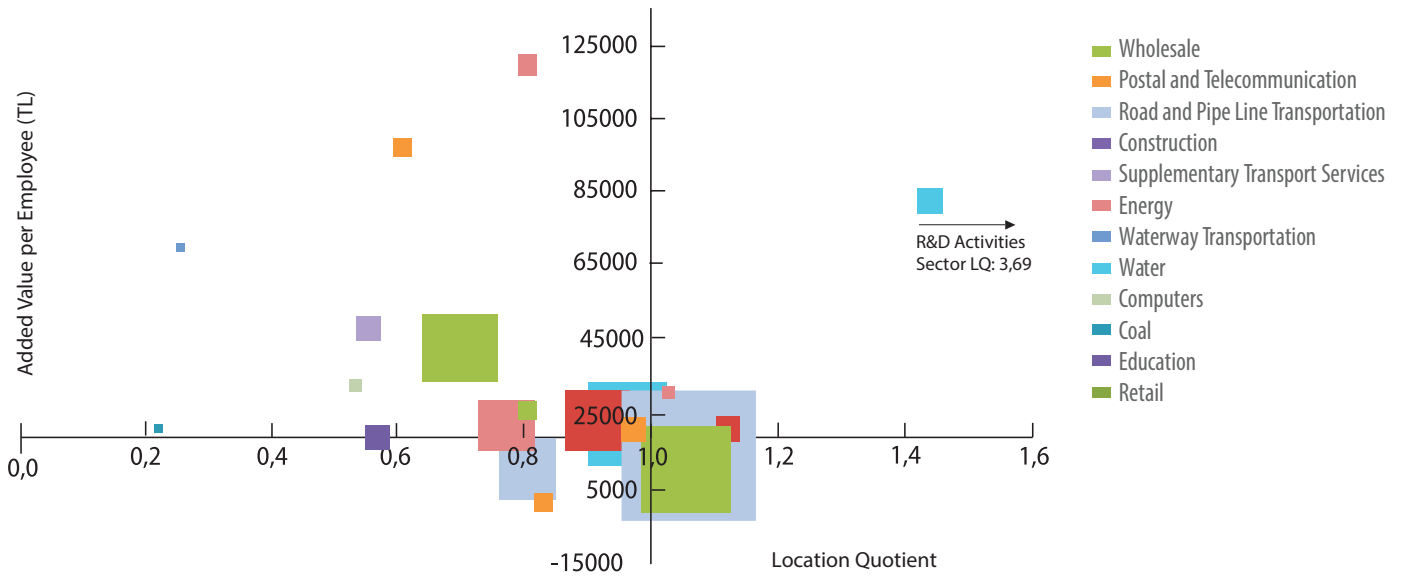
Other than R&D, water collection, purification and distribution sector among nonmanufacturing sectors in the region has an added value of 95,700 TL and employs 22,500 people in the region.

Retail trade, road transportation, sales and repair of motor vehicles, construction, machinery rental, entertainment, culture and sports, mining and quarrying sectors have agglomeration around average of Turkey and added value of these sectors are between 10,000 and 20,000 TL. (Circles located at the intersection point in the graph.) Retail trade has the largest employment number with 90,000 persons employed in East Marmara Region. Road transportation sector, construction sector and sales and repair of motor vehicles sector employ 40,000, 30,000 and 20,000 people, respectively. Location Quotient of electricity, gas, steam and hot water production and distribution sector that generates an added value of 125,000 TL per employee is 0.82; number of employees is 2,700.



Figure 7

### Agglomeration – Added Value Correlation Analysis (Non-manufacturing Sectors)



1 Location Quotient values are calculated basing on the last current business statistics of TÜİK dated 2006. 2005 values of National Productivity Center were used for the data of added value per employed person. Added value data mean the added value generated around Turkey by that sector.

2 To facilitate readability, sector data of "Research and development services activities" were not included in the graphic. Location Quotient of this sector is 3,69; Added Value Per Employed Person is 67,000 TL, Number of Employees is 101.

The sectors of which agglomeration is below the average of Turkey are healthcare and social services, hotels and restaurants, wholesale trade, travel agencies, computer and related activities, education, postal and telecommunications sectors.

Volume and agglomeration ratio of postal and telecommunications sector which has an added value of 100,000 TL are low in the region. Travel agencies, computer and related activities sector generate added values of 45,000 TL and 35,000 TL, respectively. Added value generated by other sectors is around 20,000 TL. Added value of hotels and restaurants sector is around 10,000 TL and 23,000 people are employed in this sector. In general, added value per employed person of services sector is not high; these sectors absorb labor in the context of social development.

#### Agglomeration – Sectoral Growth Rate Correlation Analysis

Petroleum products, automotive, basic metal products, fabricated metal products, rubber and plastic products, electrical machinery manufacturing sectors where agglomeration (specialization) is observed in East Marmara Region presented growth rates of 20% and above per year as estimated between 2003 and 2006. (Circles located in the right upper middle section in Figure 9).

Although chemical products manufacturing (LQ= 2) is a sector where agglomeration is observed, it is one of the sectors where growth has stopped (1.8%) in the region. If the process continues in this way, possible results include agglomeration dissolution. Mineral products manufacturing, machinery manufacturing and water distribution activities sectors where agglomeration is 50% over the average of Turkey (LQ= 1.5) achieved growth between 15% and 25%.

Construction, health services, recreational and cultural activities and land transport sectors among the sectors where activities are around the average of Turkey (LQ=1) tend to grow. Annual employment growth was 25% and above.

It is expected that continuity of the trend of growth in the region will increase specialization in these sectors. Annual growth in machinery and goods rental sector was over 100%.

Retail and wholesale trade, energy production and distribution, food products and beverages production, hotels and restaurants, sales and repair of motor vehicles sectors have agglomeration rate at the average of Turkey and annual growth of these sectors is 20% and below.

Significant growth were not observed in auxiliary transport services, education and production of recorded media sectors of which weights are low in the region; on the contrary, coal mining, medical and optical instruments and watch and clock manufacturing, and computer and related activities sector achieved a growth of 25% and above per year; water transport sector grew by 70% per year.

Postal and telecommunications, paper and paper products manufacturing and communications equipment manufacturing sectors downsized in East Marmara Region.

#### Analyses

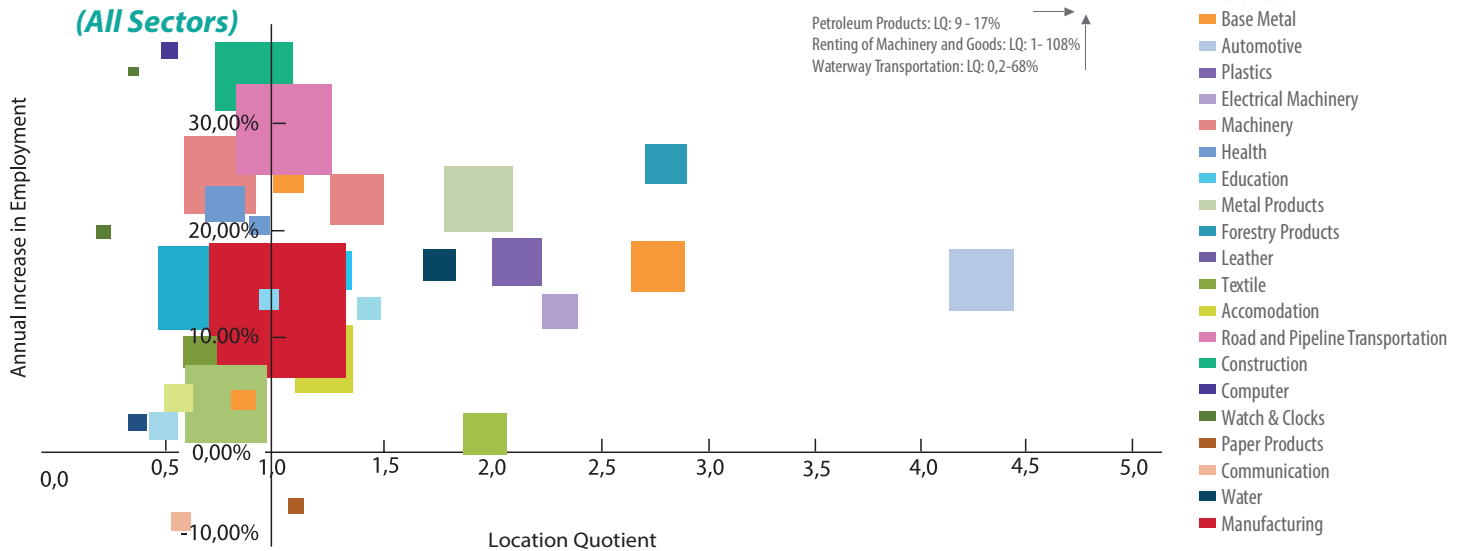
The sectors operating in the region are classified into three groups as a result of 20 different studies conducted on the basis of four criteria for identification of main manufacturing sectors that are already active in the regional economy in East Marmara Region. The sectors that contribute mostly to the regional economy and parse mostly in the national economy in terms of export, employment, added value and R&D structuring currently in the region are located in the first group.





Figure 8

## Agglomeration – Sectoral Growth Rate Correlation Analysis (All Sectors)



1 Location Quotient values are calculated based on the last current business statistics of TÜİK dated 2006. Sectoral employment rates of 2003-2006 were used in calculation of annual employment increase.

2 To facilitate readability, data "Petroleum products", "Machinery and furniture rental" and "Water transport" sectors were not included in the graphic.

### CRITERIA GROUPS

Figure 9

## Sector Groups and Sectors Outstanding in the Region

Figure 9

Sector Groups and Sectors Outstanding in the Region

		INVESTMENTS					EMPLOYMENT				EXPORTS				VALUE, R&D AND TECHNOLOGY LEVEL						
		CRITERIA																			
		Amount of Investment	Increase Rate in Investment	SME Dominance	Direct Foreign Investment Density	Stakeholder Preferences According to Questionnaire	Employment Based Agglomeration	Increase Rate in Employment	Employment Generation Capacity	Shift Share Analysis	Export Volume	Export Based Agglomeration	Increase in Export Volume	Existence of Main Actors	Three Star Analysis	Added Value Analysis	Agglomeration - Added Value Relation	R&D Center and Personnel Density	Scientific Article, Thesis and R&D Projects	Private Sector R&D Projects	TÜBİTAK Institutes Fields of Expertise
FIRST GROUP	Chemicals	X	X		X		X	X		X	X	X		X	X	X	X	X <sup>1</sup>	X <sup>1</sup>		X <sup>2</sup>
	Machinery Production	X	X	X	X	X	X		X		X	X	X		X		X		X		
	Automotive Main and Supply Ind	X		X	X	X	X				X	X	X	X	X		X			X <sup>3</sup>	
	Iron & Steel	X		X				X	X		X		X	X	X	X				X <sup>4</sup>	
	Metal Products	X	X	X					X	X				X	X				X		
	Logistics	X	X	X	X		X	X													
SECOND GROUP	Electrical Equipment and Products	X	X	X	X	X	X				X	X	X	X			X	X		X	
	Food & Beverages	X	X	X	X				X	X	X	X		X							X <sup>5</sup>
	Forest Products	X	X	X		X						X	X								
	Electronics	X									X							X	X		
	Plastics and Rubber	X		X			X								X		X				X <sup>6</sup>
	Tourism	X	X	X		X	X		X												
THIRD GROUP	Energy	X	X																		X <sup>7</sup>
	Non Ferreus Metals	X	X									X						X			X <sup>8</sup>
	Weaving and Textile	X		X	X				X	X		X		X							
	Shipbuilding Industry	X	X				X					X					X				
	Glass Industry	X	X	X										X							
	Paper Industry	X								X							X				

"Sector Groups and Sectors Outstanding in the Region is used as a basis for Weighted Key Performance Indicators Analysis (see page 50)"

1 Valid for Kocaeli University, Abant İzzet Baysal University and Yalova University.

2 Chemicals and Medicine

3 Super Alloys

4 Aluminum

5 Hybrid Vehicle Power Unit (Engine), Battery, Control Modules

6 Process & Inorganic, Polymer & Organic, Biodegradable Food Packaging

7 Nanotechnology, Composite

8 Food Hygiene, Mold, Advanced and Rare Processes, Fermented Food and Beverage, Probiotics, Functional Nutrition

9 Battery, Power Electronics, Fuel Cells, Catalytic and The rmochemical Hydrogen Production



## R&D Indicators

When macro-data are analyzed, it is observed that R&D activities in Turkey are mainly implemented by universities and private sector and private sector outstands as the dragging element in R & D and innovation due to the size of its volume.

Table 2

### Research, Technology Development and Innovation Indicators

Research, Technology Development and Innovation Indicators	RatioY	ear
Human Resources in Science and Technology (Percentage of Active Population %)	9,72%	2010
Percentage of Public R&D expenditure to GDP (%)	0,13	2010
Percentage of Private Sector R&D expenditure to GDP (%)	0,48% (Turkey)	2010
Percentage of Private Sector R&D Personnel (to Total Employment %)	0,203% (Turkey)	2010
Percentage of Higher Education R&D expenditure to GDP (%)	0,52	2010

Kaynak: InTraRegio Regional Research Agenda, 2013

## International Positioning of the Region

The most important input in the openness of the area is close location of İstanbul, a financial center. On the Global Scale, Turkey and in particular East Marmara Region is located in center of an area that can reach up to a market volume of \$25 trillion in size and a population of 1.5 billion with 3.5 hours flight. In the Local Scale, Dilovası-Gebze-Tuzla axle is the heart of the industry in Turkey. Industry structure has been strengthening with presences of a total of 37 organized industrial zones and large enterprises, 18 of which are active, and is in the focus of the industry market which will be served by regional R&D market at local scale .

There are 60 ports affiliated to 5 port authorities close to the region. Although the majority of these ports belong to institutions, it is an important data in terms of reflecting the openness and demonstrating the intensity of international maritime traffic. On the other hand, it will be at a road distance of 90 km to Atatürk Airport that constitutes 42.86% of air movement of

Turkey (passenger + cargo + multi-purpose), 70 km to Marmaray, 20 km to Sabiha Gökçen Airport that provides 7.93% of the same air movement, and 50 km to Cengiz Topel Airport of which construction is about to start. In addition, these ports pass by the area of road (TEM, 3rd Bridge Connection Way and D-100) and railway routes that connects Turkey, the Middle East and Asia to Europe.

## Foreign Trade

In 2011, East Marmara Region realized a share of 11.2%, according to data of Turkish Exporters Assembly (TIM) and 10.8% according to data of TSI in total export of Turkey. However, when the exporter countries that are İstanbul-based but operate in East Marmara Region are taken into consideration, this percentage is estimated to be higher.

Kocaeli province has realized an average of 79.25% of the export of the region in the last for years.

Table 3

### Export Values of the Region

	Year	Turkey	East Marmara	Kocaeli	Sakarya	Düzce	Bolu	Yalova
Number of Exporter Companies	2008	48.143	1.405	927	262	84	66	66
	2009	48.588	1.451	970	261	85	59	76
	2010	50.379	1.491	994	279	95	53	70
	2011	54.566	1.663	1.136	278	105	65	79
Export (thousand \$)	2008	132.027.196	11.396.064	8.320.241	2.907.203	85.734	45.290	37.596
	2009	102.128.447	6.423.459	4.557.639	1.722.184	64.319	45.740	33.577
	2010	112.135.961	11.491.248	9.558.290	1.714.642	73.292	54.393	90.629
	2011	133.301.459	14.930.853	12.629.113	2.063.834	85.143	90.382	62.379
Exports per capita (\$)	2011	1.783	4.503	7.885	2.323	249	327	302

Source: Ministry of Economy, TÜİK 2012

## East Marmara Development Agency Core Values

*East Marmara Development Agency reflects various core values and principles into all activities legally regarding the foundation regulation. Besides, the listed values-principles are determined in the light of implementation experience during acting in the Region composed of 5 Provinces;*





East Marmara centered exporter companies, excluding the companies that are outside the region, formed 2.9% and 3% of the total of Turkey in 2008 and in 2011, respectively. While these companies performed 8.6% of total export in 2008, they reached 11.2% in 2011. The region has a rate of 2.5 times the average of Turkey in terms of exports per capita. While Kocaeli province exhibits a performance far above the average of Turkey and the Region, Düzce, Bolu and Yalova provinces demonstrate export per capita performance below the average of the country.

While a steady increase is observed in the export values of Kocaeli province in the last 4 years, Sakarya and Düzce provinces could recover after the economic crisis of 2008 in parallel with the average of the country and Bolu and Yalova provinces exhibited export growth performance at a higher rate than the average of Turkey.

Table 4

#### Sectoral Export Values of the Region

Sector	Kocaeli	Sakarya	Düzce	Bolu	Yalova	East Marmara
Vehicles and Supplier Industry	4.456.655.879	1.715.768.632	4.806.557	692.080	1.525.954	6.179.449.103
Chemicals and Chemical Products	5.114.920.358	79.246.268	14.106.004	24.240.813	5.422.900	5.237.936.343
Ferrous and Non Ferrous Metals	805.949.688	54.793.387	4.152.054	5.878.164	279.183	871.052.475
Electricity - Electronics	846.240.573	14.868.653	1.440.144	2.442.031	614.686	865.606.087
Machinery and Accessories	537.737.521	95.253.032	18.346.662	486.128	1.739.233	653.562.576
Iron and Steel Products	343.839.080	10.456.489	4.789.015	225.800	153.505	359.463.889
Cereals, Pulses, Oilseeds and Products	123.262.075	45.827.622	33.101	652.949	453.967	170.229.714
Ship & Yacht	98.046.721	4.286	5.875	0	35.555.859	133.612.741
Wood Products and Forestry Products	84.090.807	6.492.127	18.521.683	6.838.424	270.625	116.213.666
Cement and Soil Products	70.136.182	7.591.543	393.089	571.322	19.202	78.711.338
Mining and Metals	67.010.997	6.210.834	352.952	203.676	1.538.527	75.316.986
Fisheries and Livestock Products	4.136.642	2.476.846	0	41.411.260	4.153.914	52.178.662
Textile and Raw Materials	22.096.507	9.234.567	15.700.722	237.478	669.060	47.938.334
Clothing and Apparel	28.184.219	5.271.960	1.641.012	89.333	2.726.161	37.912.684
Other Industrial Products	17.052.879	7.132	20.895	0	0	17.080.905
Ornamental Plants and Products	0	2.948.372	15.000	0	7.040.782	10.004.154
Leather and Leather Products	390.331	341.116	62.164	5.874.393	81.391	6.749.396
Precious Metals and Jewelry	5.511.378	0	5.583	0	56.596	5.573.557
Hazelnut and Products	11.188	4.432.236	676.374	0	0	5.119.798
Carpet	3.061.496	19.041	22.945	0	0	3.103.482
Fruit and Vegetable Products	469.933	1.740.068	0	524.542	30.808	2.765.351
Fresh Fruits and Vegetables	120.781	491.420	51.434	13.049	0	676.684
Dried Fruits and Products	50.994	346.574	0	606	43.551	441.726
Olive and Olive Oil	137.262	12.660	0	0	3.543	153.466

Source: Turkish Exporters Association (TİM), 2012

According to TİM (Turkish Exporters Association) data, the sectors in which export is performed mostly in 2011 are Vehicles and Supplier Industry, Chemicals and Chemical Products, Ferrous and Non Ferrous Metals, Electricity – Electronics and Machinery and Accessories sectors, relatively. This ranking at provincial level is as follows:

Table 5

#### Sectoral Export Ranking according to Provinces

	Kocaeli	Sakarya	Düzce	Bolu	Yalova
1st Sector	Chemicals and Chemical Products	Vehicles and Supplier Industry	Wood Products and Forestry Products	Fisheries and Livestock Products	Ship & Yacht
2nd Sector	Vehicle Tools and Supplier Industry	Machinery and Accessories	Machinery and Accessories	Chemicals and Chemical Products	Ornamental Plants and Products
3rd Sector	Electricity - Electronics	Chemicals and Chemical Products	Textile and Raw Materials	Wood Products and Forestry Products	Chemicals and Chemical Products
4th Sector	Ferrous and Non Ferrous Metals	Ferrous and Non Ferrous Metals	Chemicals and Chemical Products	Ferrous and Non Ferrous Metals	Fisheries and Livestock Products
5th Sector	Machinery and Accessories	Cereals, Pulses, Oilseeds and Products	Vehicle Tools and Supplier Industry	Leather and Leather Products	Clothing and Apparel

Kaynak: Turkish Exporters Association, 2012



In the provinces where export volume is low compared to Kocaeli and Sakarya provinces, Textile and Raw Materials, clothing and wood products, forestry products, ornamental plants and Leather Products outstand.

Exports from the region are mainly to European countries, notably Germany and the UK, Iraq, China and Central Asia Turkish Republics.

Table 6

**Countries with most Export in the Provinces of the Region**

Kocaeli	Sakarya	Düzce	Bolu	Yalova
Country / Percentage	Country / Percentage	Country / Percentage	Country / Percentage	Country / Percentage
Germany / 9,61%	France / 16,03%	Uzbekistan / 18,86%	Iraq / 26,78%	PR China / 26,41%
England / 8,28%	Germany / 5,38%	Germany / 14,15%	Azerbaijan / 10,02%	France / 19,2%
USA / 7,26%	England / 7,92%	Egypt / 8,20%	Germany / 8,97%	Germany / 12,41%
France / 4,98%	Italy / 6,24%	Iran / 6,33%	Tajikistan / 7,30%	Iraq / 6,54%
Italy / 4,86%	Greece / 4,89%	Italy / 5,88%	Russian Fed / 6,16%	Netherlands / 5,26%
Egypt / 3,48%	Poland / 4,22%	England / 4,63%	Bulgaria / 5,82%	Azerbaijan / 4,34%
Lebanon - UAE / 3,38%	Belgium / 3,78%	Azerbaijan / 4,13%	Egypt / 4,53%	Turkmenistan / 4,18%

Source: Turkish Exporters Association, 2009

From the point that share of electricity, electronics, machinery and IT sub-sectors of the region in export in 2009 is approximately 9%, it can be said that the industry that has more added value and damages less to the environmental relatively has an important place in the export of the region. In Machinery and Accessories sub-sector, on the other hand, share of the region in sub-sector total export is approximately 5%. Similarly, share of the region in sub-sector total export in Ferrous and Non Ferrous Metals sub-sector is 6%.

Turkey is an important exporter in Europe in terms of automotive main and supplier industry which is one of the prominent sectors in the region and is the biggest bus manufacturer and second biggest light commercial vehicle manufacturer of Europe. Export of automotive main and supplier industry which has a share of 5% within the total manufacturing industry in Turkey constituted 17% of total export of Turkey in 2008 and 15% in 2009. When we look at export figures of TR42 Level 2 region; it can be seen that 25% of the export of the country is performed from the region in Vehicle Tools and

Supplier Industry sub-sector. Provinces of the region that largely undertake export are Kocaeli and Sakarya.

Around 5,000 companies operate in plastics sector in Turkey. 40% of these companies are located in Istanbul, and Izmir, Ankara, Bursa, Gaziantep, Konya, Izmir, Adana and Kayseri are among the other cities that are leading in plastic production. 98% of the companies in this sector are of SME scale. Export of the sector increased every year until 2008, but it decreased to decreased by 14% (4.32 billion dollars) because of the crisis in 2009.

### Multinational and Foreign-Capitalized Companies

618 foreign capitalized companies operate in East Marmara Region as of 2011, and these companies are mainly located in Kocaeli province.

Table 7

**Number of Foreign-Capitalized Companies**

		TR 42	Kocaeli	Sakarya	Düzce	Bolu	Yalova
Number of Foreign-Capitalized Companies	2010	540	306	95	14	15	110
	2011	618	338	110	18	15	137

Source: Turkish Exporters Association, 2009



16,405 of 29,144 foreign capitalized companies in Turkey operate in İstanbul. However, many companies are İstanbul centered and operate in other regions and East Marmara Region is the first among these regions.

Figure 10

**Distribution of Direct Investment Inputs according to Manufacturing Sectors and Years**



When the sectoral distribution of direct investment inputs of foreign-capitalized companies in East Marmara Region in the recent years is analyzed, Manufacturing Industry as well as the Wholesale and Retail Trade, Transportation, Communication and Storage Services and Financial Intermediation Organizations become prominent. On the other hand, Food Products, Beverages and Tobacco, Textile Products, Manufacture of Chemicals and Chemical Products, NEC Machinery and Equipment Manufacturing, Electrical Optical Instruments Manufacturing and Motor Vehicles, Trailers and Semi-Trailers outstand in the manufacturing industry. A serious decrease was observed in the investments for manufacturing likewise the worldwide after the economic crisis of 2008 and the figures of before the crisis have not been achieved yet.

Table 8

**Distribution of International Direct Investment Inputs according to Sectors**

Sektörler	2006	2007	2008	2009	2010	Toplam
Agriculture, Hunting and Forestry	5	6	23	48	79	161
Fishing	1	3	18	1	4	27
Mining and Quarrying	122	337	151	89	196	895
<b>Production Industry</b>	<b>1.866</b>	<b>4.211</b>	<b>3.955</b>	<b>1.565</b>	<b>868</b>	<b>12.465</b>
Food Products, Beverages and Tobacco	608	766	1.252	196	149	2.971
Textile Products	26	232	189	77	82	606
Chemicals and Prroducts	601	1.109	200	336	102	2.348
NEC Machinery and Equipment	54	48	226	220	64	612
Electrical Optical Equipments	53	117	236	59	167	632
Motorized Land Vehicles, Trailer, Semi-Trailer	63	70	77	225	39	474
Other Production	461	1.869	1.775	452	265	4.822
<b>Electrics, Gas and Water</b>	<b>112</b>	<b>568</b>	<b>1.068</b>	<b>2.126</b>	<b>2.063</b>	<b>5.937</b>
<b>Construction</b>	<b>222</b>	<b>285</b>	<b>336</b>	<b>208</b>	<b>355</b>	<b>1.406</b>
<b>Wholesale and Retail</b>	<b>1.166</b>	<b>165</b>	<b>2.085</b>	<b>389</b>	<b>389</b>	<b>4.194</b>
<b>Hotels and Restaurants</b>	<b>23</b>	<b>33</b>	<b>24</b>	<b>54</b>	<b>113</b>	<b>247</b>
<b>Transportation, Communication and Stocking Services</b>	<b>6.696</b>	<b>1.117</b>	<b>170</b>	<b>391</b>	<b>210</b>	<b>8.584</b>
<b>Financial Intermediary Activities</b>	<b>6.957</b>	<b>11.662</b>	<b>6.069</b>	<b>666</b>	<b>1.630</b>	<b>26.984</b>
<b>Real Estate Renting and Business Activities</b>	<b>99</b>	<b>560</b>	<b>641</b>	<b>560</b>	<b>368</b>	<b>2.228</b>
<b>Healthcare and Social Services</b>	<b>265</b>	<b>177</b>	<b>149</b>	<b>106</b>	<b>114</b>	<b>811</b>
<b>Other Social and Personal Services</b>	<b>105</b>	<b>13</b>	<b>58</b>	<b>49</b>	<b>131</b>	<b>356</b>
<b>Overall</b>	<b>17.639</b>	<b>19.137</b>	<b>14.747</b>	<b>6.252</b>	<b>6.520</b>	<b>64.295</b>

Source: Ministry of Economy, 2011

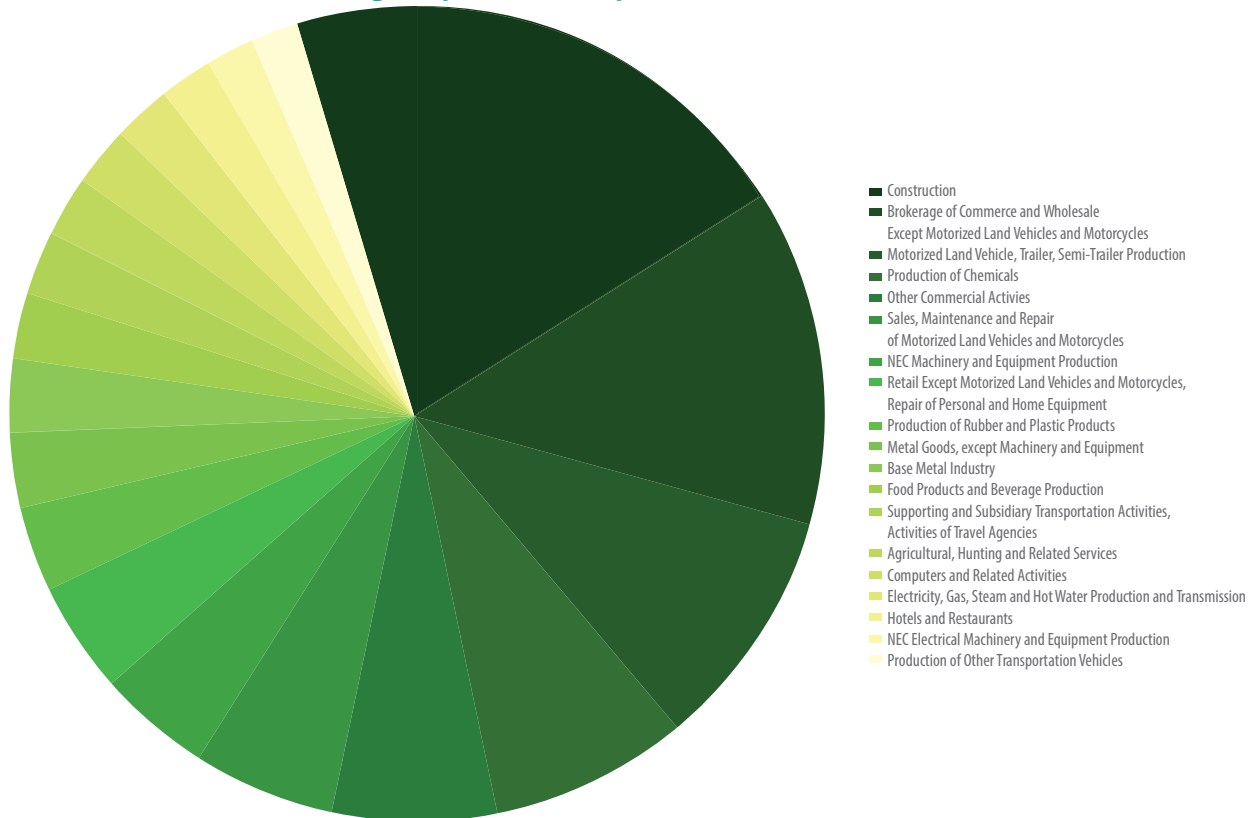


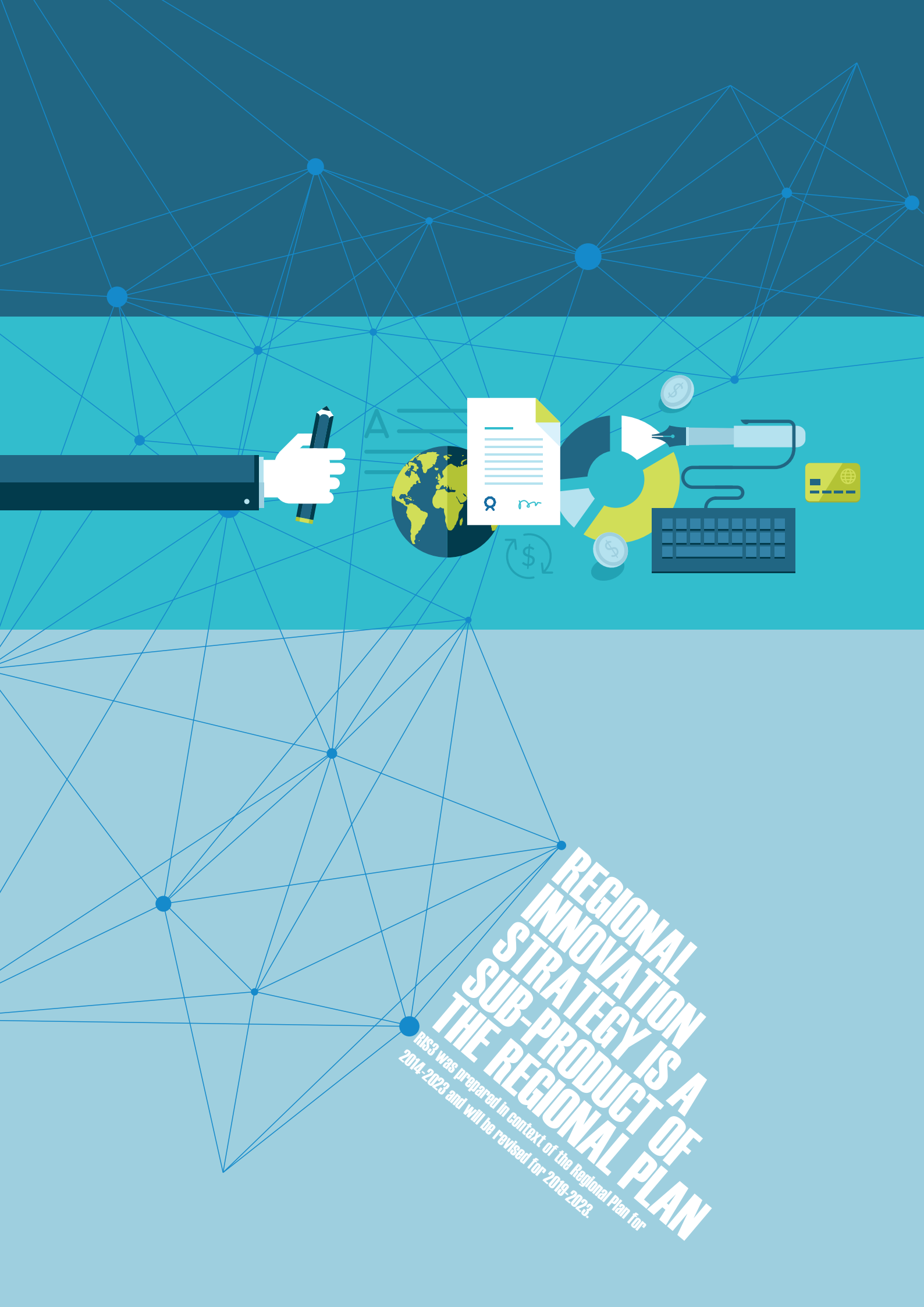


When the sectoral distributions and countries of foreign capitalized countries operating region are analyzed; Civil Works, wholesale trade and trade brokerage other than motor vehicles and motorcycles, motor vehicles, trailers and semi-trailer manufacturing, chemicals and chemical products manufacturing, other business activities, sales, maintenance and repair of motor vehicles and motorcycles, retail sale of fuel of motor vehicles, NEC Machinery and equipment manufacturing, retail trade other than motor vehicles and motorcycles, repair of personal and household goods, manufacture of plastic and rubber products, metal products industry except machinery and equipment, Base metal industry and food products and beverages production stand out.

Figure 11

### Sectoral Distribution of Foreign Capitalized Companies





**REGIONAL  
INNOVATION  
STRATEGY IS A  
SUB-PRODUCT OF  
THE REGIONAL PLAN**

*RIS3 was prepared in context of the Regional Plan for  
2014-2023 and will be revised for 2019-2023.*





Table 9

### Distribution of Foreign Capitalized Companies according to Sectors and Countries

Sector	Number of Foreign Capital Companies	Countries
Construction	101	Afghanistan, Germany, USA, Austria, Azerbaijan, Bahrain, Belgium, UAE, Dubai, Palestine, France, South Korea, Netherlands, Iraq, England, Iran, Sweden, Switzerland, Italy, Qatar, Kazakhstan, Kuwait, Macedonia, Russia, Syria, S. Arabia, Oman, Jordan, New Zealand, Greece
Brokerage of Commerce and Wholesale Except Motorized Land Vehicles and Motorcycles	101	Germany, USA, Austria, Azerbaijan, UAE, Bosnia and Herzegovina, Bulgaria, China, Morocco, Palestine, France, South Korea, India, Netherlands, Iraq, England, Iran, Ireland, Switzerland, Italy, Canada, Kyrgyzstan, Liechtenstein, Lebanon, Luxembourg, Malaysia, Egypt, Moldova, Uzbekistan, Romania, Russia, Syria, Turkmenistan, Yemen, Greece
Motorized Land Vehicle, Trailer, Semi-Trailer Production	43	Germany, USA, Austria, Belgium, UAE, France, South Korea, Netherlands, Iraq, England, Spain, Sweden, Italy, Japan, Monaco
Production of Chemicals	27	Germany, USA, Palestine, France, South Korea, Netherlands, Iran, Spain, Switzerland, Italy, Japan, Luxembourg, Poland, Greece
Other Commercial Activities;	26	USA, Germany, Cyprus, Luxembourg, the Netherlands, England, Bulgaria, Moldova, Austria, Bahrain, Dubai, S. Arabia
Sales, Maintenance and Repair of Motorized Land Vehicles and Motorcycles	25	Germany, USA, Austria, UAE, China, France, South Korea, Hong Kong, England, Iran, Italy, Japan, Luxembourg, S. Arabia, Thailand, Greece
NEC Machinery and Equipment Production	26	Romania, Germany, Italy, South Korea, Netherlands, Switzerland, France, Greece, Spain, Denmark, Macedonia, USA, England,
Retail Exc. Motorized Land Vehicles and Motorcycles, Repair of Personal and Home Equipment	19	Germany, Azerbaijan, China, France, Netherlands, England, Iran, Spain, Sweden, Switzerland, Luxembourg, Moldova, Russia, Serbia, Ukraine
Production of Rubber and Plastic Products	19	Germany, Austria, Gibraltar, France, South Korea, Netherlands, Italy, Luxembourg
Metal Goods, except Machinery and Equipment	17	Germany, Australia, France, South Korea, Netherlands, Spain, Sweden, Italy, Macedonia
Base Metal Industry	15	Italy, France, Switzerland, Iran, Netherlands, Jordan, Romania, England, Germany, Liechtenstein
Food Products and Beverage Production	15	Germany, USA, Azerbaijan, France, Netherlands, England, Iran, Switzerland, Cyprus, Greece
Supporting and Subsidiary Transportation Activities, Activities of Travel Agencies	14	Norway, Japan, Germany, England, South Korea, Italy, Belgium, Saudi Arabia, Syria, Iraq, UAE
Agricultural, Hunting and Related Services	13	Afghanistan, Germany, Bermuda, South Korea, Netherlands, Italy, Lebanon, Serbia
Computers and Related Activities	12	Germany, Iran, Azerbaijan, USA, Canada, Ireland, South Korea, Switzerland, England
Electr., Gas, Steam and H. Water Production and Transfers	12	Germany, France, Netherlands, Serbia, Turkmenistan
Hotels and Restaurants	12	Germany, Bahrain, UAE, Iraq, Saudi Arabian, Turkmenistan
NEC Electrical Machinery and Eq. Production	11	Slovenia, France, Hungary, the Netherlands, Bulgaria, Nigeria, USA, Italy
NEC Other Production Production of Furniture	10	Belgium, Bulgaria, France, Netherlands, Iraq, Luxembourg, Greece
Production of Other Transportation Vehicle	10	Germany, USA, Netherlands, Italy, Japan, S. Arabia

Source: Ministry of Economy, 2011

## Relations with the European Union

East Marmara Region that cannot benefit from a set of funds due to high level of development benefits increasingly from Framework Programs of the European Union, mainly Kocaeli and Sakarya provinces. East Marmara ABİGEM and East Marmara Development Agency as well as initiatives of universities, trade chambers and industry chambers tend to increase this ratio more.

### Framework Programs

Turkey joined officially to framework programs that are created to support multinational research and technology projects in the EU and began to benefit from 6th Framework Program that covers the period of 2002-2007 beginning as of 2003. 459 of 2,982 projects prepared by project consortiums that include the organizations from Turkey have been approved within the scope of 6th Framework Program and project approval percentage has been 15.4% (TÜBİTAK, 2010). When performances of the provinces of East Marmara Region in 6th Framework Program are monitored, on the other hand, it is observed that 13 of 459 projects were conducted by the consortiums to which the organizations in Kocaeli and Sakarya provinces are partners and they received a share of 2.83% from 6th framework projects of the region in Turkey with this number. There is no partner that has participated in a project within scope of 6th framework program from Bolu, Düzce and Yalova.

When the amount of funds received by the provinces of East Marmara Provinces and the consortiums they are included within the scope of 7th Framework Program during the period 2007-2012 are analyzed, it is observed that Düzce and Yalova could never benefit from these programs and 47 projects of Kocaeli, 2 projects of Sakarya and 1 project of Bolu have been supported. In addition, while the share of the company in 6th Framework Program around Turkey is 2.83% with 13 projects, it increased to 6.51% with 50 projects when its share in 7th Framework Program between the years 2007 and 2012 is considered. When total project budgets are considered, on the other hand, 11,128,848€ of 155,600,000€ obtained around Turkey, in another word 7.15% has been used by East Marmara provinces.



Table 10

**Fund Amounts received by the Provinces within the scope of 6<sup>th</sup> and 7<sup>th</sup> Framework Programs and Numbers of Projects**

		Kocaeli	Sakarya	Düzce	Bolu	Yalova
Number of Project Proposals	FP6	-	-	-	-	-
	FP7	381	18	4	8	3
Number of Supported Projects	FP6	11*	2**	-	-	-
	FP7	47	2	-	1	-
Total Budget	FP6	1.363.886 €	524.188 €	-	-	-
	FP7***	10.601.808€	489.240€	-	37.800€	-

Source, Data Year: TÜBİTAK, 2013

\* Organizations/enterprises/companies supported in Kocaeli province within the scope of 6th Framework Program: MAM Institute of Marine Sciences, OMTAŞ Automotive San., MOMENTUM Bilgisayar, Kocaeli University, Gebze Institute of Technology; Organizations/enterprises/companies supported within the scope of 7th Framework Program; MAM Enerji, Food Institute, UEKAE, Gebze Institute of High-Technology, +90 ArtiDoksan Hizli Imalat Teknolojileri A.S, Hexagon Studio, OMTAŞ Automotive San.

\*\* Organization supported in Sakarya within the scope of 6th Framework Program is Sakarya University.

\*\*\* Shares of Turkish partners in the projects as of 30.01.2013.

The share received by the region from 6th and 7th framework funds of the European Union has been gradually increasing and it is observed that awareness for R&D and innovation supports of European Commission has raised in the region, particularly in Kocaeli.

Nevertheless, it is observed that number of applications and partners by universities of the region to the framework programs where R&D projects are supported is insufficient. Kocaeli University and Sakarya University have

benefited within the scope of 6th Framework Program with 11 projects and 2 projects, respectively; and during the first three years of 7th Framework Program, Gebze Institute of Technology has benefited with 2 projects. Thus, 3 universities within the region has achieved a share of 1.18% within 169 projects around Turkey and it is observed that other universities of the region do not take place in the program. Therefore, increasing the capacities of the universities to benefit from the project is important.

Table 11

**Amounts of Funds Received by the Provinces within the scope of ICT-PSP Programs and Numbers of Projects**

	Turkey	Kocaeli	Sakarya	Düzce	Bolu	Yalova
Number of Project Proposals	94	2	1	-	1	-
Total Application	149	2	1	-	1	-
Number of Financed Projects	22	1	-	-	1	-
Number of Financed Institutions	32	1	-	-	1	-
Total Budget	5.047.421€	167.000€	-	-	9.630€	-

Source: Ministry of Development, 2013

A total 32 organizations/enterprises have achieved supported from 22 projects around Turkey within the scope of European Union Information and Communication Technologies Policy Support Programme (ICT-PSP). 2 projects and 2 partners among them are in East Marmara Region. The projects that are granted with support in the region correspond to 9% of the projects supported around Turkey and this percentage decreases down to 3.5% in the supported budget. When innovation infrastructure and industrial potential of the region is considered, it can be said that this percentage is low and it is important to increase it.

Supports are provided over three component within the scope of EIP (Entrepreneurship and Innovation Program), one of the components of CIP framework program by the European Union. "Financial instruments", which is one of these components, provides loan guarantee agreements with banks for SMEs. In addition, setting up a platform which promotes raising awareness in terms of community financing opportunities over "Enterprise Europe Network", technical cooperation, technology transfer and innovative technologies and where SMEs can find all assistances and supports in all terms they search for innovation and business needs is intended. KOSGEB Bursa Service Center Directorate serves as the coordinator and Bursa Chamber of Commerce, KOSGEB Kocaeli Service Center Directorate, Uludağ University, Ulutek Technology Development Zone and ABİGEM East Marmara serve as partner in East Marmara Network covering Bursa, Eskişehir, Bursa, Kocaeli, Sakarya, Düzce, Bolu, and Yalova provinces among the consortiums in Turkey.

Third issue supported within the scope of EIP is innovation projects. In this framework, there are not any representatives from East Marmara Region among the companies, enterprises, organizations or associations benefiting as coordinator or partner from Turkey.

**Innovation Infrastructure**

Regional innovation infrastructure is addressed separately for private sector, academy, public and civil society. Prioritized issues have been tried to be determined by identifying the innovation activities on which the private sector focus for manufacturing, the subjects on which the academy concentrates in researches and projects and the areas where the projects are generated and infrastructure of the society for using innovation and technology.

**Private Sector (Industry) and Civil Society**

Capacity of Organized Industrial Zone, KSS and free zones are high in East Marmara Region where industrial activities have accelerated, while the situation is not same in terms of innovation and technology centers. Although, the region is at the higher levels when compared to the average of Turkey in terms of innovation and R&D structure, it is observed that R&D and innovation structure that will move the advanced industry of the region to further levels are insufficient and current infrastructure is not used adequately.<sup>6</sup>

<sup>6</sup> East Marmara Regional Plan 2010-2013



Table 12

### General Technology and R&D Indicators

	TR42/TR	TR 42	Kocaeli	Sakarya	Düzce	Bolu	Yalova
Technoparks	%17,6	6+1*	3+1*	1	1	1	-
Technology Dev. Cen.	%10	2	1	1	-	-	-
Number of IT Companies	%11,9	65	62	1	-	-	2

Source: (1) Ministry of Industry and Commerce, 2012 (2) TÜBİDER, 2012

\*Muallimköy TGB has not initiated its activities actually.

Gebze Organized Industrial Zone Technology Development Area which is the first OSB Technology Development Area of Turkey operates in the region. 6 of 34 technoparks that are active around Turkey and 2 of 20 technology centers are located in the region. 3 technoparks – TÜBİTAK Marmara Technokent, Gebze OSB Technopark and Kocaeli University Technopark – among the

technoparks that are located in the region are in Kocaeli; and Sakarya University Technokent is located in Sakarya and Bolu University Technokent is located in Bolu. Moreover, two technology centers – Gebze Institute of Technology and KOSGEB Sakarya University Technology Center – are located in the region.<sup>7</sup>

Table 13

### Technology Development Zones

Name	UniversityP	Province	Year of Foundation
TÜBİTAK Marmara Research Center Technopark	TÜBİTAK - TTGV	KOCAELİ	2001
GOSB Technopark TDZ	Sabancı and Kocaeli Universities	KOCAELİ	2003
Kocaeli University TDZ	Kocaeli University	KOCAELİ	2003
Sakarya University TDZ	Sakarya University	SAKARYA	2008
Bolu TDZ	İzzet Baysal University	BOLU	2009
Düzce Technopark TDZ	Düzce University	DÜZCE	2010
Muallimköy TDZ (to be established)	Gebze Institute of Technology	KOCAELİ	2011

Source: MARKA, 2013

Table 14

### Performance of Technology Development Zones

Rank	Technology Development Zone	Overall Grade	State Supports and Expenditures of Managing Company (20%)	R&D Competence (20%)	Exports and Company Composition (20%)	Intellectual Property (15%)	Incubation and Technology Transfer Office Services (8%)	Cooperation and Interactivity (12%)
9	Gebze OIZ	40,57	8,84	14,89	11,44	2,49	0	2,92
10	TÜBİTAK Marmara Technopolis	40,45	11,65	13,15	9,16	5,07	0	1,43
20	Sakarya	33,25	8,89	7,75	8,34	3,28	2,49	2,5
29	Kocaeli University	40,45	11,65	13,15	9,16	5,07	0	1,43
30	Düzce	17,93	9,41	3,23	3,51	1	0	0,78
31	Bolu	10,6	5	0,15	1,86	0	0	3,59

Source: The Ministry of Science, Industry and Technology, 2013





# **EAST MARMARA REGIONAL INNOVATION STRATEGY IS A PRODUCT OF A PARTICIPATORY PROCESS**

All stakeholders were brought together and they were involved to the regional innovation vision development process.



## Organized Industrial Zone (OIZ)

37, in other words 13.3%, of 279 organized industrial zones that are active or at establishment stage around Turkey are located in East Marmara Region. 12 of the OSBs in the region are located in Dilovası and western part, namely close to İstanbul border. Therefore, the industry of the region is in close

relationship with İstanbul industry.

20 OSBs are located close to the ports locating in İzmit Gulf and they have high export capacity and potentials

Table 15

### Organized Industrial Zones Operating in East Marmara Provinces

	Name of OIZ	Province	District	Area (decare)	Main Sectors
1	Aşım Kibar OIZ	Kocaeli	İzmit	2.060	Automotive, Steel
2	Arslanbey OIZ	Kocaeli	Kartepe	1.420	Iron and Steel, Forestry Products, Rubber, Non-Metal Products
3	Gebze OIZ	Kocaeli	Gebze	5.368	Machinery, Chemicals, Automotive Supply, Plastics, Food Products
4	TAYSAD OIZ	Kocaeli	Çayirova	2.784	Automotive Supply
5	Gebze Plastics OIZ	Kocaeli	Gebze	1.699	Plastics, Machinery Production, Chemicals, Textile, Food Products
6	Güzeller OIZ	Kocaeli	Gebze	1.340	Metal, Steel, Packaging, Machinery Production, Automotive Supply, Industrial Kitchen
7	Dilovası OIZ	Kocaeli	Dilovası	9.000	Iron and Steel, Chemicals, Forestry Products, Non-Metal Products
8	VI. İMES OIZ	Kocaeli	Dilovası	3.000	Machinery, Automotive Supply, Constr. Machinery and Supply, Electrics, Electronics, Packaging Machinery
9	IV. İstanbul Machinery Producers OIZ	Kocaeli	Dilovası	5.100	Machinery and Supply, Metal, Electrics, Electronics
10	V. Chemicals Specialized OIZ	Kocaeli	Gebze	2.430	Chemicals
11	Gebze Coal Processors' Specialized OIZ	Kocaeli	Gebze	780	Coal
12	Sakarya I. OIZ	Sakarya	Arifiye	1.610	Automotive Supply, Metalware, Plastics, Textile, Chemical Goods, Food Products
13	Sakarya II. OIZ	Sakarya	Hendek	3.500	Automotive, Metalware, Plastics, Textile, Construction Elements, Food Products
14	Sakarya III. OIZ	Sakarya	Söğütli	2.540	Food Products, Plastics, Electrical Machinery, Iron and Steel, Textile and Clothing
15	Düzce OIZ	Düzce	Merkez	1.730	Textile, Metal, Machinery, Food Products
16	Düzce II. OIZ	Düzce	Merkez	810	Glass
17	Bolu Mixed Textile OIZ	Bolu	Merkez	1.470	Wood, Textile, Machinery, Electrical Cable
18	Gerede OIZ	Bolu	Gerede	1.000	Textile, Forestry Products, Furniture

Source: OSBÜK, 2012



Table 16

### Organized Industry Zones of which Foundation Activities are ongoing in East Marmara Provinces

	Name of OIZ	Province	District	Status	Area (decare)
1	Kandıra Food Spec. OIZ	Kocaeli	Kandıra	Legal Process Continues	1.910
2	Ali Kalya Mixed OIZ	Kocaeli	İzmit	Infrastructural Works Ongoing	1.200
3	Marble Producers' OIZ	Kocaeli	Dilovası	Application Process	-
4	Quarry Specialized OIZ	Kocaeli	Dilovası	Evaluation Phase	-
5	Şekerpinar Spec. OIZ	Kocaeli	Çayirova	Evaluation Phase	-
6	Machinery Spec. OIZ	Sakarya	Kaynarca	Application Phase completed.	2800
7	Karasu OIZ	Sakarya	Karasu	Infrastructural Works Ongoing	480
8	Ferizli OIZ	Sakarya	Ferizli	Expropriation Process	750
9	Kaynarca OIZ	Sakarya	Kaynarca	Expropriation Process	900
10	Akyazı OIZ	Sakarya	Akyazı	Application Process	
11	Husbandry Specialized OIZ	Sakarya	Ferizli	Application Process	
12	Geyve Food Prod. Specialized OIZ	Sakarya	Geyve	Application Process	
13	Gümüşova (Spec.) OIZ	Düzce	Gümüşova	Establishment Phase	3000
14	Bolu Yeniçağa OIZ	Bolu	Yeniçağa	Establishment Phase	1.180
15	Gerede Leather Spec. OIZ	Bolu	Gerede	Infrastructural Works Ongoing	1.310
16	Yalova Ornamental Flower Ind. OIZ	Yalova	Çiftlikköy	Expropriation Process	1.048
17	Yalova IT Specialized OIZ	Yalova	Merkez	Registered	341
18	Yalova Shipbuilders' OIZ	Yalova	Çiftlikköy	Expropriation Process	1.400
19	Yalova Automotive Parts & Comp. Manufacturers' Specialized OIZ	Yalova	Çiftlikköy	Application Process	1.600

Source: OSBÜK, 2012



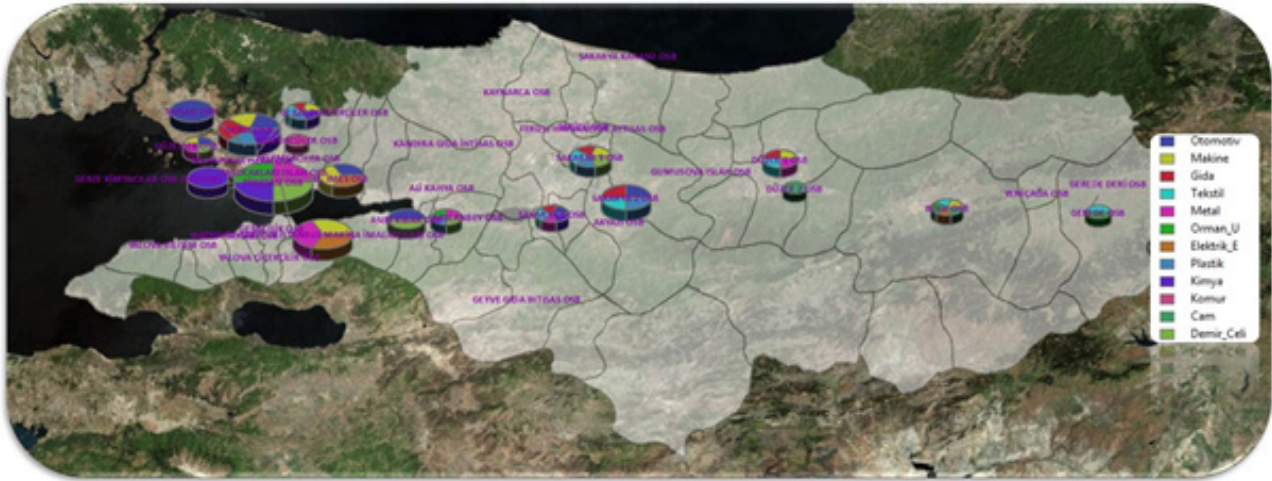


When activity fields of the enterprises locating at the OSBs operating in the region are analyzed, it is observed that machinery manufacturing, automotive and automotive parts, food, textile and base metal as well as iron & steel sectors stand out mainly.

Among the Organized Industrial Zones that are about to be established in the region, 3 are at the stage of evaluation as Renovation OSB, 2 are at application stage, 8 are at expropriation and infrastructure stage, and the remaining 6 are at the stage of completion of legal process. Shipbuilding, IT, ornamental plants, automotive parts, food and livestock, leather, quarrying, marble and machinery manufacturing are the main sectors among the ones that will operate as specialization OSB.

Figure 12

### Sizes and Spatial Distribution of Active OSBs according to Sectors



When spatial distribution of the dominant sectors operating at the Organized Industrial Zones is analyzed, Machinery, Chemistry, Automotive Parts, Plastic, and Food sectors stand out in Gebze-Dilovası Area which is in direct interaction with İstanbul. On the other hand, although there are no active Organized Industrial Zones in the districts of Yalova which is in the southern part of the Gulf, main sectors that constitute the base for foundation stage are shipbuilding, automotive parts and floristry. Automotive and supplier industry, iron and steel or base metal and machinery manufacturing sectors stand out in the direction of İzmit-Adapazarı-Akyazı. Food sector will take place in the Organized Industrial Zones that are at foundation stage in the rural areas of Sakarya and Kandıra. Glass, textile, leather goods, food and forest products industries stand out in the direction of Düzce-Bolu-Gerede in the east of the region where manufacturing activities are intensely implemented.

### R&D Centers

R&D centers are defined as the units that are organized as a separate unit within the organization of capital companies which are legally located or of which business centers are located in Turkey including the workplaces of the limited taxpayers, that exclusively implement research and development activities domestically and that employ minimum 50 full-time equivalent R&D personnel and that have the adequate R&D know-how and capability.<sup>8</sup>

R&D Center Certificate has been granted to 134 of 163 enterprises that applied for establishing R&D center as of the end of 2012<sup>9</sup>. Total R&D personnel number of these enterprises is 14,837 and R&D expenditures by these enterprises are 4.80 billion TL.

Table 17

### Sectoral and Personnel Distribution of the R&D Centers in the Region

Indicators	TR42	KOCAELİ	SAKARYA	DÜZCE	BOLU	YALOVA
Sectoral Distribution and Number of Personnels of R&D Centers within the Region (paranthesis indicates number of personel)	Automotive (1049)	Automotive (470)	Automotive (228)	Automotive Sup. Ind (63)	Durable Consumption Goods (62)	Automotive (351)
	Automotive Supply Industry (600)	Automotive Supply Industry (406)	Automotive Supply Ind (79)			Chemicals (84)
	Chemicals (237)	Chemicals (153)				Automotive Supply Ind (61)
	Electrics and Electronics (116)	Electrics and Electronics (116)				
	Durable Consumption Goods (120)	Durable Consumption Goods (58)				

Source: Ministry of Science, Industry and Technology, 2012

<sup>8</sup>BSTB website, 2013. <http://www.sanayi.gov.tr/Pages.aspx?pagelD=543&lng=tr>

<sup>9</sup>BSTB website, 2013. <http://sagm.sanayi.gov.tr/ServiceDetails.aspx?dataID=113>



2073, in other words 13.97%, of 14,837 R&D staff operating at R&D centers around Turkey are in East Marmara Region. R&D centers operating in the region are mainly in automotive and automotive parts sector. 13 of 21 R&D centers belong to the companies that carry out business in automotive and automotive supplier industry and they are located in all provinces other except Bolu. A total of 1658 R&D personnel work in these companies. This sector is followed by chemistry sector with 237 employees in 2 companies

in Kocaeli and Yalova provinces. Another sector is electric-electronics sector located in Kocaeli and Yalova provinces and these activities are carried out by 3 companies with a total of 116 R&D personnel. 1 company in Bolu with 62 R&D employees is the only company that has an R&D center in the province and is one of the 2 companies that have R&D center operating in durable consumer goods in the region. As of the beginning of 2013, the last sector with R&D center is the drug industry.

Figure 13

**Sectoral Distribution of the Number of Personnel in R&D Centers**

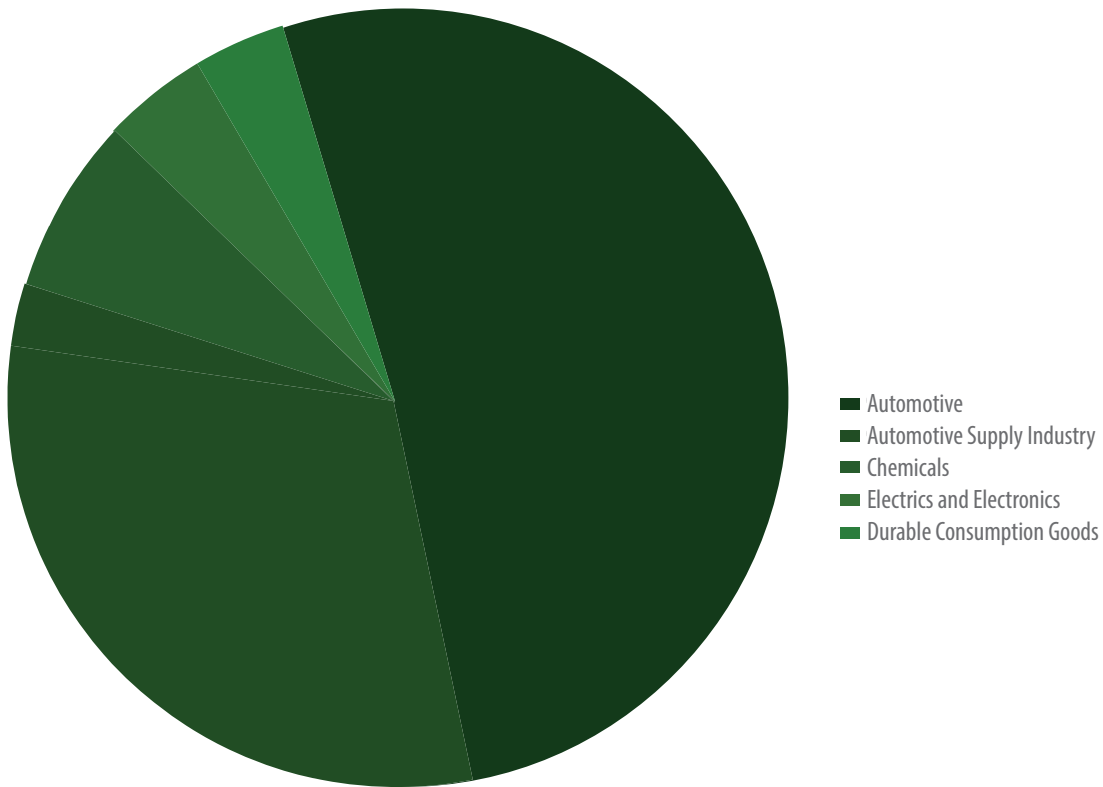


Figure 14

**Sectoral Percentage of the R&D Centers in the Region**

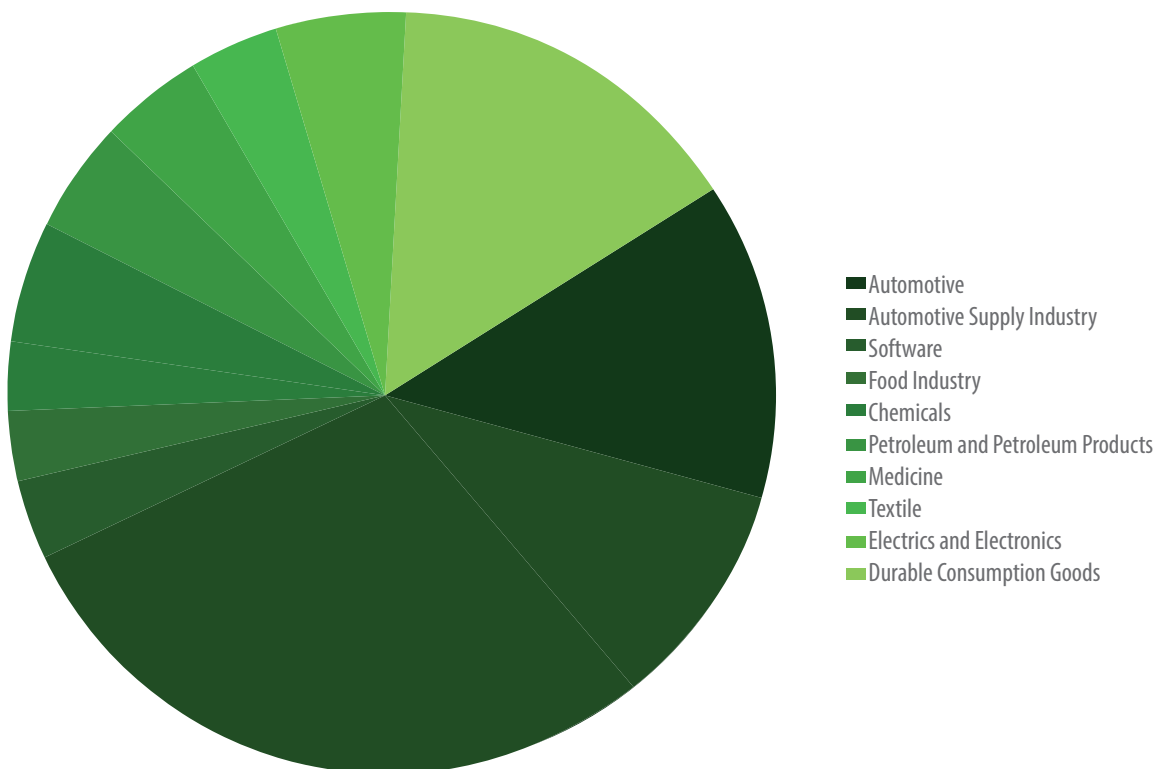




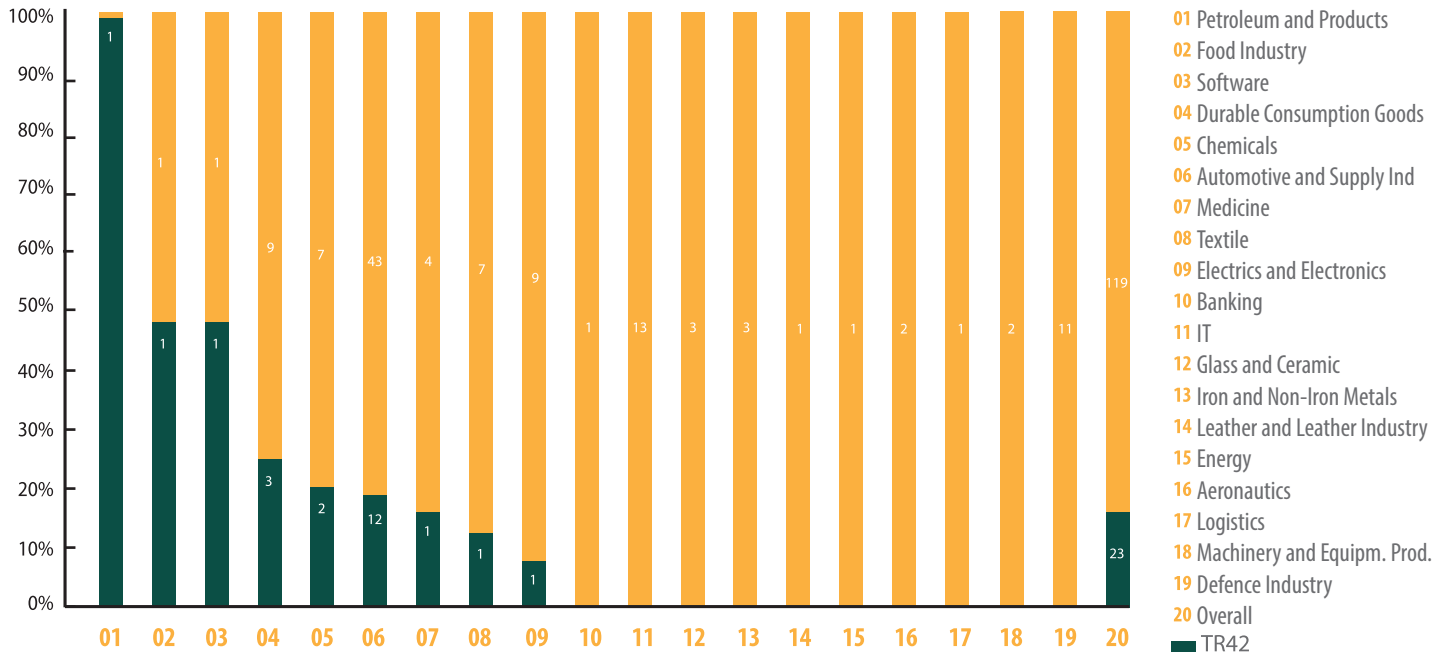
Table 18

## East Marmara Region R&amp;D Centers

	CODE	NAME OF THE COMPANY	SECTOR	PROVINCE
9	012.MERKEZ.2008	ARÇELİK PİŞİRİCİ CİHAZLAR	Durable Consumption Goods	BOLU
17	023.MERKEZ.2008	FORD OTOMOTİV SANAYİ A.Ş.	Automotive	KOCAELİ
19	027.MERKEZ.2008	TEKLAS KAÇUK SANAYİ VE TİCARET A.Ş.	Automotive Supply Industry	KOCAELİ
24	031.MERKEZ.2008	TIRSAN TREYLER SANAYİ TİCARET VE NAKLİYAT A.Ş.	Automotive Supply Industry	SAKARYA
27	038.MERKEZ.2008	BİLİM İLAÇ SANAYİ VE TİCARET A.Ş.	Medicine	KOCAELİ
28	025.MERKEZ.2008	OTOKAR OTOMOTİV VE SAVUNMA SANAYİ A.Ş.	Automotive	SAKARYA
38	048.MERKEZ.2009	KORDSA GLOBAL A.Ş.	Automotive Supply Industry	KOCAELİ
39	049.MERKEZ.2009	FARPLAS OTO YEDEK PARÇALARI İMALATI, İTHALATI VE İHRACATI ANONİM ŞİRKETİ	Automotive Supply Industry	KOCAELİ
41	050.MERKEZ.2009	AKSA AKRİLİK KİMYA SAN. A.Ş.	Chemicals	YALOVA
44	052.MERKEZ.2009	ANADOLU ISUZU OTOMOTİV SANAYİ VE TİCARET A.Ş.	Automotive	KOCAELİ
69	087.MERKEZ.2010	TÜPRAŞ TÜRKİYE PETROL RAFİNERİLERİ A.Ş.	Chemicals	KOCAELİ
71	091.MERKEZ.2010	KANCA EL ALETLERİ DÖVME ÇELİK VE MAKİNE SANAYİ A.Ş.	Automotive Supply Industry	KOCAELİ
78	101.MERKEZ.2010	ASSAN HANIL OTO SAN. VE TİC. A.Ş.	Automotive	KOCAELİ
85	107.MERKEZ.2011	TEKNOROT OTOMOTİV ÜRÜNLERİ SAN. VE TİC. A.Ş.	Automotive Supply Industry	DÜZCE
86	108.MERKEZ.2011	HEGZAGON MÜHENDİSLİK VE TASARIM A.Ş.	Automotive Supply Industry	KOCAELİ
93	118.MERKEZ.2011	ARÇELİK-LG	Electrics and Electronics	KOCAELİ
102	125.MERKEZ.2011	SIEMENS SANAYİ VE TİCARET A.Ş.	Electrics and Electronics	KOCAELİ
108	132.MERKEZ.2011	KALE OTO RADYATÖR SANAYİ VE TİCARET ANONİM ŞİRKETİ	Automotive Supply Industry	KOCAELİ
111	135.MERKEZ.2011	HAYAT KİMYA SANAYİ A.Ş.	Chemicals	KOCAELİ
116	144.MERKEZ.2011	MECAPLAST OTOMOTİV ÜRÜNLERİ SANAYİ VE TİCARET A.Ş.	Automotive Supply Industry	KOCAELİ
122	151.MERKEZ.2012	ALARKO CARRIER	Durable Consumption Goods	KOCAELİ

Figure 15

## Sectoral Agglomeration of the R&amp;D Centers







### Indicators of Brand, Patent and Utility Models

According to Turkish Patent Institute (TPE) data, 4.7% of the patents granted around Turkey since 2000 have been granted to East Marmara Region. The vast majority of these patents are to the province of Kocaeli. While 3.96% of useful models, 2.16% of industrial design and 2.89% of registered trademark around Turkey are realized in East Marmara Region, dominance of Kocaeli

stands out in all areas. When the regional production statistics are taken into consideration, it can be said that number of patents, utility models, industrial designs and brands remains low.

Table 19

### Indicators of Brand, Patent and Utility Models

INDICATORS	YEAR	KOCAELİ	SAKARYA	DÜZCE	BOLU	YALOVA	TR42	TÜRKİYE
Number of Patents	2000	10	0	0	0	0	10	23
	2001	4	0	0	0	0	4	57
	2002	8	0	0	0	0	8	73
	2003	3	0	0	0	0	3	92
	2004	3	0	0	0	0	3	68
	2005	4	0	0	0	0	4	94
	2006	3	0	0	0	0	3	122
	2007	4	1	0	0	0	5	317
	2008	6	4	1	7	0	18	337
	2009	10	3	0	0	1	14	456
	2010	27	5	1	0	0	33	642
	2011	29	13	0	0	0	42	847
	TOPLAM	111	26	2	7	1	147	3128
Utility Models	2000	5	0	0	0	1	6	145
	2001	8	1	0	1	0	10	257
	2002	10	2	0	0	0	12	373
	2003	17	4	1	0	1	23	704
	2004	16	5	1	0	2	24	677
	2005	12	13	0	0	0	25	963
	2006	23	19	0	1	0	43	1659
	2007	58	24	1	0	0	83	2146
	2008	45	24	3	1	0	73	1833
	2009	56	41	2	2	4	105	2151
	2010	58	27	2	21	4	112	2022
	2011	42	17	9	3	3	74	1948
	TOPLAM	350	177	19	29	15	590	14878
Industrial Design	2000	9	5	2	1	0	17	1678
	2001	33	10	1	4	0	48	2339
	2002	37	9	2	1	0	49	2693
	2003	32	24	2	4	2	64	3225
	2004	47	33	1	0	2	83	4223
	2005	64	24	5	0	2	95	4388
	2006	75	25	3	1	4	108	5708
	2007	65	41	1	2	9	118	5856
	2008	100	55	6	2	0	163	5783
	2009	84	36	5	3	2	130	5378
	2010	92	49	4	6	3	154	6360
	2011	105	46	6	8	4	169	6958
	TOPLAM	743	357	38	32	28	1029	47631
Brands	2000	180	79	6	37	6	308	10640
	2001	154	62	4	20	2	242	10129
	2002	186	58	19	22	7	292	13479
	2003	201	67	16	30	9	323	14514
	2004	257	121	12	22	8	420	18865
	2005	366	183	33	43	30	655	26933
	2006	573	270	41	48	48	980	34509
	2007	701	284	48	68	61	1162	40705
	2008	670	307	41	41	42	1101	35543
	2009	853	339	93	52	75	1412	41414
	2010	629	227	62	45	59	1022	32397
	2011	767	258	73	48	48	1194	35858
	TOPLAM	5537	2255	448	476	395	9111	314986

Source: Turkish Patent Institute, 2012

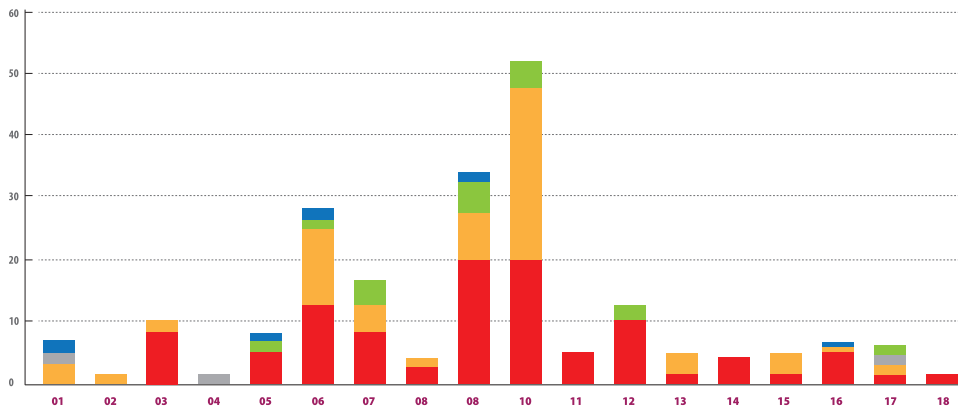
### R&D Supports

Distributions of applications to R&D, innovation and industrial practices provided by KOSGEB stand out as a significant indicator in terms of determination of an innovative sector in smart specialization.



Figure 16

## Sectoral Distribution of Applications to KOSGEB R&D Supports according to Provinces



Kaynak: KOSGEB, 2012

### Applications to KOSGEB R&D Financial Support

- Kocaeli
- Sakarya
- Düzce
- Bolu
- Yalova

- 01 Manufacture of Wood and Wood Products and Cork Products (Except Furniture), Merchandise Made of Straw and Similar Materials by Weaving
- 02 Manufacturing Coal and Refined Petroleum Products
- 03 Motor Vehicles, Trailers and Semi- Trailer Manufacturing
- 04 Manufacture of Paper and Paper Products
- 05 Base metals Industry
- 06 Manufacture of Fabricated Metal Products (Except Machinery and Eq.)
- 07 Electrical Equipment Manufacturing
- 08 Manufacture of Other Transport Eq.
- 09 Manufacture of Computer, Electronic and Optical Products
- 10 Manufacture of Machinery and Eq. Non Elsewhere Classified
- 11 Manufacture of Basic Pharmaceutical Products and Pharmaceutical Materials
- 12 Manufacture of Chemicals and Chemical Products
- 13 Installation and Repair of Machinery and Equipment
- 14 Manufacture of Textile Products
- 15 Manufacture of Food Products
- 16 Other Productions
- 17 Manufacture of Rubber and Plastic Products
- 18 Manufacture of Other Non-Metallic Mineral Products

Table 20

## Sectoral Distribution of Applications to KOSGEB R&D Supports according to Provinces

	East Marmara	Ratio to Turkey (%)	Kocaeli	Sakarya	Düzce	Bolu	Yalova
<b>MANUFACTURING</b>	<b>199</b>	<b>%12,08</b>	<b>103</b>	<b>67</b>	<b>4</b>	<b>18</b>	<b>7</b>
Manufacture of Wood and Wood Products and Cork Products (Except Furniture), Merchandise Made of Straw and Similar Materials by Weaving	7	%77,77	-	3	2	-	2
Manufacturing Coal and Refined Petroleum Product	1	%33,33	-	1	-	-	-
Motor Vehicles, Trailers and Semi- Trailer Manufacturing	10	%22,72	8	2	-	-	-
Manufacture of Paper and Paper Products	1	%20	-	-	1	-	-
Base metals Industry	9	%18,00	5	-	-	3	1
Manufacture of Fabricated Metal Products (Except Machinery and Eq.)	27	%16,17	12	12	-	1	2
Electrical Equipment Manufacturing	3	%15,24	8	4	-	4	-
Manufacture of Other Transport Eq.	16	%14,29	2	1	-	-	-
Manufacture of Computer, Electronic and Optical Products	33	%13,15	20	8	-	4	-
Manufacture of Machinery and Eq. Non Elsewhere Classified	52	%11,21	21	28	-	3	1
Manufacture of Basic Pharmaceutical Products and Pharmaceutical Materials	4	%11,11	4	-	-	-	-
Manufacture of Chemicals and Chemical Products	12	%9,76	10	-	-	2	-
Installation and Repair of Machinery and Equipment	4	%9,52	1	3	-	-	-
Manufacture of Textile Products	3	%8,82	3	-	-	-	-
Manufacture of Food Products	4	%7,69	1	3	-	-	-
Other Productions	6	%6,12	4	1	-	-	-
Manufacture of Rubber and Plastic Products	5	%5,55	2	1	-	1	1
Manufacture of Other Non-Metallic Mineral Products	2	%5,26	2	-	1	-	-
<b>INFORMATION AND COMMUNICATION</b>	<b>35</b>	<b>%4,85</b>	<b>25</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>-</b>
<b>OCCUPATIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES</b>	<b>18</b>	<b>%7,69</b>	<b>12</b>	<b>3</b>	<b>3</b>	<b>-</b>	<b>-</b>
<b>WHOLESALE AND RETAIL TRADE; REPAIR OF MOTOR VEHICLES AND MOTORCYCLES</b>	<b>10</b>	<b>%12,66</b>	<b>3</b>	<b>4</b>	<b>3</b>	<b>-</b>	<b>-</b>
<b>CIVIL WORKS</b>	<b>1</b>	<b>%3,70</b>	<b>-</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>-</b>

Source: KOSGEB, 2012



### Other R&D Support Programs

Manufacturing sectors for which maximum support applications are made are Not Elsewhere Classified Machinery and Equipment Manufacturing, Manufacture of Computer and Electronic and Optical Products, Manufacture of Fabricated Metal Products (Except Machinery and Equipment) and Electrical Equipment Manufacturing, while their percentages to the country are examined it is observed that Manufacture of Wood, Wood Products and Cork Products, Motor Vehicles, Trailers and Semi-Trailer Manufacturing, Base Metal Industry, Manufacture of Fabricated Metal Products (Except Machinery and Equipment), Electrical Equipment Manufacturing, Other Transportation Equipment Manufacturing and Manufacture of Computers and Electronic and Optical Products agglomerate in the region.

Although manufacture of Coke and Refined Petroleum Products as well as manufacture of Paper and Paper Products also exhibits agglomeration, their amounts are too low.

### Technopreneurship Capital

216 projects have been prepared for technopreneurship capital support program, which covers supporting, monitoring, concluding and evaluating results of transformation of technology and innovation focused business ideas of high educated and qualified young people into enterprises with added value and potential to create qualified employment as of 2013 by the persons that are educated/being educated in the universities of the region and 40 of these projects have been supported.

Dominance and high project support ratio of the universities located in Kocaeli stand out. Both projects applied by the students of Düzce University were supported.

Table 21

### Technopreneurship Capital Supports

Universities (Accepted / Application)	2009	2010	2011	2012	2013	Toplam
Kocaeli University		1/4	2/11	7/32	4/32	14/79
GYTE	1/2	0/7	1/5	8/29	3/14	13/57
Sakarya University	0/2	0/10	2/16	2/23	5/13	9/64
Düzce University					2/2	2/2
Abant İzzet Baysal University		0/1	1/2	0/6	0/1	1/10
Yalova University				1/4		1/4

Source: The Ministry of Science, Industry and Technology, 2012

## Academy and Public

There are 6 universities within the provinces of East Marmara Region and all these universities are public. In addition, although Sabancı University is within the borders of the province of İstanbul, it is mainly in interaction with Gebze region. 4 universities in the region were established in 1992 and this number increased to 6 after the years 2006 and 2008.

### Universities

Table 22

### Universities

	Year of Foundation	Entrepreneurship and Innovation Index 2012 Ranking*	Number of Academic Members **	Number of Total Publications **	Publication Rate per Academic Member **	Implemented Technology, R&D and Innovation Projects
Kocaeli University	1992	24	671	366	0,52	136
GYTE	1992	9	192	159	1,18	
Sakarya University	1992	38	676	200	0,29	
Düzce University	1992	50	375	182	0,47	75
Abant İzzet Baysal University	2006	36	146	168	1,12	
Yalova University	2008	-	7	10	1,29	40
Sabancı University <sup>(1)</sup>	1994	1	166	182	1,04	

Source: University websites, 2013; \*Ministry of Science, Commerce and Industry, 2012; \*\*YÖK, 2010; (1) Located within the borders of the province of İstanbul.

Sabancı University and Gebze Institute of Technology are ranked at the top tier in the entrepreneurship and innovation index prepared by the Ministry of Science, Industry and Technology. Manufacturing sector centered in Gebze region and nature of the departments delivering the courses are the biggest factors in improvement of the relations of these two universities with the private sector. In terms of the number academic members, most academics work at Kocaeli and Sakarya Universities in the region.



## Industrial Theses (SANTEZ)

Table 23

### Industrial Theses (SANTEZ) Supports

INDICATORS	YEAR	KOCAELİ	SAKARYA	DÜZCE	BOLU	YALOVA	TÜRKİYE
Granted SAN-TEZ Projects from the Region	2007	2					66
	2008	2	2				43
	2009	2			1		73
	2010	4		1		1	107
	2011	9					154
Status of San-Tez Projects in 3 Largest Metropolises (İstanbul, Ankara, İzmir)	2007	585.070 TL					293.866,88 TL
	2008	67.070 TL	791.101 TL				406.803,09 TL
	2009	219.503 TL			24.168 TL		262.852,66 TL
	2010	219.137 TL		264.755 TL		219.756 TL	466.118,31 TL
	2011	410.379 TL					559.616,18 TL

Source, Data Year: Ministry of Science, Industry and Technology, 2012

SANTEZ projects have an important place in examination of the cooperation between the universities and the private sector in the region. Almost all of the applications for SANTEZ (80% in the last 5 years) from the region are from the province of Kocaeli.

		İstanbul	Ankara	İzmir	TR42
Status of San-Tez Projects in 3 Largest Metropolises (İstanbul, Ankara, İzmir) and East Marmara.	2007	12	13	11	2
	2008	8	15	3	4
	2009	16	19	13	3
	2010	24	30	11	6
	2011	24	47	23	9

Source, Data Year: Ministry of Science, Industry and Technology, 2012

5% of the applications for SANTEZ around Turkey are from the region. SANTEZs, of which vast majority is from Ankara in the recent years, mainly center in İstanbul and İzmir. When industrial structure is taken into consideration, East Marmara Region has a percentage far below from these provinces.

### Entrepreneur and Innovative University Index<sup>10</sup>

Universities have been evaluated with the "Entrepreneur and Innovative University Index" consisting of 5 dimensions and conducted according to 23 indicators by the Ministry of Science, Industry and Technology and in line with the data provided by TÜBİTAK, YÖK, Ministry of Science, Industry and Technology, TPE, Ministry of Development, KOSGEB, TTGV and TÜBA.

Figure 27

### Dimensions of Entrepreneur and Innovative University Index

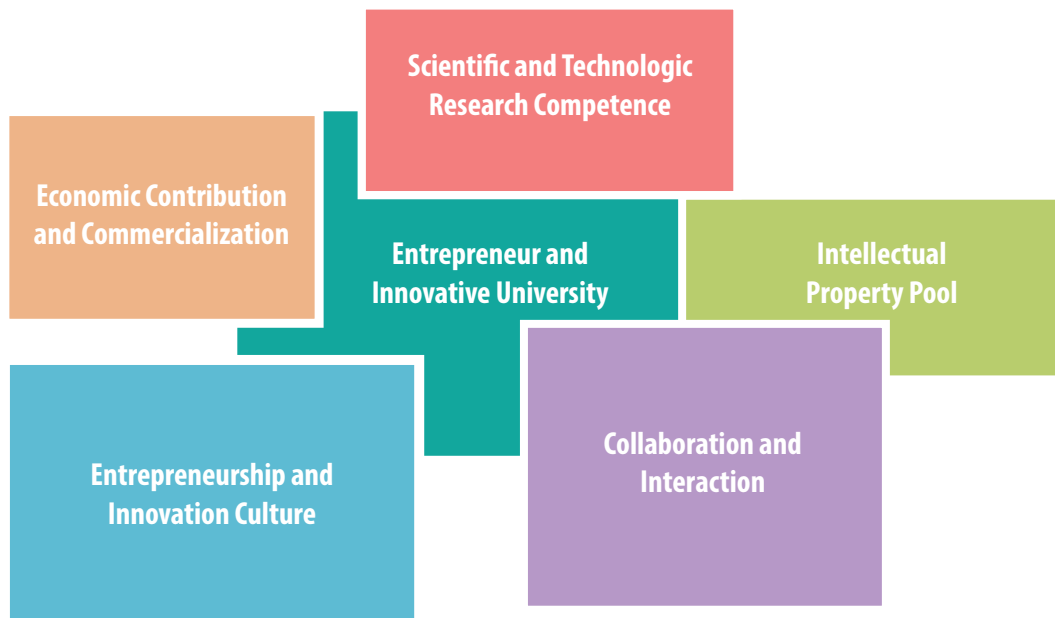




Table 24

**Inter-Universities Entrepreneurship and Innovation Index 2012 Ranking\***

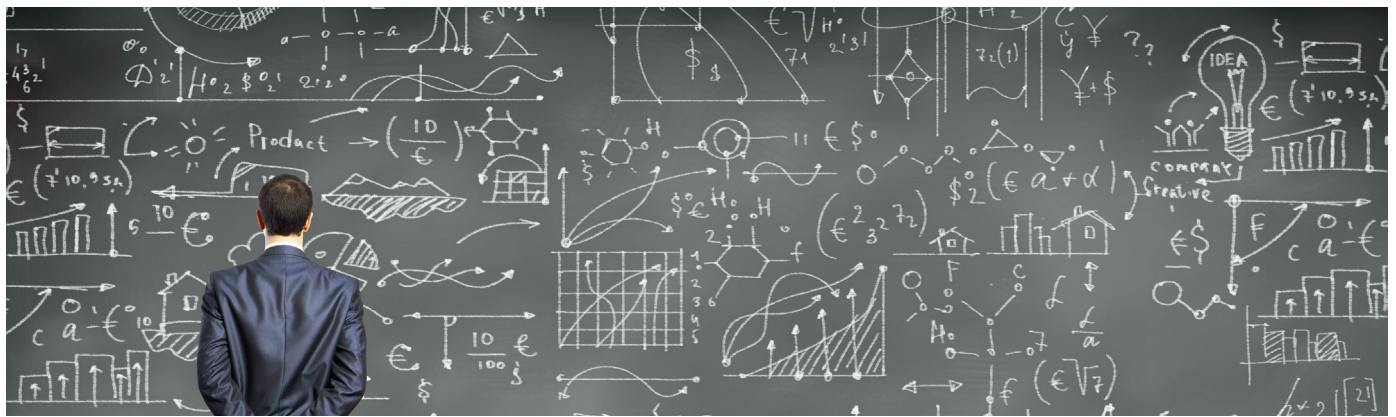
Rank	University	Overall Score	Scientific and Technologic Research Competence	Intellectual Property Pool	Collaboration and Interaction	Entrepreneurship and Innovation Culture	Economic Contribution and commercialization
1	SABANCI UNIVERSITY	84	19,2	9,2	25,0	12,5	18,3
2	MIDDLE EAST TECHNICAL UNIVERSITY	83	18,9	10,6	22,2	12,2	18,8
3	IHSAN DOĞRAMACI BİLKENT UNIVERSITY	70	18,3	6,5	22,8	4,5	18,2
4	ÖZYEGİN UNIVERSITY	69	13,3	6,5	19,3	10,9	18,8
5	İSTANBUL TECHNICAL UNIVERSITY	67	15,9	7,8	20,1	7,4	15,9
6	BOĞAZİÇİ UNIVERSITY	65	19,0	0,9	24,2	3,4	17,1
7	İZMİR INSTITUTE OF TECHNOLOGY	58	18,8	1,8	18,1	3,3	16,2
8	KOÇ UNIVERSITY	57	17,2	5,9	22,2	9,9	2,2
9	GEBZE INSTITUTE OF TECHNOLOGY	57	18,4	3,8	17,5	6,3	11,1
10	TOBB ECONOMY and TECHNOLOGY UNIVERSITY	54	16,1	0,0	19,2	6,8	12,2
24	KOCAELI UNIVERSITY	37	8,2	2,9	10,0	4,2	11,2
36	DÜZCE UNIVERSITY	30	7,1	3,4	6,9	5,5	7,2
38	SAKARYA UNIVERSITY	29	7,9	6,3	8,0	1,0	6,2
50	BOLU İZZET BAYSAL UNIVERSITY	22	7,3	4,9	6,2	0,8	2,8

Source: Ministry of Science, Industry and Technology

All universities from the region, except Yalova University which was newly established relatively, are ranked in first 50 and Gebze Institute of Technology is ranked at 9th place. Gebze Institute of Technology stands out in scientific researches, Sakarya University in intellectual property, Gebze Institute of Technology and Kocaeli University in cooperation and interaction, Gebze Institute of Technology, Kocaeli University and Sakarya University in entrepreneurship and innovation culture, and Kocaeli University, Gebze

Institute of Technology and Düzce University in economic contribution and commercialization.

26 projects benefited from technoprenurship capital support Ministry of Science, Industry and Technology between 2009 and 2012 by the universities in the region. 10 each of these projects were used by Gebze Institute of Technology and Kocaeli University, 4 by Sakarya University, 1 by Bolu İzzet Baysal University and 1 by Yalova University.



It is observed that the shares allocated to scientific researches increase in the universities that have completed their establishment and institutionalization stages. Although there are not any universities in the region that have a long-standing past, the universities other than Düzce and Yalova Universities have completed their establishment and institutionalization stages and has begun to increase their budgets allocated for scientific activities.

### Faculties

When distribution of the academic members (Professor, Associate Professor, Assistant Professors, Lecturer, Research Assistant and Expert) working in the universities in the region according to the faculties is analyzed, it is observed that they are mainly from medical, science and literature and engineering faculties.

Number of Academicians According to Faculties	TOTAL	KOCAELI UNIVERSITY	GEBZE INSTITUTE OF TECHNOLOGY	SAKARYA UNIVERSITY	DÜZCE UNIVERSITY	ABANT İZZET BAYSAL UNIVERSITY	YALOVA UNIVERSITY
Medicine **	697	223	-	-	226	248	-
Arts and Sciences	430	121	121	-	146	42	-
Engineering *	389	233	15	-	54	87	-
Education	237	63	-	-	169	5	-
Economics and Administrative Sciences	162	63	-	-	86	13	-
Fine Arts	61	48	-	-	7	6	-
Forestry	60	-	-	-	-	60	-
Communication	40	40	-	-	-	-	-
Law	37	37	-	-	-	-	-
Dentistry	35	11	-	-	24	-	-
Architecture	27	27	-	-	-	-	-
Other	8	8	-	-	-	-	-

\*Including Computer, IT, Technology, and Technical Education Faculties

\*\*Excluding TUS





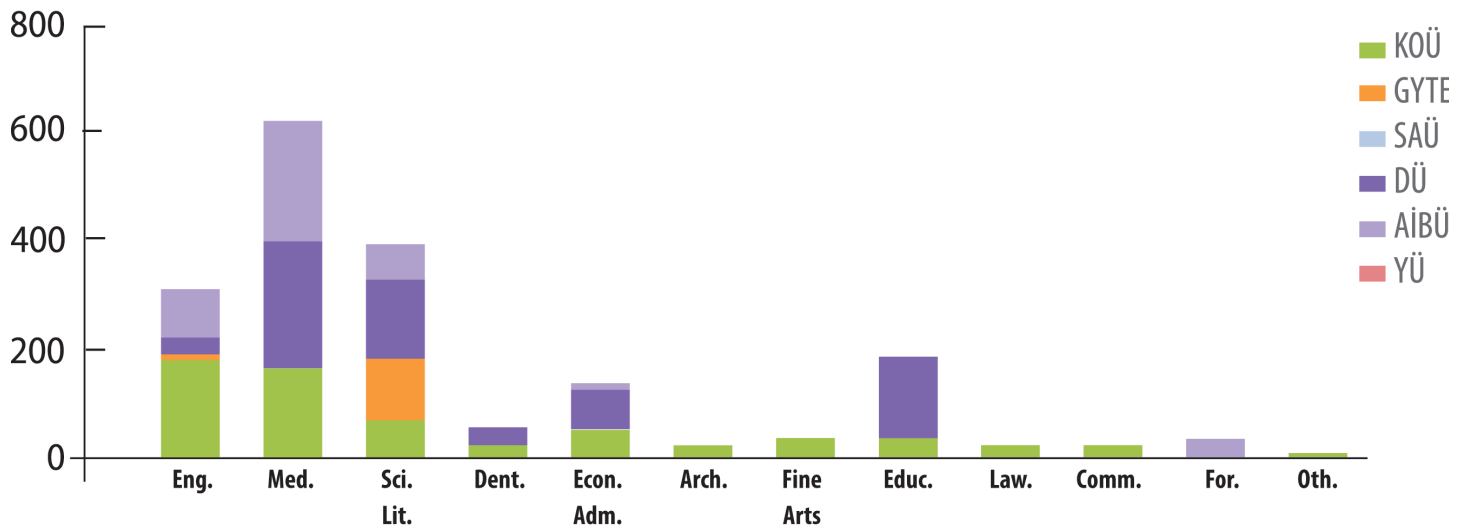


# **EAST MARMARA DEVELOPMENT AGENCY IS DYNAMIC**

**With highly qualified laborforce, MARKA is adequate in  
strategy development and impelentation.**



Number of Academics According to Faculties



\* Including Computer, IT, Technology, and Technical Education Faculties

\*\* Excluding

Electrical and electronics, mechanical engineering, computer engineering and civil works engineering departments spearhead among the departments of Engineering where innovation can be applied in the fastest way. Among more specific branches in the university of the region are mechatronics, information systems, bioengineering, manufacturing engineering, automotive engineering, polymer engineering and transportation engineering departments.

Number of Engineering, Technology and Technical Education Faculties

Number of Engineering, Technology and Technical Education Faculties	Number of Departments
Electrical and Electronics Engineering *	7
Mechanical Engineering	7
Computer Engineering	6
Civil Engineering	5
Environmental Engineering	4
Industrial Engineering	4
Metallurgy and Materials Engineering	4
Chemical Engineering	3
Mechatronics Engineering	3
Information Systems Engineering	2
Biomedical Engineering	2
Electronics and Computer Education	2
Energy Systems Engineering	2
Food Engineering	2
Geodesy and Photogrammetry Engineering	2
Geophysical Engineering	2
Bioengineering	1
Electrical Education	1
Electronics and Communication Engineering	1
Manufacturing Engineering	1
Geological Engineering	1
Machinery Training and Education	1
Automotive Engineering	1
Polymer Engineering	1
Transport Engineering	1
Construction Education	1



### Colleges

There are 22 colleges operating in 5 universities in the region. 4 of them are physical education and sports, 4 are foreign languages, 4 are healthcare, 3 are tourism and hospitality, 3 are applied sciences, 1 is physical therapy and rehabilitation, 1 is conservatory colleges. On the other hand, Maritime Business and Management, Ship Machinery Operations Engineering, Marine Transportation Operations Engineering educations are delivered at Barbaros Maritime College of Kocaeli University; and Aircraft Electrical and Electronics, Aircraft Body and Engine, Civil Aviation Transportation Operations educations are delivered at Civil Aviation College.

### Institutes

6 universities in the region have Science and Social Science Institutes. In addition, four universities have Health Sciences Institute, 2 universities have Educational Sciences Institutes and 1 university has Earthquake Engineering and Building Engineering Institute. Among the specialization departments are forest products, furniture and decoration and polymer sciences, metal sciences and automotive related departments.

Departments of Institute of Science	Number of Departments
Computer Engineering	3
Information Technologies Engineering	2
Biology	1
Biomedical Engineering	1
Environmental Engineering	2
Electrical Education	2
Electrical Engineering	2
Electronics and Computer Education	2
Electronics-Communication Engineering	1
Electro-Optical Systems Engineering	1
Industrial Engineering	2
Energy Engineering	2
Physics	2
Food Engineering	1
Primary Education Department Science Teaching	1
Primary Education Department Mathematics Teaching	1
Food Engineering	1
Civil Works Engineering	2
Occupational Health and Safety	1
Geodesy and Geoinformation Engineering	1
Geophysical Engineering	2
Quality Management	1
Chemistry	3
Chemical Engineering	2
Machinery Education	2
Machinery Engineering	2
Mathematics	3
Mechatronics Engineering	2
Metal Education	1
Metallurgical and Materials Engineering	3
Architecture	1
Furniture and Decoration Education	1
Engineering Management	1
Forest Engineering	2
Automotive Engineering (evening education)	3
Landscape architecture	1
Polymer Science and Technology	2
Construction Teaching	2

### Vocational Schools

299 vocational schools operate within the body of 6 universities in the region. The sectors agglomerated in the region are also in concordance with the departments in parallel with the need for qualified intermediate staff.



Departments of Vocational Schools	Number of Departments
Justice	1
Hospitality Services	1
Beekeeping	1
Cookery	2
Horse Training	1
Equine Operations	1
Footwear Design and Production	1
Horticulture	3
Department of Banking and Insurance	3
Press and Publishing Department	1
Information Management	1
Computer Programming and Technology	16
Plant Protection	1
Biomedical Equipment Technology	1
Paint Technology	1
Office and Secretarial Services Department	5
Glass-Ceramic and Applied Jewelry Technologies programs	1
Environment Protection and Control	3
Child Care and Youth Services Department	2
Maritime Transportation and Management	1
Maritime and Port Management	1
Leather Technology	3
Foreign Trade	10
Electricity	6
Electricity and Energy Department	2
Electronic Communication Technology	2
Electronics Technology	6
Real Estate and Property Management	2
Industrial Product Design	1
Industrial Electronics	1
Industrial Molding	3
Industrial Automation	1
E-Commerce	1
Fermentation	1
Physiotherapy	1
Photography and Videography	1
Gas and Installations Technology	2
Traditional Handicrafts	1
Ship Construction	1
Ship Machinery Business	1
Food Processing Department	1
Department of Food Quality Control and Analysis	2
Food Technology	3
Initiatives and Project Management Assistant	1
Graphic Design	2
Public Relations and Publicity Department	5
Cadastral Map	2
Nursing and Care Services	1
Law Department	1
Air Conditioning and Cooling Technologies Department	3
Economics and Administrative Programs	2
Human Resource Management	1
Construction Programs	7
Internet and Network Technologies	1
Occupational Therapy	1
Occupational Health and Safety	2
Business Administration	18
Welding Technology	1

Chemistry and Technology	3
Control and Automation Technology	1
Cooperative System	1
Cosmetic Technology	1
Poultry Breeding	1
Laboratory Technology	1
Rubber and Plastics Technology	2
Logistics	6
Machinery (including Image Technology)	14
Machinery and Metal Technologies	5
Department of Finance	2
Materials and Material Processing Technologies Department	2
Mushroom Operations	1
Mechatronics	5
Securities and Capital Markets	1
Metallurgy	3
Department of Architectural Restoration	1
Architecture and Urban Planning	1
Furniture and Decoration	2
Fashion Design Program	1
Department of Motor Vehides and Transportation Technologies ...	2
Accounting and Tax	20
Property Protection and Safety Department	3
Farriery	1
Organic Farming	3
Mid-Level Management	1
Hotel, Restaurant and Catering Services Department	1
Automotive Technology	7
Parks and Horticulture Department	1
Marketing	8
Landscape and Ornamental Plants	3
Refining and Petro-chemistry	1
Department of Health Care Services	1
Saddlery	1
Saddlery Design and Production	1
Pulp and Paper Technology	1
Greenhouse Operation	2
Insurance	1
Social Insurance	1
Department of Social Services and Consulting	1
Department of Fisheries	2
Milk and Dairy Products Technology	1
Farming Equipment and Machinery	1
Agricultural Laboratory	1
Agricultural Products Preservation and Storage Technology	1
Textile Technology	4
Textile, Apparel, Footwear and Leather Department	2
Therapy and Rehabilitation Department	1
Department of Medical Services and Techniques	6
Medicinal and Aromatic Plants	2
Tourism Guidance	1
Tourism and Hotel Management	8
Transportation Services Department	1
Quality Control in Production	1
Architectural Drafting	1
Structure Insulation Technologies	1
Elderly Care	1
Management and Organization	2

There are 31 departments relating to machinery and hardware among the vocational schools operating in the region. There are 20 departments in IT, 16 in electrical and electronics, 14 in agriculture, 11 in tourism, 11 in logistics, 10 in textile and leather, 9 in food, 9 in chemistry, 9 in automotive and related areas, 6 in furniture and industrial design, 4 in landscaping and ornamental plants, 3 in organic agriculture, and 2 in shipbuilding industry fields.



### **Units and Research Centers and Laboratories of Rectorates**

50 research centers operate in the body of the universities in the region. Among these research centers, innovative and sectoral ones are:

#### **Kocaeli University**

- Alternative Fuels Development and Application Center
- Information Technology Research and Application Center
- Electronics and Communication Systems Research and Application Center
- Welding Technology
- Stem Cell and Gene Therapy Research and Application Center
- Laser Technologies Research and Application Center

#### **Gebze Institute of Technology**

- Nanotechnology Research Center
- Renewable Energy Research Center
- Aluminum Research Centre

#### **Sakarya University**

- Computer Research and Application Center
- Welding Technology Research, Inspection Application Center
- Sakarya Innovation Centre
- Sakarya Economic and Social Research Centre
- Artificial Intelligence Systems Application and Research Center

#### **Düzce University**

- DAGEM Beekeeping Research, Development and Application Center
- DÜ-BOYEM Biodiversity Research Center
- DÜSİMER Industry and Business Cooperation, Application and Research Center

#### **Abant İzzet Baysal University**

- Experimental Animal Research and Application Center

#### **Yalova University**

- Science and Technology Research and Application Center (YUBİTAM)

### **National and Ministry-Associated Research Centers and Laboratories Central Research Institutes**

#### **Yalova**

- Atatürk Horticultural Central Research Institute Directorate (Fruit Gardening, Vegetable Gardening, Ornamental Plants-Medicinal and Aromatic Plants, Plant Health, Postharvest Physiology and Mechanization, Food Technologies, Agricultural Economics, Soil and Water Resources, Production and Management)

#### **Public Research Institutes**

#### **Sakarya**

- Directorate of Maize Research Station (Breeding Genetics, Breeding Techniques, Plant Health, Agricultural Economics, Production and Management)







### Projects

A number of projects has been implemented by the universities within the scope of Ministry of Development (DPT), TÜBİTAK, BSTB, MARKA, CFCU, Municipalities, the European Commission and other programs. It is observed that projects are implemented in the three universities from which data are compiled mainly in chemistry, social sciences, infrastructure, environment, biology, medical science, biology and electronics-communication fields.

<b>Sectoral Distribution of Implemented R&amp;D and Innovation Projects (DPT, TÜBİTAK, BSTB, MARKA, CFCU, Municipals, EU, Foreign)</b>	<b>Overall</b>
<b>Chemistry</b>	<b>43</b>
<b>Social</b>	<b>26</b>
<b>Infrastructure</b>	<b>22</b>
<b>Environmental</b>	<b>20</b>
<b>TIP Sciences (Medical Biology, Medical Genetics, Biomedical)</b>	<b>15</b>
<b>Biology</b>	<b>14</b>
<b>Electronics and Communication</b>	<b>13</b>
<b>Geology</b>	<b>9</b>
<b>Machine</b>	<b>9</b>
<b>Physics and Optics</b>	<b>8</b>
<b>Psychology</b>	<b>8</b>
<b>Energy Systems</b>	<b>6</b>
<b>Food</b>	<b>6</b>
<b>Stem Cell and Genetics</b>	<b>6</b>
<b>IT and Computer</b>	<b>5</b>
<b>Laser Technologies</b>	<b>5</b>
<b>Mechatronics</b>	<b>4</b>
<b>Archaeology, Museology and History</b>	<b>3</b>
<b>Economy</b>	<b>3</b>
<b>Construction</b>	<b>3</b>
<b>Agriculture and Forestry</b>	<b>3</b>
<b>International Relations</b>	<b>3</b>
<b>Labor Economics</b>	<b>2</b>
<b>Electricity</b>	<b>2</b>
<b>Business</b>	<b>2</b>
<b>Metallurgical and Materials</b>	<b>2</b>
<b>Microbiology</b>	<b>2</b>
<b>Engineering</b>	<b>2</b>
<b>Horticulture</b>	<b>1</b>
<b>Industry</b>	<b>1</b>
<b>Physiology</b>	<b>1</b>
<b>Law</b>	<b>1</b>
<b>Communication, Radio, TV and Cinema</b>	<b>1</b>
<b>Geophysics</b>	<b>1</b>
<b>Mathematics</b>	<b>1</b>





Sectoral Distribution of the Publications addressing the University (Article, Letter, Meeting Abstract, Proceedings Paper, Review)	Overall
Physics	38
Chemistry	33
Engineering	32
Surgical	27
Pharmacy	26
Gynecology	25
Materials Science	23
Polymer Science	22
Neuroscience, Neurology	18
Internal medicine	17
Computer Science	15
Biochemistry and Molecular Biology	15
Cardiovascular System of Cardiology	12
Radiology, Nuclear Medicine, Medical Imaging	12
Reproducible Biology	12
Biotechnology and Applied Microbiology	11
Environmental Sciences, Ecology	11
General Internal Medicine	11
Pediatrics	11
Mathematics	10
Microbiology	10
Urology	10
Dermatology	9
Food Technology	9
Research, Experimental Medicine	8
Plant Science	8
Ear, Nose and Throat	8
Automation Control Systems	8
Mechanical	7
Eye Science	6
Genetics, Heredity	5
Metallurgy, Metallurgical Engineering	5
Nutrition Diet	4
Marine Freshwater Biology	4
Dentistry Oral Surgery	4
Energy Fuels	4
Crystallography	4
Oncology	4
Optical	4
Sports Science	4
Telecommunications	4
Fuel Energy	4
Agriculture	4
Anesthesiology	3
Infectious Diseases	3
Endocrinology Metabolism	3
Geology	3
Thermodynamics	3
Transportation	3
Electrochemistry	2
Animal Science	2
Nursing	2
Spectroscopy	2
Pathology	2
Toxicology	2
Veterinary	2
Science Technology Other Areas	2
Rheumatology	2

### Academic Studies

When the subjects and distribution according to the sectors of the publications made by addressing the regional universities are examined, it is observed that physics, chemistry, engineering, surgery, pharmacy, gynecology, materials science, polymer science, neurology and internal medicine stand out.





## Prominent Sectors

One of the primary elements that need to be addressed in smart specialization based regional development is the necessity of selecting the sector to support. Not analyzing all details of the sectors and prioritizing the sectors with powerful lobbies risk the success of the support mechanisms. In order to prevent this risk, the sectors prominent in the region should be identified and then it should be decided which of these sectors will be developed in which way. In this regard, it is considered necessary that smart specialization be ensured in East Marmara Region and **leading sectors and how these sectors will be developed be determined** within a sustainable innovation system.

**20 different studies** have been conducted **on the basis of four criteria groups** (investment intensity, employment volume, export volume and provided added value) as shown in the following figure – **in line with the data that have been obtained** – in determination of the manufacturing sector that is prominent already in the region and that is effective in the economy of the region. Stakeholder surveys that are referred to the opinions of Ministry of Economy, Ministry of Science, Industry and Technology, Turkish Employment Agency (İŞKUR), Small and Medium Industry Development Organization (KOSGEB), Social Security Institution (SGK), Revenue Administration (GİB), Turkish Statistical Institute (TSİ), Turkey Exporters Assembly (TİM), Efficiency General Directorate, TÜBİTAK and the universities in East Marmara Region as well as the people of the region to be used in these studies.

Figure 8

**Criteria and Data Referred in Determination of Prominent Sectors**

DATA SOURCE	CRITERIA	
The Ministry of Economics 2001-2012	Investment Intensity (Incentive Certificated)	INVESTMENT INTENSITY
The Ministry of Economics 2001-2012	Increase Rate of Investments	
Turkish Employment Agency 2012	SME Dominance	
The Ministry of Economics 2006-2010	Interval of FDI Flows	
Regional Competitiveness and Innovation Surveys, 2013	Interval of FDI Flows	
Social Security Institution 2009-2012	Employment Based Agglomeration	VOLUME OF EMPLOYMENT
Social Security Institution 2009-2012	Increase in Employment	
The Ministry of Economics 2001-2012	Capacity of Job Generation	
TURKSTAT 2003-2008	Shift-Share Analysis	
Turkish Exporters' Association 2012	Export Volume	VOLUME OF EXPORTS
TURKSTAT 2009-2011	Export Based Agglomeration	
TURKSTAT 2009-2011	Increase in Exports	
Turkish Exporters' Association 2010-2011	Existence of Main Actors in Exports	
TURKSTAT 2006	Tri-Star Analysis	VALUE, R&D, TECHNOLOGY LEVEL
Social Security Institution 2009-2012	Added Value Analysis	
General Directorate of Productivity, 2005	Agglomeration - Added Value Value Relationship	
The Ministry of Science, Industry and Technology, 2012	Intensity of R&D Centers and Personnel	
Universities 2012	Academic Paper, Thesis and R&D Projects	
KOSGEB 2008-2012	Private Sector R&D Projects	
TÜBİTAK 2012	Areas of Expertise of TÜBİTAK Institutes	







### **Phase 1: Prominent Sectors According to Investment Intensity**

**Sectoral preferences of private sector investments** in the last 10 years have been examined. Preferences of domestic and foreign investors in investment statistics with incentive certificates, shares of the sectors within the region and change of these shares, position of the shareholders of the sectors in the region in Turkey and development trends of this position in the 10-year period have been examined. When identifying the prominent sectors in the region, the issue that privilege the investment statistics with incentive certificate is that first level has been completed among the sectors that are located in the region in line with the information obtained from these statistics. With this study where the investment preferences in the region were examined in detailed, more than ten sectors were eliminated in East Marmara Region where activities are performed in many main manufacturing industries and **18 sectors** have been determined. In line with the evaluations basing on the investment incentive statistics, not only main sectors but also some sub-sectors have also stand out in the manufacturing sector according to their activity status.

In addition to the analysis of investments with incentive certificates, **SME dominance** have been analyzed basing on the company structures and company sizes in the sectors where investments concentrate. In line with the reality that large-scale and multinational companies put the items such as employment, export, and turnover forward in the sectors they take place, SME dominance have been considered important to determine the developed sectors that bear potential and that are developed with internal dynamics of the region. Another determiner element in identification of the concentration of investment in the sectors is opinion of the community. In the surveys that were conducted in the preparation period and that could access to a wide audience, questions **related to the sectors that are preferred in terms of investments** were included and the community was expected to determine their advance sector preferences.

### **Phase 2: Prominent Sectors in the Region according to Employment Volume**

The second criteria group referred for determination of the prominent sectors in the region was the analyses basing on the employment data. **Agglomeration analysis** was carried out using the employment data on the basis of the sectors and, therefore, the sectors that put the region forward within the company have been determined. At the same time, **employment change rates** in the last 4 years and employment created in the last 10 years of the sectors were also calculated and the sectors that contribute to the employment volume in the region were identified. Another analysis method prepared setting off from the employment structure of the sectors is shift share analysis. With **shift share analysis**, it was calculated that which sector was how effective in regional development and it was revealed that which sectors led economic development or decrease in the region.

### **Phase 3: Prominent Sectors in the Region according to Export Volume**

Within the scope of evaluation of the sectors in the region according to export, the sectors were sorted according to their **export volumes** and the sectors that export over the export value defined per sector for the region were determined. Additionally, export change values of the sectors were also calculated and **sectors with high export increase rate** were identified.

Export based agglomeration analysis was carried out to determine which sectors put the region forward in the country according to export. Another source referred in evaluation of the sectors basing on export in the region was the list of highest 1000 enterprises in export declared by TIM. Exporter enterprises of which manufacturing or management centers are located in the provinces of the region were identified in the lists of highest 1000 enterprises in export in Turkey of 2010 and 2011 and the sectors for which these enterprises carry out business were weighted.

### **Phase 4: Prominent Sectors according to Provided Added Value and R&D Activities**

The last criteria group referred in determination of the prominent sectors in the region is examination of added value and R&D structuring of the sectors. In this scope, **three-star analysis** was conducted basing on employment – number of employees – turnover and thus the sectors with clustering potential were identified. In addition, the sectors of which **added value per sector** is over than the level defined for the region were identified.

Position of the regional sectors in Turkey and the added value created by them were addressed together and agglomeration-value added correlation analysis was prepared. The added values created by the sectors were compared with the agglomeration in that sector to move the analysis beyond identifying only the sectors with high added value in the region. In this scope, location quotients were calculated for the sectors operating in the region and numbers of the employees in the sectors were used to determine the weight of the sector within the economy of the region. To make the sectors where agglomeration is high and low significant, added value data per employee created by that sector was included into the analysis. "Added value per employee" data was in the analysis as total of added value would be high in the sectors with high volume.

Another element that must be addressed in identification of the prominent sectors in East Marmara Region is the abilities of the sectors to generate innovation. In this scope, various indicators were created with the accessible limited R&D data. Data were obtained about the private sector R&D centers operating in the region and R&D personnel employed at these centers and **the sectors mostly bearing R&D identity** currently were identified according to results of these obtained data.

Another subject that will determine R&D identity of the sectors of the region is scientific publications and theses conducted by the academy and the sectors oriented by R&D projects and, for this reason, data were obtained from the universities operating in the region. Another indicator is status of benefit from R&D supports in the region. The most important feature that renders the sectors of East Marmara Region advantageous in terms of R&D infrastructure is that TÜBİTAK Marmara Research Center is located in the region. In line with the fact that TÜBİTAK-MAM located in the region is important in terms of R&D support in the industry of the region, it was evaluated which sectors are supported by the specialization areas of TÜBİTAK institutes.

### **Sectors to Prioritize / Leading Sectors**

The sectors operating in the region were classified into three groups as a result of 20 different studies conducted on the basis of four criteria groups towards identification of main manufacturing sectors that are active in the economy of East Marmara Region currently. The sectors that provide most contribution to the economy of the region in terms of export, employment, added value and R&D structuring in the region currently and that differentiate the region mostly in the national economy are in the first group.



Figure 19

**Prominent Sector Groups and Sectors in the Region****CRITERIA GROUPS**

		INVESTMENT INTENSITY					VOLUME OF EMPLOYMENT				VOLUME OF EXPORTS				VALUE, R&D, TECHNOLOGY LEVEL						
		Investment Intensity (Incentive Certified)	Increase Rate of Investments	SME Dominance	Interval of FDI Flows	Interval of FDI Flows	Employment Based Agglomeration	Increase in Employment	Capacity of Job Generation	Shift-Share Analysis	Export Volume	Export Based Agglomeration	Increase in Exports	Existence of Main Actors in Exports	Tri-Star Analysis	Added Value Analysis	Agglomeration - Added Value Relationship	Intensity of R&D Centers and Personnel	Academic Paper, Thesis and R&D Projects	Private Sector R&D Projects	Areas of Expertise of TÜBİTAK Institutes
<b>First Group</b>	Chemicals	X	X		X		X	X		X	X	X		X	X	X	X <sup>1</sup>	X <sup>1</sup>			X <sup>2</sup>
	Machinery	X	X	X	X	X	X		X		X	X	X		X		X		X		
	Automotive	X		X	X	X	X				X	X	X	X	X		X	X			X <sup>3</sup>
	Iron and Steel	X		X				X	X		X		X	X	X	X	X				X <sup>4</sup>
	Metal Products	X	X	X					X	X				X	X					X	
	Logistics	X	X	X	X		X	X													
<b>Second Group</b>	Electrical Machn&Prod	X	X	X	X	X	X				X	X	X	X			X	X		X	
	Food & Beverages	X	X	X	X				X	X	X	X		X							X <sup>5</sup>
	Forest Products	X	X			X						X	X								
	Electronics	X									X							X	X		
	Plastics & Rubber	X		X			X								X		X				X <sup>6</sup>
	Tourism	X	X	X		X	X		X												
<b>Third Group</b>	Energy	X	X																		X <sup>7</sup>
	Non Ferrous Metals	X	X									X									X <sup>8</sup>
	Weaving & Textile	X		X	X				X	X		X		X							
	Shipbuilding	X	X				X					X					X				
	Glass Industry	X	X	X										X							
	Paper Industry																				

1 Chemicals and Medicine

2 Process &amp; Inorganic, Polymer &amp; Organic, Biodegradable Food Packaging

3 Hybrid Vehicle Power Unit (Engine), Battery, Control Modules

4 Super Alloys

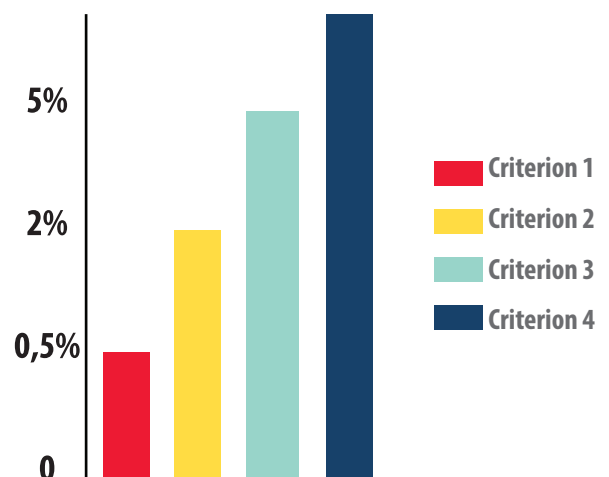
5 Food Hygiene, Mold, Advanced and Rare Food Processing, Fermented Food and Beverage, Probiotics, Functional Nutrition

6 Nanotechnology, Composite

7 Battery, Power Electronics, Fuel Cells, Catalytic and Thermochemical Hydrogen Production

8 Aluminum

However, it was considered that merely quantitative methods would be insufficient in deciding the sectors that would be taken as focus by smart specialization and therefore it was decided to address these studies as base in determining the specialization areas of academy and business in the region. Therefore, "Weighted Key Performance Indicators (W-KPI)" study was conducted on the members of Regional Innovation Strategy Advisory Board to make prioritization on qualitative data.

**Weighted Key Performance Indicators (Example)**



One of the most important stages of Regional Innovation Strategy is to identify the Weighted Key Performance Indicators (W-KPI) to be focused on and thus score the consolidated indicators. Weighted Key Performance Indicators system depends on two basic pillars:

\*Realistic and numeric indicators to be determined

\*Weighting for consolidating different indicators

The process of identifying realistic numeric indicators does not follow a linear process in case of absence of reliable, regular or specific data sets. The fact that the data that is considered to be used generally is not reliable (e.g. that the data that is used does not represent the region it belongs to, healthy data cannot be obtained from the data source, due diligence, attention or control is not given in data input in general) or it is not organized in the desired way (e.g. that the sectoral classification does not comply with the sectoral

standard that is needed in the study) or it is not specific enough (e.g. that it has been prepared at national level and it does not contain details on province or region basis or the data of years lacks) may cause replacing the data set that is considered to be used in the conducted study and frequently changing the top title of the data that is addressed. Such cases may require going back to the beginning again and again and reorganizing the indicators frequently. This case requires the score tables created in W-KPI studies to be dated and evolve from primitive format to ideal form.

In this W-KPI study conducted by East Marmara Development Agency, following scoring main and sub-groups were used on the basis of sectors. As defined above, manufacturing and gross scores on the basis of region or provinces were not included due to lack of the needed data.

Scoring main group	Sub Group	Spatial Framework	Data Source
Investment	Amount of investment of \$1 million per investment projected employment	Provincial Level	Investment Incentive Data
	Share of Foreign Investment	Provincial Level	Investment Incentive Data
	Rate of increase in the amount of investment	Regional Level	Investment Incentive Data
Employment	Foreseen employment in investments	Provincial Level	Investment Incentive Data
	Employment foreseen per 1 million TL investment	Provincial Level	Investment Incentive Data
	Employment Growth Rate	Regional Level	Investment Incentive Data
Research	Patent and utility model applications	National Level	TPE Statistics
	Rate of increase in applications	National Level	TPE Statistics
Gross Added Value	Gross Added Value	National Level	VGM Statistics
	Gross Added Value Growth Rate	National Level	VGM Statistics
Export	Amount of Exports	Provincial Level	TIM Statistics
	Growth Rate in Amount of Exports	Provincial Level	TIM Statistics
Financing	Amount of Bad Loans	Provincial Level	BDDK
	Rate of Increase in Bad Loan Amounts	Provincial Level	BDDK







The data that evaluated at the regional level were created by consolidating the data that exist on the provincial basis on regional basis. The reason for consolidating is that the data for rate of increase at provincial level in many sectors was not in the frequency to provide significant results. GVA (Gross Value Added) data are published at national level by General Directorate of Productivity and they were not distinguished at the level of provinces. It is considered that GVA data have high variance at provincial level.

Following method was used firstly in W-KPI study in evaluating the provincial ones among the statistics given above:

**Phase 1.** Provincial data were compared with national data ( $x_{\text{Province}}/x_{\text{Turkey}}$ ).

**Phase 2.** Proportional value arising as a result of the comparison was compared with the ratio of the related province to the population of the country [ $(x_{\text{Province}}/x_{\text{Turkey}})/(n_{\text{Province}}/n_{\text{Turkey}}) = y_{\text{Province}}$ ].

**Phase 3.** The arising values were simplified by subjecting to Range Scoring<sup>12</sup>. Each 1 (100%) unit range with 200% or above was evaluated with 1 point in the Range Scoring ( $y_{\text{Province}} \Rightarrow z_{\text{Province}}$ ).

**Phase 4.** To minimize the differences that may occur as a result of the reasons that arise as due to the structure of the related data sub-group between the scores given to the sectors at provincial basis within the scope of the addressed Score Sub-group (e.g. A proportional difference level between non-performing loans may be more important than the same proportional difference level between the investment amounts), the proportional comparison to the median value between the Range Scores given to the values obtained by means of proportional comparison defined in Phase 3 were counted ( $z_{\text{Province}}/z_{\text{median}}$ ).

Following method was used in W-KPI study in evaluating the increase rates at regional level among the statistics given above:

**Phase 1.** Total value<sup>13</sup> of the last 3 years at regional and national level was compared proportionally with the total value of the 3 years before the last three years [ $(\sum x_{\text{sector, Region, (last 3 years)}})/(\sum x_{\text{sector, Region, (3 Years before the last 3 years } y_{\text{Province}})})/[(\sum x_{\text{Türkiye, (2012-2010)}})/(\sum x_{\text{Türkiye, (2009-2007)}})]$ ].

**Phase 1.** Each 1 (100%) unit range with 150% or above in investment increase values was evaluated with 1 point in the Range Scoring ( $y_{\text{Province}} \Rightarrow z_{\text{Province}}$ ).

Following method was used in W-KPI study in evaluating the national ones (excluding the increase rates) among the statistics given above:

**Phase 1.** Distribution according to sectors was compared with the national

total data ( $x_{\text{sector}}/x_{\text{Türkiye}} = y_{\text{sector}}$ ).

**Phase 2.** The proportional values obtained in Phase 1 were simplified by subjecting to Range Scoring. Each 1% unit range with 3% or above was evaluated with 1 point in the Range Scoring ( $y_{\text{Province}} \Rightarrow z_{\text{Province}}$ ).

**Phase 3.** Proportional comparison to the median value between the Range Scores given to the values obtained by means of proportional comparison defined in Phase 2 were counted.

Following method was used in W-KPI study in evaluating the increase rates at national level among the statistics given above:

**Phase 1.** Total value<sup>14</sup> of the last 3 years at national level was compared proportionally with the total value of the 3 years before the last three years [ $(\sum x_{\text{sector, Türkiye, (last 3 years)}})/(\sum x_{\text{sector, Türkiye, (3 Years before the last 3 years)}}) = y_{\text{sector, Türkiye}}$ ].

**Phase 2.** The value obtained in phase 1 was compared with the average value in all sectors [ $y_{\text{sector}}/y_{\text{general}}$ ].

**Phase 3.** The proportional values obtained in Phase 2 were simplified by subjecting to Range Scoring. 5% unit range that are 110% and above in GVA increase data and 25% unit range in Patent and Utility Model applications were evaluated with 1 point in the Range Scoring ( $y_{\text{Province}} \Rightarrow z_{\text{Province}}$ ).

**Phase 4.** Proportional comparison to the median value between the Range Scores given to the values obtained by means of proportional comparison defined in Phase 3 were counted ( $z_{\text{Province}}/z_{\text{median}}$ ).

Weighting of different data Main Groups and Sub-Groups were determined by contribution of RIS Advisory Board. The Advisory Board consists of the Chambers of Industry in the Region, Chambers of Industry and Commerce, Technology Transfer Offices of Universities, and TürkStat Regional Representative.

**Phase 1.** Averages of the weights were calculated in the way defined by the Secretary General and Advisory Board members of MARKA. Sum of the Main Groups was adjusted in a way that it would be 100 units.

**Phase 2.** Values for identified in a way that they would constitute the percentage value of the Main Group in total of the Sub-Groups of each data Main Group.

W-KPI calculation was made by multiplying the values obtained as a result of the evaluation made for each data Sub-Group on the basis of each province constituting the region with the Sub-Group coefficients. Regional W-KPI values were obtained by summing up the W-KPI values composing for each Sub-Group on the basis of the provinces

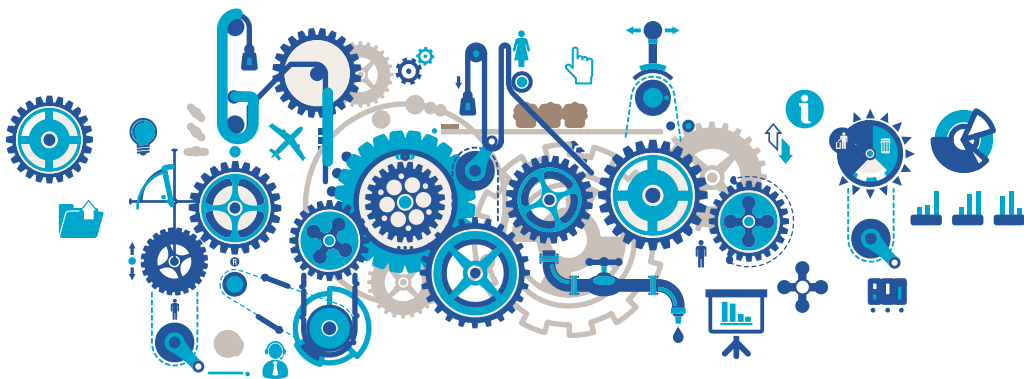
<sup>12</sup>For more detail about Range Scoring: [http://www.cbsolution.net/techniques/ontarget/how\\_to\\_consolidate\\_multiple\\_kpis](http://www.cbsolution.net/techniques/ontarget/how_to_consolidate_multiple_kpis) (Range Scoring is conducted to minimize the differences at fractions level and not to count the values below a specific value.)

<sup>13</sup>Last 3 years: 2012-2010 in Investment Incentives Data

<sup>14</sup>Last 3 years: 2008-2006 in GSKD Data, 2012-2010 in Patent and Utility Model Applications



TR-42	Investment	Intensity (TR-42)	Foreign Intensity (TR-42)	Growth Trend (TR-42)	Employment	Intensity (TR-42)	Intensity per 1 Million TL (TR-42)	Growth Rate (TR-42)	Research and Development	Patent and Utility Model (TR)	Growth Trend (TR)	Gross Value Added	Gross Value Added (TR)	Growth Trend (TR)	Exports	Exports (TR-42)	Growth Trend (TR-42)	Finance	Bad Loan	Growth Trend (TR)	TOTAL
Machinery	32,24	17,95	14,29	0,00	49,41	9,95	39,46	0,00	106,04	106,04	0,00	0,00	0,00	0,00	3,98	1,43	2,55	0,00	0,00	0,00	191,67
Electrical Machinery and Equipment	13,05	8,28	4,76	0,00	62,38	7,74	54,64	0,00	90,13	90,13	0,00	16,07	6,75	9,32	1,43	1,43	0,00	0,00	0,00	0,00	183,06
Automotive Main and Supplier Industry	69,81	19,33	47,64	2,85	18,23	12,16	6,07	0,00	24,75	21,21	3,54	27,00	27,00	0,00	22,26	17,16	5,11	-0,05	0,00	-0,05	162,00
Non-ferrous Materials	59,24	38,65	6,35	14,23	22,86	13,26	3,04	6,56	21,21	21,21	0,00	0,00	0,00	0,00	15,63	2,86	12,77	-0,05	0,00	0,05	118,88
Chemistry and Medicine	20,99	8,28	12,70	0,00	8,77	2,21	0,00	6,56	38,91	21,21	17,70	27,00	27,00	0,00	21,14	18,59	2,55	0,00	0,00	0,00	116,81
Agriculture and Ornamentals	0,00	0,00	0,00	0,00	3,04	0,00	3,04	0,00	0,00	0,00	0,00	0,00	0,00	0,00	103,58	39,72	63,86	0,64	-0,58	-0,05	105,98
Forestry Products	43,21	40,03	3,18	0,00	23,76	17,69	6,07	0,00	37,11	37,11	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	104,08
Transportation and Ship Building	28,02	24,85	3,18	0,00	37,55	34,27	0,00	3,28	0,00	0,00	0,00	15,54	0,00	15,54	17,16	17,16	0,00	-4,75	-2,91	-1,85	93,51
Energy	19,78	1,38	12,70	5,69	12,16	12,16	0,00	0,00	0,00	0,00	0,00	44,18	44,18	0,00	0,00	0,00	0,00	-0,03	0,00	-0,03	76,09
Metal Products	15,81	11,04	4,76	0,00	14,91	8,84	6,07	0,00	42,42	42,42	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	73,14
Paper	17,39	11,04	6,35	0,00	31,74	4,42	27,32	0,00	0,00	0,00	0,00	25,93	13,50	12,43	0,00	0,00	0,00	2,35	-2,33	-0,03	72,71
Iron-Steel	27,75	5,52	22,23	0,00	16,84	7,74	9,11	0,00	0,00	0,00	0,00	9,86	6,75	3,11	15,63	2,86	12,77	-0,08	0,00	-0,08	70,00
Weaving and Textile	5,52	5,52	0,00	0,00	27,02	5,53	18,21	3,28	0,00	0,00	0,00	0,00	0,00	0,00	30,65	0,00	30,65	-5,21	-5,23	0,03	57,99
Plastic and Rubber	24,37	6,90	17,47	0,00	6,35	3,32	3,04	0,00	26,51	26,51	0,00	0,00	0,00	0,00	0,00	0,00	0,00	-0,58	-0,58	0,00	56,65
Glass	35,89	35,89	0,00	0,00	18,76	15,48	0,00	3,28	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	54,65
Livestock	4,14	4,14	0,00	0,00	43,64	25,42	18,21	0,00	0,00	0,00	0,00	0,00	0,00	0,00	7,15	7,15	0,00	-0,64	-0,58	-0,05	54,29
Food and Beverage	18,43	4,14	14,29	0,00	18,49	3,32	15,18	0,00	5,30	5,30	0,00	6,75	6,75	0,00	0,00	0,00	0,00	-0,58	-0,58	0,00	48,40
Logistics and Storage	18,83	5,52	4,76	8,54	10,46	1,11	6,07	3,28	0,00	0,00	0,00	6,75	6,75	0,00	0,00	0,00	0,00	-0,58	-0,58	0,00	35,45
Tourism	2,85	0,00	0,00	2,85	9,84	0,00	0,00	9,84	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	-0,05	0,00	-0,05	12,63
Electronics	2,97	1,38	1,59	0,00	3,04	0,00	3,04	0,00	3,54	0,00	3,54	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	9,54
Leather Products	8,28	8,28	0,00	0,00	5,25	2,21	3,04	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	-4,62	-4,65	0,03	8,90











# EAST MARMARA REGION; CENTER OF TECHNOLOGY COMMERCIALIZATION

The region is a “brand” with its universities,  
research, development and technology centers,  
technology transfer offices and production bases.





**Machinery, Electrical Machinery and Equipment, Automotive and Supplier Industry sectors** stand out as the sectors to focus on within the scope of regional innovation strategy and within the framework of smart specialization concept as a conclusion of these results.

Detailed sector reports should be prepared for each of these sectors to determine the areas to focus in these sectors, each containing many sub-sectors and breakdowns in their bodies. These reports should be prepared in line with the global trends and national policies by basing on the detailed data analysis and spreading intensive participatory process and policy makers and information generators included in the innovation ecosystem should prepare their strategies considering these areas.

In the National Science, Technology and Innovation Strategy prepared by TUBITAK, "Manufacture of Motor Vehicles and Trailers (Automotive)" and "Manufacture of Not Elsewhere Classified Machinery and Equipment" sectors among the prioritized sectors that need to be addressed with a target oriented approach in the areas where R&D and innovation capacities are powerful stand out in the scope of East Marmara Regional Innovation Strategy and has overlapped in this means.

## Machinery Manufacturing Sector

**Machinery Manufacturing** Sector is a sector that has agglomerated in the region and which is used in almost every sector and that directly affects efficiency. In line with the location and sectoral structure of East Marmara Region, machinery manufacturing towards the sectors such as automotive, energy, defense, agriculture and food which are identified as the strategic sectors for Turkish industry should be promoted and supported in the region. Production for this sector as well as manufacture of machine tools and metalworking machines, construction machinery, pumps, valves and compressors as well as agricultural machinery and food machinery should be given importance and should be supported.

## Electrical Machinery and Equipment Industry

**Electrical Machinery** consists of the machinery running with one of electric power, electric field and magnetic field effects that are used in generation, transmission, distribution and usage processes of electrical power and the electrical energy transport units and auxiliary units and it is one of the prominent sectors in the region. It is among the sectors that are rapidly growing around the world and it has an ever-expanding large market share towards the sectors that demand high technology such as IT, defense, automotive, and machinery manufacturing. R&D activities of the enterprises operating in the electrical machinery sector, activities for scale-up and branding by coming together and switching to international standards, and cooperation activities with research centers, mainly TUBITAK-MAM, and universities should be increased. Components sub-sector that extract products for the automotive sector should be promoted for the needs of this sector.

## Automotive Main and Supplier Industry

Although **automotive sector**<sup>15</sup> has a structure mainly developed by foreign-capitalized or foreign partnered companies in the region, it has substantially developed itself with supplies to the sector in long term and with the related sectors. It would be beneficial to make investment as there is a potential market for new generation power units (engine, gearbox and differential box) or components peculiar to such new generation vehicles (fuel cells, electronics and software). Innovation and domestic production

stand out in terms of paint and plastic raw materials and casting and forging parts, the two fields in which the region is powerful and have infrastructure in terms of supply to large enterprises. In these matters, new composite products and sheet materials can find a place in the market by performing R&D studies in the field. One of the major supply problems of the sector is the quality problem of metal and plastic parts such as fasteners mainly imported from the Far East. Therefore, import substitution should be encouraged. On the other hand, the fact that most of the major automotive companies merger or do strategic partnerships nowadays put the importance of cooperation one step forward in the sector. Similarly, developing merger and partnership culture at the medium-sized industrial enterprises in the region will be beneficial in terms of competitiveness.

## Negotiations towards Innovation Environment

A comprehensive Innovation and Economic Development Strategy workshop was held in Sapanca district of Sakarya province in 2012 to develop an innovation roadmap in the region. SRI (Stanford Research Institute) managed as the facilitator on the strong and weak aspects of the innovation system in the region during the workshop. Important points of the negotiation:

### Communication Networks and Leadership

\*Current university-industry dialog and cooperation are insufficient. MARKA may establish a forum by means of the members of the renewed Development Board and support the suggestions from the universities and ideas to be actualized.

\*Mutual support triangle between the public, university and SMEs is lacking; it should be established.

\*More communication network activities should exist in East Marmara and Turkey which are deprived of the communication network of Silicon Valley.

### Research and Development

\*Although East Marmara Region focuses on R&D activities more and more, it is far behind Germany about this issue. While 1 of every 500 people perform R&D study in East Marmara, this ratio is 1 person in every 200 people in Germany.

\*R&D activities are inadequate in the industry due to insufficient R&D human resource in East Marmara Region. Universities train limited number of personnel for industrial R&D as there is no demand. Universities should train R&D personnel and co-develop industrial R&D.

\*Supports for researches of academic members of the universities are insufficient; and the researches are not focused on industry needs.

### Universities

\*Universities play a critical role in promoting innovation in the region. Therefore, rectors should participate in the Board of Managers of MARKA.

\*There are obstacles for innovation at the universities. Professors do not have adequate time for R&D researches as the course hours are too much. Law on the Council of Higher Education hinders improvement of R&D activities.

\*Student quality is the most important issue in East Marmara Region. Most qualified engineering students prefer the universities out of East Marmara Region such as Ankara (METU, Bilkent) and İstanbul (İTÜ, Sabancı, Koç, and Boğaziçi).

\*Universities should focus on education of science that can provide the students with the knowledge to develop technology and follow it their entire lives.

<sup>15</sup>For detailed information related to the sector, see: East Marmara Automotive Sector Report, 2013





## Business Infrastructure

\*East Marmara Region has many advantageous aspects and trends. It has a rich nature and human resource and has a perfect location where you can reach an economy of 23 trillion Dollars with a 4-hour flight. Production is growing rapidly.

\*East Marmara Region has advantages over Istanbul and developing green fields is easier and cheaper than reconvert brown fields.

\*Technoparks are the basic elements of business infrastructure for innovation in Turkey and a platform for university-industry cooperation. However, technoparks generally lack commercialization activities.

## Current Industry

\*East Marmara has an established industry but R&D activities of these organizations are very low and they do not have the adequacy to support innovation. East Marmara should try to find the high added value in production

\*Large, small and newly established companies should form partnerships to support innovation.

\*The region has some industries and collaborations such as automotive and automotive spare parts, metals, and food processing. Chemicals and IT / Software sector has remained weak compared to the above.

## Policy

\*Intellectual property rights have not developed much or their importance could not be understood in the region. Perception of lack of protecting IP (Intellectual Property) startles the customers and leads to demotivation for setting up new initiatives.

## Innovation Culture

\*Innovation concept cannot be well and clearly understood; people confuse innovation with 'invention'.

\*Failure is not tolerated sufficiently in Turkey; this situation makes it difficult for people to take risks.

\*State should provide leadership on this issue by supporting entrepreneurs.

\*The focus of innovation cannot be limited to universities; inventions may occur at universities. However, innovation requires more than "invention", success of several actors altogether.

## Risk Capital and Finance

\*Entrepreneurship is not adequate in the country.

\*MARKA should develop strategy to bring international finance to East Marmara Region.

## Entrepreneurship Support

\*There is no support or consultancy for entrepreneurs. Successful businessmen generally do not serve as coaches or do not support entrepreneurs.

\*Successful entrepreneur examples with successful outputs are needed.

\*Networking between the entrepreneurs is insufficient. There is a woman leadership forum and groups in some social networking websites such as Facebook and Linked-in.

## Human Capital

\*There is a lack of qualified R&D personnel. Universities should train R&D personnel. Universities do not produce R&D graduates but production line engineers.

\*East Marmara Region cannot attract highly qualified individuals yet around

the world, but it has a perfect environment and climate that can attract people.

\*KOSGEB has begun a program to attract foreign students.

## Framework for Setting Up East Marmara as the Center of Innovation <sup>1</sup>

East Marmara Region needs to develop an innovation system as defined below to become an "Innovation Center".

**\*Creating Information:** The universities, research centers and industry in East Marmara Region have the need for high-quality R&D studies. In addition, these R&D investments should focus on the areas relating to the existing and future industry of the region. These R&D studies should be merged with effective commercialization processes. Allocation of funds to strategic researches is important for creating suitable organizational incentives and support structures as well as academic-industrial cooperation.

**\*Ability and Labor:** Education system of the region should grow the necessary abilities for innovation where entrepreneurs, scientists, engineers and other professionals are involved. This requires a strong STEM (science, technology, engineering and mathematics) and fundamental education such as primary-mid-high schools as well as professional and vocational training depending innovation and industrial needs of the region.

### \*Seed and Venture Capital and Entrepreneurial Experience:

As in many other countries, early-stage capital for entrepreneurs in Turkey is insufficient. Even, guiding technology based enterprises with experienced mentors is rare. Networks and programs suitable for attracting experienced entrepreneurs such as seed and venture capital can be created to reduce this failure of the common market in East Marmara Region. Strong relations with the regions such as Silicon Valley having such assets will contribute to the process.

**\*Infrastructure:** MARKA can support regional innovation by providing the researches, entrepreneurs and industry of East Marmara Region with physical (e.g., transportation, ports, programs, etc.), digital and organizational (e.g., research institutes, technology parks, incubators, etc.) most advanced infrastructure.

**\*Communication Networks and Intermediaries:** Potential innovators needs to connect to others and share knowledge and expertise about markets, technologies and business applications. East Marmara Region needs to ensure a support structure and environment for networking, mentoring and collaboration between people from different sectors (industry, academy and government) and professions (scientists, engineers, managers, marketing, law, accounting, consulting, etc.). Such networks not only connect people in the region but also ensure establishing connection with the world's best knowledge of the region.

**\*Leadership and Strategy:** Successful regional innovation requires many partners, organizations, resources, and plan participation, support and coordination at national, regional and local level. A strong leadership is needed for East Marmara Region to establish communication with all stakeholders about the importance of its vision and innovation. This leadership will help developing an effective strategy networking and collaboration framework and coordinating the programs and achieving the common goal.

In addition to these items, policies relating to taxing at national level, protection of intellectual property rights, foreign investment, bankruptcy and other areas also have a very significant impact on the innovation environment. These areas are under the national control rather than regional. The areas that are directly affected by East Marmara Region are mainly focused here.

<sup>16</sup> Innovation in East Marmara: SRI International Trip Report and Roadmap, 2012



## Regional Innovation Ecosystem

Identification of the shareholders in the region relating to innovation is important in terms of both analysis of the current status and viewing by whom the strategies will be performed. Regional stakeholders has been categorized under the headings "Knowledge Producers", "Technology

Developer", "Technology Commercializer", "Expander of Innovation Culture", "Financing Provider", "Politics Developer" and "Producer" in this regard. On the other hand, non-regional and national stakeholders that are in a close relationship with the region have also been involved in the ecosystem.

## EAST MARMARA INNOVATION ECOSYSTEM

### KNOWLEDGE DEVELOPMENT

Universities of the region are the main knowledge developers. Furthermore, knowledge is imported from other regions and countries.

#### UNIVERSITIES

Bolu İzzet Baysal University  
Düzce University  
Gebze Institute of Technology  
Kocaeli University  
Sakarya University  
Yalova University  
Sabancı University\*  
Okan University\*\*

#### PUBLIC INSTITUTES

TÜBİTAK Marmara Research Center (MAM)  
Institute of Environment  
Institute of Energy  
Institute of Food  
Institute of Genetic Engineering and Biotechnology (GBME)  
Institute of Chemistry  
Institute of Material  
Institute of Ground and Sea Sciences

### TECHNOLOGY DEVELOPMENT

Developed knowledge is converted to technology in technoparks, research institutes and centers.

#### TECHNOLOGY DEVELOPMENT ZONES

TÜBİTAK MAM Technopark  
Gebze OIZ Technopark  
Kocaeli University Technopark  
Sakarya University Technopark  
Bolu Technopark  
Düzce Technopark  
Muallimköy Technopark (IT Valley)

#### PRIVATE SECTOR RESEARCH CENTERS

Arçelik Pishirici Cihazlar  
Ford Otomotiv  
Tektas Kauçuk  
Tırsan Treyler  
Bilim İlaç  
Otokar Otomotif ve Savunma  
Kordas Global  
Farplas Oto Yedek Parçaları  
Akso Akirlik Kimya  
Anadolu Isuzu Otomotiv  
TÜPRAŞ Türkiye Petrol Rafinerileri  
Kanca El Aletleri Dökme Çelik ve Makine  
Assan Hamil Oto  
Teknorot Otomotiv Ürünleri  
Hegzaon Mühendislik ve Tasarım  
Arçelik LG  
Siemens  
Kale Oto Radyatör  
Hayat Kimya  
Mecaplast Otomotiv Ürünleri  
Alarko Carrier

### TECHNOLOGY COMMERCIALIZATION

Technology Transfer Offices were established in order to produce commercial products by integrating the knowledge and technology produced by the knowledge with marketing infrastructure. Academia-industry interfaces also support the process.

#### TECHNOLOGY TRANSFER OFFICES

TÜBİTAK Marmara Araştırma Mrk. (MAM) İş Geliştirme Birimi  
TÜBİTAK Bilişim ve Bilgi Güvenliği İleri Tekn. Araş. Mrk. (BİLGEM)  
TÜBİTAK Marmara Teknokent (TTM)  
Kocaeli Üniversitesi ve Kocaeli Üniversitesi Teknopark (TTO)  
Sakarya Üniversitesi (TTO)  
Sakarya Üniversitesi Teknokent (TTO)  
Düzce Üniversitesi ve Düzce Üniversitesi Teknokent (TTO)  
Bolu Abant İzzet Baysal Üniversitesi Teknokent (TTO)  
Yalova Üniversitesi (TTO)

#### PROPERTY RIGHTS

Avrupa Patent Ofisi (EPO)\*  
Türk Patent Enstitüsü (TPE)\*  
Kültür ve Turizm Bakanlığı\*

#### RESEARCH CENTERS OF UNIVERSITIES

İBÜ Deney Hayvanları Uygulama ve Araştırma Merkezi  
DAGEM - Arıcılık Araştırma Geliştirme ve Uygulama Merkezi  
BÜYÖM - Biyolojik Çeşitlilik Uygulama ve Araştırma Merkezi  
DÜŞİMER - Sanayi ve İş Dünyası İşbirliği Uygulama ve Araştırma Mrk.  
GYTE Nanoteknoloji Araştırma Merkezi  
GYTE Yenilenebilir Enerji Araştırma Merkezi  
GYTE Alüminyum Araştırma Merkezi  
SAÜ Bilgisayar Araştırma ve Uygulama Merkezi  
SAÜ Kaynak Teknoloji Araştırma, Muayene ve Uygulama Merkezi  
Sakarya Yenilik Merkezi  
Sakarya Ekonomik ve Sosyal Araştırma Merkezi  
SAÜ Yapay Zeka Sistemleri Uygulama ve Araştırma Merkezi  
KOÜ Alternatif Yakıtlar Geliştirme ve Uygulama Merkezi  
KOÜ Bilişim Teknolojileri Araştırma ve Uygulama Merkezi  
KOÜ Elektronik ve Haberleşme Sistemleri Araştırma ve Uygulama Mrk.  
KOÜ Kaynak Teknolojisi  
KOÜ Kök Hücre ve Gen Tedavileri Araştırma ve Uygulama Merkezi  
KOÜ Lazer Teknolojileri Araştırma ve Uygulama Merkezi  
YÜ Bilim ve Teknoloji Uygulama ve Araştırma Merkezi (YUBİTAM)

#### PUBLIC RESEARCH CENTERS

Yalova Atatürk Bahçe Kültürleri Merkez Araştırma Enstitüsü  
Mısır Araştırma Enstitüsü  
TÜBİTAK Bilişim ve Bilgi, İleri Tek. Araş. Mrk. (BİLGEM)  
TÜBİTAK Ulusal Metroloji Enstitüsü (UME)  
Türkiye Sanayi Sevk ve İdare Enstitüsü (TÜSSİDE)

### INNOVATION CULTURE

The researchers who develops the knowledge and the entrepreneurs who realizes the innovation are motivated and the awareness is ensured by chambers, NGOs and associations.

#### CHAMBERS

Kocaeli Ticaret Odası  
Kocaeli Sanayi Odası  
Sakarya Ticaret ve Sanayi Odası  
Düzce Ticaret ve Sanayi Odası  
Bolu Ticaret ve Sanayi Odası  
Yalova Ticaret ve Sanayi Odası  
Akyazı Ticaret ve Sanayi Odası  
Gerede Ticaret ve Sanayi Odası  
Akçakoca Ticaret ve Sanayi Odası  
Gebze Ticaret Odası  
Kürfez Ticaret Odası

#### BUSINESS ASSOCIATIONS

Kocaeli Aktif Sanayici ve İşadamları Derneği  
Kocaeli Sanayici ve İşadamları Derneği  
Gebze Sanayici ve İşadamları Derneği  
Müstakil Sanayici ve İşadamları Derneği Kocaeli Şubesi  
Müstakil Sanayici ve İşadamları Derneği Sakarya Şubesi  
Tüm Sanayici ve İşadamları Derneği Kocaeli Şubesi  
Tüm Sanayici ve İşadamları Derneği Sakarya Şubesi  
Tüm Sanayici ve İşadamları Derneği Gebze Şubesi  
Bolu Sanayici ve İşadamları Derneği  
Düzce Sanayici ve İşadamları Derneği  
Sakarya Sanayici ve İşadamları Derneği  
Sakarya Genç İşadamları Derneği  
Yalova Aktif Sanayici ve İşadamları Derneği  
Yalova Sanayiciler Derneği  
Yalova Gemi Sanayicileri Derneği  
Kartepe Sanayici ve İşadamları Derneği  
İzmit Genç İşadamları Derneği  
Karamürsel Genç İşadamları Derneği  
Kürfez Genç Girişimciler ve İşadamları Derneği  
Gebze Genç İşadamları ve Sanayiciler Derneği  
Darıca Genç İşadamları ve Sanayiciler Derneği  
Gebze Aktif Sanayiciler ve İşadamları Derneği  
Dilovası Sanayici ve İşadamları Derneği

### FINANCING

Financement is the main aspect of converting knowledge into technology and technology into products. State aids, incentives, credits are provided by government, banks or business angels.

#### PUBLIC

KOSGEB Bolu Hizmet Merkezi Müdürlüğü  
KOSGEB Düzce Hizmet Merkezi Müdürlüğü  
KOSGEB Kocaeli Hizmet Merkezi Müdürlüğü  
KOSGEB Kocaeli Organize Sanayi Bölgeleri Hizmet Merk.  
KOSGEB Sakarya Hizmet Merkezi Müdürlüğü  
KOSGEB Yalova Hizmet Merkezi Müdürlüğü  
Doğu Marmara Kalkınma Ajansı  
Bakanlıklar\*

### PRODUCTION

Commercialized technology is transformed into marketable products by producer companies and organized zones.

#### PRIVATE SECTOR

##### Companies

#### ORGANIZED PRODUCTION ZONES

##### FAAL OSB

Asım Kibar OSB  
Arslanbey OSB  
GERZE OSB  
TAYSAZ OSB  
Plastikçiler OSB  
Güzeller OSB  
Dilovası OSB  
VLİMES OSB  
IV. İstanbul Makine İmlatçıları OSB  
V. Kimya İhtisas OSB  
Kömmürçüler İhtisas OSB  
Sakarya I. OSB  
Sakarya II. OSB  
Sakarya III. OSB  
Düzce OSB  
Düzce II. OSB  
Bolu Karma Tekstil OSB  
Gerede OSB

##### KURULUŞ AŞAMASINDA OSB

Kandıra Gıda İhtisas OSB  
Ali Kahya Karma OSB  
Mermerçiler OSB  
Taş Ocakları İhtisas (İslah) OSB  
Şekerpanar (İslah) OSB  
Makine İhtisas OSB  
Karasu OSB  
Ferizli OSB  
Kaynarca OSB  
Akyazı OSB  
Ferizli Hayvancılık İhtisas OSB  
Geyve Gıda İhtisas OSB  
Gümüşova (İslah) OSB  
Bolu Yeniçağa OSB  
Gerede Deri İhtisas OSB  
Yalova Çiçekçilik OSB  
Yalova Bilişim İhtisas OSB  
Yalova Gemi İhtisas OSB  
Yalova Taşıt Araçları Yan Sanayi İhtisas OSB

Tuzla Organize Sanayi Bölgeleri (S)\*

Kocaeli Serbest Bölgesi  
İstanbul Tuzla Endüstri ve Ticaret Serbest Bölgesi  
Küçük Sanayi Siteleri (KSS)

### POLICY DEVELOPMENT

The RIS3 were developed by a quadruple helix, which had formed with public authorities, academia, private and society via analysing regional quantitative and qualitative data and in accordance with global trends and national strategies.

#### RIS TECHNICAL COMMITTEE AND ADVISORY BOARD

Kocaeli Ticaret Odası  
Kocaeli Sanayi Odası  
Sakarya Ticaret ve Sanayi Odası  
Düzce Ticaret ve Sanayi Odası  
Bolu Ticaret ve Sanayi Odası  
Doğu Marmara Kalkınma Ajansı  
Kocaeli Üniversitesi  
Gebze Yüksek Teknoloji Ens.  
Sakarya Üniversitesi  
Düzce Üniversitesi  
Bolu İzzet Baysal Üniversitesi  
Yalova Üniversitesi  
TÜİK Bölge Müdürlüğü

#### BUSINESS ANGELS

Doğu Marmara Melek Yatırımcılar Ağı  
Melek Yatırımcılar Ağı (TBAA)\*

#### FINANCE ORGANIZATIONS

Banks

#### SECTORAL DISTRIBUTION

Agriculture  
Services  
Logistics  
Tourism  
IT  
Health  
Energy  
Industry  
Automotive  
Chemistry  
Plastics and Rubber  
Food  
Metal Products  
Iron and Steel  
Non-Ferrous Metals  
Electronics  
Electrical Machinery  
Machinery  
Glass  
Clothing and Textile  
Forestry Products  
Shipbuilding

## 03

has been defined as “Industry Producing Region” among the options of Information and Technology Oriented Region, Industry Producing Region and Non-Technology Oriented Region.

In the “Innovation Surveys” carried out in the scope of preparation activities of East Marmara Regional Plan, East Marmara Region has been defined as “Industry Producing Region” among the options of Information and Technology Oriented Region, Industry Producing Region and Non-Technology Oriented Region. It shows that general perception about the region is that it does not produce information but make production using the present information and technology at high rate. In addition, the fact that the prominent sectors in the region mostly use medium-technology also supports this information. It is also observed that it is intended by the shareholders of the region to convert this situation that gives rise to risk of middle-income trap into a region where information and technology are produced and commercialized.

*Becoming a national technology commercialization center that can produce information and develop technology, follow global innovations and shapes itself, has specialized in automotive, machinery and electrical machines, and develops key enabling technologies.*







### 1. Focusing on Prioritized Areas

In East Marmara Regional Plan prepared by MARKA within the framework of Physical Development Planning Law No. 3194, pursuant to the authorization granted by the Ministry of Development, manufacturing sector, agricultural products, tourism types, target markets, new technologies and employment areas of which development needs to be prioritized in the region have been identified and strategies have been determined for them.

With the smart specialization approach adopted in the regional innovation strategy, sub-sectors and topics in which the region is strong, that have the potential to develop and that are accepted by the region are tried to be identified. These sectors and topics have been reduced to three sectors and common topics containing the qualitative and participatory methods from those specified in the regional plan.

The sectors have been identified as machinery manufacturing, automotive and supplier sector and electrical machinery. However, smart specialization approach and innovation are not addressed at the scale of main sector. Sub-segments in which the identified main sectors will specialize, brand and cluster in the region should be identified. In addition, development of key enabling technologies should also be supported by evaluating their development opportunities.





## **1.1. Performing R&D and Innovation Focused Detailed Sector Analyses**

The most important step in ensuring smart specialization is performing detailed analyses for the sectors to identify the sub-segments of the prominent sectors. It is required to prepare detailed current status analyses and identify sub-segments of automotive, machinery and electrical machines sectors.

Therefore, basic clustering analyses, input-output analyses, supply chain maps, human resources and training infrastructure analysis should be performed and areas that are open for development should be identified by following an intense participatory process for the prioritized sectors.



## **1.2. Identifying R&D and Innovation Oriented Prioritized Sub-Segments for Prioritized Sectors and Determination of Roadmaps**

Global trends, national policies and regional infrastructure should be taken into consideration for the sectors that are addressed in detail as a result of the analyses above and, thus, how to develop the sub-segments that have potential to stand out should be identified. It is important to manage the investment and support mechanisms as well as academic mechanisms according to these segments by putting high value added and technology oriented areas forward when operating the process.











# **EAST MARMARA INNOVATION STRATEGY FOCUSES ON COORDINATION**

The implementation of the strategy will be done innovatively after a strongly coordinated preparation process.



### 1.3. Evaluation of New Key Technologies that do not Stand Out with the Statistics but has Development Potential

EA continuous differentiation has been occurring along with the economic structure, technology and changing trends. Many new business branches have been emerging continuously while many businesses are consigned to history since the industrial revolution in parallel with new production and service methods and use of new technologies in these areas. The first providers of the solutions for new trends and production demands achieve high profits. In this respect, anticipating future trends is the essential element that will bring the companies and researchers to a strong position. In parallel, the sectors where these applications are first developed stand out in economic development in parallel with the development of the basic sector and supporting sectors.

This process has been experienced for centuries and innovative practices, new technologies and theories have been increasing. These applications have spread over a very wide area from good agricultural practices to artificial intelligence nowadays. Highest added value producers appear in information technologies, nanotechnology, biotechnology and mechatronics. NBIC<sup>17</sup> has become one of the most popular terms<sup>18</sup>. On the other hand, the increasing energy demand and limited fossil resources increase the need for new and sustainable energy and this condition increases the demand for innovative energy applications. Studies should be conducted for examination of the development potentials of such key technologies.



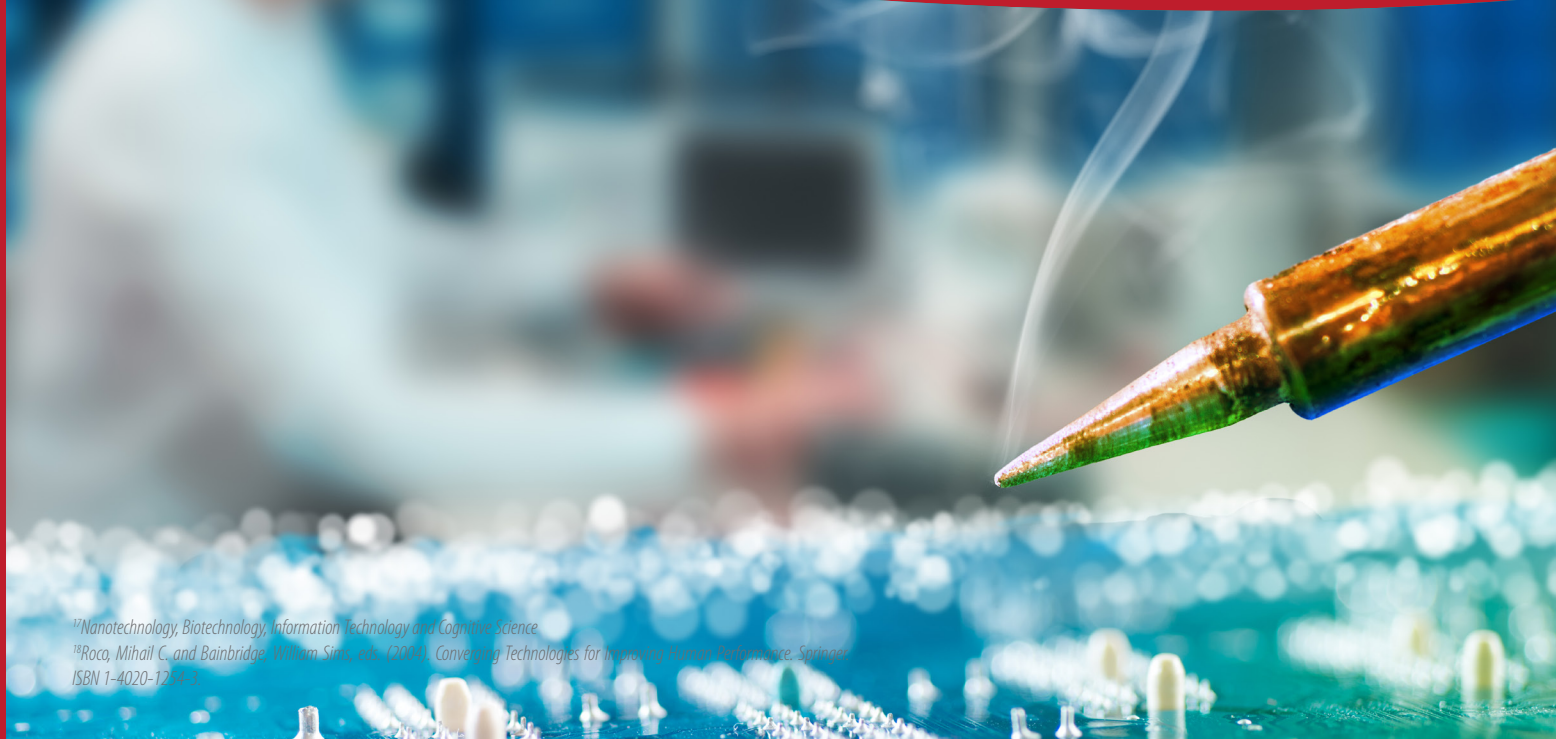
## 2. Innovation Infrastructure

One of the most important components for ensuring innovation is infrastructure. To ensure realization of innovation, spatial and human infrastructure is required to be suitable. Therefore, it can be said that the locations where innovation is implemented and the persons implementing innovation are directly associated with the development of innovation. Necessary activities should be performed for effective use of the existing centers in the region where information and technology are developed and

that transform technology into products and opening new centers, and management of such centers in this line. In addition, due to the fact that innovation process is human-oriented, innovative human resources should be increased and their development should be supported in the region. In parallel, improvement of coordination between these locations and individuals and taking urban planning approach that bases on innovative/creative labor into consideration will be important.

<sup>17</sup>Nanotechnology, Biotechnology, Information Technology and Cognitive Science

<sup>18</sup>Roco, Mihail C. and Bainbridge, William Sims, eds. (2004). *Converging Technologies for Increasing Human Performance*. Springer. ISBN 1-4020-1244-3.







## 2.1. Creating Vision, Strategic Plan and Roadmaps of R&D, Technology and Innovation Foci in the Region

GOSB Technopark, Turkey's first Technology Development Organized Industrial Zone, has been operating in the region. 6 of 34 total active technoparks across the country and 2 of 20 technology centers are located in the region. 3 of the technoparks located in the region – TÜBİTAK Marmara Technopolis, Gebze Organized Industrial Zone Technopark and Kocaeli University Technopark – are located in Kocaeli; Sakarya Technopark in Sakarya; Düzce Technopark in Düzce; and Bolu Technopolis in Bolu. Besides, there are two technology centers in the region – Gebze Institute of Technology and KOSGEB Sakarya University Tekmer<sup>19</sup>. Creating detailed strategic plans involving specialization areas and prioritizing opening to outside environment should be supported for all the technoparks and technology centers in the region.



## 2.2. Ensuring Effective Use of Current Infrastructure

While the capacity of OSBs, KSSs and free zones is high in East Marmara Region where industrial activities have accelerated, a similar situation is not valid for innovation and technology centers. Although the region is at a higher level when compared to the average of Turkey in terms of innovation and R&D structure, it appears that R&D and innovation structure that will move the developed industry of the region further in the global competition is insufficient and current infrastructure is not used adequately<sup>20</sup>. Dissemination of technology centers and technology development zones by means of the structures where technological production is promoted and in which universities or research centers are directly involved and using the idle capacity that is currently present should be supported. Publication and infrastructure activities should be implemented especially to attract entrepreneurs from outside environment of the region.



## 2.3. Disseminating Research Centers at Universities and Private Sector

Accelerated increase and reflection to everyday life of technology and innovative applications give rise to the requirement for the private sector and academy rather than public to develop in this direction. Although the weight of R&D expenditures in East Marmara Region is on academy and public, share of the private sector in R&D expenditures needs to be increased to accelerate the development. R&D centers are important tools in increasing R&D expenditures of the private sector.

The leading sectors in the region also comply with the existing R&D centers. Creating R&D centers in large scale companies in this and other sectors should preferentially be supported and technical support should be provided by informing. Raising the awareness levels of the companies with R&D center establishment capacities will also lay the ground for new establishments. Support mechanisms should be developed by taking into account the financial and bureaucratic barriers before establishment of R&D centers by the companies.



<sup>19</sup>East Marmara Regional Plan 2010-2013

<sup>20</sup>East Marmara Regional Plan 2010-2013



## 2.4. Increasing Intellectual and Industrial Property Right Applications.

Innovation performance of a country or region is directly proportional to the patents produced there. The sectoral distribution of patents is also regarded as an important indicator that highlights the innovative sectors. 4.7% of the patents granted since 2000 has been to East Marmara Region according to the data of Turkish Patent Institute (TPE). The vast majority of these patents are to the province of Kocaeli. While 3.96% of the utility models, 2.16% industrial design and 2.89% registered trademark in Turkey are implemented in East Marmara Region, dominance of Kocaeli stands out in all areas.

The most basic step to be taken in order to increase ownership of intellectual and industrial property rights is to increase the quality of education and support formation of qualified and creative labor. As education will show its effect in long-term, activities for attracting creative labor to the region should be carried out in the meantime.

In parallel with branding, national certification and accreditation as well as international certifications are important in terms of export potential. Therefore, certification of the products and services offered in the region by the objective certification organizations should be supported. Organizations and institutions producing these services and products should be informed

about these topics and their training should be ensured. In addition, similar training and information activities should be performed for experiment and analysis services to be obtained from accredited laboratories for determining compliance of the products newly developed in scope of R&D activities and manufactured currently to the international standards.

Although industrial activities are intense in the region, capacity of these sectors to generate innovation is directly proportional to the presence of R&D staff. In this respect, innovative workforce training capacity of the region needs to be developed. Emphasis should be put on raising specialized R&D employees and presence and necessary form of training programs towards qualified R&D employees needed by the regional industry should be presented. On the other hand, the most interesting branch among those with training program lack for the R&D employees in the region currently is industrial design training. Designs are generally prepared by the designers or engineers trained at the universities centered in Istanbul and Ankara. The subject for opening industrial design or industrial products design departments for both design infrastructure towards the industry of the region and working in cooperation with the sectors located in the region.

## 2.5. Publication of Regional Innovation Environment for New R&D Investments

The most important vase in selection of the location where research and development will be implemented can be deemed as proximity to production and proximity to labor. On the other hand, it is important that R&D culture is settled in this respect. The companies addressing all elements relating to innovation environment and infrastructure and manufacturing in the region should be encouraged to perform their R&D activities and establish R&D centers in the region.





# THE BASE OF INNOVATION; EAST MARMARA REGION

Innovative Geography enabling creative ideas and new ideas  
that carry the region onwards





### 3. Cooperation and Innovation Culture

Production stages differ even in production of the same product or service with research and development. Information producers should be in the front of the product producers to keep up with the speed of technology and innovation and to become a brand region in regional development. However,

transformation of this knowledge into production must actualize before this process. Therefore, it is required to develop the opportunities for the information producers and product producers altogether.



#### 3.1. Diversification and Dissemination Activities of Industry - Academy Cooperation Platforms

Creation of qualified labor needed by the private sector is another area of intersection between the academy and private sector. Needs of the companies operating in the prioritized sectors in the region should be key point in setting up universities and vocational schools. Cooperation platforms that will be established via chambers of commerce and industry and other professional organizations, and sectoral unions should be disseminated for the need of intermediate staff. Academic studies conducted by the white-collar staff should be supported at institute scale.

Another contribution of academy that can be provided for the private sector is consultancy. Suitable grounds should be prepared for the consultancy services that the companies will receive from academicians in R&D, production, marketing, and strategy determination processes. Therefore, dissemination of mutual agreements should be encouraged for creating the platforms where the enterprises can work with academicians. Project-based private sector - university collaboration is important for both efficient use of time and addressing final outputs. Presenting the common projects to the organizations and institutions such as the European Union, relevant Ministries, TUBITAK, and Development Agency that can provide financial support should be encouraged. Additionally, collaborations should be set up

for sectoral experience and practical information for the students, especially in engineering and technical education. For this purpose, transport and accessibility capabilities of industrial and business centers and universities should be improved.

Industrial theses and academic studies of post-graduates towards application should be supported by the Ministry of Science, Industry and Technology. Activities should be carried out by the universities for dissemination of such studies. Activities towards effective use of this program should be encouraged particularly in the provinces other than Kocaeli.

Technology Transfer Offices (TTO) has been established within the body of the universities to increase technological commercialization. Although their administrative structuring has been completed, technology transfer activities outside Gebze region do not have a wide range of application. For this purpose and in order to commercialize the academic studies that can feed the industry, actively operation of the technology transfer offices in the region should be supported. In addition, integration of TTOs into international networks and acceleration of their institutionalization activities should be addressed as a priority.



### 3.2. Enhancing of Innovation Management Performance and Sector

Business areas of the enterprises operating in the innovative sectors are complicated by new technologies, innovative products and services, detailed knowledge production and interdisciplinary interaction. And this makes the dominance of innovative enterprises to dominate the processes difficult. On the other hand, employers can neither dominate all of the processes nor employ dominant personnel.

Detailing of sectors leads to the trend for specialization of the enterprises. It is important for the enterprises focusing on specific areas to find qualified consultants to fulfill common requirements of general and innovation areas. And this makes innovation management consulting extremely important. Innovation management activities involve the actions for identification of innovation strategy that includes preferring the most result promising projects; innovation organization and culture for the enterprise; innovation results implemented to commercialize the manufactured products and ensure maximum income with the facilitating factors such as support, IT systems, project management, human resource management, and protection of intellectual property rights protection.

In order to ensure institutionalization, acquiring good practice examples domestically and from abroad and maximum benefit from current international formations – particularly from the resources of the European Union – are required. For this reason, foreign expansion of the innovation management consultancy should be encouraged for training, certification

and self-assessment activities.

Access to all methodologies relating to the services of consultancy companies accredited in innovation field and increasing growth and impact area within the innovation network, and access to experience sharing opportunities should be improved.

Chances of the SMEs that will benefit from consultancy service to examine good practice examples in innovation management area, to compare their innovation management practices with good examples, to identify the missing points in terms of innovation management, and to use better innovation management tools and to access consultancy network should be improved.

Activities should be implemented by the policy-makers at regional and provincial scale towards taking the necessary steps for obtaining information about key factors for innovation management and identifying and improving the obstacles before innovation management.

Activities of the academicians and universities in producing the knowledge to be commercialized towards teaching innovation management consultancy at undergraduate, graduate and certificate program levels at universities, developing application and business scopes for academicians, and increasing spin-offs should be supported.











### 3.3. Improving Technical Capacities of Umbrella Organizations and Chambers

It is important for efficient use of resources in the region that foundations such as sectoral associations, chambers, and upper organizations have institutionalized. In addition to common researches and analyses for each sector, fulfilling the needs such as common technical elements, common infrastructure, common promotion and marketing by a central management will be helpful in cost reduction and increased productivity. Therefore, development of capacities of the umbrella organizations such as sectoral associations and chambers should be supported.

### 3.4. Creating Interfaces to Improve Cooperation between Organized Industry Zones – Technology Developments Zones – Technology Transfer Offices

Improving cooperation and common operability between the industry zones where production occurs as well as technology development areas where technology is developed and commercialized and technology transfer offices is important for the innovation to gain momentum.

Organized industrial zones where production is made in an organized way show great capability in meeting many common expenditures and needs of the enterprises within their bodies. In order to improve the effectiveness of managements of organized industrial zones in technology development commercialization stages, their common activities with newly institutionalized technology transfer offices and technology development zones that are being increasingly widespread should be encouraged.

Technology transfer offices should be supported also to have an efficient working environment with technology development zones and to develop collaborations in product development processes. Therefore, establishment of an interface where different organized industrial zones, technology transfer offices and technology development zones in the provinces of the region will come together and share their activities should be ensured.

### 3.5. Improving and Facilitating Employment and Internship Opportunities of University Students at the Industry

There are many departments in the universities of the region that train qualified staff at vocational, technical, undergraduate, graduate and postgraduate levels that are needed by the industry of the region. The students being educated in these departments need common studies with the private sector in the stages such as compulsory or optional internship, industry thesis or similar sector-specific academic studies, researches and analyses, business processes, design, supply, production and marketing of intermediate and final products, and innovative practices.

Similarly, the private sector needs qualified labor and common studies with the academy. Therefore, development of joint working of the universities and vocational schools in the region with the private sector for such stages should be ensured.



## 4. Financing

One of the most important requirements in ensuring innovation is to diversifying financing opportunities. Access to financial resources by the universities producing information, organizations and companies producing technology, technology transfer office commercializing products, public and civil society improving the innovation environment, and the private sector

performing innovative production is important.

Therefore; more efficient use of public resources, EU resources, angel investors and loan organizations institutions in the field of innovation should be provided.





## 4.1. Maximum Benefit from Horizon2020

### Program

East Marmara Region, which cannot benefit from a set of funds in terms of level of development, especially the provinces of Kocaeli and Sakarya, has increasingly benefiting from framework programs of the EU. Activities of East Marmara ABİGEM and East Marmara Development Agency as well as initiatives of the universities and chambers of commerce and industry tend to increase this rate further. It is expected that Horizon 2020 program will support R&D and innovation activities with a budget of over € 70 billion after the end of 7th Framework Program. Moreover, it is stated this program will be supported according to regional innovation strategies and smart specialization priorities of the regions. Activities towards maximum benefit of regional enterprises, public institutions, universities, NGOs and professional organizations from these funds should be implemented referring to East Marmara Regional Innovation Strategy.

Almost all projects of the framework program in the area have been presented and gained support from the province of Kocaeli (58), and Sakarya and Bolu provinces have benefited with a total of 5 projects. Benefit of Sakarya, Düzce, Bolu and Yalova from Horizon 2020 program should be encouraged primarily. In addition, the universities of the region benefited with only 15 projects from 6th and 7th Framework Programs. Participation of the universities in more projects should be ensured in R&D and innovation fields.

European Union Information and Communication Technologies Policy Support Programme (ICT-PSP) and EIP programs and EU Competitiveness and Innovation Framework Programme (CIP / EIP) are among underutilized programs in the region. Information and awareness should be provided for utilization from these funds and cooperation opportunities should be improved.

## 4.2. Increasing Utilization from Techno - Venture Capital and Monitoring of Beneficiaries

216 projects have been prepared since 2013 by the persons trained/being trained at the universities of the region for the techno-venture capital program that involves supporting, monitoring, concluding and evaluating the results of transformation of technology and innovation oriented business ideas of highly trained and qualified young person's into the enterprises with high potential to create added value and qualified employment and 40 of these projects have been supported.

Ensuring increase of entrepreneurs receiving techno-venture support will be very useful for the innovation of the region. Therefore, publicity and project preparation processes related to this support need to be supported.

On the other hand, tracking and reporting of the activities of the entrepreneurs who have already benefited from this support will be beneficial in terms of sustainability. These entrepreneurs should be motivated at certain times and they should be supported to receive new supports and guidance and supporting activities should be sustained.

## 4.3. Dissemination of Benefiting from Other Government Supports

Innovative projects should be supported by the government, especially by the Ministry of Science, Industry and Technology and its affiliated institutions TÜBİTAK and KOSGEB. In particular, consultancy should be provided to increase benefit of universities, research centers and private enterprises from this support.





## 5. Promotion and Dissemination

Publication and dissemination activities should be performed for implementation of regional innovation strategy, publicity of innovative initiative and investment environment in the region, and improving recognition and adoption at international scale.



### 5.1. Providing Sustainability of Regional Innovation Strategy Advisory Board and Technical Committees

A governance mechanism is required for implementation and continuous improvement of regional innovation strategies. Technical committee and advisory board established in strategy formation process should maintain their activities for this purpose.

This structure is important in terms of both monitoring and leading the activities and tracking the innovation indicators regularly and coming together of different stakeholders. Coming together of the advisory board consisting of the universities of the region, chambers of commerce and industry, and TurkStat representatives as well as the actors taking place in the innovation ecosystem at certain intervals will be useful.





## 5.2. Preparing Innovation Guide For Enterprises, Universities, Institutes and Umbrella Organizations in the Region

As in promoting governmental supports, a guide containing conceptual and legal information related to innovation towards all stakeholders, promoting regional innovation ecosystem, compiling angel investor and technological products and processes, involving government supports have been prepared.



## 5.3. S3 Platform Membership (Observer)

S3 Platform established in parallel with RIS3 guide developed by the European Commission and with innovation activities follows the smart specialization strategies of regions in Europe. Participation as observer should be ensured as Turkey is not a Member State.



## 5.4. Updating the Website and Ensuring Active Participation

It is important to create a website where regional innovation strategy is described and all information, documents, announcements, news and information related to the stakeholders are included and that will serve as guide.



## 5.5. Translation of Regional Innovation Strategy and Related Documentation and International Announcement

As smart specialization is a global phenomenon, this website should also be published in different languages. Innovation structure and specialization sectors of East Marmara Region of innovation should also be published on this tool.



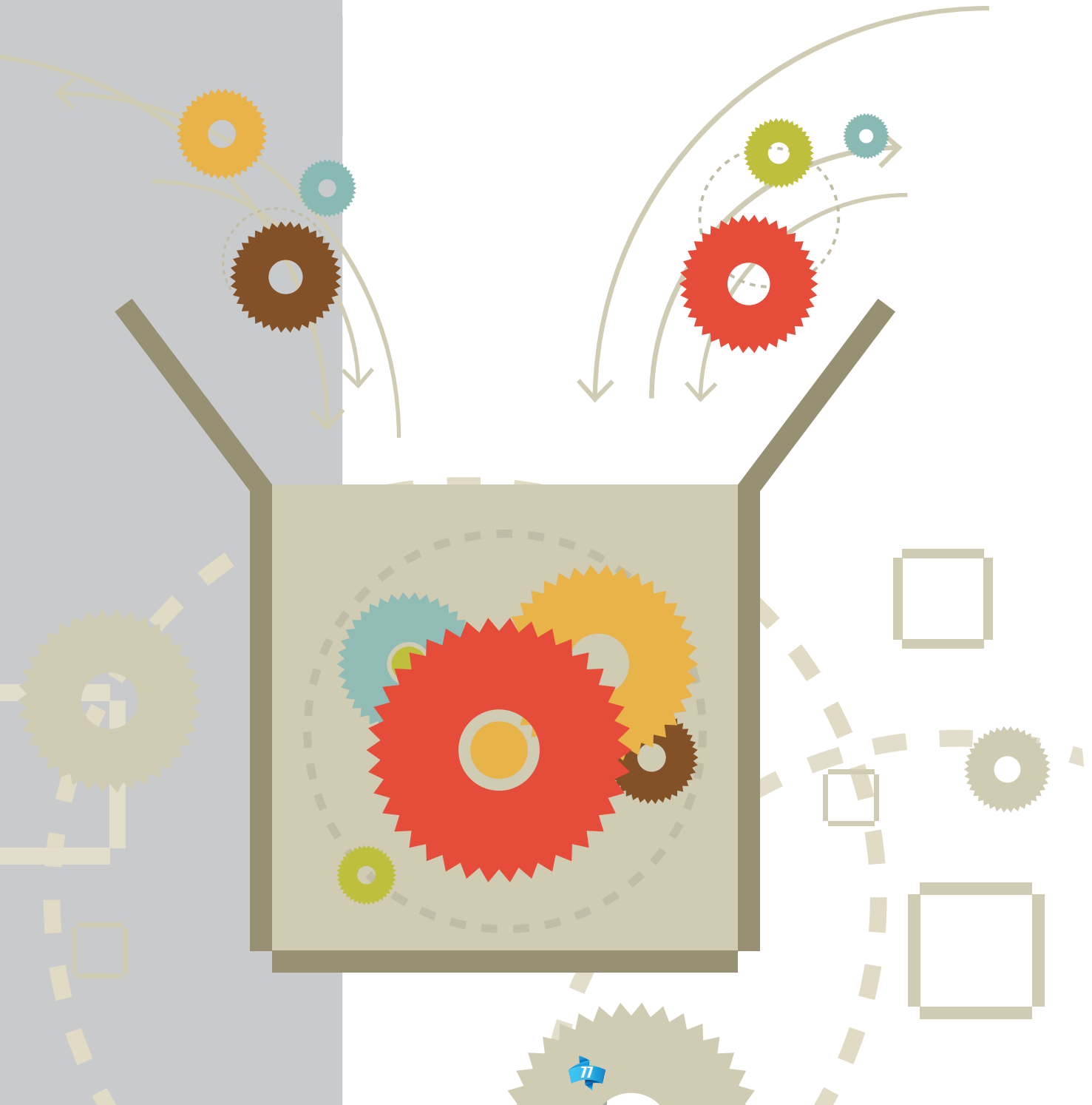






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- *Innovation Union Flagship Initiative*, by the European Commission
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- *Bölgesel İnovasyon Stratejisi Hazırlama Kılavuzu*, by IRE Network









An aerial photograph of a city skyline, likely Chicago, featuring prominent skyscrapers like the Willis Tower. The sky is filled with dramatic, grey clouds, and the city below is a dense grid of buildings and infrastructure.

# EAST MARMARA IS HIGHLY COMPETITIVE

Regional Innovation Strategy will boost the  
growth in the region





# FOR SMART SPECIALIZATION REGIONAL INNOVATION STRATEGIES

2014-2018

The report could be found online at:  
[www.dogumarmarabolgeplani.gov.tr](http://www.dogumarmarabolgeplani.gov.tr)









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# MARKA

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