DESCRIPTION AND SCOPE

The manufacturing industry of electrical equipment manufactures products for making electricity, the most important source of energy, usable and beneficial for humanity. The manufacturing industry of electrical equipment is categorised among the medium-high intensity sectors. With this position, the manufacturing industry of electrical equipment has the capacity to produce high value added products.

The sector includes a wide range of product and produces both investment goods, intermediate input and final consumption goods. The manufacturing industry of electrical equipment constitutes the group numbered 27 among the NACE 2 sector categorisations. This section includes the manufacture of products which generates, distributes and uses electrical energy as well as electric lighting, signalisation equipment and household electrical appliances.

THE DEVELOPMENT OF THE SECTOR AND MAIN INDICATORS

The number of enterprises in the manufacturing industry of electrical equipment in 2004, namely 6.223, increased to 7,517 in 2011. The number of wageworkers has reached to 115.831 with an increase by 33 percent. Nominal production value, 14,4 billion TL in 2004, increased to 35 billion TL in 2011. The value added created the manufacturing industry of electrical equipment was 4,5 billion TL in 2004 with nominal values while it increased to 6,8 billion TL in 2011.

When it comes to the shares of the sub-sectors in the manufacturing industry of electrical equipment; the highest number of entrepreneurs according to the data of 2011 is in the sector of electrical lighting equipment with a share of 35,4. As of production value, household electrical appliances sub-sector has the biggest share with the rate of 41,9 percent while the same sub-sector created the highest value added with 40,6 percent.

Between 2004 and 2011, in the main indicators of the manufacturing industry of electrical equipment, the share of the number of enterprises in the overall manufacturing industry rose from 2,21 to 2,26, though a slight increase. Its share in the employment remained nearly the same with a limited increase and ended up being 4,08 percent in 2011. Its share in terms of production value was 5,05 in 2004 while rising to 5,02 in 2011. Its share in the rendered value added was 5,21 in 2004 while it rose to 5,30 in 2011. The share of the investments of the manufacturing industry of electrical equipments in the overall manufacturing industry was between 3 and 4,5 in the corresponding years; while it has been falling behind its performance in 2004.

Production in the manufacturing industry of electrical equipments considerably increased by 76 percent between 2005 and 2012. Employment in the manufacturing industry of electrical equipment increased by 47,8 percent in the period of 2005-2012. Productivity measured by per capita production in the manufacturing industry of electrical equipment increased by 19,1 percent within 2005-2012. In the same period, the productivity or per capita production increased by 15,6 percent in the manufacturing industry. The increase in productivity in the sector ended up in 3,5 points over the increase in the mean productivity of the manufacturing industry.

In the manufacturing industry of electrical equipment, the export in 2005 was 3,26 billion dollars and rose to 8,96 billion dollars in 2012. The share of the sector export in the overall export of Turkey increased from 4,44 to 6,5 percent. Being 4,32 billion dollars in 2005, import increased to 7,47 in 2012 while the share of sectoral import in the overall import of Turkey decreased from 3,7 percent to 3,16.

In the manufacturing industry of electrical equipment, electrical and non-electrical household appliances carry out the highest export amount with 3,75 billion dollars. Mostly exported product in terms of product-base is electricity conductors between 80-1000 volts, household refrigerators, microwave ovens and other ovens-cookers and washing machines. In the sub-sectors of the manufacturing industry of electrical equipment, the highest import was concentrated on electrical machinery and machine parts with 3 billion dollars.

In the manufacturing industry of electrical equipments, expenses of technological activities and R&D activities increased year by year and were measured as 312 million TL in 2011. The number of employees is 3,166 as of 2011. The number of acquired patents was 32 in 2000 while it increased gradually and steadily in the following years and reached to 203 in 2012. 181 local brands were registered in 2000 while the number rose to 2,091 in 2012.

In the manufacturing industry of electrical equipment, there are 14 R&D Centers founded under companies to benefit from R&D support with a minimum of 50 employees; 13 of them operate in the sub-sector of electrical household appliances.

The white ware sector in Turkey contributes significantly to Turkish economy in terms of its developing technology, ever-increasing production, export capacity; side industries, services, dealer networks and employment opportunities growing thanks to the aforementioned. 90 percent of the white ware demand in Turkey is met by domestic manufacturer companies. With the production of 21 million components and production capacity of 21 million pieces, the white ware sector has become an important production base in the last 10 years and now being the biggest manufacturer in the Europe with its recent progresses. The usage rate of domestic materials in the white ware sector is 60-70 percent. The most significant factor behind the rapid development of the sector is the support and high-quality production made by side industry companies that manufacture in national and international standards. In the refrigerator, oven, washing machine and dish machine markets, regarded as the four big white goods, 50 million components are sold annually and nearly 15 percent of the EU market is made up of Turkish made products.

There are predominantly investment and intermediate products in the sub-sector of electric motors, generators, transformations and electricity distribution and control devices. Within the sectoral production, the main structure comprises of electric motors, generators and transformations sub-groups. A major part of the sectoral production is about investments on communication infrastructure network, energy sector, transmission, distribution and production. Sub-sectors of electrical equipment, electric motors, generator and transformations, electricity distribution and control devices make up a substantial part of the sector. The market size of the sub-sector of electric motors, generators, transformations, electricity distribution and control devices was 6,36 billion TL in 2007 and increased to 9,56 billion TL in 2012.

The cable industry, one of the first branches in the electromechanical industry in Turkey, has entered a new development process since the early 1990s and many companies in the sector have transferred technologies from abroad. Apart from that, foreign capital companies made investments and purchases. Hence, the cable industry has reached the level of developed countries in terms of technology and know-how and seized international standards in terms of production technology.

95 percent of cable production is realised by 16 companies in the sector, which are open to foreign competition and have technical knowledge and equipment. Nearly 85 percent of the capital of the first seven large companies has been made up by foreign capital investments. The size of the domestic market in Turkish cable sector was 3,5 billion dollars in 2012.

The sector of lighting equipment is the most rapidly developing and growing sub-sector in the last ten years in the manufacturing industry of electrical equipment. There are nearly 3000 enterprises in the sector of lighting equipments and 50 large and approximately 300 small-medium scale businesses generate the majority of the production in the sector with their corporate structures.

Production in the sector is carried out mainly as the supply of foreign dependent inputs and their assembly. That is why the value added in the production remains limited. However, the sector leans towards areas of high value added such as decorative lighting products. The size of the domestic market in Turkish lighting equipment sector was 2,1 billion dollars in 2012.

THE MANUFACTURING INDUSTRY OF ELECTRICAL EQUIPMENT IN THE WORLD AND THE POSITION OF TURKEY

The production moves from developed countries to developing ones because of the fact that technology used in white ware sector, which is one of the sub-sectors in the manufacturing industry of electrical equipment, has reached a certain level of maturity. The developing countries acquire this technology through license and white ware demand in the developing countries increases. For instance; while Western Europe was the leader in the sector, it left its leadership to Southern European countries recently. In the Americas, the production moves from the USA to Latin American countries.

It is predicted that the world white ware market will reach 151 billion dollars in the six main product groups in 2012. China outrun the USA and became the biggest market while Brazil, Russia and India entered the list of biggest markets. As the market has got saturated in developed countries, growth in these markets has stopped. This led to the need for inclining to new markets and required the companies to convert from national companies towards being international companies.

Important developments are present in three areas in the international sub-sector of the electric motors, generators, transformations, electricity distribution and control devices. Energy efficiency and energy

saving targeted against sustainability and climate change ensures all motors and equipments that generate and distribute power to be more efficient. The EU is the pioneer in this matter as the regulations it has issued necessitate the use of highly efficient motors and other equipments. As a result, motors and generators which consume less energy, have lower emission and work more quietly are produced and used. In this respect markets of motors and generators and other equipments that are based on the energy efficiency principal have come into the forefront.

China has become the biggest manufacturer in the world cable and conductors production with a share of 32,8 percent. The global sector of cables and conductors has been growing especially with the rapidly-increasing demand of developing countries and the demand of innovation created by technological improvements in the sector of mainly electronic, communication and energy.

The global market size of the lighting sector reached to 73 billion dollars in 2011. The market is expected to reach 91 billion dollars in 2016 and 102 billion dollars in 2020. The basis of this growth will be made up of the expansion in the area of general lighting. While the growth in automotive lighting has been limited, shrinkage is expected in the backlight lighting market. The most important development in the lighting market will be the growth in LED lighting market. As of 2011, LED lighting market, which has a share of 12,7 percent in the overall lighting market with 9 billion Euros, is predicted to reach 61 billion dollars and a share of 60 percent in 2020.

Export in the global manufacturing industry of electrical equipment was 460 billion dollars in 2005 and 662 billion dollars in 2008. Reducing to 535 billion dollars with the impact of the global crisis in 2009, the export increased for the following three years and reached 767 billion dollars in 2012.

As of 2012, total export of electrical and non-electrical household appliances was 96 billion dollars, of cable and wires was 112 billion dollars and of motors and machines that generate and distribute power was 95 billion dollars. However, the export of electrical circuits, resistances and similar accessories and parts was 234 billion dollars.

Turkish manufacturing industry of electrical equipments has been increasing its share in the global market of electrical equipments gradually over the years. 3,26 billion dollars in 2006, the export has increased to 8,96 billion dollars in 2012. The share of Turkey in the global export of the manufacturing industry of electrical equipment was 0,71 in 2005 and rose to 1,17 in 2012.

MAIN COMPETITIVE FACTORS AND DEVELOPMENTS

Main competitive factors in the manufacturing industry of electrical equipments is categorised under the value chains.

In the Turkish manufacturing industry, intermediate inputs of sub-sectors other than the white ware industry are quite limited, which generates insufficiency problem in one of the most determinant competitive factors.

While Turkey has its own production technology substantially in the white ware industry, foreign dependency in the production technologies in other sub-sectors still exist. All products in the industry should be environment-friendly and green production should be conducted. Turkey is in the stage of transition to this kind of production and products.

Being more advanced in the white ware and small household appliances, activities for product diversity and innovation activities have been increasing.

It is observed that Turkey also has a significant amount of foreign capital investment in other sub-sectors except fort he sub-sector of lighting equipments.

Like the other similar countries, Turkey also suffers from the Far East oriented cheap cost-price competition. Besides the foreign markets, this competitiveness pressure by Far Eastern product exists in also the domestic market. Especially labor, energy and transportation costs and tax liabilities remain comparatively high in Turkey.

When company scales in Turkey are compared to their rivals, it is seen that there are large-scale companies in each sub-sector in a significant amount. However, even these firms need to grow.

Among the many determinants of competitive factors in the manufacturing industry of electrical equipment, technological knowledge, infrastructure and capacity to develop takes an important place. The USA, Japan, Germany, South Korea, Taiwan, Singapore, France and Sweden have competitive advantage in this area. Technological developments are managed by these countries. The main technological knowledge and infrastructure of Turkey is being newly formed while its capacity to develop products is at an advance level.

The third determinant factor other than knowledge and human resources in the capacity to develop technology is the expenses on technological activities. The budget and expenses of the companies in Turkey on that area are limited. However, higher R&D expenses are made especially within the white ware sector. However, it is observed that foreign

capital companies are more supported by central R&D activities. Unfair competition created by cheap and low-quality imported goods and unregistered domestic production reduces the importance of R&D activities and efforts. Predominantly in the white ware sector, patents acquired domestically have been increasing.

Turkey is a country that follows and complies with the standards on a large scale. The EU is an important source of reference for Turkey. The need for rapid harmonization with the EU provides advantages to the sector.

Brand is a very important factor for the white ware and small household appliances and final consumers choose from the brands. Turkey has significant brands in this sub-sector. Yet, branding in other sub-sectors is not in a sufficient level. Production in the foreign markets is an important factor especially for the sectors of white ware and small household appliances. The white ware sector increases its competitive power in this area by making production and investment in abroad and at the same time purchasing substantial producer companies and brands. Branded sales of white ware and small household appliances are carried out by their own sales and service channels abroad. To form these channels is quite important to reach customers in the global scale. The white ware sector is forming its own channels and makes sales in the target European markets with its own brands.

The sales of products in the form of investment goods in the manufacturing industry of electrical equipment are rather project-oriented and the competition in this area is determined by the existence of project and engineering companies. The existence and effectiveness of local project and engineering companies in Turkey in an international nature remain limited.

The long-term capital and financing opportunities in Turkey in proper conditions are limited. Debts are incurred from abroad and additional risks are taken for these kinds of sources. Industrial profitability of the companies in Turkey is under downward pressure continuously. The main reasons for this are the substantial foreign dependency in inputs, the failure to create value added and increasing high production costs. Besides, high public liabilities and taxes also negatively affect the profitability. Small scales also limit the profitability.

There are improvements in the education for raising human resources in Turkey; however, there is not still an effective harmony between the educational system and institutes and the demands of the industry. Human resources in the industry are mainly raised within the companies.

Unfair competition can easily be created in both domestic and foreign markets with non-standard, low-quality, imitation, off the record products that are produced without complying with the labor and business conditions. That is why the observation of domestic market and imports has been an important competitive factor. The effectiveness and improvements are needed in both areas in Turkey. National companies are face to face with the unfair competition.

The lack of sufficient testing, measurement and laboratory infrastructure in Turkey decreases the effectiveness in the observation of both imports and domestic market. Besides, the accreditation of products for foreign markets has come to be made in abroad and for high costs.

SWOT ANALYSIS AND EVALUATIONS

Within the context of SWOT analysis of the Turkish manufacturing industry of electrical equipment; current strong and weak sides and faced threats and opportunities are identified and assessed. The assessments of SWOT analysis are grouped and presented as evaluations about value chain circles of the industry.

Strong Sides of the Sector

Production experience, knowledge and production capacity come into the forefront. Especially the white ware sector has the largest production capacity in the Europe. Again, the market share and capacity to direct the market are strong sides of the white ware sector. There are high quality and standards available and the production is made in compliance with the EU norms. There are substantial foreign capital investments in the sub-sectors. Closeness to the European market is one of the strongest sides of the sector. Meeting the demands of the customers and quick delivery thanks to the flexible production are other strong sides.

Weak Sides of the Sector

The weak sides of the sector are high production costs, foreign dependency in main inputs that are important for companies, foreign dependency in production technology in the sub-sectors other than the white ware sector, high financing costs, insufficient testing, measurement and certification infrastructure, the lack of internationally sufficient and strong engineering, consultancy and project companies and limited branding.

Opportunities in the Sector

The opportunities in sector comprise of rapid urbanisation, domestic demand that will emerge with the demographic structure, closeness to the newly developing markets, renewal demand created by energy efficiency-oriented new standards, the need for creating energy efficiency-oriented products, opportunities of purchasing companies and brands in foreign markets, renewal demand created by the regulations about the use of highly efficient motors etc, increasing demand of cogeneration and trigeneration products and systems, closeness to the developing markets in the area of construction and industry, growth in the foreign contracting services, growth in the areas of energy and communication, the rising awareness of lighting, increasing interest of foreign capital companies in investment and purchasing, new production and extra demand opportunities created by LED technology.

Threats of the Sector

The threats of the sector consist of the import of low-efficiency, low-quality and cheap products, SCT rates applied to products as a result of considering the white ware products as luxury consumption goods, obstructions for forming investment, production and market channels in foreign markets, new generation FTA contracts of the EU, insufficient audit and observation in the domestic market, tender applications of the public, lacks in the standards, that no technical obstructions are set in the imports and easy access of the strangers into the market, the lack of sufficient project and engineering companies to highlight Turkish products in foreign and domestic projects, off the record production that creates unfair competition and spoils prestige in the foreign markets, low level of knowledge and awareness of consumers and customers in some sub-sectors and price-oriented domestic market competition again in some sectors.

STRATEGIES AND SUGGESTIONS FOR COMPANIES

13 strategic targets have been defined primarily based on the value chain of the sector under the heading of strategies and policies for the manufacturing industry of electrical equipment. These strategic targets are as follows: 1 for intermediate and input supply, 2 for production, 1 for technological activities, 4 for marketing and sales, 1 for financing and financial structure, 1 for human resources and 3 strategic targets the condition of market and sector.

1. To Diminish the Foreign Dependency in the Intermediate Inputs and Make Productions in Chosen Intermediate Inputs
2. To Enhance the Production Technology and Production with High Value Added
3. To Diminish the Burden on Production and Operational Costs
4. To Expand and Support the Activities of Design, Product and Technology
5. To Carry Out 14,9 Billion Dollars of Import of Electrical Equipment in 2023
6. Public Application of Supplying, Purchasing and Bidding Policies that Support the Sector
7. To Expand and Support the Foreign Investments and Activities in This Context
8. To Expand and Support the Capacities and Competences of Domestic Project and Engineering Companies
9. To Meet the Capital and Financing Needs with Appropriate Conditions
10. To Raise Qualified Human Resources and Develop the Cooperation of Industry-University
11. To Develop the Capacity and Quality of Standardisation, Testing, Measurement and Accreditation
12. To Activate the Observance in Exports and Domestic Market
13. To Increase the Level of Knowledge and Awareness of the Customers and End Users

Here are suggestions for increasing the competitive powers among companies operating in the manufacturing industry of electrical equipment;

1. To Produce Products with High Value Added
2. To Follow and Meet the Needs of the Customers
3. To Develop and Produce Energy Saving Green Products in Compliance with the Regulations of Energy
4. To Give Weight to Project That Require Special Engineering Services
5. To Provide Turn-Key Packet Services
6. Branding
7. To Expand in Investment and Marketing Channels in Foreign Markets
8. To Raise Engineers and Technical Personnel and Intracompany Trainings
9. Re-structuring Based on Efficiency and Profitability
10. For Companies to Increase Enterprise Capital and Partnerships with Angel Investors