



U.S. Department of State's  
Bureau of Population,  
Refugees, and Migration



# Earthquake Impact and Sustainability Analysis for Manufacturing Sector Regional Report

Adiyaman  
Gaziantep  
Hatay  
Kahramanmaraş  
Malatya

June / 2023



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# Earthquake Impact and Sustainability Analysis for Manufacturing Sector Regional Report

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June / 2023

# WE HAVE PREPARED OUR EARTHQUAKE ZONE ROAD MAP WITH GCI AND IOM COLLABORATION

## ADNAN ÜNVERDİ

Gaziantep Chamber of Industry  
Chairman Of The Board



We experienced an unspeakable pain that will be remembered as the disaster of the century with our families and loved ones in 11 provinces at 04:17 on the morning of February 6.

Unfortunately, we have lost more than 50,000 people and thousands of people were injured in the earthquake, which affected an area larger than countries like Austria, Netherlands and Sweden and 13.5 million people.

I wish that such a disaster will never happen again all over the world.

Our wounds are very fresh and despite all our pain, somehow we have to heal our mental and social wounds, repair the damage of our economy and recover.

While the total export of the 11 provinces affected by the earthquakes reached 20 billion 510 million dollars last year, Gaziantep has an export number of 10.5 billion dollars in 2022 solely.

We have an understanding that exists with our business and continuity in production, exports and employment is the main factor in the recovery of our region.

In this direction, both the public and private sectors in our country are making extraordinary efforts.

However, we determined that a road map is needed to ensure that the process is carried out effectively in terms of both production and employment, head off loss of time, to analyse correctly and to reach results quickly. "Earthquake Impact Analysis and Reporting Working of The Production Sector", financed by IOM and conducted by Gaziantep Chamber of Industry was carried out in this direction.

With the "Earthquake Impact Analysis and Working of The Production Sector", it is aimed to reveal the impact of the earthquakes on the enterprises operating in the manufacturing sector and their employees in 5 of the 11 provinces affected by the earthquake (Gaziantep, Kahramanmaraş, Malatya, Hatay, Adiyaman provinces) and to create short-medium and long-term action plans for the industry-based structuring and improvement pro-

cesses of these provinces and the region.

In this project, questionnaires for the direct addressee of the study; the owner or authorized people of the manufacturer company, surveys of employees working in these companies, qualitative interviews with the chambers of commerce and industry and relevant institutions/organizations of which the producer companies are members were conducted.

Producer company surveys were conducted through direct interviews with a total of 2,970 companies, 825 from Gaziantep, 828 from Kahramanmaraş, 491 from Malatya, 491 from Hatay and 335 from Adiyaman.

Employee survey interviews conducted with a total of 5,940 personnel/employees, including 1650 in Gaziantep, 1652 in Kahramanmaraş, 983 in Malatya, 655 in Adiyaman and 1000 in Hatay.

In addition, inperson meetings were held with the presidents and general secretaries of the Chambers of Commerce and Industry, Development Agency officials, and Organized Industrial Zone Directorates of the 5 provinces.

As a result of this effort, time and work;

5 provincial reports including short, medium and long term action plans and project proposals for Gaziantep, Kahramanmaraş, Malatya, Hatay and Adiyaman provinces, with a regional report covering all provinces and including short, medium and long term action plans and project proposals has been prepared.

Prepared reports are a road map for the work to be carried out for the future, they contain and guide all the elements that will be decisive in the recovery of the region and its redevelopment by sustaining production and employment.

I would like to thank International Organization for Migration (IOM) for their solution-oriented approach, support and cooperation and everyone who contributed and supported the project at a time when we struggle with difficulties. I hope that the work carried out will undertake an active role in the future of our region.

# FOREWORD



**Mohanad AMEEN**

Programme Coordinator (Recovery & Stabilization Unit)

On February 6, 2023, a devastating earthquake of magnitude 7.8 struck Türkiye, leaving a trail of destruction across several provinces, including Gaziantep, Hatay, Adiyaman, Kahramanmaraş, and Malatya. This catastrophic event resulted in an unprecedented loss of life, claiming over 50,000 lives and injuring more than 100,000 individuals. The earthquake severely damaged critical infrastructure, homes, businesses, and factories. The manufacturing sector in these provinces was drastically impacted, bearing the brunt of the disaster with widespread devastation. Numerous factories were either obliterated or suffered severe damage, resulting in thousands losing their jobs. The disruption in supply chains further exacerbated operational challenges for businesses. To comprehensively assess the earthquake's impact on the man-

ufacturing sector, with the support of the U.S. Department of State: Bureau of Population, Refugees, Refugee, and Migration, the International Organization for Migration (IOM) collaborated with the Gaziantep Chamber of Industry to conduct a comprehensive study, shedding light on the significant toll the earthquake had on the manufacturing sector, both physically and economically.

These findings are instrumental in guiding response and recovery initiatives in the affected provinces, providing crucial insights into the manufacturing sector's pressing needs and challenges. Moreover, it emphasizes the vital role of supporting vulnerable populations during the recovery process.



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# 1. PURPOSE OF THE STUDY

“Earthquake Impact Analysis and Reporting Study of the Manufacturing Sector” was conducted to determine the earthquake impact of enterprises and their employees operating in 5 provinces (Gaziantep, Kahramanmaraş, Malatya, Hatay, and Adıyaman) where 45% of the earthquake victims in 11 provinces of Turkey live.

Within the scope of this study, the impact of the earthquake on businesses and employees has been comprehensively analyzed. In addition, the effects of the earthquake were not only limited to building damages, but also the effects on the production sector and employment were investigated. In this way, a more comprehensive 5 provincial reports and a general report on the effects of the earthquake were prepared. The General Report summarizes the contents of the 5 provincial reports and presents a holistic approach.

Short, medium and long term activity and project proposals have been prepared for the provinces in the region. These proposals will help businesses and workers in the region to recover and contribute to improving the living standards of earthquake victims.

In addition, the results of the study will be shared with relevant stakeholders and used to determine policies and strategies for recovery after earthquake. In this way, the recovery of earthquake victims and businesses in the region will be realized faster and more effectively.

# 2. METHOD

Surveys were conducted with a total of 2970 company officials and 5940 company employees in Gaziantep, Kahramanmaraş, Hatay, Malatya and Adıyaman provinces to determine the economic, social and psychological effects of the earthquake. As a result of the interviews with company officials, the results and evaluations are presented in graphs and tables.

## **The research process of earthquake impact analysis was carried out with 3 different target groups**

- Survey of producer companies,
- Survey for the employees of these companies
- It was implemented in the form of qualitative interviews with the chambers of commerce and industry and relevant institutions/organizations of which the producer companies are members.

During the conduct of the “Earthquake Impact Analysis and Reporting Study of the Manufacturing Sector”, support was provided to young people especially living in the study areas for per-



forming face-to-face surveys. The surveys were particularly supported for surveys with manufacturing companies and their employees. The aim of this study was to help young people in the region to recover from the psychological effects of the earthquake and to be involved in the working environment, even for a short period of time. It also created an opportunity for young people to earn an income.

The support was received from earthquake victims in the region during the study. The surveys and interviews were achieved three months after the earthquake to acquire more reliable data. The participation of young people in the survey process is of great importance as it provides valuable information on the impact of the earthquake on the manufacturing sector and the overall economy.

Moreover, the data collected from young people provided a unique perspective on the psychological and social impacts of the earthquake. The data collected was used to generate short, medium and long-term project recommendations which will help in recovery and reconstruction efforts for the affected areas.

The importance of data collection after natural disasters such as earthquakes is crucial for assessing damages and planning the recovery process. However, the timing of data collection can greatly affect data reliability. Chaos, lack of coordination and rapid changes after natural disasters can lead to data that is not completely accurate or reliable.

It is therefore recommended to start data collection at least three months after the acute phase has passed. During this period, people start to return home and go back to their normal routines, which makes the data collected more reliable, realistic and verifiable. In this way, the research can be more valuable and effective.

The earthquake impact analysis research was conducted with three different target groups: questionnaires for manufacturing companies, questionnaires for their employees, and qualitative interviews with chambers of commerce and industry affiliated with manufacturing companies. The data obtained from these groups can be used to analyze the economic, social and psychological impacts of the earthquake and to create proposals for short, medium and long-term recovery plans.

Overall, data from young people living in affected areas provides valuable information about the impact of earthquakes on the manufacturing sector, the economy and the overall well-being of communities. This data can be used to develop effective recovery and reconstruction plans that take into account the unique needs and challenges of the affected areas.

If data collection is carried out at a later time, the effects of the earthquake will be forgotten and the data collected will not accurately reflect the situation. Therefore, data collection should be prioritized in the post-acute period to ensure that the collected data is accurate and effective. The research data were collected approximately 3 months after the earthquake in May-June.

This study aims to understand the impact of two major earthquakes happened on February 6, 2023 on the manufacturing industry in five provinces. The study includes separate reports for the five provinces, consisting of research, quantitative data sources, qualitative data sources, and analysis sections.

## **Chapter 2 was created using 4 different data sources:**

1. Direct effects of the earthquake (public sources and news sources)
2. Quantitative data (survey results)
3. Results of the survey conducted with company employees
4. Qualitative interviews (interviews with institutions)

**Table 1.** Number of Interviews for Producer Survey

Provinces	Number of producers which is the member of chamber	Sample Quota (Visit Target)	Minimum Answer Target	Realization
<b>Gaziantep</b>	2,423 companies	1,250 companies	813 companies	825 companies
<b>Kahramanmaraş</b>	2,231 companies	1,250 companies	813 companies	828 companies
<b>Malatya</b>	1,584 companies	750 companies	488 companies	491 companies
<b>Hatay</b>	1,465 companies	750 companies	488 companies	491 companies
<b>Adiyaman</b>	821 companies	500 companies	325 companies	335 companies
<b>Total</b>	<b>8,524 companies</b>	<b>4,500 companies</b>	<b>2,925 companies</b>	<b>2,970 companies</b>

According to the member lists received from the chambers of industry, it was reached that there are 8,254 firms in the region. In the producer survey, the number of firms on a provincial basis was determined by the sampling method and firms were categorized according to sectors. In total, 8,524 company information was sent to us from other chambers.

As stated in the table above, a specific number of companies were selected as a sample quota for each province, and the aim was to visit a total of 4500 companies to conduct the survey application process. 2,970 company visits were realized. Enterprise sample quotas in the relevant province were calculated in accordance with the reliability scale accepted by scientific research methods, taking into account the size of the enterprise universe in that province. This calculation includes 95% confidence interval and 2% margin of error.

**Table 2.** Number of Employee Survey Interviews

Provinces	Number of firms to be surveyed	Number of people to be interviewed in the company (minimum)	Minimum Answer Target	Realization
<b>Gaziantep</b>	813 company	2 people	1,625 people	1,650 people
<b>Kahramanmaraş</b>	813 company	2 people	1,625 people	1,652 people
<b>Malatya</b>	488 company	2 people	975 people	983 people
<b>Adiyaman</b>	325 company	2 people	650 people	655 people
<b>Hatay</b>	488 company	2 people	975 people	1,000 people
<b>Total</b>	<b>2,925 company</b>		<b>5,850 people</b>	<b>5,940 people</b>

The employee sample quotas in the relevant provinces were calculated as % 95 confidence interval and %2 margin error in accordance with the reliability scale accepted by scientific research methods, taking into account the size of the employee population in that province.

With the face-to-face qualitative interview method, the Chairman of the Board of Directors of the Professional Chamber and the Secretary General or General Manager were interviewed about which areas of the production sector were more affected and how the recovery process should start from the perspective of the managers of the chambers / institutions / organizations representing the production sector.

Professional Chambers and Institutions interviewed:

- Gaziantep;
  - o Gaziantep Chamber of Industry
  - o Gaziantep Chamber of Commerce
  - o Gaziantep Commodity Exchange
  - o Nizip Chamber of Commerce
  - o Nizip Commodity Exchange
  - o Gaziantep Organized Industrial Zone Directorate
  - o Development Agency
- Kahramanmaraş;
  - o Kahramanmaraş Chamber of Commerce and Industry
  - o Kahramanmaraş Organized Industrial Zone Directorate
  - o Development Agency
- Malatya;
  - o Malatya Chamber of Commerce and Industry
  - o Malatya Organized Industrial Zone Directorate
  - o Development Agency
- Hatay
  - o Antakya Chamber of Commerce and Industry (ATO)
  - o İskenderun Chamber of Commerce and Industry (ITSO)
  - o Development Agency
  - o Antakya Organized Industrial Zone Directorate
- Adiyaman;
  - o Adiyaman Chamber of Commerce and Industry
  - o Adiyaman Organized Industrial Zone Directorate

**Survey method:** Surveys were conducted simultaneously for the 5 provinces analyzed. Surveyors conducted face-to-face interviews in the field and recorded online data entry into the central system using tablets with GSM data lines. “Survey Tracking and Control Software” was used for the surveys.

Fieldwork, data collection, data entry and field management were monitored entirely in digital environment. Access was provided to the identity, location and quota information of the surveyors assigned to fieldwork. Each survey, by which interviewer, on which date, at what time and for how long, was recorded in the digital environment in an unchangeable way. The automatically recorded GPS coordinates of the geographical location where the survey was conducted were recorded in an unchangeable way.

### 3. SITUATION BEFORE THE EARTHQUAKE: GENERAL INFORMATION ABOUT REGIONAL INDUSTRY

When the 5 provinces affected by the earthquake are analyzed, it is determined that the dominant industry in the economy is largely based on the processing of agricultural products. According to the assessments made, the economic development of the region is based on “agriculture-based industrial activities”. Trade in the region is generally based on the weaving and food sectors. The leadership of Gaziantep in terms of exports, production, number of workplaces and employees is undeniable. Most of the exports are carried out with Iraq and other Middle Eastern countries, which is the first country in the region’s exports thanks to geographical proximity and the flexibility of commercial conditions .

According to the socio-economic development ranking survey of districts/provinces and regions published by the Ministry of Industry and Technology, taking into account the employment, competitive and innovative capacity, financial capacity, accessibility, education, health and demographic characteristics of provinces, Kahramanmaraş ranks 8th, Gaziantep 30th, Adıyaman 66th, Hatay 39th and Malatya 44th. When the districts in the region are analyzed, Şehitkamil and Şahinbey districts of Gaziantep, Yeşilyurt and Battalgazi districts of Malatya, Antakya and İskenderun districts of Hatay, Dulkadiroğlu and Onikişubat districts of Kahramanmaraş, and the central district of Adıyaman rank high . The levels of incentives given to industrial investments are similar to the development level of provinces.

**Table 3.** Population structure in the region

Province	Total	(0-17)	(15-24)	(15-29)	(0-29)	(15-64)	65+
<b>Gaziantep</b>	2,154,051	790,077	373,459	543,469	1,206,932	1,366,161	124,427
<b>Kahramanmaraş</b>	1,177,436	373,637	193,881	278,382	586,363	764,905	104,550
<b>Malatya</b>	812,580	215,978	126,831	184,285	361,013	545,210	90,642
<b>Hatay</b>	1,686,043	537,008	265,090	382,846	828,626	1,102,478	137,785
<b>Adıyaman</b>	635,169	213,088	104,216	151,927	329,544	404,271	53,281

There are approximately 3.5 million registered Syrians under temporary protection in Turkey. Approximately 50 percent of the total number of Syrians in Turkey live in the 11 provinces affected by the earthquake and the number of Syrians under temporary protection in the region is 1,738,035.

<http://tucaum.ankara.edu.tr/wp-content/uploads/sites/280/2022/12/TM-07-Cumali-OGEL-69-86.pdf>

<https://www.sanayi.gov.tr/merkez-birimi/b94224510b7b/sege>

<https://www.sbb.gov.tr/wp-content/uploads/2023/03/2023-Kahramanmaras-ve-Hatay-Depremleri-Raporu.pdf>

**Table 4.** Activities with the Highest Share in the Private Sector in Employment in the Earthquake Region (2021)

Province	Thousand Total Employment	Registered Employment	Share of the Province in Disaster Area (%)	Share of Provincial Employment in Total (%)
<b>Gaziantep</b>	712	471	18.5	2.5
<b>Kahramanmaraş</b>	338	210	8.8	1.2
<b>Malatya</b>	257	149	6.7	0.9
<b>Hatay</b>	477	296	12.4	1.7
<b>Adiyaman</b>	122	81	3.2	0.4

On the other hand, the unemployment rate in the TR63 (Hatay, Kahramanmaraş, Osmaniye) region is 17.1%, which is above Turkey's average of 12%. In the region, the labour force participation rate and employment rate are lower than in Turkey, while the unemployment rate is higher.

As of the end of 2022, 24,476 MW of installed electricity capacity, which constitutes 23.6% of Turkey's total installed capacity, is located in 11 earthquake-affected provinces. This installed capacity includes 50% of HEPPs, 16% of imported coal power plants, 14% of domestic coal power plants, 13% of solar and wind power plants, 6% of natural gas power plants and 1 percent of other power plants. The total installed capacity of substations in these provinces is 23,399 MVA, constituting 10.8% of the total transformer capacity in Turkey. The total length of electricity distribution lines and total transformer capacity in the region stand at 199,857 km and 34,793 MVA, respectively, by the end of 2021. These figures represent 16.2% and 16.3% of Turkey's total natural gas consumption, respectively, while the total natural gas consumption of 4.7 billion m<sup>3</sup> in the disaster area in 2021 accounted for 8% of the national natural gas consumption.

There are 142 hydroelectric power plants in the earthquake region with a total installed capacity of 12,339 MW. In Turkey, 19% of the number of dams and 39% of the installed hydroelectric power capacity are located in this region. Approximately 26 billion kWh of electricity is generated annually from hydroelectric power plants, accounting for 40% of Turkey's hydroelectric generation. 45 MW of solar power plants, 924 MW of wind power plants and biomass and waste heat plants with a total installed capacity of 224 MW are licensed. A total of 58.1 TWh of electricity and 4.7 billion m<sup>3</sup> of natural gas were consumed in the earthquake zone. These amounts account for 19% and 8% of total national consumption, respectively.

**Table 5.** Share of Provinces in GDP and Sub-Sectors (2021)

Provinces	Gaziantep	Kahramanmaraş	Malatya	Hatay	Adiyaman
<b>Agriculture, forestry and fisheries</b>	1.3	1.4	0.9	1.3	0.8
<b>Industry</b>	3.6	1.4	0.5	1.8	0.3
<b>Manufacturing industry</b>	4	1.3	0.5	1.9	0.2
<b>Construction</b>	1.7	0.8	0.7	1.0	0.3
<b>Services</b>	1.5	0.4	0.3	1.4	0.2
<b>Information and communication</b>	0.2	0.1	0.1	0.1	0.0
<b>Finance and insurance activities</b>	0.8	0.3	0.3	0.5	0.2
<b>Real estate activities</b>	1.6	0.8	0.8	1.3	0.5
<b>Professional, administrative and support service activities</b>	1.1	0.4	0.3	0.8	0.2
<b>Public administration, education, human health and social work activities</b>	1.8	1.1	1.1	1.6	0.7
<b>Other service activities</b>	0.7	0.3	0.4	0.6	0.2
<b>GDP</b>	2	0.9	0.5	1.4	0.3

**Table 6.** Foreign Trade Data of Provinces (2022)

Provinces	Export Million Dollars	Import Million Dollars
<b>Gaziantep</b>	11,197	8,493
<b>Kahramanmaraş</b>	1,412	1,731
<b>Malatya</b>	456	171
<b>Hatay</b>	4,067	7,611
<b>Adiyaman</b>	97	83

**Table 7.** Share of provinces in total country exports by product or sector (2022)

Province	Product or Sector	Percentage Share
Gaziantep	Carpet	60.6
Gaziantep	Cereals, Pulses, Oil Seeds and Products	31.7
Gaziantep	Fruit and Vegetable Products	17.4
Gaziantep	Textile and Raw Materials	16.8
Hatay	Fresh Fruits and Vegetables	15.6
Malatya	Dried Fruits and Products	15.5
Gaziantep	Leather and Leather Products	9.9
Gaziantep	Dried Fruits and Products	9.5
Hatay	Steel	9.1
Kahramanmaraş	Textile and Raw Materials	8.5
Gaziantep	Furniture, Paper and Forestry Products	7.2
Gaziantep	Air Conditioning Industry	6.0
Gaziantep	Chemicals and Chemical Products	4.7
Gaziantep	Machinery and Components	2.3
Hatay	Mining Products	2.1

The total railway length in the disaster area is 1,275 km and conventional lines are available between Adana-Hatay-Osmaniye- Gaziantep-Kahramanmaraş-Malatya. The Sivas-Çetinkaya-Malatya-Narlı-İskenderun corridor is critical for freight transportation in Turkey as a whole, transporting export products, mainly minerals, from the Southeastern and Eastern Anatolia regions to Iskenderun Port. Freight transportation is carried out by the Osmaniye and Hatay railways and is the busiest region among all lines, with line values reaching 8-10 million tons per year. Airports open to civil air traffic are located in Hatay, Adiyaman, Malatya, Gaziantep and Kahramanmaraş.

There are 13 ports operated by the private sector in Iskenderun Bay and these ports handle dry bulk, general cargo, container, liquid bulk, liquid cargo and passenger transportation. Total handling in the region is approximately 135.9 million tons and the number of containers handled is 659,335 TEU.

In 2021, these provinces accounted for 15% of total vehicle-km, 15% of passenger-km and 20% of ton-km on Turkey's highways. The northern and western regions are connected to the Habur border crossing and Mersin and Iskenderun ports by road.

15.3% of the country's agricultural output is produced in earthquake-affected provinces. As of 2022, 26% of the area under fruit growing and 16.2% of the area under field agriculture is located in earthquake zones. Apricots, almonds, pomegranates and olives, which have an important place in the country's agriculture, are produced in this region. 13% of bovine and 17.8% of ovine livestock are located in earthquake zones. In addition, 2,375 boxes of silkworms were raised in the region in 2022, which corresponds to 42.6% of Turkey's production. Hatay accounts for 1.6% of the production from marine aquaculture.

**Table 8.** Number of Manufacturing Industry Firms in the Region (2023)

Province	Big	Middle	Small	Micro	Total
Gaziantep	152	308	1,269	11,798	13,527
Kahramanmaraş	55	92	301	3,863	4,311
Malatya	7	43	194	2,682	2,926
Hatay	23	60	285	4,148	4,516
Adiyaman	4	13	96	1,817	1,930
<b>TOTAL</b>	<b>241</b>	<b>516</b>	<b>2,145</b>	<b>24,308</b>	<b>27,210</b>

**Table 9.** Number of OIZs and SIAs in the Region (2023)

Province	Number of OIZs	Number of SIAs
Gaziantep	5	15
Kahramanmaraş	6	10
Malatya	3	9
Hatay	5	12
Adiyaman	4	5
<b>TOTAL</b>	<b>23</b>	<b>51</b>

**Table 10.** Employment in Earthquake Region by Registration Status (2021)

Provinces	Total Employment (Thousand People)	Registered Employment (Thousand People)
Gaziantep	712	471
Kahramanmaraş	338	210
Malatya	257	149
Hatay	477	296
Adiyaman	122	81
<b>TOTAL</b>	<b>1,906</b>	<b>1,207</b>

Overall, the earthquakes affected the local labour market in the four provinces much more. Compared to before the earthquake, the loss of working hours due to the earthquake was as follows: Adiyaman 48.1%; Hatay 45.2%; Kahramanmaraş 43.1%; and Malatya 58.8%. For Gaziantep, the rate was 5.5% .



## 4. CURRENT SITUATION AFTER THE EARTHQUAKE

### 4.1. Effects of the Earthquake on the Region

Hatay, Kahramanmaraş and Adiyaman are most affected among the provinces by earthquakes in the region. An aftershock of magnitude 6.4, with its epicenter in Defne district, occurred on February 21, 2023, increasing the destructiveness of previous earthquakes in Hatay.

**Table 11.** Total Number of Buildings in Earthquake Affected Provinces

Province	Residence	Workplace	Public	Other	Total
<b>Gaziantep</b>	269,212	22,829	5,480	8,162	305,683
<b>Kahramanmaraş</b>	219,351	12,358	6,879	4,565	243,153
<b>Malatya</b>	159,896	8,370	6,670	4,051	178,987
<b>Hatay</b>	357,467	33,511	10,382	5,489	406,849
<b>Adiyaman</b>	107,242	5,765	4,370	3,119	120,496
<b>TOTAL</b>	<b>1,113,168</b>	<b>82,833</b>	<b>33,781</b>	<b>25,386</b>	<b>1,255,168</b>

**Table 12.** The number of residences in the region before the earthquake and their status of being affected by the earthquake

Province	Number of Pre-Earthquake Residences (2021)	Total Number of Emergency+Heavy+ Demolished Residences	Number of Moderately Damaged Residences	Number of Less Damaged Residences
<b>Gaziantep</b>	893,558	29,155	20,251	236,497
<b>Kahramanmaraş</b>	481,362	99,326	17,887	161,137
<b>Malatya</b>	345,536	71,519	12,801	107,765
<b>Hatay</b>	847,380	215,255	25,957	189,317
<b>Adiyaman</b>	216,744	56,256	18,715	72,729

The size of the population that left the region after the earthquake (3.3 million) is larger than internal migration movements within Turkey and took place throughout 2021. According to the analysis, around half of the population of Adiyaman and more than a third of the population of Hatay, Kahramanmaraş and Malatya were displaced. After the earthquake, the registered Syrian population in the region decreased by 4.5%.

**Table 13.** Debris rates by administrative units

Province	Damaged Location Rate (%)	Damage Free Rate (%)
Adıyaman-Çelikhan	71	29
Adıyaman-Gölbaşı	70	30
Adıyaman-Merkez	18	82
Adıyaman-Tut	61	39
Gaziantep-İslahiye	41	59
Gaziantep-Merkez	3	97
Gaziantep-Nizip	0.03	99.97
Gaziantep-Nurdağı	53	47
Hatay-Antakya	41	59
Hatay-Dörtyol	3	97
Hatay-Erzin	4	96
Hatay-Hassa	44	56
Hatay-İskenderun	40	60
Hatay-Kırıkhan	57	43
Hatay-Payas	4	96
Kahramanmaraş-Elbistan	57	43
Kahramanmaraş-Merkez	19	81
Kahramanmaraş-Pazarcık	66	34
Malatya-Merkez	54	46

Note Compiled from the report “2023 Turkey-Syria Earthquake Remote Damage Assessment” personally obtained from Miyamoto International Turkey.

**Table 14.** Estimated displaced population in 5 provinces in the earthquake zone

Province	Total Population	Estimated Displaced Population	Ratio
Gaziantep	2,625,601	252,317	9.6%
Kahramanmaraş	1,274,468	489,149	38.4%
Malatya	845,352	320,100	37.9%
Hatay	2,043,472	774,483	37.9%
Adıyaman	657,888	307,204	46.7%
<b>TOTAL</b>	<b>7,446,781</b>	<b>2,143,253</b>	<b>28.8%</b>



According to the Ministry of National Education, Hatay, Kahramanmaraş, Malatya, Adiyaman and Gaziantep stand out in terms of the number of students who transferred from the earthquake zone to other provinces. Of the 217,246 students enrolled as of March 6, 71,959 were transferred from Hatay, 52,908 from Kahramanmaraş, 39,987 from Malatya, 22,889 from Adiyaman and 14,719 from Gaziantep. When we look at the approximate changes in the number of Syrians in the 5 provinces affected by the earthquake, 7500 people in Gaziantep, 21,500 in Hatay, 1,100 in Kahramanmaraş, 180 in Adiyaman and 200 in Malatya .

The earthquake caused significant damage in the energy sector. Some buildings, transformers and switchyards were damaged in facilities owned by the Electricity Generation Corporation (EÜAŞ). A total of 52.5 million TL (2.8 million dollars) worth of damage was also detected in electricity generation facilities operated by the private sector .

Damage was also recorded on electricity transmission lines. Eleven poles connecting the 1,128 km long electricity transmission line of the Turkish Electricity Transmission Corporation (TEİAŞ) collapsed. Substations with a total power of 4,088 MVA were also damaged. Electricity distribution lines and transformer substations in the region, especially in Hatay, Gaziantep, Kahramanmaraş and Adiyaman, were severely damaged.

Explosions and malfunctions occurred at approximately 20 different points in the natural gas transmission lines of the Pipelines and Petroleum Transportation Corporation (BOTAŞ). Therefore, there were serious problems in natural gas supply. These problems caused problems especially in the supply of natural gas used for heating.

The railroad network in the earthquake zone was also severely damaged. On the lines, cave-ins in tunnels, rock and stone falls and structural damages on bridges occurred in general. The damaged sections were located on the corridors with the bottlenecks where the most operations in terms of rail freight transportation in our country are carried out. Therefore, the earthquake is expected to have serious impacts on the rail transportation sector.

In addition, according to the preliminary assessments made in the earthquake zone, a total of 26 station buildings were destroyed and 165 buildings were damaged. It has been determined that approximately 3.7 billion TL resources are needed for the construction of the destroyed station buildings and other facility buildings and maintenance-repair of the damaged ones<sup>9</sup>.

At Hatay Airport, the runway broke and the apron was damaged. Settlement was detected on the ground of the airport and it was reported that infrastructure drainage, electrical and mechanical systems were not functioning. At Malatya Airport, where two axle additions were made, one axle of the terminal building was damaged.

Nearly 1,500 containers were damaged after a fire at the privately-operated Iskenderun Port. However, no significant damage was reported to the port infrastructure. Port operations were disrupted due to the collapse of the dock.

The cost of damage to highway infrastructure in the 11 provinces in the KGM road network that were damaged in the earthquake was approximately 12.2 billion TL (645 million USD). Many roads were damaged and accessibility problems were experienced.

The earthquake also had serious impacts on the logistics and export sectors. At Iskenderun Port, the dock collapsed and some containers suffered partial damage. Exports are expected to be adversely affected as a result of disruptions in production and delivery due to earthquake damage to some export-oriented enterprises and facilities producing intermediate goods for these enterprises. Due to the interruption in production, a demand deficit is expected to occur in some products and this demand deficit will be met by imports.

## 4.2. Earthquake Impact and Sustainability Research in the Regional Manufacturing Sector

Within the scope of the research, face-to-face quantitative and qualitative interviews were conducted in Gaziantep, Kahramanmaraş, Antakya, Malatya and Adiyaman provinces.

The purpose of this research;

1- To determine the current situation of the companies in the manufacturing sector in Gaziantep, Kahramanmaraş, Malatya, Antakya and Adiyaman provinces prior to and following the earthquake, the economic, social and psychological effects caused by the earthquake and the requirements of the companies,

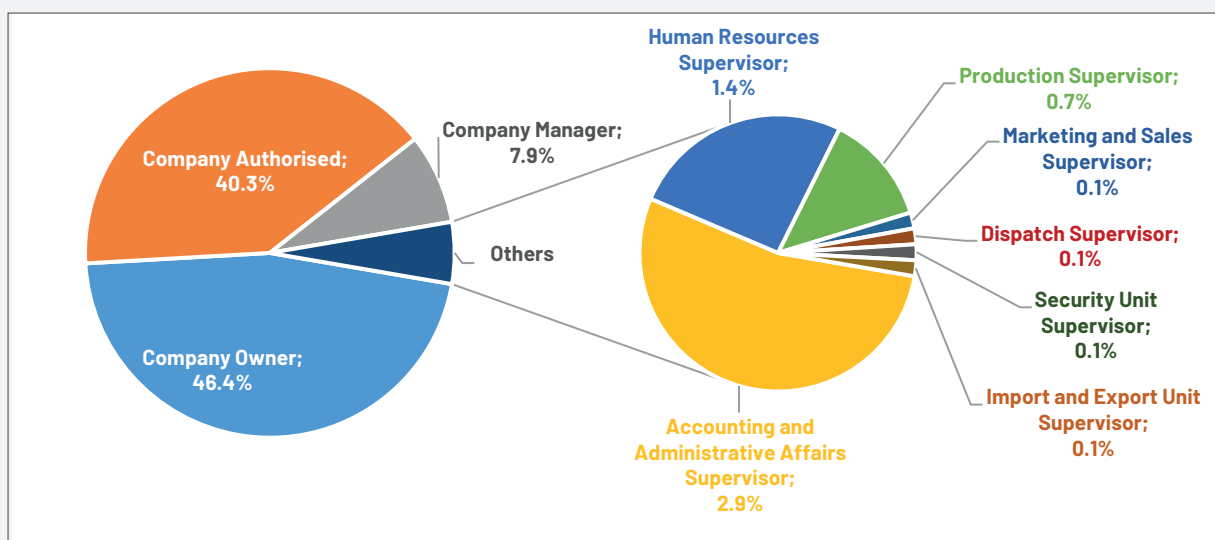
In this context, face-to-face interviews were conducted with a total of 2970 companies according to the sample size determined with a confidence interval of 95% and an accuracy level of 2.8%. In face-to-face interviews, it was attempted to determine the current situation of the company, the current situation of the employees, institutional needs and employment status. As a result of the interviews with company authorities, the results and evaluations are presented in graphs and tables.

2- To determine the current situation of production sector employees in Gaziantep, Kahramanmaraş, Malatya, Antakya and Adiyaman provinces after the earthquake, the economic, social and psychological effects of the earthquake caused by the earthquake and the requirements of the employees, In this scope, face-to-face interviews were conducted with 2 employees of the interviewed companies (5,940 employees in total). In face-to-face interviews, the current situation and requirements of

the employees were tried to be determined. As a result of the interviews with company employees, the results and evaluations are presented in graphs and tables.

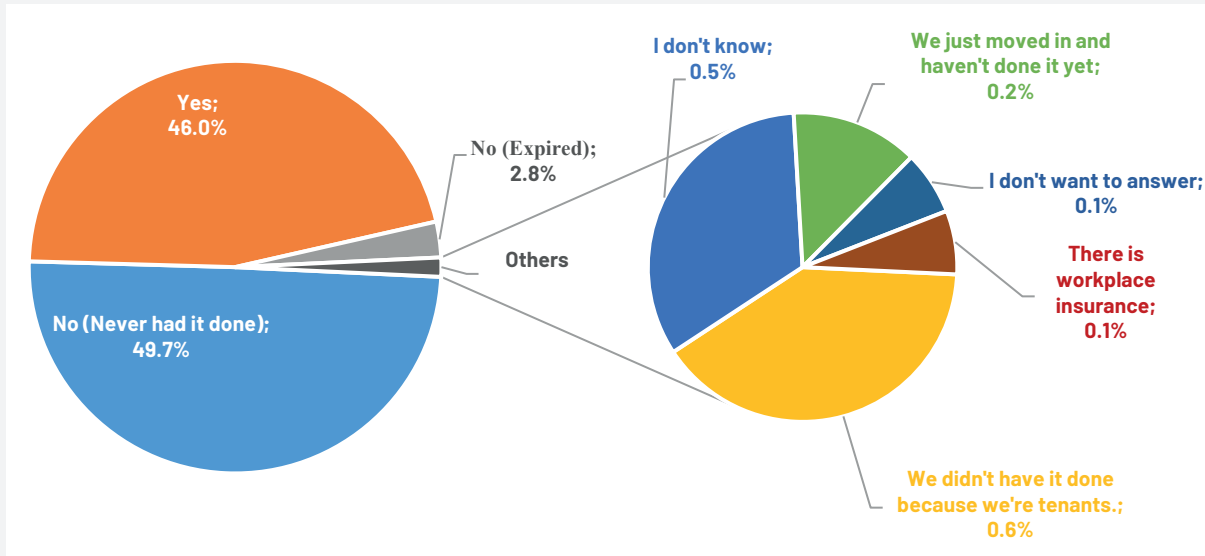
3- To determine the current situation and requirements of the members of the institutions and organizations in Gaziantep, Kahramanmaraş, Malatya, Antakya and Adiyaman provinces, the current situation of the institution and the organization after the earthquake, the effects of the earthquake and their requirements in order to sustain their activities. In face-to-face interviews, it was ensured to determine the current situation and requirements of the members and sectors, the current situation of the institution, institutional requirements, and employment status. In this regard, face-to-face interviews were conducted with the authorities of the institutions and organizations representing the companies (two authorities from each institution).

In 5 provinces, 2.6 % of the interviewees were Syrian and 97.4 % were Turkish Citizens. It was declared that a total of 19,287 white-collar workers and 134,400 blue-collar workers were employed in the interviewed companies before the earthquake. The status of company authorities interviewed is represented in Figure 1.



**Figure 1.** Status of company authorities interviewed (5 provinces in total)

It was determined that 46% of the companies located in 5 provinces have Voluntary Earthquake Insurance. Of the companies that do not have Voluntary Earthquake Insurance, 49.7% stated that they never had it, while 2.8% stated that the insurance period expired and was not renewed. 1.5% of the interviewed companies stated their reasons in the “Other” option.



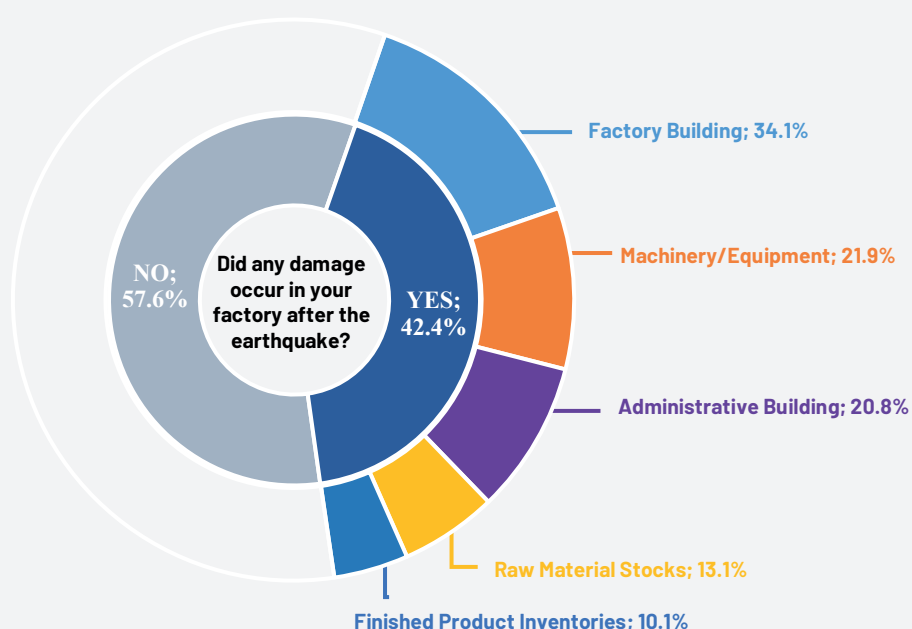
**Figure 2.** Voluntary earthquake insurance ownership of the manufacturer companies (5 provinces in total)

The reasons of the firms for not having or renewing the Optional Earthquake Insurance are shown in Table 15. Among the reasons stated by 1559 companies that did not have or renew the Voluntary Earthquake Insurance, the highest rate was “I do not know that there is such an insurance” with 26.8%. In addition, 23% of the companies that do not have or renew voluntary earthquake insurance answered “I do not have enough information on this subject”. In addition, it has been determined that 44.9% of the interviewed companies do not have an emergency business plan that includes “what to do” in case of natural disasters. In addition, 41.5 % of the firms do not have any business plan for post-earthquake recovery.

**Table 15.** Reasons for not having/renewing voluntary earthquake insurance (5 provinces in total)

Reason for not having or renewing Voluntary Earthquake Insurance	Ratio
I didn't know there was such insurance	26.8%
I do not have enough information about this subject	23.0%
No sanctions	16.8%
Too expensive	12.7%
I find the application impractical, it takes too much time, requires too many documents	6.6%
I have no confidence in voluntary earthquake insurance	5.7%
I think the building of my company is already earthquake resistant	5.3%
I think I have taken the necessary precautions against earthquakes, I do not need insurance	2.8%
Other	0.3%

42.4% of the companies manufacturing in 5 provinces stated that their factories were damaged after the earthquake. On the other hand, 57.6% of the companies did not have any damage in their factories as a result of the earthquake. These damages are categorized in Figure 3. The damages occurred mostly in the factory building (34.1%), machinery/equipment (21.9%) and administrative building (20.8%). The financial aspect of the damage occurred is given in Table 16.

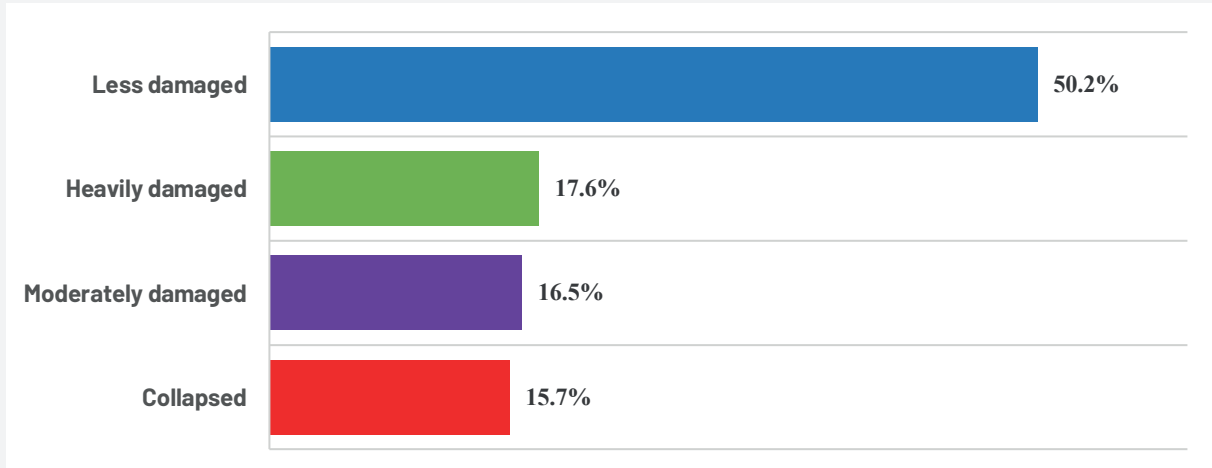


**Figure 3.** The damage to companies after the earthquake (5 provinces in total)

**Table 16.** The financial dimension of damages to companies (5 provinces in total)

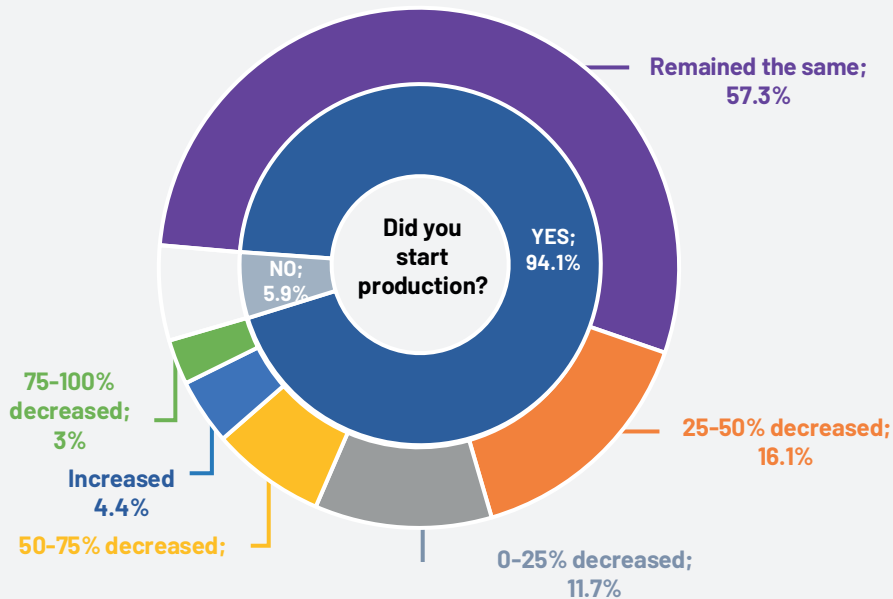
Financial Aspect of Loss (USD)	
Administrative Building/Factory Building	\$ 556,901,098.00
Machinery/Equipment	\$ 222,975,539.00
Other	\$ 107,163,989.00
Raw Material Stocks	\$ 92,275,189.00
Finished Product Inventories	\$ 29,819,202.00
<b>TOTAL</b>	<b>\$ 1,009,135,017.00</b>

When the damage conditions of 1489 companies whose “Administrative Building” and/or “Factory Building” were damaged after the earthquake were evaluated, it was detected that 50.2% were less damaged, 17.6% were heavily damaged, 16.5% were moderately damaged and 15.7% were collapsed (Figure 4).



**Figure 4.** Building damage situations of the companies whose Administrative Building and Factory Building were damaged (5 provinces in total)

It was found that 2682 companies (94.1%) started the production after the earthquake (Figure 5). Of the firms that started production, 57.3% stated that there was no change in their production, 4.4% stated that their production increased and 38.3% stated that their production decreased.



**Figure 5.** Current capacity status of the companies that started production (5 provinces in total)

**Companies whose production capacity remains the same;** Of the 1,539 companies that reported their production capacity remained the same after the earthquake, 94.5% stated that they did not encounter any production-related problems. However, 5.5% of companies reported experiencing issues. The problems, number of firms and ratios of the firms experiencing problems in production are shown in Table 17. The most common problem among these companies was a decrease in the number of employees, which accounted for 53.6% of cases. This was attributed to factors such as a lack of trust in the workplace environment following the earthquake, psychological reasons, relocation, or building collapses. The claimed supports for the solution of these problems experienced by the firms are presented in Table 18. As a result of the decrease in employees, companies reported that their demand for human resources was their top priority, at 35.9%.



**Table 17.** Problems experienced by companies with no change in production capacity (5 provinces in total)

Problems	Ratio
Decrease in the number of personnel (death, unwillingness to come to work, etc.)	53.6%
Raw material supply problems	14.5%
Machine damage	7.2%
Factory building damages	5.8%
Difficulty of the personnel in adapting to work (psychological reasons, etc.)	4.3%
Infrastructure problems (electricity, water, etc.)	4.3
Decrease in customer demand	2.9%
Problems with banks	1.4%
Financial problems	1.4%
Damage to raw materials	1.4%
Logistics problems	1.4%
Problem of access to clean water	1.4%

**Table 18.** Support claims of companies with no change in production capacity (5 provinces in total)

Support Claims	Ratio
Labor support	35.9%
Support for resolving raw material supply problems	11.6%
Financial support	14.0%
Machinery/equipment support	5.8%
No opinion	5.8%
Investment support	4.7%
Building construction support	3.5%
Support for starting production activities	3.5%
Product sales support	3.5%
Support to increase customer demand	3.5%
Support for resolving infrastructure problems	3.5%
Abolition of interest on loans	2.3%
Psychological support	1.2%
Ensuring access to clean water	1.2%

**Companies with increasing production capacity;** 118 companies stating that their production capacity has “increased” have reported that the reason for the increase in production in companies with increasing production capacity is the production of food, clothing, etc. products prepared for shipment to the provinces where destruction occurred after the earthquake, and the production of containers to meet housing needs, as well as an increase in recycled products, increase in demand for building materials etc. after the earthquake. While 67.8% of the companies with an increase in production capacity stated that their production capacity was sufficient, 32.2% stated that their production capacity was not sufficient.

**Companies with decreased production capacity;** 1029 companies reported a decrease in production capacity, with reasons listed in Table 19. In order to address the reasons for the decrease, companies prioritized solutions in Table 20. Among the issues faced, ensuring the active return of the workforce was identified as the top priority, followed by addressing the decreased customer demand. Financial support is particularly needed to help companies compensate for the losses they incurred after the earthquake. In addition, the decrease in customer demand was indicated as the problem to be solved as the second priority. Firms especially demand financial support in order to compensate for the losses they suffered after the earthquake.

**Table 19.** Reasons for decrease in production capacity (5 provinces in total)

Reasons for Decrease in Production Capacity	Production Capacity after the Earthquake			
	0-25% decreased	25-50% decreased	50-75% decreased	75-100% decreased
We are experiencing problems in raw material supply	30.9%	40.0%	20.5%	8.6%
Not all of our employees have actively returned to work	27.7%	43.9%	20.6%	7.7%
Decline in customer demand	27.6%	41.5%	21.1%	9.7%
Problems related to infrastructure (electricity, natural gas, water, etc.)	17.6%	40.0%	26.4%	16.0%
Logistics Problems	21.2%	40.9%	25.5%	12.4%
Financial Problems	20.8%	43.3%	25.3%	10.6%

**Table 20.** List of the reasons for the decrease in production capacity to be solved as a priority (5 provinces in total)

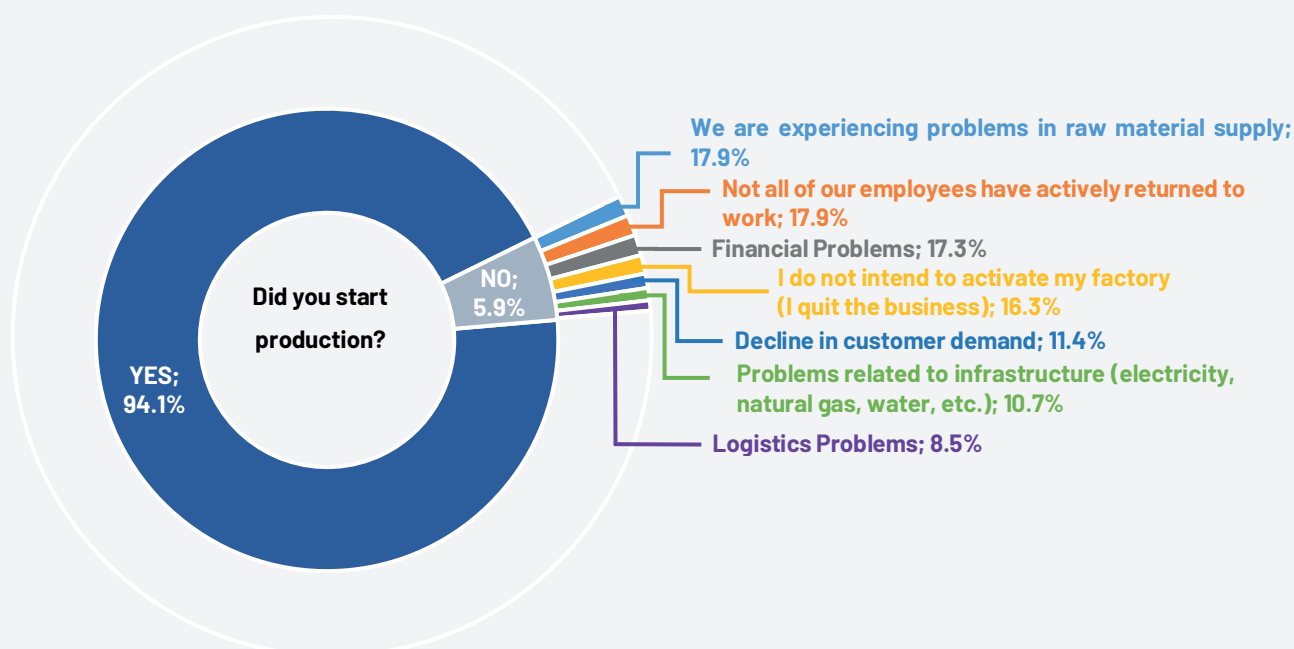
Problems	1 <sup>st</sup> priority	2 <sup>nd</sup> priority	3 <sup>rd</sup> priority
We are experiencing problems in raw material supply	19.7%	11.6%	10.4%
Not all of our employees have actively returned to work	27.8%	22.0%	15.9%
Decline in customer demand	26.6%	27.8%	25.3%
Problems related to infrastructure (electricity, natural gas, water, etc.)	3.3%	5.4%	6.0%
Logistics Problems	2.7%	7.7%	5.9%
Financial Problems	18.6%	23.5%	34.1%
Others	1.3%	2.0%	2.4%

The supports requested by the firms whose production increased but whose production capacity was insufficient and whose production capacity decreased after the earthquake in order to increase their capacities are given in Table 21.

**Table 21.** Requesting support to increase their production capacity of companies experiencing production increases but with insufficient production capacity and those whose capacity has decreased (5 provinces in total)

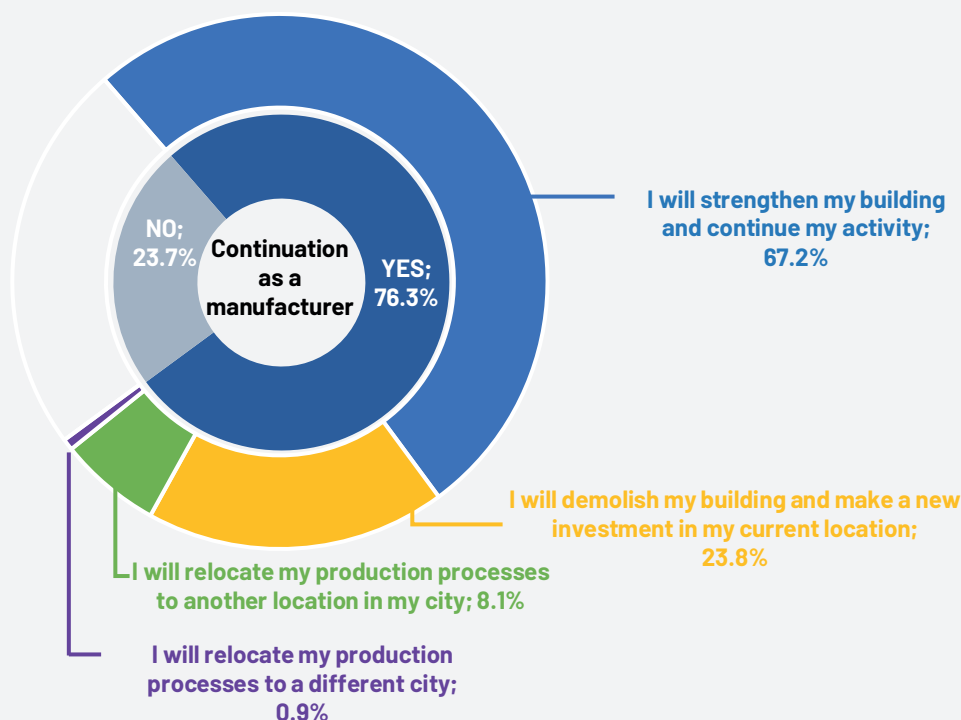
Requested Supports	Ratio
Investment loan support	21.4%
Labour support	17.6%
Machinery and Equipment support	16.5%
Raw material support	15.5%
Land support for investment location	13.5%
Building construction support	10.5%
Counselling support	5.0%

Figure 6 illustrates the “Reasons for Not Starting Production” of 89 companies that were interviewed and have not yet started production. The most significant issues experienced by these companies include problems with raw material supply (17.9%), Not all of their employees have actively returned to work (17.9%), and financial problems (17.3%). Unfortunately, 16.3% of these companies have stated that they will not activate their factories, effectively quitting the business.



**Figure 6.** Reasons for the companies that have not started production yet (5 provinces in total)

Figure 7 illustrates the situation of the 566 companies that were interviewed and whose factories were moderately damaged, heavily damaged, or collapsed after the earthquake and did not resume production. The firms that stated they would continue production either in the same region or in another city intended to reinforce their buildings (67.2%) or demolish and rebuild their facilities in their current location (23.8%).

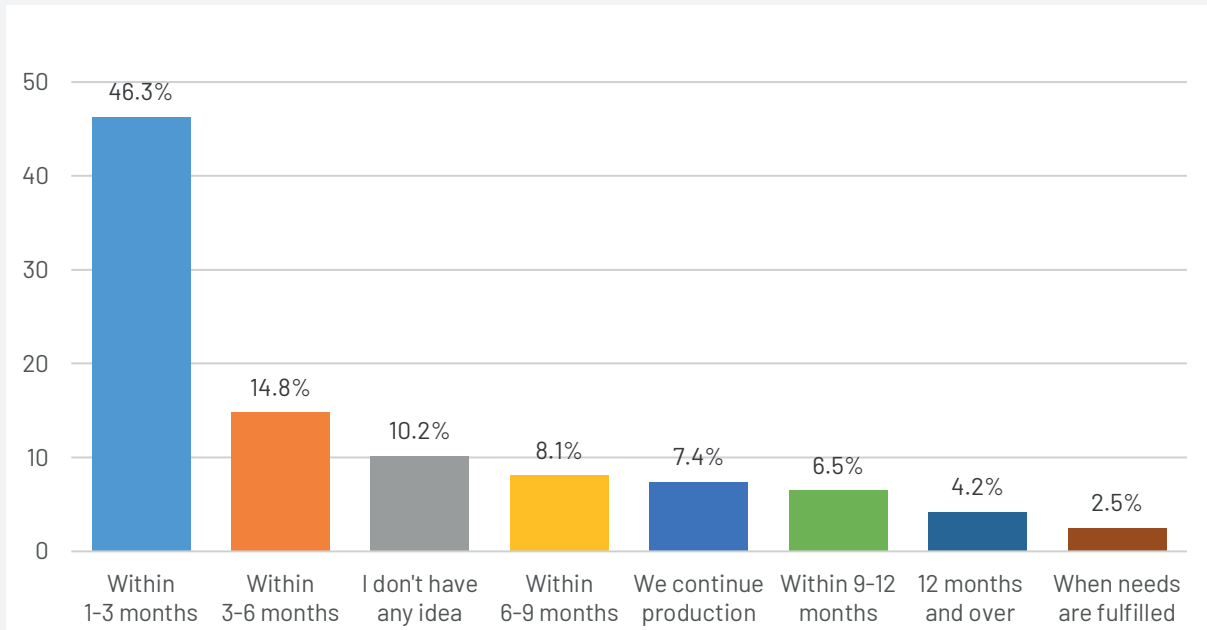


**Figure 7.** The situation of the companies with medium damage, heavy damage, or collapse which want to continue as producers in this region or in another city (5 provinces in total)

Table 22 indicates the support requested by companies that plan to continue production but need support to start. Investment loan support (17.8%), machinery/equipment support (16.4%), and building construction support (15.8%) were the most commonly demanded supports. With the provision of these requested supports, 46.3% of the companies stated that they could start production within 1-3 months, while 14.8% could start within 3-6 months (Figure 8).

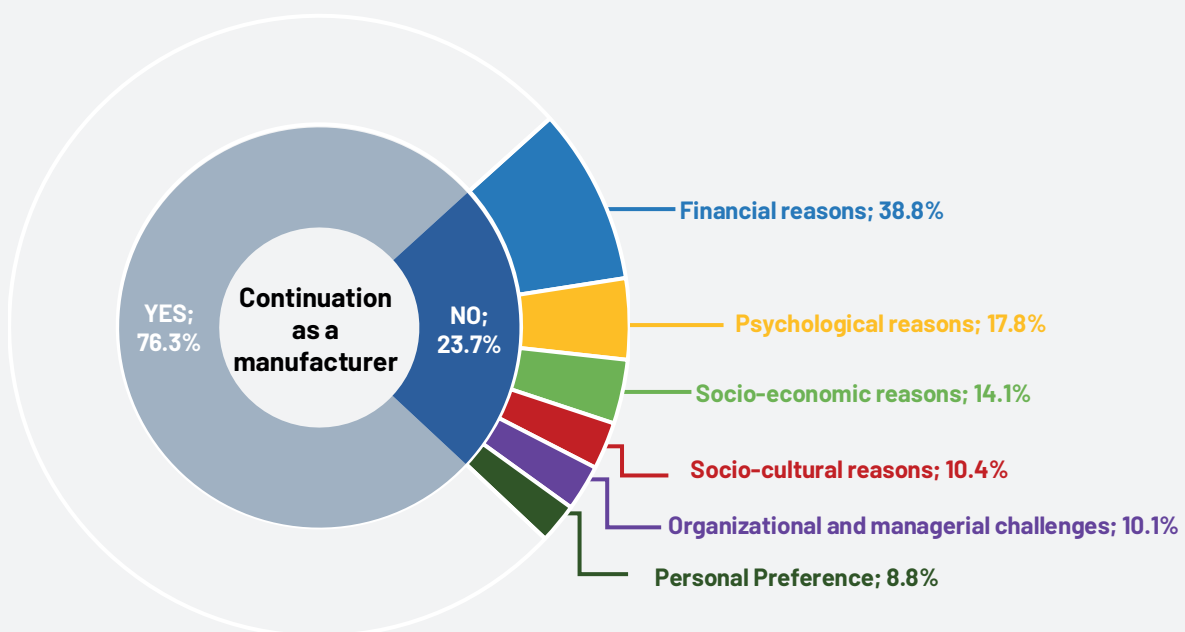
**Table 22.** Supports requested by companies to start production (5 provinces in total)

Support Claims	Ratio
Investment loan support	17.8%
Machinery and Equipment support	16.4%
Building construction support	15.8%
Land support for investment location	15.7%
Raw material support	14.3%
Labour support	14.0%
Counselling support	6.0%



**Figure 8.** The period during which companies can start production (5 provinces in total)

On the other hand, the reasons behind the decision of the companies that decided “not to continue as a producer in this region or in another city” are given in Figure 9.



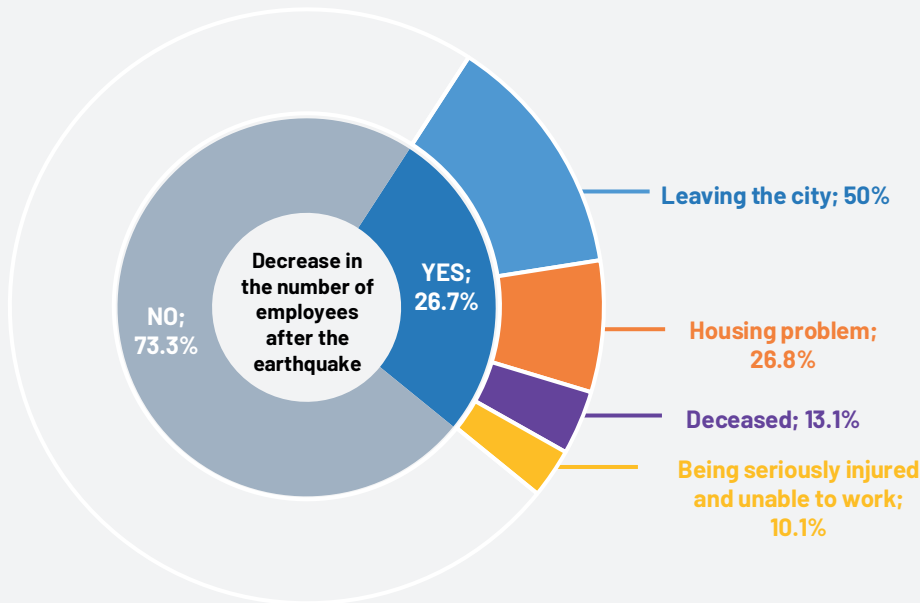
**Figure 9.** Reasons why companies with medium damage, heavy damage or collapse do not continue as a producer in this region or in another city (5 provinces in total)

It is observed that both the number of white-collar and blue-collar employees decreased after the earthquake. While the decrease in the number of white-collar employees is 3.3%, the rate of decrease in the number of blue-collar employees is about 6.9%.

**Table 23.** Change in the number of employees in the region (5 provinces in total)

	Number Of Employees	
	White Collars	Blue Collars
<b>Before Earthquake</b>	19,286	134,40,
<b>After Earthquake</b>	18,655	125,075

When examining whether there was a decrease in the number of employees of the companies interviewed, it was determined that 73.3% of the companies did not have any decrease in their employees, but 26.7% of the companies had a decrease in their employees. Among the reasons for the decrease in the number of employees, the highest rate was determined to be leaving the city by the employees with 50% and housing problem with 26.8% (Figure 10). The personnel requirements of the interviewed companies according to occupational branches are shown in Tables 24 and 25.



**Figure 10.** The situation of companies whether there is a decrease in the number of employees (5 provinces in total)

**Table 24.** Personnel needs by occupational branches in companies (5 provinces in total)

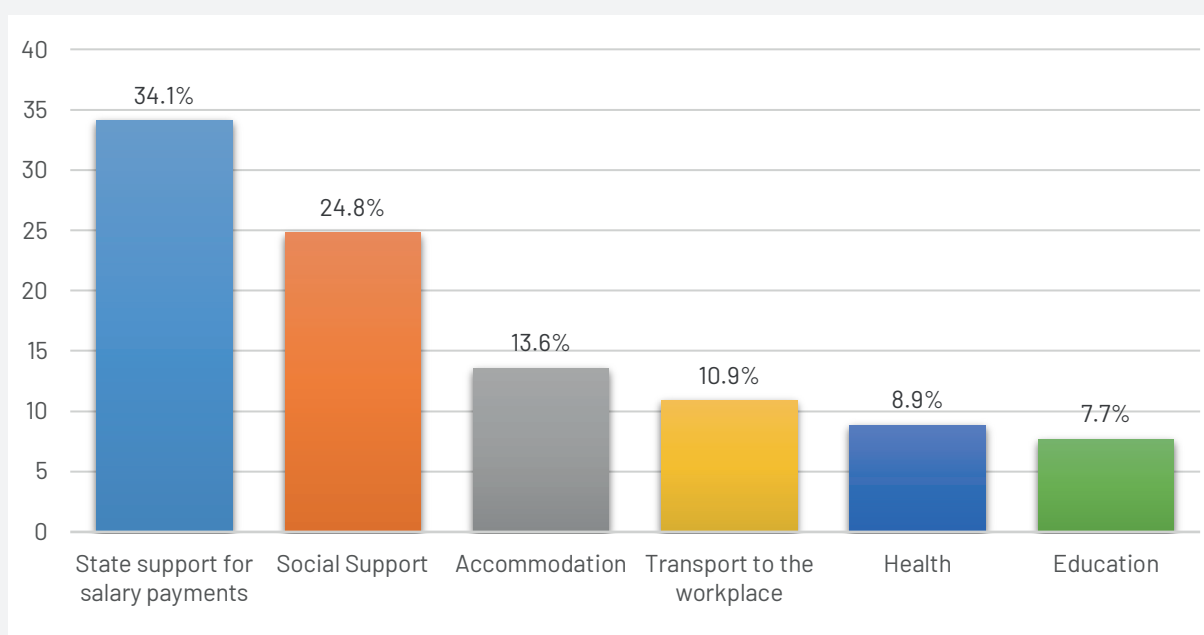
Occupational Branches	Number of personnel
Unskilled Labour	7,671
Operator, Technical and Expert Staff	3,190
Administrative Staff	958
Middle Level Manager	154
Engineer	137
Senior Manager	91
<b>TOTAL</b>	<b>15,419</b>

**Table 25.** Personnel requirements by occupational branches in firms with a decrease in the number of employees (5 provinces in total)

Occupational Branches	Number of personnel
Unskilled Labour	5,763
Operator, Technical and Expert Staff	2,926
Administrative Staff	141
Engineer	55
Middle Level Manager	32
Senior Manager	28
<b>TOTAL</b>	<b>8,945</b>

In general, it has been determined that firms have a high need for unskilled labour. In addition, there is also a need for operator, technical and skilled personnel. Support should be provided in order to eliminate the deficiencies in these positions.

In 5 provinces, 78.4% of the employees of the manufacturing companies do not have housing problems, 21.6% have housing problems and 9824 employees need housing with their families. In general, the needs/support demands declared by the companies in order to ensure the continuity of the employees working in the firms and to increase the employment supply are given in Figure 11. 34.1% of the companies demanded state support for salary payment and 24.8% demanded social support for their employees.



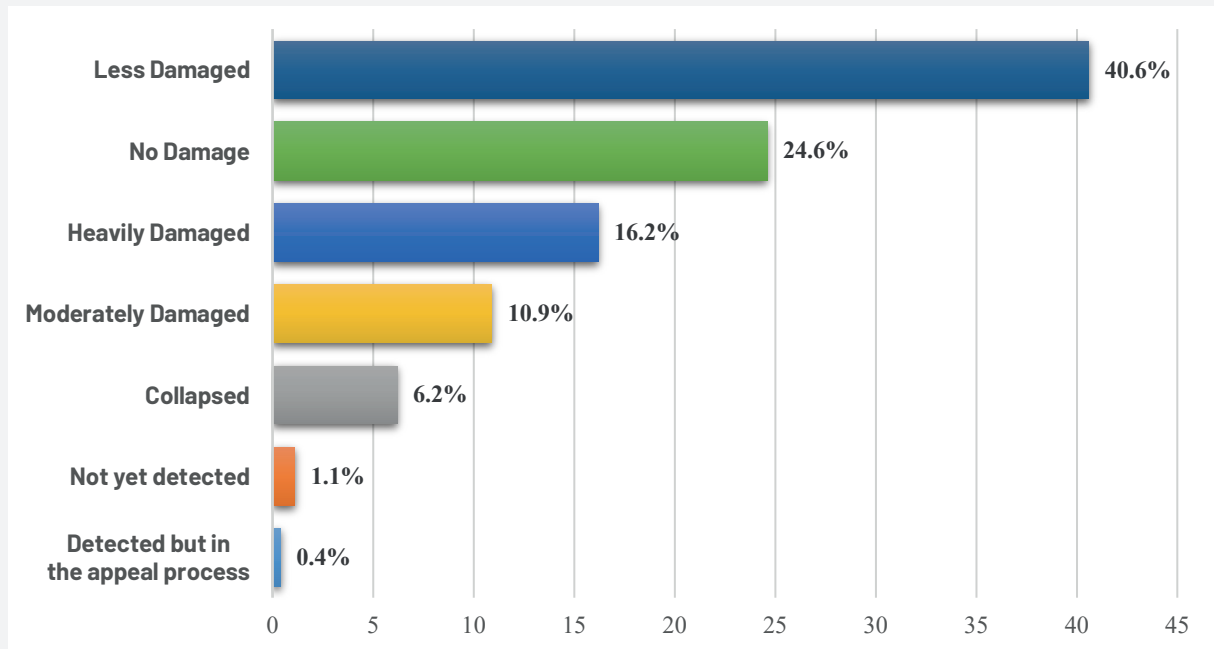
**Figure 11.** Supports claimed for maintaining the continuity of employment of active personnel and increasing the employment supply (5 provinces in total)

A total of 5940 employees were interviewed face to face in order to determine the current situations and needs of the company's employees in 5 different provinces after the earthquake. Of the employees interviewed, 85% were male and 15% were female. As for the nationality of the employees, 92.9% were citizens of the Republic of Turkey, 6.9% were Syrian citizens, and 0.2% were citizens of other countries. According to the Table 26 comparing the employees' positions and their working period in the company, it is observed that 42.5% of the employees have been working in the company for 0-2 years.

**Table 26.** Comparative analysis of employees' positions and working period (5 provinces in total)

Employees' Positions	Working Period (years)			
	0-2	2-5	5-8	8 years and above
Senior Manager	17.8%	15.8%	17.2%	49.2%
Middle Level Manager	25.9%	27.5%	21.2%	25.4%
Administrative Staff	41.1%	34.4%	10.8%	13.7%
Engineer	52.3%	29.2%	4.6%	13.8%
Operator, Technical, Expert Staff	31.1%	27.8%	15.0%	26.2%
Unskilled Labour	51.2%	32.2%	7.6%	9.1%
<b>TOTAL</b>	<b>42.5%</b>	<b>31.3%</b>	<b>10.6%</b>	<b>15.6%</b>

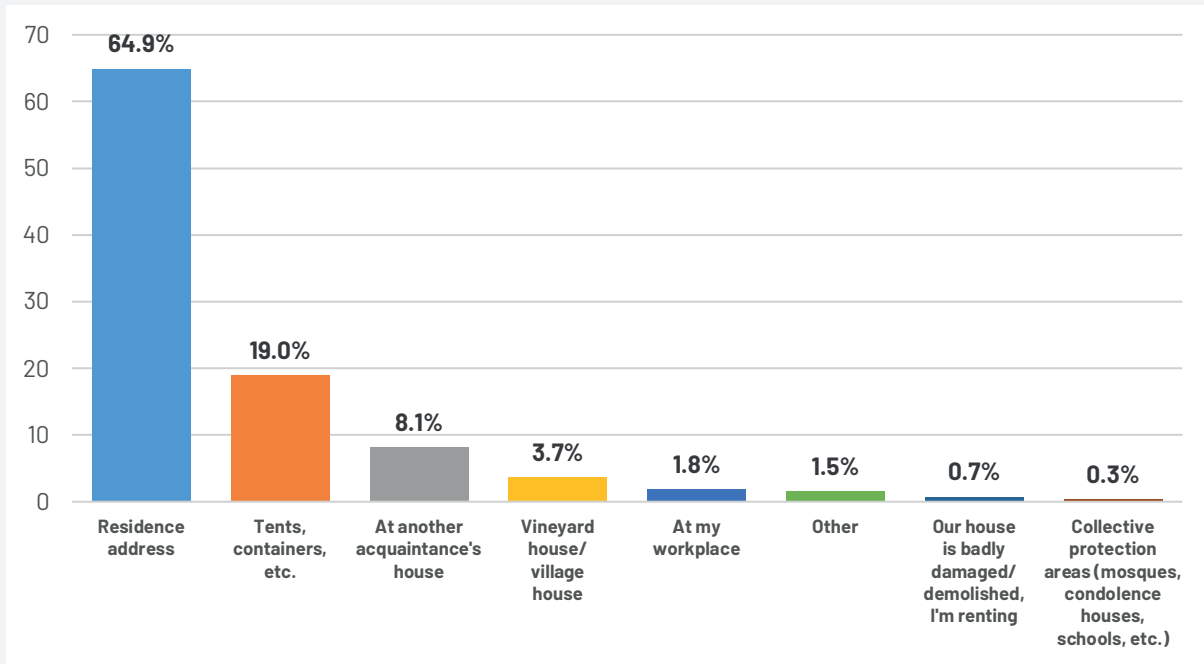
Prior to the earthquake, 60.1% of company employees reported residing with 4-6 individuals in their homes, 31.1% with 1-3 individuals, and 8.8% with 7 or more individuals. Figure 12 shows the status of employees' homes following the earthquake. It was determined that 40.6% of company employees' homes were either undamaged or only less damaged.



**Figure 12.** The situation of the houses where the company employees reside after the earthquake (5 provinces in total)

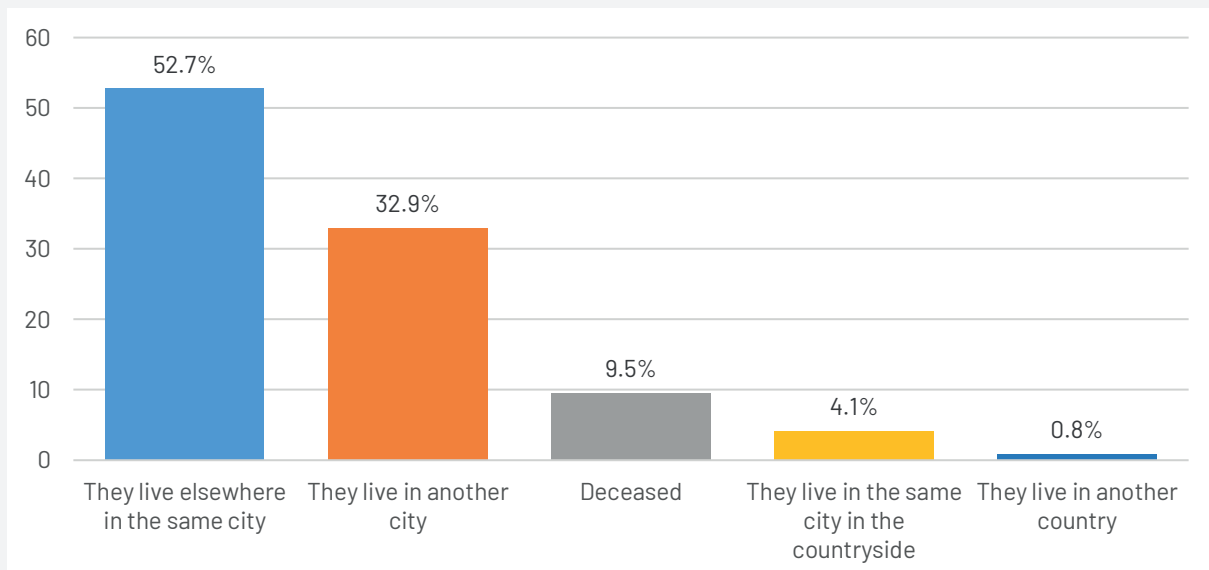


It was observed that 90.7% of the company employees did not have any loss in their first-degree relatives, but 9.3% of them lost their first-degree relatives. 353 of the employees have family members who are being treated in hospital after the earthquake. It was detected that 64.9% of the employees interviewed in the company live at the address of residence (Figure 13).



**Figure 13.** Housing status of company employees (5 provinces in total)

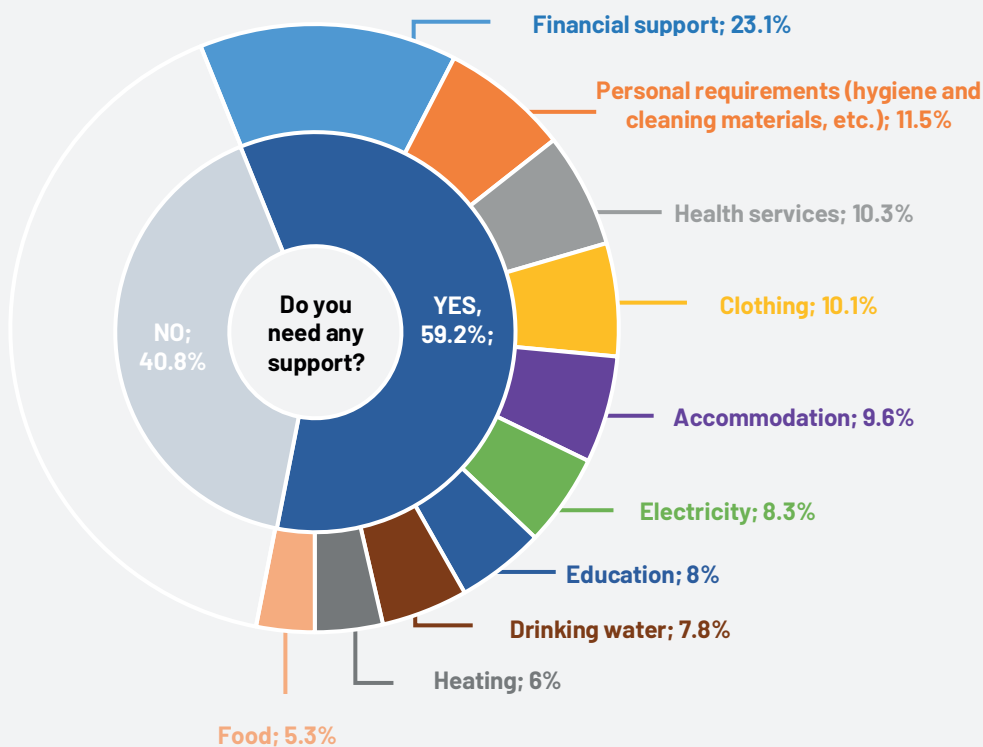
8.3% of the employees (493 people) do not live with their family members. Among the family members who do not live together, 52.7% live in another place in the same city, 32.9% live in another city, 4.1% live in the countryside in the same city, and 0.8% live in another country (Syria). However, 9.5% said that their family members had passed away (Figure 14).



**Figure 14.** Housing status of family members of employees (5 provinces in total)

The family members of the employees living in different cities are located in various provinces of Turkey (Giresun, Kütahya, Kocaeli, Mersin, Nevşehir, Niğde, İzmir, Karabük, Diyarbakır, Aydın, Antalya, Ankara, Kahramanmaraş, etc.). 51.9 % of the employees live with 5-10 people, 45.8 % with 1-4 people, 2.1 % with 11-20 people and 0.2 % with 21 or more people.

Out of the total number of employees, 59.2% (3,515 people) confirmed that they require support. The specific areas where they need help are shown in Figure 15. Among the employees who are in requirement, 23.1% need financial support, while others need support in the following areas: personal, health services, clothing, housing, electricity, education, drinking water, heating, and food requirements.



**Figure 15.** Support needs of company employees (5 provinces in total)

1.3% of the employees, which amounts to 75 individuals, expressed that they do not wish to continue working in their current workplace. Of those who do not intend to stay, 40.0% stated that they desire to relocate to a different city, while 29.3% are searching for a job that offers a higher salary. Furthermore, 96.2% of employees indicated that they have no plans to leave their current city in the near future, while 3.8% stated that they do plan to leave. The reasons for leaving the city are outlined in Table 27. Among the employees who wish to leave the city, 27.0% expressed fear of living in the area due to earthquakes, while 22.7% attributed their decision to an unfavorable socio-economic environment.

**Table 27.** Reasons of employees who want to leave their current city (5 provinces in total)

The Reason for Leaving the City	Ratio
I am afraid to live in this city because of the earthquake	27.0%
Negativity of socio-economic life	22.7%
Negativity of socio-cultural life	17.0%
Living in this city no longer gives me confidence	14.7%
Reluctance of family members	11.3%
Inadequacy of educational opportunities	4.0%
Inadequacy of health services	3.3%

## 4.3. Assessment of the Current Situation and Needs of the Regional Manufacturing Sector

### 4.3.1. Gaziantep

**Affected Sectors:** The research shows that the most intense areas in Gaziantep's production sectors are textile, food, packaging, agricultural industry, machinery/metal, chemistry and health products. It was stated that these sectors were affected at different levels due to the earthquake.

**Worker Loss:** It is stated that there was a loss of workers as a result of the earthquake. While the rate of loss of workers is 20-25% in Gaziantep, the rate of loss of workers is around 70-75% in regions such as Kahramanmaraş and Adıyaman, which are the surrounding provinces. This shows that the labor market in the region has been affected.

**Loss of Production and the Supply Chain:** According to the research, customers of companies that lost production or were destroyed due to the earthquake started to supply their orders from other countries. This shows that local production is affected and supply is directed to other sources.

**Port Issues:** The fire at the Iskenderun port and the waiting of the ships due to the density in the Mersin port adversely affected the logistics processes such as raw material supply and export. This indicates that production has been disrupted.

**Healing Process:** According to the research, the recovery process of companies in Gaziantep generally took 2 months. However, some of the companies in some regions, such as İslahiye, have been demolished and there are logistics problems.

**Infrastructure Issues:** In the research, infrastructure problems such as the delay in natural gas supply after the earthquake and the absence of employees due to occupational safety concerns are mentioned. These problems are also among the factors that affect production.

As a result, the research shows that the production sector in Gaziantep has faced various difficulties due to the earthquake effect and these difficulties cause loss of production, loss of workers and logistics problems. However, it has been stated that companies in the region generally show improvement in a period of 2 months.

### 4.3.2. Kahramanmaraş

As a result of the qualitative interviews about the tendency to stay in Kahramanmaraş after the earthquake and the reasons for those who want to leave, it was determined that the sectors that need the most support according to the potential of the province are textile and metal kitchenware. The sectors that provided the most employment before the earthquake were also the textile and metal kitchenware sectors. However, the most damaged sector after the earthquake is the textile sector.

In addition to the buildings of the companies operating in the manufacturing sector, there is significant damage to machinery and equipment. Therefore, the most important support that can be given to the sectors will be cheap credit support. The service building of Kahramanmaraş Chamber of Commerce and Industry is moderately damaged and approximately 30-40 million TL is needed. Kahramanmaraş Organized Industrial Zone has 70 active members and the service building is slightly damaged. The service building of the Eastern Mediterranean Development Agency is completely unusable.

In terms of employment, the most affected sectors are again the textile and metal kitchenware sectors. Accommodation support and salary support for companies in the province will help ensure a faster return.

Among the most important supports for Kahramanmaraş after the earthquake are issues such as repairing machinery equipment damage, purchasing new machinery, making repairs and revisions. The most important support that can be given to the sectors will be cheap credit support.

In summary, the sector that suffered the most after the earthquake in Kahramanmaraş is the textile sector and the most important support that can be given to this sector is cheap credit support. It is also stated that there are damages in the service buildings of the institutions in the province and approximately 30-40 million TL is needed. In this direction, urgent financial support should be provided by the government in order to revitalize the economic activities in the province.

### 4.3.3. Malatya

After the earthquake that took place in Malatya province, many sectors were significantly affected. Among the most affected sectors are the textile, food and machinery metal sectors. In the city center, workplace damage is extensive and most of them are destroyed or unusable. The damage is less in organized industrial zones and 90% of the enterprises are in a slightly damaged or undamaged condition. However, because of the destruction caused by the earthquake in the city, people's housing problem has arisen. There has been a lot of migration from the city due to the housing problem and the fear of earthquakes. Approximately 11-12% of people have moved their residence to a different city. This situation has caused a significant loss of workforce and employment in the city. It is thought that the loss of workforce in the city is approximately 49%.

In order to raise the industry and commerce sectors to the pre-earthquake level in the province of Malatya, it is necessary to ensure the return of those who migrated from the city. For this reason, it is necessary to solve the housing problem first and ensure that people settle in permanent residences. All private hospitals in the city are still unable to serve, and it is expected that the city infrastructure

will be repaired and basic accommodation conditions will be provided. Damages in the manufacturing sector are generally machine/equipment damage. In the glass and food sectors, earthquake damages in the form of raw material and product loss are observed. In Malatya province, it is thought that employment, machinery equipment and workplace support should be provided in order to reactivate the industry and trade sectors at the pre-earthquake level. It is thought that production activities can be started more quickly and efficiency can be increased with appropriate credit facilities.

The evaluations made by the Malatya Chamber of Commerce and Industry (MTSO) and the First Development Agency (FKA) after the earthquake reveal the post-earthquake status of the sectors in detail. MTSO states that a significant earthquake effect has occurred in sectors such as textile, food, construction and general trade. It has been stated that the damage in Organized Industrial Zones is minimal. Most of the building damage occurred in the businesses in the city center. In addition, machinery equipment damage, infrastructure damage and logistics problems are expressed as the main problems that arise with the effect of earthquakes. Due to migration, there is a significant loss of workforce and the problem of housing is still the most important problem. It has been stated that there is a loss of employment of approximately 50-70% in the general trade sector.

FKA's assessment shows that the general trade and automotive sectors were most affected. The total employment of industry was expressed as 37,411 persons, and the total employment of general trade was expressed as 119,000 persons. It is observed that less damage occurred in the industrial zone compared to the city center. The most employment loss occurred in the textile and food sectors, and the sectors carrying out general trade activities at the SME level were more affected by the earthquake. The general trade areas such as shops, markets, market, bazaar and small industrial sites were damaged very significantly and many areas were completely destroyed. Especially in enterprises operating in the glass and automotive sectors, product loss damage has been much higher.

As a result, after the earthquake in Malatya province, industry and commerce sectors were significantly affected. First of all, it is necessary to solve the housing problem and ensure that people settle in permanent residences. Employment, machinery, equipment and workplace support should be provided for businesses to be reactivated. It is thought that production activities can be started more quickly and efficiency can be increased with appropriate credit facilities.

#### **4.3.4. Hatay**

As a result of the interviews, it was determined that the majority of the companies producing in the province of Hatay are Turkish citizens. Most of the companies operate in the machinery/metal sector, among other sectors there are wood and forest products and food sectors.

The ratio of companies that have optional earthquake insurance is 39.8%, which shows that the majority of them are uninsured. The most common reasons of uninsured companies are that they do not find insurance practical, they do not have knowledge and they think that they are taking their own precautions against earthquakes.

It was determined that 40% of the companies examined in the study did not have an emergency busi-

ness plan for natural disasters and 42% did not have a post-earthquake recovery plan. This situation shows that companies should be informed and trained about earthquakes and emergencies.

52% of the firms stated that their factory or administrative buildings were damaged after the earthquake. The majority of the damages occurred in the factory buildings. Damages caused disruptions in production due to damage to machinery and equipment. The financial size of the damages was calculated as 249 million dollars in total.

The majority of the companies that returned to production after the earthquake stated that there was an increase in their production. However, some companies have faced problems such as decreased customer demand and employee non-return.

In the province of Hatay, the sectors that the members who made production before the earthquake provided the most service were determined. These sectors include machinery/metal, construction, energy, food, packaging, agricultural industry, chemistry, filter production and health products sectors. The machinery/metal industry stands out as the sector that provides the most employment.

In addition, the sectors in which the members were active before the earthquake were also determined. These sectors include coil sheet production, rebar production, cement production, profile pipe production, metal kitchenware, food and building materials. The machinery and metal sector stands out as the sector that provides the most employment. In the province of Hatay, 68% of Turkey's sheet roll and rebar needs are met and approximately 13,000 people are employed in this sector.

### 4.3.5. Adiyaman

Adiyaman is a city that suffered serious damage after the earthquake that occurred on February 6th. The city center, especially Gölbasi and Besni districts, has been severely damaged. Villages in mountainous regions were less damaged. The majority of those who stayed in the city center after the earthquake migrated to villages, nearby provinces or big cities. For this reason, people staying in the city live in containers and tents.

The bazaar section in the city center has been almost completely destroyed and buildings with little or medium damage are in the majority. More than 2,000 buildings in the city were destroyed. In addition to the buildings built before the earthquake, the buildings built after the 1990s were also destroyed and heavily damaged. AFAD building and Adiyaman Municipality building, which are public buildings, were also demolished.

In Adiyaman Organized Industrial Zone, damage and destruction is less compared to the city center. The biggest problems of the companies operating in the industrial zone are the damage to machinery and equipment, loss of workforce due to migration and deaths. Most of the companies operate at 30-40 percent capacity.

After the earthquake, there was a significant migration and people generally migrated to Kahta district, surrounding provinces and other regions of Turkey. Housing problem is still a big problem and many of the people who migrated to other cities and districts due to earthquake fear and housing

problem still have not returned. The most important needs are financial support to repair or rebuild damaged buildings and to replace lost household items.

As a result of the company surveys, it was determined that 30.7 percent of the companies operating in Adiyaman had voluntary earthquake insurance, 67.5 percent did not have insurance and 1.8 percent had their insurance expired before the earthquake. The most common reasons for companies not taking out or renewing insurance are lack of sanctions, high cost and lack of information about insurance.

With the effect of the earthquake in Adiyaman, the labor force and unemployment situation were also significantly affected. After the earthquake, most of the workplaces in the city center were severely damaged or completely destroyed. This has meant that many businesses suspend or close their operations.

According to the survey, a total of 617 white-collar employees and 8,220 blue-collar employees were working in companies in Adiyaman before the earthquake. However, due to the damages that occurred after the earthquake, many companies stopped their production or greatly reduced their capacities. This situation led to an increase in the unemployment rate and loss of labor force.

According to the survey results, 46.9% of the companies affected by the earthquake stated that their factories were damaged. This has caused employees to lose their jobs or disrupted their production processes. It has been observed that companies that can continue their production after the earthquake generally work with low capacities.

The unemployment rate increased significantly after the earthquake. The number of employees who were unemployed or put on paid leave could not be determined, but it is obvious that there is an unemployment problem due to the closure of many workplaces or stopping their production due to the effect of the earthquake.

The losses of workforce and increasing unemployment have deepened the livelihood problems of the earthquake victims. Many people have lost their income sources and are experiencing financial difficulties. Financial support and employment opportunities are needed to meet the basic needs of people.

The regions most affected by the earthquake are Gölbaşı and Besni districts. Less damage occurred in villages. After the earthquake, most of the population in the city center migrated.

The bazaar section in the city center was almost completely destroyed. The number of undamaged buildings is very low. More than 2,000 structures were destroyed.

It is stated that the damage and destruction in Adiyaman Organized Industrial Zone is less than in the city centre. However, a significant part of the companies here suffered serious damage and lost their workforce.

After the earthquake, there was a significant migration from the city. Shelter problem still persists. Repairing and strengthening damaged buildings and constructing new houses are the most import-



ant needs. In addition, financial support is required so that people can regain lost household items. In the surveys conducted with the companies operating in Adiyaman, it was determined that 30.7% of the companies had optional earthquake insurance and 67.5% did not have insurance. Most of the companies do not have an emergency business plan for natural disasters.

The factories of 46.9% of the companies were damaged as a result of the earthquake. Damages occurred mainly in factory buildings and machinery/equipment. Therefore, the production capacity has decreased.

When the financial dimension of the damages was examined, it was determined that the biggest damage occurred in the factory and administrative buildings, and there was a total financial loss of \$72,798,550.

After the earthquake, 97.3% of the companies continued production, but their production capacities are at low levels.

It can be said that Adiyaman Chamber of Commerce and Industry urgently needs to repair the service building and get financial support, Adiyaman Organized Industrial Zone needs urgent financial support for the repair of the treatment plant, and it is important to provide support to the textile-apparel and agriculture sectors.



## 4.4. Summary of Qualitative Interview Results

In the aftermath of natural disasters, it is vital to understand the impacts on local economies and industries. Qualitative interviews were conducted in Gaziantep, Hatay, Kahramanmaraş, Adiyaman and Malatya to understand the situation.

Thanks to these interviews, the pre- and post-earthquake conditions of the local trade and industry sectors were evaluated and institutional needs were determined. Interviews were held with local chambers of commerce, industrial zones, economic development agencies and other relevant organizations.

The interviews revealed the urgent needs of the institutions. These include providing the necessary tools and equipment for the detection and repair of earthquake damage, financial support for businesses to continue their activities, technological infrastructure to facilitate modernization and development, training centers to respond to the demand for qualified labor, and export support to increase competitiveness in international markets.

For example, interviews with relevant institutions in Hatay showed that there are studies focused on financial support, technological infrastructure, qualified workforce training centers and export support to help businesses recover from disaster. Similarly, the textile and metal kitchenware industries were among the most affected sectors in Kahramanmaraş. Damage to machinery and equipment has been noted as a major problem and financial support is required to repair and replace damaged machinery.

The interviews held in Adiyaman focused on the textile, food and furniture industries. The textile industry has been severely affected and the need for financial support for the repair and replacement of damaged machinery has been highlighted. The food sector has been stated as a sector with significant commercial potential for the

city. The interviews also revealed that it is important to support the agricultural sector, which has great potential in the region.

The meetings held in Malatya focused on the furniture and metal industries. Both sectors were severely affected by the earthquake and the need for financial support for the repair and replacement of damaged machinery was highlighted.

Qualitative interviews with various institutions in Gaziantep provided valuable information about the current state of the manufacturing sector after the earthquake. Meetings with institutions such as Gaziantep Chamber of Industry (GSO), Gaziantep Chamber of Commerce (GTO), Gaziantep Commodity Exchange (GTB), Gaziantep Organized Industrial Zone Directorate, Nizip Chamber of Commerce (NTO), Nizip Commodity Exchange (NTB) and Silk Road Development Agency (IKA) provided a comprehensive understanding of the situation.

During the meetings with the GSO, it was stated that the sectors most affected by the earthquake were textile, food, packaging, agricultural industry, machinery/metal, chemistry and health products. In particular, the textile industry caused production disruptions and financial losses due to the damage of many machines and delayed repairs and replacements. The food industry also suffered from damage to silos and difficulties in supplying raw materials. The collapse or severe damage of suppliers in Kahramanmaraş also caused a decrease in production capacity. The fire at the Iskenderun Port also caused significant damage to imported and exported products and caused losses exceeding 350 million dollars. It was stated that among the 32,000 members of the GTO, construction and its sub-sectors, contracting, engineering, service sector (hotels, restaurants, etc.) and textile are the most represented sectors. The service sector, textile and labor-intensive sectors were the sectors that

employed the most workers. GTO negotiations revealed that the earthquake caused problems such as production in textile and other sectors, the absence of personnel in the service sector, the inability of members to collect receivables from companies in Hatay, and the cancellation of fairs in the region.

Interviews revealed that the earthquake caused 20-25% personnel loss in manufacturing companies. Especially Adiyaman and Kahramanmaraş provinces were among the provinces that experienced personnel loss. In the interviews, it was emphasized that the recovery process was successful, but the state should encourage investment in the region, SSI and tax cuts should be reflected in the salaries of the employees and the region should be made attractive in terms of employment. The lack of qualified personnel was also stated as an important problem and it was stated that vocational training should be supported to solve this problem.

Qualitative interviews with various institutions in Gaziantep revealed the difficulties faced by the manufacturing sector after the earthquake. Especially the textile sector has been hit hard and the collapse of Iskenderun Port still affects production. The interviews revealed that the state should encourage investment in Gaziantep, provide financial and logistical support, and support vocational training. The interviews also emphasized that the earthquake caused a significant loss of personnel and that measures should be taken to support the psychological well-being of the workers and to attract employment to the region.

Within the scope of qualitative interviews held in Malatya province, meetings were held with Malatya Chamber of Commerce and Industry (MTSO), Malatya Organized Industrial Zone (OSB) and Firat Development Agency (FKA) institutions, and the pre- and post-earthquake conditions of industry and trade sectors in the province were evaluated.

It was seen that the most active sectors before the earthquake were textile, agriculture industry and food sector. Food and agriculture sectors are largely dependent on apricot cultivation and the

production of products derived from apricots. While the textile sector ranks first among the sectors with the highest employment before the earthquake, this sector is followed by the agriculture sector depending on apricot cultivation. After the earthquake, the service building of the Malatya Chamber of Commerce and Industry was found to be slightly damaged. However, there is a lot of damage to the building. The water tanks and hydrophores belonging to the service building exploded with the effect of the earthquake. Archives are badly damaged. The cine-visions in the room are completely damaged. One of the elevators is still not working. The air conditioning system is damaged. There is not much damage to office equipment such as computers and printers. According to the damage assessment analysis made in April, it was stated that there was a damage of approximately 10 million TL in the MTSO service building. There is no loss of life in the staff. The current number of staff is 30. The damages caused by the earthquake are not at a level that will affect the services of the institution. Therefore, the institution started to serve 10 days after the earthquake and still continues to serve.

There are 1 service building (Directorate building), kindergarten, electricity entrance building, treatment plant, 6 passenger cars and 32 personnel belonging to Malatya 2nd Organized Industrial Zone. There is no damage to electricity, water and natural gas distribution infrastructures. There is minor damage to the treatment plant building. There are crashes on the roads. There were collapses and damages in the rain water and sewer lines. This has caused blockages. There is no damage to the OIZ directorate building and other buildings. In addition, there is no damage to the vehicles belonging to OSB. The companies that produced the most glass products in the industrial zone suffered financial losses. All products and raw materials are damaged and unusable. Likewise, companies operating in the food sector have suffered significant financial losses due to spoiled products and raw materials. Firat Development Agency is located in Malatya Chamber of Commerce and Industry

service building. The building is slightly damaged. However, the building needs repair. There are 37 personnel within the agency. There are 2 passenger cars and 1 minibus belonging to the agency. There is no damage to office supplies and office equipment. There is no deceased in the agency staff. The service continues with 37 personnel as before the earthquake. Due to the earthquake, the activities of the institution were not interrupted. In the first month, agency activities were carried out in the form of aid to Kızılay and AFAD. Normal operations were resumed as of March 1, 2023 and have been continuing since this date. Since the agency has no institutional members, it has not been able to provide assistance and support to its members. However, studies were carried out in the city in coordination with the Kızılay and AFAD and significant support was provided.

Firat Development Agency continues its activities in pre-earthquake service quality. It is stated that there is no need for additional assistance or support institutionally. Studies are carried out with the relevant ministries to provide the necessary support to the region after the earthquake.

After the earthquake, most of the businesses operating in Malatya Chamber of Commerce and Industry and Malatya Organized Industrial Zone were damaged and suffered financial losses. Especially since the products of the enterprises operating in the city center were under the dent, the size of the material damage was greater. Currently, membership fees and service fees cannot be collected from members. Its members are not in a position to pay these fees. This indirectly caused a significant decrease in the revenues of the MTSO. It was stated that even the personnel payments were made with the support of businessmen.





Therefore, financial support is expected from TOBB.

Approximately 15 Million TL is needed to repair the infrastructure facilities of Malatya 2nd Organized Industrial Zone. In addition, training support is needed for the training of technical personnel. Training of technical personnel will contribute to the increase in the added value to be provided to the OIZ and to the further development of the region.

In addition to the financial losses of the businesses operating in Malatya, the debts of the businesses have also become a major problem. Businesses that had to continue their activities with unsaved products became unable to pay their debts. In this case, as a result of negotia-

tions with banks and related institutions, zero interest loan support was provided.

Within the scope of the support and rehabilitation works in the post-earthquake Malatya region, Malatya Chamber of Commerce and Industry took initiatives to provide financial support to its members. Attempts were made to provide credit and grant support to members through KOSGEB and KGF (Credit Guarantee Fund). After the earthquake, a total of 50 aid trucks were sent to the Malatya region.

After the Malatya earthquake, businesses in the region suffered serious financial losses. However, with the support of institutions and relevant ministries, efforts are being made to recover the businesses in the region. Support for sectors with high added value and training of technical personnel will contribute to the further development of the region.

In the qualitative interviews held in Hatay province, the current situation of the sectors producing production before and after the earthquake, the employment situation, the physical infrastructure of the institutions affected by the earthquake, the situation of the institution personnel being affected by the earthquake and the institutional needs were evaluated.

In the meetings held with Antakya Chamber of Industry and Commerce (ATSO), Eastern Mediterranean Development Agency Directorate (DOĞA-KA), İskenderun Chamber of Commerce and Industry (İTSO), the most active sectors before the earthquake were coil sheet production, rebar production, cement production, profile pipe production, metal kitchen utensils, food and building materials are listed as. While the machinery and metal sector came first among the sectors with the highest employment before the earthquake, this sector was followed by construction materials. 68% of Turkey's sheet roll and rebar needs are produced in Hatay. Approximately 13,000 people are employed in the Machinery and Metal sector.

As a result of the interviews with the institutions, it was stated that the members who carried out production in the province of Hatay before the earthquake mostly served in the machinery/metal, construction, energy, food, packaging, agricultural industry, chemistry, filter production, health products sectors. It has been stated that the most employment among these sectors is in the machinery/metal industry.

It was determined that the loss of workers was around 45% in the enterprises that were moderately affected by the three major earthquakes that took place in the province of Hatay one after the other. This situation had a significant impact on the economy of Hatay province. It caused significant damage to infrastructure and buildings in both Antakya and Iskenderun, resulting in loss of business and economic activity.

ATO's headquarters in Antakya was damaged, while the ICI's headquarters in Iskenderun was destroyed. Both rooms had to be moved to temporary offices. The destruction of the production houses of many of its members and the death of many white and blue collar workers or the loss of their families caused serious production losses in some production facilities. The regions in the south-west of the province are relatively less affected by the earthquake. Most of the companies producing in Iskenderun, Arsuz, Payas, Dörtyol and Erzin industrial zones in this region have undamaged, slightly or moderately damaged buildings. The main sectors serving in the field of production in these industrial zones are Iron and Steel Industry, Construction Materials Industry, Chemical Industry and Filter Industry. The vast majority of affected firms have requests for support in the field of machine maintenance and worker employment. ATO and ITS0 stated that they needed financial assistance to help them recover after the earthquakes. They also sought assistance in rebuilding their headquarters and providing assistance to businesses and employees affected by the disasters. Financial support requests are available for businesses to repair, rebuild and reopen after the

earthquake. Again, the lack of adequate preparations for institutionalization in the pre-earthquake period caused the institutions to be unprepared for their post-disaster needs. In this context, one of the urgent needs of the institutions is to provide the necessary tools and equipment for the detection and repair of the damage after the earthquake.

ATO and ITS0 are also working on providing financial support for businesses to continue their activities in the post-earthquake period. For this purpose, short and long-term financing models are developed in cooperation with relevant institutions. In addition, studies are carried out to provide the technological infrastructure necessary for the restructuring, modernization and development of enterprises. At the same time, export supports are also provided so that businesses can make their products more competitive in international markets.

ATO and ITS0 also carry out studies to meet the need for intermediate staff necessary for businesses to continue their activities in the post-earthquake period. In this context, it is planned to establish vocational training centers to meet the personnel needs of enterprises. In these centers, besides the vocational skills needed by the enterprises, general vocational trainings will also be provided. In this way, the personnel needs of the enterprises will be met and at the same time, it will contribute to the solution of the unemployment problem.

In the qualitative interviews held in Hatay province, the necessary precautions and supports for the businesses to continue their activities in the post-earthquake period were discussed. ATO and ITS0 carry out studies on issues such as providing financial support, providing technological infrastructure, export support, establishing vocational training centers and meeting the need for intermediate staff so that businesses can continue their activities in the post-earthquake period. In addition to all these studies, it is important to provide all the necessary support for the restructur-

ing, modernization and development of the enterprises in the post-earthquake period. In this way, it will be ensured that businesses continue their activities and economic development continues.

Kahramanmaraş has been evaluated with qualitative interviews about the post-earthquake effects and sectoral situation. During the meetings with institutions such as Kahramanmaraş Chamber of Commerce and Industry, Kahramanmaraş Organized Industrial Zone, and the Eastern Mediterranean Development Agency, the pre- and post-earthquake conditions of the industry and trade sectors in the province were evaluated and institutional needs were determined.

The sectors in which the members were most active before the earthquake were listed as textile, metal kitchenware, and food and building materials. While the textile sector is the first among the sectors with the highest employment before the earthquake, this sector is followed by metal kitchenware. It is stated that approximately 60% of Turkey's metal kitchenware production is produced in Kahramanmaraş.

After the earthquake, Kahramanmaraş OIZ has 70 active members. Before the earthquake, there were 1 service building, 2 vehicles, and 12 employees, all infrastructure lines such as electricity, water, and natural gas. OSB service building is slightly damaged. Institutionally, there was no loss of life in Kahramanmaraş OIZ personnel. There was no earthquake effect at a level that would affect the activities of the Institution.

The textile sector, which experienced loss of production after the earthquake, is among the sectors most affected. About 800 of the 1000 companies suffered significant damage. In the textile sector, which is the largest sector, 359 thousand tons of yarn, 138 million meters of woven fabric, 49 million meters of denim, 122 thousand tons of knitted fabrics and 22.7 million pieces of clothing are produced annually. In the province, 27% of Turkey's yarn production and 8% of woven fabric production are carried out.

However, many textile enterprises have become unusable due to the earthquake. There are textile enterprises that are partially damaged and continue their production only in the surviving part of their enterprises.

The textile and metal kitchenware sectors were most affected by the employment issue. There has been a significant loss in employment due to the loss of life due to the earthquake and subsequent migration. The employment loss is thought to be around 35-40%. It is estimated that there will be faster returns with the provision of housing support and salary support.

All companies have significant machinery and equipment damage. It is seen that many machines are unusable and therefore cannot start production. The undamaged machines, on the other hand, seem to need maintenance, repair and readjustment. It has been stated that the most important support that can be given to the sectors will be cheap credit support. Financial support is required for machine repairs and revisions, and for the purchase of new machines. In this way, it will be possible for enterprises to re-produce and to compensate for their losses.

Since the service building of Kahramanmaraş OIZ is slightly damaged, the activities of the institution were not affected. However, there is also machinery and equipment damage among OIZ members. With the financial support to be provided to the OIZ, infrastructure facilities can be renewed and modernized. In this way, OIZ members can continue their production from where they left off.

The service building of KMTSO is moderately damaged, and many infrastructure and office equipment are damaged. Therefore, KMTSO is in urgent need of financial support. Approximately 30-40 million TL is needed only for the repair of the service building. Dues and other service fees from KMTSO members have not been collected since the earthquake. In this situation, KMTSO is going through difficult times financially.

No direct support was provided to the members after the earthquake. However, the containers sent from different provinces to the members of Kahramanmaraş OIZ directorate were distributed and coordinated according to the number of companies. According to the potential of the province, textile and metal kitchenware were determined as the sectors that need the most support. The type of support to be provided is expressed as machinery equipment support and investment loan.

As a result, the post-earthquake situation and sectoral needs of Kahramanmaraş were evaluated with qualitative interviews, and institutional needs were determined. In particular, significant losses were experienced in the textile and metal kitchenware sectors. Machinery equipment damage stands out as an important problem in all sectors. With the provision financial support, it will be possible for the enterprises to start again and to compensate for their losses production. KMT-SO needs financial support. Since the OIZ service building is in a slightly damaged condition, the activities of the institution were not affected, but the infrastructure facilities need to be renewed.

Within the scope of qualitative interviews held in Adiyaman province, meetings were held with Adiyaman Chamber of Commerce and Industry and Adiyaman Organized Industrial Zone Directorate. In these interviews, the pre- and post-earthquake conditions of the trade and industry sectors in the province were evaluated.

The sectors in which the members were most active before the earthquake were stated as textile-apparel, food industry and furniture. In these sectors, the most employment was realized in the apparel sector. Before the earthquake, approximately 65% of the employees were employed in the textile-apparel industry. Approximately 22,000 people work in the apparel industry.

As a result of the negotiations between Adiyaman Chamber of Commerce and Industry (ATSO) and Adiyaman Organized Industrial Zone (OSB), the post-earthquake conditions of the sectors were

also evaluated. Adiyaman Chamber of Commerce and Industry was damaged in terms of its service building. Therefore, it is a priority need to repair the service building and put it into service. Then there is a need for overhaul of computers, printers and other office equipment. Financial support is required for service building repairs and other needs.

There was no significant damage to the service building of Adiyaman Organized Industrial Zone after the earthquake. However, the treatment plant has been damaged and is still not actively used. Therefore, urgent financial support is needed for use in the repair of the treatment plant.

It is thought that the support to be provided to Adiyaman industry after the earthquake should be given primarily to the textile-apparel and food sectors with growth potential. The apparel industry offers very important employment opportunities. Therefore, it would be beneficial to provide support to this sector as a priority. The food sector is another sector with significant commercial potential for the city.

Adiyaman has very important agricultural potential. It is necessary to provide support to the agricultural sector in order to eliminate the effects of the earthquake in a short time and to restore the city to its former state. The apparel industry has an important potential in terms of employment. However, this potential is thought to be entirely dependent on cheap labor. Since 6th Region incentives are currently used, labor costs are cheaper than other regions. In the long run, if these conditions disappear, it is estimated that the apparel industry will move to different regions that provide cheaper labor. Therefore, it is important for Adiyaman to ensure sustainable development in the long term.

Priority needs were determined by evaluating the post-earthquake conditions of the trade and industry sectors in Adiyaman. It is thought that supports should be given to sectors with growth potential. In addition, providing support to the agricultural sector is important for the development of the city. Various strategies need to be devel-



oped for a sustainable development in the long term. Collaboration between relevant institutions is important for the determination of these strategies.

**Commonly expressed topics, needs or situations include:**

- Providing financial support for businesses to continue their activities after the earthquake
- Providing the necessary tools and equipment for the detection and repair of the damage after the earthquake
- Providing the necessary technological infrastructure for the restructuring, modernization and development of enterprises
- Providing export supports to make the products of the enterprises more competitive in international markets.
- Establishment of vocational training centers to meet the personnel needs of businesses
- Machinery equipment damage is an important problem in all sectors and businesses need to re-produce and compensate for their losses with financial support.
- Providing support to the agricultural sector
- Developing various strategies for the long-term sustainable development of the city and co operating between relevant institutions.



## 5. SUMMARY OF REGIONAL SHORT, MEDIUM AND LONG-TERM ACTION PROPOSALS

### 5.1. Short Term Action Plans

- **Establishment of Development and Survival Centers:** Development and survival centers can be established to assist disaster victims after an earthquake. These centers provide support on issues such as sheltering, feeding, receiving health services and ensuring the safety of the victims. In addition, psychosocial support services can be provided in these centers.
- **Establishment of the Regional Support Platform:** A regional support platform can be established between the five cities. This platform facilitates access for businesses and entrepreneurs to financial, technical and advisory support. In addition, cooperation between enterprises and the opportunity to develop joint projects can be provided on this platform.
- **Supporting Supplier and Customer Partnerships:** Establishment of supplier and customer partnerships between businesses can be encouraged. These partnerships are important for businesses to support and collaborate with each other. In addition, thanks to these partnerships, the production costs of the enterprises can be reduced and customer satisfaction can be increased.
- **Organizing training programs and vocational courses for the Training of Qualified Personnel:** It is important to train qualified personnel in order to increase the competitiveness of enterprises. Therefore, training programs and vocational courses can be organized for businesses. Thanks to these trainings, the personnel quality of the enterprises can be increased and a competitive advantage can be obtained in the labor market.
- **Implementation of Earthquake Friendly City Initiative:** It is important to create a safe city image by learning from the earthquake. Therefore, Earthquake Friendly City Initiative can be implemented. This initiative includes measures such as reinforced infrastructure, earthquake resistant structures, disaster management plans and public education. The earthquake-friendly city initiative increases the tourism and industrial potential, while ensuring the safety of local people.
- **Realization of the Target of Being Tourism and Industrial Zone:** Steps to be taken to maximize the tourism and industrial potential of cities can be considered. For example, measures can be taken to develop tourism infrastructure, protect cultural heritage, create environmentally friendly industrial zones and implement investor-friendly policies. While this encourages the economic growth of cities, it also acts in accordance with the principles of sustainability.
- **Establishment of Inter-basin Logistics Centers:** Inter-basin logistics centers can be created for each city. These centers are areas where warehousing, distribution, customs clearance and logistics services are integrated. In this way, trade and logistics flow between cities becomes more efficient and time and cost savings are achieved.

- Establishment of Logistics Training Centers: Logistics training centers can be established to train qualified personnel in the logistics sector. These centers offer courses and certificate programs led by instructors specializing in logistics professions. Thus, the quality of labor in the logistics sector increases and the competitiveness of cities increases.
- Establishment of Combined Transport Infrastructure Combined transport infrastructure can be established between cities. This is a system in which different modes of transport such as road, rail and sea are integrated. Combined transport provides a more environmentally friendly and efficient logistics solution. It also promotes inter-city trade and reduces logistics costs.
- Providing the technological infrastructure for Smart Storage and Stock Management: The use of smart technologies in storage and stock management processes can be encouraged. For example, innovative solutions such as automatic stock tracking, RFID labeling, smart palletizing systems can be used. In this way, logistics processes become more efficient, stock management is optimized and errors are minimized.
- Realization of E-commerce and Logistics Integration: In a period when e-commerce is growing rapidly, the integration of the logistics industry with e-commerce is important. Cities can create collaboration platforms between e-commerce companies and logistics companies. These platforms encourage innovative projects aimed at optimizing supply chain management, delivery processes and logistics costs.
- Dissemination of Drone and Automatic Transport Systems: The use of drones and automatic transport systems in the logistics sector can be expanded. These systems provide fast and efficient distribution, reduce traffic congestion and increase energy efficiency. Cities can make regulations and adapt infrastructure to encourage the use of drones and automated transport systems.
- Establishment of Joint Promotion Desk or Regional Export Support Center: A joint promotion desk or regional export support center could be established between the five cities. This center provides companies with export consultancy, training and financial support. Thus, cooperation between cities increases, joint marketing strategies are developed and export potential is maximized.
- Establishment of Financial Support Center: One financial support center can be established for five cities. This center facilitates access to financial resources for entrepreneurs and local businesses. It also provides access to venture capital funds, loan programs and grant support. This fosters local economic growth and innovation.
- Establishment of Earthquake Disaster Coordination Center: An earthquake disaster coordination center can be established for five cities. This center coordinates the measures before, during and after the earthquake. It prepares emergency plans, organizes disaster awareness training, manages infrastructure reinforcement projects and develops innovative solutions to reduce earthquake risk.
- Creation of the Joint Information Center: A joint information center can be established for five cities. This center promotes knowledge sharing for businesses, researchers, academics and entrepreneurs. It provides support on issues such as innovation, technology transfer, and market research. Thus, information flow and cooperation between cities increase and competitive advantage is gained.
- Creation of the Common Mind Platform or Think Tank Center: A common mind platform or think tank center can be established for five cities. This center encourages the exchange of knowledge and ideas among academics, experts and industry leaders. It makes strategic analyzes, offers policy recommendations and advises decision makers on economic, social and logistical issues. Thus, the management and development strategies of cities become more knowledge-based and sustainable.

## 5.2. Mid Term Action Plans

- Emergency plans should be prepared and trainings on disaster management should be organized.
- Training programs should be organized for fire brigades, medical teams and other emergency services.
- Cooperation between non-governmental organizations, local governments and businesses should be encouraged.
- Reinforced infrastructure and earthquake resistant structures should be built in areas with earthquake risk.
- Earthquake preparedness level should be increased by performing earthquake simulations in cities.
- The number of personnel related to disaster management should be increased.
- Trainings should be organized in the areas needed by the enterprises and the quality of the workforce should be increased.
- Vocational training centers should be established and necessary programs should be established for training the workforce.
- Access of youth and unemployed to employment should be facilitated.
- It should be aimed to develop tourism infrastructure, protect cultural heritage and create environmentally friendly industrial zones.
- Investors should be encouraged to come to the region by implementing investor friendly policies.
- Logistics infrastructure should be developed to increase tourism and commercial activities between cities.
- By establishing inter-basin logistics centers, it can be ensured that the inter-city logistics flow becomes more efficient.
- Transportation costs can be reduced by improving the combined transportation infrastructure.
- By establishing logistics training centers, qualified workforce can be trained in the logistics sector.

## 5.3. Long Term Action Plans

- Collaboration and coordination between local governments, non-governmental organizations, private sector and academicians should be encouraged and they should act together in disaster management studies.
- Economic development and regional cooperation can be achieved by developing cooperation projects.
- Cooperation opportunities between businesses and business platforms to be established in the region should be increased.
- Encourage local economic growth and innovation by providing entrepreneurs and local businesses with access to financial resources.
- Incentives and grant programs for entrepreneurs should be established for the economic development of cities.
- Financial support centers should be established to meet the financial needs of businesses.
- Strategic analyzes can be made on economic, social and logistics issues and the management and development strategies of cities can be made more knowledge-based.

- For the long-term sustainability of businesses, studies can be conducted to develop intellectual resources. These studies can be carried out with the cooperation of universities, research centers and businesses in the region. In this way, the transition of the region to a knowledge economy and the development of innovative products can be achieved.
- In order to increase the quality of the workforce in the region, general vocational trainings can be provided in addition to the vocational skills needed by the enterprises through vocational training centers. In this way, the qualified personnel needs of the enterprises can be met and the labor market can be operated more efficiently.
- Cooperation can be made between public institutions and private sector enterprises in the region to develop the infrastructure. Within the scope of this cooperation, infrastructure elements such as roads, water resources and energy infrastructure in the region can be developed. In this way, the physical infrastructure necessary for the development of the region can be provided and the basic infrastructure elements necessary for the businesses to continue their activities can be strengthened.



## 6. REGIONAL PROJECTS AND GENERAL ASSESSMENT

Earthquakes are natural disasters that are alarming because of their devastating effects. However, steps can be taken for the recovery process after the earthquakes and thus, the negative effects on the production sector and the development of the region can be minimized. In this study, the steps to be taken for the rehabilitation of the earthquake zone will be discussed, based on the recommendations stated in the “Earthquake Impact Analysis and Reporting Study of the Manufacturing Sector”. The first suggestion is to set up co-working centers. These centers can help businesses stay in business and continue production. Most of the businesses affected by the earthquake had to take a short break from their work. Co-working centers can provide these businesses with a place to continue their business. These centers offer an environment where businesses can rent office space and work together at low cost. These centers can help businesses recover and contribute to the revival of the manufacturing sector in the region.

The existence of co-working centers can increase the interaction of businesses in the region with each other and create cooperation opportunities. These centers allow sharing innovative ideas and allowing businesses to learn from each other. Also, the existence of co-working centers can stimulate entrepreneurial activity in the region and help start new businesses. In addition, co-working centers can connect businesses in the region to a wider network and help businesses expand their customer base. Thus, co-working centers can play an important role in the recovery and growth of businesses.

The second suggestion is to establish data storage and data security centers that will serve regionally. The earthquake caused losses in physical servers of many businesses, and these losses resulted in data loss and disruptions in businesses’ production. Data storage and data security centers can help businesses keep their data safe and keep business running. These centers can prevent data loss and reduce the negative effects on the development of the region by minimizing disruptions in the production of enterprises.

Efficient use, development, protection and storage of intellectual resources is important for businesses to maintain their competitive advantage. These resources may include an entity’s intellectual property rights, trademarks, patents, copyrights, and other intellectual property. Businesses should develop appropriate policies and procedures to protect these resources and pass them on to future generations. This can ensure the sustainability and growth of businesses.

The earthquake caused data loss on the physical servers of many enterprises, and these losses caused disruptions in the production of the enterprises. Therefore, protecting and storing intellectual resources can help businesses keep their data safe and continue their business. By establishing

data storage and data security centers to serve regionally, it is possible to prevent data loss and reduce the negative effects on the development of the region by minimizing disruptions in the production of enterprises. These centers can help businesses maintain their competitive advantage and help businesses use their intellectual resources effectively.

The third proposal is to turn the Gaziantep Chamber of Industry-Vocational Training Center into a regional training and qualification center by developing solutions for accommodation. This center can meet the training needs of businesses in the region and contribute to the development of the production sector. In addition, this center can help the manufacturing sector become more competitive by increasing the qualifications of businesses in the region. This center can be an important step for the development of the region.

Gaziantep Chamber of Industry Vocational Training Center can be an important step for the development of the region by meeting the training needs of the enterprises in the region and contributing to the development of the production sector. The center has advantages such as having the most developed industrial enterprises of the region, the deepest qualified human infrastructure, the most exporting province, the highest number of universities, techno parks and related institutions and facilities, sectoral diversity and being located in the center of the region in terms of logistics. In addition, this center can help the manufacturing sector to be more competitive by increasing the qualifications of businesses in the region. GSO-MEM is one of the centers with the most comprehensive education infrastructure and is located in the Organized Industrial Zone (OSB). In addition, there is a vocational school and a model factory in its immediate vicinity. It can also be listed that the personnel working in the institution are at a high level in terms of quality and quantity.

**Apart from these suggestions, the following suggestions are listed for the development of the regional manufacturing industry.**

- **Regional Earthquake Action Plan:** In this project, a common “Regional Earthquake Action Plan” can be created for all five cities. This plan determines the measures to be taken to reduce the effects of the earthquake and improves the emergency response processes. The plan includes in detail what needs to be done before, during and after the earthquake.
- **Sustainable Energy Cluster:** A “Sustainable Energy Cluster” can be established between five cities. This cluster encourages the use of renewable energy sources, increases energy efficiency and enables cities to meet their energy needs in a sustainable way. At the same time, cooperation projects can be realized in the fields of energy production, storage and distribution.
- **Green Infrastructure Projects:** “Green Infrastructure Projects” can be implemented in five cities. These projects aim to increase green areas in cities, protect natural habitats and improve water management. For example, vacant lots, rooftops and parks within the city can be turned into green spaces. In addition, water resources can be managed sustainably by installing rainwater harvesting systems and water treatment plants.
- **Innovation and Technology Centers:** “Innovation and Technology Centers” can be established in

each city. These centers provide an environment where entrepreneurs, start-ups and researchers can develop their innovative ideas. It also supports the research, testing and commercialization of new technologies. These projects stimulate economic growth in the region and increase employment opportunities.

- **Education and Awareness Programs:** Education and awareness programs on earthquake risk and sustainability can be organized in five cities. These programs encourage the public to take pre-earthquake precautions, raise awareness of energy efficiency and support environmentally friendly lifestyles. At the same time, it is aimed that future generations will be interested and actively contribute to these issues through trainings and internship programs for young people.
- **Artificial Intelligence Supported Agriculture:** Unusual projects can be developed in the agricultural sector, in which artificial intelligence and robotic technologies are used. For example, using agricultural robots and drones, automated harvesting systems can be set up, increasing productivity and optimizing the use of water and fertilizer in agricultural fields.
- **Sustainable Tourism Villages:** Sustainable tourism villages can be established in order to protect the natural beauties in the regions and to increase the tourism potential. In these villages, renewable energy sources are used, organic farming is practiced, eco-friendly accommodation is built and local culture and handicrafts are supported.
- **Holographic Education Centers:** Holographic education centers can be established by going beyond the traditional understanding of education. In these centers, students can experience virtual reality through 3D holograms, visit historical sites or participate in scientific experiments. In this way, education can be presented in a more interactive and visual way.
- **Technology Transfer for Manufacturing:** It can be ensured that manufacturing technologies in developed countries are transferred to production centers in developing countries. This will strengthen local production capacities, increase the skills of the workforce and support competitiveness.
- **Establishment of Industrial Zones:** Establishing industrial zones and providing infrastructure services in developing districts encourage the growth of the production sector. In these regions, producers may be offered low rent and tax benefits.
- **Clusters and Collaborations:** Creating clusters and promoting collaborations in the manufacturing sector can support resource sharing and innovation. Efficiency can be increased through joint supply chains, joint marketing activities and collaboration projects.
- **Developing Educational and Professional Skills:** The training and professional skills development of the workforce in the manufacturing sector is of great importance. Technical and managerial competencies of employees can be increased through training programs and vocational courses.
- **Financial Support and Incentives:** Providing financial support and incentives to entrepreneurs in the manufacturing sector encourages investment. Incentives such as tax cuts, loan facilities, and grant programs support the establishment of new businesses and the growth of existing businesses.
- **Improving Market Access:** It is important to improve access to international markets for the growth of the manufacturing sector of developing countries. Export potential can be increased through trade agreements, export incentives and market research.
- **Development and Survival Centers:** Development and survival centers can be established for cit-

ies that are most under threat from earthquake risk. These centers can be centers equipped with earthquake resistant structures, have emergency plans and meet basic needs such as food, water and medical resources.

- **Regional Support Platform:** A regional support platform can be established to support the post-earthquake recovery and sustainability efforts of 5 cities. This platform can be a network of local governments, non-governmental organizations, academics and private sector representatives. The platform enables sharing of resources, collaboration and dissemination of best practices.
- **Measures to Support Supplier and Customer Partnerships:** Measures can be taken to support supplier and customer partnerships between cities. Thus, regional cooperation increases, marketing opportunities of local producers expand and economic growth is achieved. These measures may include organizing trade fairs, establishing cooperation networks and offering marketing supports.
- **Training of Qualified Personnel:** Training programs and vocational courses can be organized to fill the shortage of qualified personnel in the manufacturing sector. These programs support the quality and competitiveness of local production by increasing the skills of the workforce. At the same time, it facilitates the access of youth and the unemployed to employment.
- **Earthquake Friendly City Initiative:** A safe city image can be created by taking lessons from the earthquake. This initiative includes measures such as reinforced infrastructure, earthquake resistant structures, disaster management plans and public education. The earthquake-friendly city initiative increases the tourism and industrial potential, while ensuring the safety of local people.
- **Target of becoming a Tourism and Industrial Zone:** The steps to be taken to maximize the tourism and industrial potential of the cities can be considered. For example, measures can be taken to develop tourism infrastructure, protect cultural heritage, create environmentally friendly industrial zones and implement investor-friendly policies. While this encourages the economic growth of cities, it also acts in accordance with the principles of sustainability.
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- **Combined Transportation Infrastructure:** Combined transportation infrastructure can be established between cities. This is a system in which different modes of transport such as road, rail and sea are integrated. Combined transport provides a more environmentally friendly and efficient logistics solution. It also promotes inter-city trade and reduces logistics costs.
- **Intelligent Storage and Inventory Management:** The use of smart technologies in storage and inventory management processes can be encouraged. For example, innovative solutions such as automatic stock tracking, RFID labeling, smart palletizing systems can be used. In this way, logistics processes become more efficient, stock management is optimized and errors are minimized.
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Lessons to be learned from the earthquake may include:

- **Investing in reinforced infrastructure:** Reinforced infrastructure can help minimize post-earthquake destruction. Cities should invest in strengthening structures and preparing contingency plans in earthquake-prone areas.
- **Earthquake awareness education:** Earthquake awareness education can help raise public awareness of earthquake risk and preparedness. Cities should raise public awareness by organizing earthquake awareness training.
- **Renewable energy sources:** Renewable energy sources can prevent energy cuts after natural disasters. Cities can reduce the effects of power cuts by investing in renewable energy sources.
- **Cooperation and coordination:** Cooperation and coordination are of great importance for post-earthquake recovery efforts. Cities should encourage cooperation and coordination among local governments, non-governmental organizations, the private sector and academics.
- **Innovative solutions:** Innovative solutions can be useful in the post-earthquake reconstruction process. Cities can strengthen infrastructure, improve disaster management plans, and ensure public safety with innovative solutions.





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