

Okay CIVELEK

*Bursa Chamber Of Commerce and Industry
Bursa, Turkey
ocivelek@gmail.com*

New Generation Organized Industrial Zones for Industrial Transformation

ABSTRACT

The organized industry in Turkey is operating since 1961. The companies located in the organized industrial zones aim only manufacturing and try to deliver orders of customers on time in general. They provide supplies for whole manufacturing from the organized industrial zones (OIZ), but they provide services for better manufacturing of products, development of products and development of employees from outside the OIZs. In this context, this research, which is focusing on necessity of such needs to be met at the organized industrial zones, is about the Bursa Organized Industrial Zone that is the first OIZ in Turkey and the Demirtaş Organized Industrial Zone. The Organized Industrial Zones should not only be manufacturing centers, but innovation centers, as well.

Key words: *Organized Industrial Zones, Innovation Centers, Regional Development, Cluster Approach .*

1. Introduction

The industrial revolution which began about 300 years ago has been transformed from mentality of supply of products whatever it is to manufacturing systems meeting the customers' needs. In this context, the globalizing manufacturing and sales techniques began the rapid transformation of the companies.

Industry negatively affects the quality of urban life and the self-development opportunities of industry are also restricted. The re-functioning need of the city center with the changing modes of production in industry, clustering trends and development of transport facilities led to organization of these spaces outside the city. However, moving the industrial enterprises and the re-functioning of the ones in the city center led to various spatial, economic and social effects. The inhabitants in the transformed area and its surroundings, the people employed in the industrial enterprises, employers, other economic activities and companies in these areas, natural environment, built environment and infrastructure, etc. are directly affected by the experienced transformation.

Establishment of Organized Industrial Zones (OIZs) in Turkey started with the planned period in particular for the SMEs and the trend to benefit from this potential has occurred in regional development. (Çetin, Kara 2008,51-52)

A significant number of authorities have been granted to the OIZ managements under the OIZ Law enacted in 2000, and important steps have been taken for increasing the capacity of OIZs in Turkey. (Çetin, Kara 2008,51-52)

As a result of development of the OIZs and the legal framework of the OIZ Law, today the OIZs are critical tools for industrial policy to be implemented with important functions such as development of the SMEs and providing them with better manufacturing facilities, providing the balanced development between the regions having economic differences, eliminating the negative effects and balancing the relation between urbanization and industrialization by moving the industrial enterprises outside the city centers and with a suitable and planned location. It is important for development the economy of Turkey that these functions are fulfilled effectively, the number and qualifications of the OIZs increase and is widely spread across the country. (Çetin, Kara 2008,51-52)

However, besides the increase of the OIZs, the increase in qualifications of the OIZs is aimed and industrial transformation is required taking into account the 2023 targets of our country, international competition, high-tech products and trade deficits of countries. It is highlighted that the Organized Industrial Zones should also be innovation centers in addition to manufacturing centers.

2. The Concept of Oiz

Since 1960s in Turkey a balanced regional development policy has being implemented. Small Industrial Zones (SIZ) are among the main tools of this policy for five-year development plans, integrated regional development plans, Rural Development Projects, investment incentives and Priority Regions for Development, OIZs and small-sized enterprises (Arslan, 2005:291; Atlan, 2007:2).

The OIZs in Turkey are defined as zones producing goods and services established in the form of allocating the pieces of lands of which the zones are approved in a planned manner and within certain systems by equipping them with the required infrastructure services and social facilities and techno parks which will be defined as per the requirements and managed as per the OIZ Law in order to structure the industry in the designated areas, to steer urbanization, to prevent environmental problems, to benefit from the IT technologies and to locate and develop the manufacturing industrial types as per a defined plan. (OSBÜK, 2014:2)

The OIZs are results of organized, tidy and planned approach. According to the Ministry of Industry and Trade the OIZs are development and organization of the planned settlement areas under certain standards by building infrastructure and common service requirements to develop the SMEs.

Briefly, the OIZs are locations of factories grouped as per an economic scale. The OIZs meet the physical needs for establishment factories while providing a suitable environment for effective activities of industrial enterprises and thus, creates a suitable

Table 1
Why is Transition to the Value-Added-Manufacturing important

Sectors	Nr. of companies	National and International Sales (Turnover) TL (excl. VAT)	Added Value TL	Own Capital TL	Net Assets TL	Period Income (V.Ö.) TL	Export \$	Average of the Paid Employees (Person)	Sales from Manufacturing TL
Wood Forest Products and Furniture	4	404.811.331	65.743.303	126.913.415	272.321.060	26.053.164	17.626.361	815	95.504.032
Environment	2	147.471.027	4.029.560	15.627.443	36.568.756	1.798.447	-	70	-
Mining	4	517.090.565	121.200.926	346.067.889	579.202.017	63.157.159	32.734.675	841	461.689.578
Leather Fur and Shoe	2	108.910.730	13.654.786	71.128.345	102.953.725	4.248.490	11.493.323	334	33.659.255
Economic Relations and Finance	3	524.836.049	204.500	1.786.871	1.868.549	-	68.722	13	-
Electrical-Electronics	2	801.312.572	30.438.218	122.541.976	618.127.410	7.545.034	130.849.434	483	677.497.858
Energy	8	2.539.787.678	-	17.375.386	1.331.532.306	6.513.666.683	106.847.674	1.059	1.099.462.917
Food Agriculture and Stockbreeding	29	6.532.194.139	858.999.201	2.593.553.161	5.645.062.457	274.373.870	226.174.354	14.329	4.643.476.653
Service, Training and Consultancy	5	1.029.762.061	275.703.166	158.081.203	424.608.768	25.614.681	-	6.647	-
Construction	10	793.604.668	140.174.672	394.256.187	759.323.362	74.494.353	3.192.186	3.746	334.812.567
Chemistry	2	198.708.533	2.163.466	20.738.418	165.342.506	614.970	2.217.603	32	-
Logistics	2	142.732.253	56.367.823	177.623.092	206.000.408	33.544.928	-	416	-
Manufacturing of Machinery and Equipment	18	4.527.354.649	1.132.947.028	1.202.677.074	4.442.891.574	168.051.444	1.447.523.516	11.861	3.348.761.337
Metal	12	4.068.489.923	463.228.321	1.164.039.659	2.834.413.278	152.824.542	593.588.264	6.111	3.645.743.698
Automotive Main Industry	4	16.913.359.019	1.673.863.979	2.300.245.974	6.835.701.075	770.679.608	5.807.992.200	13.868	15.351.150.541
Automotive Sub Industry	59	7.886.498.352	1.598.118.498	2.236.134.899	5.733.305.935	466.657.180	1.161.514.513	29.696	6.702.638.488
Retail Trade	22	3.347.263.050	384.910.090	635.917.982	2.191.982.552	75.244.817	213.149.780	7.968	34.495.926
Plastics, sponge and packaging	6	625.868.976	50.593.387	98.910.338	484.471.463	10.268.207	43.079.845	709	526.181.247
Health	1	917.534.918	38.145.807	75.363.672	316.098.685	6.349.920	-	814	-
Textile and Ready-Wear	54	6.495.482.194	1.465.474.250	3.219.398.070	7.137.817.744	404.446.798	997.108.807	25.112	4.919.525.801
Tourism	1	53.374.024	20.372.894	141.366.947	152.657.422	6.882.747	-	510	779.852
TOPLAM	250	58.576.446.711	8.378.958.489	16.433.904.921	45.454.385.429	2.465.933.963	10.697.147.809	125.434	41.875.379.750

environment for to develop a network nurturing industrial relations. In addition, the OIZs protect the agricultural lands by showing entrepreneurs an appropriate land to build industrial facilities. Considering these descriptions, the aims pursued for the formation of the OIZs are as follows (Eyüboğlu, 2003:2-3):

- To discipline industry.
- To contribute to the planned urban settlements and development.
- To provide productivity and profitability as per a program by manufacturing complementary industrialists that promote the sub products of each other
- To disseminate industry in the less developed regions.
- To prevent the use of agricultural lands in the industry.
- To plan infrastructure in accordance with the requirements; to establish common service facilities such as healthy, cheap and reliable infrastructure and common social facilities.
- To ensure standardization.
- To prevent environmental pollution by common treatment plants.
- Management of the OIZs by their own bodies under supervision of the state.

Thus, the OIZs can be seen as a space regulating and a development tool. The role of the OIZs in the regional development is carrying out through three main channels. The first one is to overcome the negative effects of industrialization which is the main aim of establishment the OIZs; to provide environmentally-friendly coordinated urbanization. The second one is to make many public services available for entrepreneurs that are required for execution the production activities in a productive way. The third one is that the companies performing similar activities create positive effect on each other due to presence on the same geographic campus. As a result of this effect which can be defined with the clustering approach, the companies can increase their productivity by lowering transaction costs between each other and by creating synergies by being together.

(Çağlar, 2006:312).

2.1. Bursa Organized Industrial Zone

In 1961 a consulting firm carried out a research all over Turkey in the name of the "State Planning Organization" for to find a suitable industrial area. This research was carried out especially in the cities of Bursa, Istanbul, Adapazarı, Adana, Mersin and Zonguldak.

As a result of these studies, it was decided that Bursa is the most appropriate city in Turkey for such project, and this proposal was presented in a report. The Bursa Organized Industrial Zone is the first of this kind carried out.

The project was adopted by the Bursa Chamber of Commerce and Industry and was founded in 1961. The foundation started in 1962 with 10% contribution of the BTO to the credit of 26.200.000 TL provided by the Ministry of Finance of the International Development Organization Balance Fund and began to serve officially in 1966.

The lands that have been assigned to the Organized Industrial Zone were purchased by the Bursa Chamber of Commerce and Industry and divided into appropriate lots and later on the infrastructure services such as roads, water, drainage, gas, electricity and telephone have been completed. To meet the need for housing, the neighboring sites were planned as a residential area.

All kinds of infrastructure maintenance services are provided in order to maintain high-standard services. In addition, garbage collection, fire and ambulance services are offered free of charge to the companies.

Initially area of the region made 1.8 million square meters and 4 companies were already operating. Over time, the demand for plots increased and this demand could not be met. The expanded area of the region currently makes 6.8 million square meters, where 2,450,000 square meters are used for infrastructure facilities and 3,850,000 square meters are used as industrial lands.

Industrialists in our region are provided with all infrastructure services. Since 1992 natural gas distribution network has been added to all of these services.

Establishment of common treatment plant was approved as establishment of individual treatment plants of the companies in the Organized Industrial Zone was not practical due to the lack of space and as it was not profitable.

The investment made for this purpose started up in 1998 and is currently working at full capacity. In this way, the waste water in the Industrial Zone discharged from a common and single sewage is treated in a joint system.

The General Assembly was formed by participants of the zone and leaving the BCCI as per the general assembly held on 10.10.2012 and the name of the BCCI Organized Industrial Zone was changed to the Bursa Organized Industrial Zone. (BOSB, 2014:2)

2.2. The Demirtaş Organized Industrial Zone

The foundation of the Türk Otomobil Fabrikası AŞ (TOFAŞ) started on April 13, 1969 and opened in 1971; the Sönmez ASF Plants opened in 1975 which led to the industrial formation of the Demirtaş Organized Industrial Zone (DOSAB).

The number of firms operating in the region in 1980s increased. Representatives of these firms gathered under the roof of association to solve their common problems and to act together. In this context, on January 29, 1987, the Demirtaş Industrialists’ Association (DSD) was founded by six founding members under the chairmanship of Mustafa Karaer; its current name is DOSABSİAD (Demirtaş Organized Industrial Zone Industrialists’ and Businessmen’s Association). (DOSAB 2014:2)

3. Transformation of Industry;

3.1. Transition Process to the Value-Added-Manufacturing

Innovation centers that can provide sustainability of industry in both organized industrial zones lack at the moment. In this context, the industry has to have the transition to the value-added-manufacturing in order for Turkey to reach its 2023 targets, to catch up international competition, to manufacture high-tech products and to eliminate the foreign trade deficit.

In this context, as per the research on 250 big companies conducted by the Bursa Chamber of Commerce and Industry, the 4 biggest sectors are the automotive, textile, metal and machinery. In this context, there is a need of technology development zones for both industries for growth based on customer needs and desires.

Table 2
Sectorial Table of Top 250 Companies in Bursa (ilk250 org.tr)



Source : ILK250 2104

As far as the city of Bursa is concerned;

There is a high manufacturing quality. There are companies having the capacity to develop products and can manufacture advanced technology. The Durmazlar A.Ş., located in the Bursa Organized Industrial Zone, manufactured the first local tram of Turkey last year.

3.2. The Fall of Detroit

Formerly, Detroit, one of the important industrial cities of the USA, was one of the automotive centers of the world. However, insufficient investments in technology and focusing on one sector led to its fall, although initially considered as being good for the economy of the city. The employment in the automotive industry in Detroit made 250.000 in 1975 which fell to 90.000 in 2010.

Table 3
Strong Sectors in Bursa

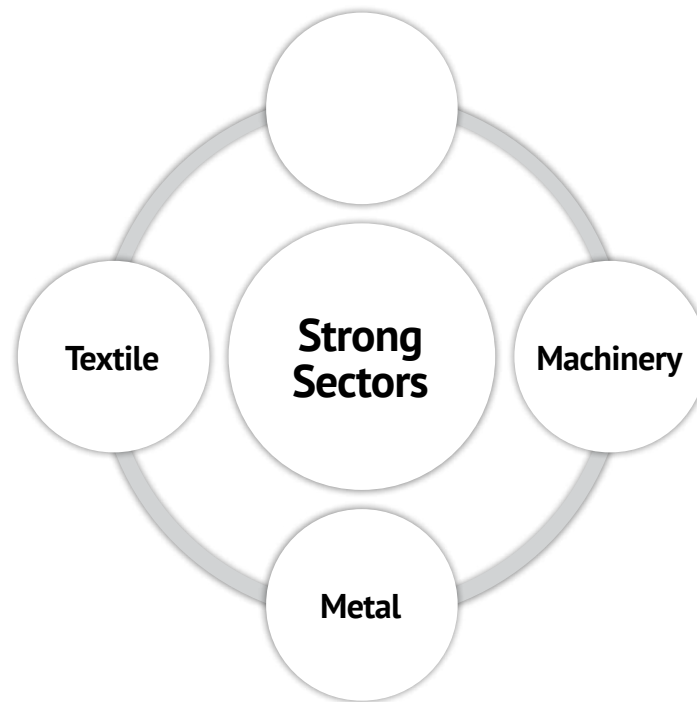


Table 4
Change ratio in the population of the city of Detroit

3.3. How 4 Important Sectors in Bursa Should be Transformed?

Automotive, metal and textile sectors in Bursa should be transformed from the low technology levels to rail systems and technical textile in addition to space, aviation and defense due to investments in medium and high technology.

3.4. Why Should Transformation Begin in 2 Organized Industrial Zones?

Organized industrial zones in Turkey had the establishment period between the years 1960-1980. In this context, the goal in the Organized Industrial Zones (OIZ) was to replace the orders given. Therefore, because of the contract manufacturing, innovation and R & D activities were very rare.

Organized Industrial Zones had their spreading period between the years 1980-2010, and their number which made 1 in 1961 has reached to 278 nowadays. Besides, there are many reclamations in the Organized Industrial Zones. (BSTB 2014:2)

Previously While the Board of the Organized Industrial Zones was responsible for ensuring public lands to industrialists, giving electricity, water, natural gas services; now they are responsible for giving services such as providing employment, ensuring the innovation needs of the companies.

Regarding the table below, both of the Organized Industrial Zones (Demirtaş and Bursa) meet 77% of total export of Bursa alone.

4. Technology Development Zones and Center of Excellence

4.1. Tech-parks

Table 5
The Realization of the Transformation in the Industry

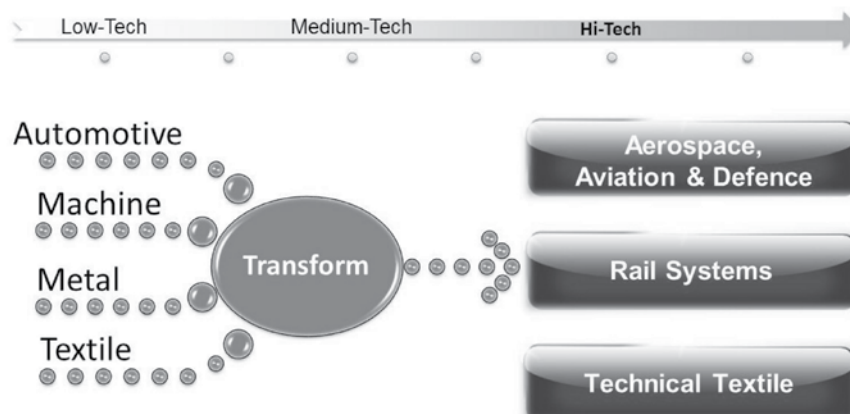


Table 6
Bursa and Demirtaş OIZ Export, Consumption and Employment Figures



The goal of the TGB's, known as Tech-parks and regulated by the law No. 4691 issued in the year of 2001, is to create technological knowledge in order to establish a structure so that the domestic industry can compete in international markets and have an export-oriented structure, to develop innovations in products and production methods, to improve the product quality and standards, to increase productivity, reduce production costs, to commercialize the technological knowledge, to support the technology intensive manufacturing and entrepreneurship, to ensure the compliance of SMEs with new and advanced technology, to create investment opportunities in technology-intensive areas considering the Science and Technology High Council's decisions, to create job opportunities for researchers and qualified persons, to help the technology transfer and to create the infrastructure which will accelerate the entry of foreign capital to our country to ensure the high / advanced technology (See in detail for TGBs: Arslan and Özdemir (2005), Ylinenpaa (2001).

4.2. Center of Excellence

Center of excellence is the name of the team, center or establishment which provides an interest in leadership, leadership, best practice, research, development, support and / or training activities, is the name given to centers or organizations. The interest of the center of excellence could be technology (eg. Java), business concept (eg. business process management), skills (eg. negotiation) or a large work area (eg. women's health), or its aim could be reviving an attempt which was stopped. (Mark, 2010:50)

The Center of excellence could be a separate organization from any organization or team, group, part or center within an existing organization. The term, which is known as competencies or skills center can also act as the common center of collaborative organizations that share the common goal of excellence in any particular area. (TAREK M. KHALİL 2001 : 164)

Centers of excellence in technology companies often focus on business concepts related to software world such as new software tools, techniques or technologies, or service-oriented architectures. (ERIC A. MARKS 2008:276).

4.3. Ensuring the Tech-park and Center of Excellences to Take Part in Organized Industrial Zones

68% of the companies in the Demirtaş Organized Industrial Zones are textile companies. Companies have to compete with China, Malaysia and South Korea which are leading companies in competition in the World. So there is a need for textile centers of excellence. (DOSAB 2014:3)

In the Bursa Organized Industrial Zones, there are many technology-oriented manufacturing in many sectors, particularly in automotive, including the production of the first tram of Turkey.

Tech-parks enable:

- Producing technological knowledge for international competition,
- Product development and innovation in production methods, improving the product quality and standards,
- Increasing productivity, reducing production costs, commercialization of technological knowledge,
- Supporting the technology-intensive investment and entrepreneurship,
- Creating job opportunities for researchers and qualified people,
- Contributing to technology transfer

Centers of Excellence enable:

- Realization of information based production technology
- Production of high value-added products
- Production with new and advanced materials
- Increase of efficiency
- Rapid product development, increasing the innovation abilities

4.3.1. Hacettepe-İvedik OIZ Tech-city

R&D and software companies have begun to take place in Hacettepe-İvedik OIZ Tech-city Building which was published and registered in the Official Gazette numbered 27716 on 01.10.2010.

In this center which is thought to contribute to the development of university-industry cooperation, leasable space makes 3.697 sq., the indoor area makes 5.267 m², and there are 30 operating offices. Through the heavy demand of more than 1500 companies which are conducting R&D activities in 1500 in the Ankara İvedik Organized Industrial Zone, they have achieved a 90% occupancy rate over a short time. (Hacettepeteknoket:2014:1)

4.3.2. Atılım University Metal Forming Center of Excellence

Metal Forming Center of Excellence has been established with the support of the Ministry of Development of the Republic of Turkey and with contribution of the Atılım University. The center's objective is to support metal forming industry in Turkey with the applied research, to develop innovative, knowledge-based and energy-efficient manufacturing technologies, the production of high value-added parts, to enable design of new and improved materials.

Researches in the center are carried out in close cooperation with industry and other universities. A significant number of national and international small and medium-sized projects have been carried out since 2010. Through the seminars, workshops, training courses and ongoing projects, a major role is undertaken for the dissemination of knowledge.

Center has many hardware and software facilities needed for metal forming researches. Forming presses, testing devices needed for material and microstructural characterization, numerical analysis needed for software and hardware form the infrastructure of the Center.

Capabilities of Metal Forming Center of Excellence

- Characterization of materials for simulation
- Forming the light metals
- Mold design and life improvement
- Conceptual methods
- Numerical methods
- Material characterization tests
- Systematic experiments
- Prototype production
- Pre-series-production

Considering the global developments, the Turkish Metal Industry needs an research and development center bringing solution to short, medium and long-term problems of industry to maintain its competitiveness in the next 20 years and even to increase it, and to manufacture new markets and products,

Within this context, the main purpose of the Metal Forming Centre of Excellence supported by the DPT is to carry out necessary research and development activities, specified below, in our country through the Academy-industry collaboration that will be established within a worldwide remarkable center of excellence: (aü 2014:1)

- Carrying out information-based production technology
- Manufacturing high value-added products
- Manufacturing with new and advanced materials
- Increasing efficiency
- Development of mini and micro products
- Rapid product development, increasing the innovation capabilities

5. Conclusion

The Organized Industrial Zones entered to industry of our country in 1961 in Bursa. Firstly, the OIZs provided land and infrastructure services to industrialists. In particular, after 1980s companies needed R&D activities and they began to meet their own R&D activities, and then they met their R&D needs in tech-parks located within universities.

The fact that the Organized Industrial Zones are far away from technology development zones has led to logistics difficulty, difficult technology production in practical, failure to use the information fully.

The share of high-tech exports must be increased to 20% and the share of medium and high technology must be increased to 95% in order to achieve 2023 goals of Bursa. To do so, offering solution to result-oriented viable projects of industrial enterprises, fields of application for ideas developed by science and research community is aimed.

The project-based effective activities must be carried out to train and provide researchers in the sphere of R&D. While establishing strong partnerships with the world's largest R&D centers, they take joint action with the universities of Bursa to establish a Tech-city to industrial zones as well.

On the other hand, leadership to establish R&D Trade Center, Design Trade Center and common R&D Labs is planned.

In this context, it's seen that tech-cities, which are established, have branches via additional fields allocated for them as tech-city fields by the OIZ within the boundaries of their cities in the OIZs, under the no. 4691 legislation, and thus provide support for entrepreneurs who want to make use of the opportunities of the tech-city by being close to companies developing and manufacturing in industry.

In this structure, managing company manages the "Branch tech-city" without changing structure of the board, and the Board of the OIZ allocating additional field is included in the system through the strategic partnership and supports the tech-city in this way.

Handing the building over to the ULUTEK Technology Development Zone Management Inc. by signing a co-operation agreement between ULUTEK and Directorates of the Organized Industrial Zones in Bursa is one of the steps to be taken in this period.

Application to the Ministry of Science, Industry and Technology of the Republic of Turkey for establishment of the ULUTEK-Bursa OIZ Tech-cities and for approval of the Council of Ministers, publication and registration on the Official Gazette are processes to be followed.

The necessities of establishing a Technical Textile Center in the Demirtaş Organized Industrial Zone is to provide:

- Establishing a joint laboratory constituted by the industry itself for Textile and Apparel sectors,
- After completing the production stage of the companies engaged in production of technical textiles, reducing the risk of failure to reach the desired results in relevant tests,
- Providing benefits to companies in terms of both time and financial aspects by sending related tests abroad,
- Existence of an incentive and directing institution which wants to switch to Technical Textile production,
- Contributing to transformation of technical textile products of companies by carrying out R&D activities in the field of technical textile,
- Contributing to formation of clusters in sub-sectors as the effective Center of Research and Excellence (baby, home textiles and so

on.), and thus creating higher value-added of every sub-sector for sustainable development of Turkey,

- Increasing collaboration of Public, Industry, University and Research Centers, In this context, there must be a Textile Center of Excellence in the Demirtaş Organized Industrial Zone established.

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