

CHEMICAL INDUSTRY

Despite problems facing the domestic industry, the future of the Turkish chemical sector remains bright. Low per capita consumption of chemicals and the move towards sustainable growth rates in the general economy, create a compulsive force to have new investments in the chemical industry. The industry possesses natural resources and a soaring demand, but lacks adequate capital. The capital and technology-intensive nature of the industry makes it an ideal field for foreign investors.

The privatisation of Tupras, which ranks 7th in Europe in terms of refinery capacity, and expected privatisation of Petkim, the giant petrochemicals company, pave the way for accelerated investments.

Sector Overview

Turkey is among the main producers of soda ash, chrome chemicals and boron chemicals. Cleaning materials and paints/coatings industries have also shown good performance in terms of production capacity and exports. However, the chemical industry depends on imports for both raw materials and technology requirements, with its import / consumption ratio steadily increasing – from 40% in 1990 to 55.5% in 2003.

The key characteristics of the chemical industry include:

- About half of its overall chemicals demand is met by imports. This import dependency ratio rises to over two-thirds in base chemicals (76% in 2004) and organic chemicals (86% in 2004). In some categories the ratio is even higher. Many varieties of base chemicals are 100% imported, as 90% of dyestuffs and pigments. Certain products are largely produced locally, usually because of easy access to certain raw materials. Since sodium and boron products are locally produced items, theirs are as low as 36%. Boron chemicals, soaps, detergents, cosmetics, paints are main sub-sectors which have export potential. Consequently, despite high import requirements, chemicals still constitute one of Turkey's major export items.
- The sector gradually becomes more import dependent as the economy develops, since production falls short of meeting the domestic demand and new investments commissioned are small scale and mostly expansion investments. On the other hand the chemical industry, which involves utilization of technology and capital-intensive production techniques, require large-scale investments. The capacity utilization during the last three years was realized 77% as an average
- Around 4,300 manufacturing companies exist in the chemical sector. Out of those, some 100 have more than 150 employees and the rest are small scale companies. Most of the chemical companies are located in Istanbul, Izmir, Kocaeli, Adana and Ankara. Of the two giant state enterprises, Petkim, the leading petrochemicals company in the country, is slated for privatisation, while Tupras, the sole refinery in Turkey, was privatised in 2005, with the ownership going to the Koc Group-Shell consortium. It is expected that Tupras' investments will accelerate and even a new refinery investment will be on the agenda.

- There is considerable foreign involvement in the sector and in particular, detergent and cosmetics sub-sectors. The Turkish chemical industry is among the top five sectors in terms of direct foreign investment: with a total 314 companies with foreign capital and a share of 13% in total foreign capital.

With increased globalisation, international chemical companies, including Unilever, Cognis, Henkel, P&G, Clariant, and to some degree BASF, have enhanced regional responsibility for their offices in Turkey. P&G Turk has been responsible for the Caucasus and Central Asia since late 1990s. Cognis Turkey is responsible for North Africa and Egypt, in addition to the Middle East. This trend is a positive boost for local production in Turkey.

- 80 % of the total production (excl. pharmaceuticals) is intermediate goods, making the chemical sector highly vulnerable to the fluctuations in the other sectors and the overall economic developments.
- Domestic per capita consumption is around \$250/annum, very low when compared with the EU countries (\$985 in Spain, for example).
- Regarding the level of technology the sector, with the exception of medium and large scale industries, is far from a modern and competitive structure. The integration between the production of basic and intermediate chemicals seems to be inadequate, excepting petrochemicals and fertilizers. On the other hand there have been considerable improvements in terms of quality, productivity and environmental protection. All large companies in the sector have ISO 9000 quality certificates. The care with accountability, the chemical industry's trademarked initiative on environmental, health and safety issues, has been successfully implemented since 1992, but still needs to be extended to the SMEs as well. For example, as a result of environmental considerations the following replacements take place in the cleaning products industry:
 - ✓ Partial replacement of STPP with zeolite
 - ✓ Polycarboksilate starting to replace STPP
 - ✓ Switch from ammonium salts, the active materials of detergent softeners, to ester quart
 - ✓ Using nonilphenol polimerik structures instead of dispersion agents
 - ✓ Use of organic products instead of benzidyne derivatives
 - ✓ Phasing out of inorganic pigments that contain heavy metals (cobalt etc) in favour of organic pigments.
 - ✓ Reducing the emission of VOC (volatile organic compounds) in favour of voc free compounds.
 - ✓ Reduced use of chromium pigments.
- For the last couple of years, raw materials from Korea, India and China are coming to Turkey. Parallel with this development, the number of importers has also increased up to around 100.

Market Size

The total demand for chemicals realized as \$ 21.97 billion in 2004, growing by 6.5% annually between 1990-02, 11.4% in 2003 and 18.8% in 2004.

In 2004, pharmaceuticals formed the largest share of demand with 24.8% (\$5.4 billion). Base chemicals and 'other chemicals' (mainly explosives, adhesives, essential oils,

photographic materials, magnetic bands, food aromatics) were the other major segments with a share of 19.4% (\$4.2 billion) and 19.01% (\$4.1 billion), respectively.

MARKET BALANCE OF CHEMICALS, 2004				
\$ million, at 1998 prices				
Chemicals	Production	Imports	Exports	Demand
1. BASIC CHEMICALS	1,625	3,236	596	4,265
1.1. INDUSTRIAL GASES	146	2	-	148
1.2. DYES & PIGMENTS	109	544	42	612
1.3. INORGANIC CHEMIC.	762	454	303	912
1.4. ORGANIC CHEMICALS	607	2,235	250	2,593
2. SYNT. RUBBER&PLASTIC RAW MATERIALS	879	3,273	217	3,935
3. PESTICIDES	165	122	23	264
4. PAINTS	1,069	358	117	1,310
5. PHARMACEUTICALS	2,914	2,845	300	5,457
6. COSMETICS&CLEANING	1,462	429	555	1,122
7. OTHER CHEMICALS (1)	3,144	1,187	150	4,182
8. SYNTHETIC& ARTIF. FIBER	769	1,006	550	1,225
GENERAL TOTAL	12,030	12,459	2,512	21,977

(1) Explosives, adhesives, essential oils, photographic materials, magnetic bands, food aromatics and others

Source: State Planning Organization (SPO)

Chemicals production grew by an average of 4.3%, exports by 5.1% and imports by 9.1% during 1990-02. Parallel with the demand, the production increased 18.7% in 2000 and declined 10% in 2001. It rose by 16.5% in 2004 compared with 2003 and totalled \$12.4 billion. The sub sectors benefiting from this growth were mainly cosmetics, cleaning products and paints.

THE CHEMICALS MARKET, 1990-05						
\$ million, at 1998 prices						
	1990	2000	2002	2003	2004	2005 e
Demand	7,800	15,868	16,608	18,515	21,977	23,753
Production	5,690	9,379	9,426	10,322	12,030	12,583
Imports	3,130	7,949	8,931	10,289	12,459	13,717
Exports	970	1,460	1,751	2,096	2,512	2,547
Import/Consumption, %	40.1	50.1	53.8	55.5	56.6	57.7

Source: SPO

Locally produced materials mainly include the following:

- Turkey owns the largest **soda** factory in the Middle East with a capacity of 750,000 tonnes/year. There exists also a reserve of 200 million tonnes of **trona** (natural soda ash) near Ankara, the second after the USA. Foundations of trona production units was laid in mid 2004 and it is planned to produce 1 million tonnes of soda ash and 100,000 tonnes of bicarbonate starting from 2006.

- Turkey is among the top five countries supplying **chrome** ore to world markets. It has two thirds of the world's **boron** reserves and is the second largest producer of boron minerals. Eti Holding's (Turkey's largest state owned mining company) refined boron chemicals production capacity stands at 500,000 tonnes/year.
- Local producers meet about one fifth of the demand for textile **dyes/pigments** and **paint additives**.
- Since the textile sector is well developed in Turkey, **polymer** production related to textiles and the production of textile chemicals have also developed simultaneously. Large plants for the production of polyamide, polyester and acrylic **fibres** have been built and production has been directed both for the foreign markets as well as the domestic market. Almost all synthetic fibres are produced by the private sector and synthetic fibre production is around 850,000 tonnes/year.

PRODUCTION OF SELECTED CHEMICALS, 2002- 04			
Product	Tonnes		
	2002	2003	2004 e
Dyes & pigments	45,839	53,544	55,000
Hydrochloric Acid	79,511	87,205	81,000
Phosphoric Acid	199,596	167,121	210,000
Sulphuric Acid	629,786	545,931	650,000
Aluminium Sulphate	51,174	54,040	57,000
Hydrogen peroxide	13,956	11,200	14,500
Formaldehyde	106,214	114,066	115,000
Methyl Alcohol	47,890	46,698	50,000
Industrial oils & acids	1,153	68	100
Synthetic Rub. & Plastics R.M.	1,156,166	1,164,406	1,200,000
Pesticides	33,805	34,617	35,000
Paints	398,143	442,937	465,500
Synthetic paints & varnish	163,690	183,333	195,000
Water based paints	136,309	154,029	162,000
Soaps	240,000	285,000	310,000
Detergents	720,000	900,000	970,000

Source: SPO

Foreign Trade

The most important characteristics of the industry are its high import dependence and low export ratio. In 2004, chemicals exports became \$2.5 billion with an increase of 19.8% and imports became \$12.4 billion with an increase of 21%. The growth in exports was attributable mainly to pharmaceuticals, cosmetics, cleaning materials and synthetic fibres, while the growth in imports was mainly attributable to synthetic and rubber plastic raw materials and dyestuff.

The EU countries account for around 60% of total chemical imports and around 30% of total chemical exports.

Prospects

- The import/consumption ratio and the capacity utilization ratio are especially high in following sub-sectors and they are considered as potential investment areas: basic chemicals, plastics in primary forms and synthetic rubber and man-made fibres. A number of oil and natural gas pipelines are currently on the agenda within the context of Turkey's role as a transit route between Central Asia and Europe, pointing to further demand for these chemicals.
- Petrochemicals demand growth has been faster in Turkey relative to the rest of the world and developed countries. Compared to average GNP growth of 4% during 1986-2003, thermoplastics demand grew by a CAGR of 11% during the same period. Besides, Turkey's general growth prospects, growth potential in chemicals, automotive, construction, electronics and pharmaceuticals, which use petrochemicals intensively, point to strong growth for the chemical sector.

Domestic supply of petrochemicals (plastic raw materials, fibre and rubber raw materials) falls short of meeting soaring domestic demand. The industrial chemicals sector, on the other hand, imported four times the exports in the mid-1990s. The share of imports is over 50% in thermoplastics and approximately 100% in thermosets in value terms. The total market size for synthetic rubber and plastics raw materials was approximately \$4.0 billion in 2004.

New petrochemical investments are urgently needed since petrochemical imports have been increasing rapidly. The rate of demand increases for petrochemical products in Turkey is 2-3 times higher than the world average. The industry is not yet saturated and has a large potential for growth. While thermoplastics consumption in Turkey is 26 kg per capita, this rate varies between 75-100 kg in developed countries. According to Petkim, the state petrochemical company, Turkey's thermoplastics demand in 2005 requires the building of a new ethylene plant with a capacity of 750,000-1 million tons/year and its downstream units. In 2010, two new ethylene plants with the same capacity and downstream units will be needed.

- Foreign companies would benefit from the investment opportunities in the chemical raw materials sector provided that they bring new and advanced technologies (or provide cheaper inputs) allowing lower production costs. Turkish companies are interested in cooperating with foreign companies on manufacturing organic and inorganic chemicals, including specialized resins, provided that these would have a relatively sophisticated technology and would have lower production cost in Turkey compared to that in Western Europe. For example, between 60-80% of the paint inputs (depending on the type of paint) are met through imports from Europe. That said, it is argued that Turkey could be a dyestuff production centre for the foreign investors for investing/exporting to third countries. Major paint and coating producers think that Turkey has reached the stage to produce paint raw materials locally due to two developments:
 - ✓ Competition in paint prices forces paint producers to look at the cost of inputs more closely.
 - ✓ Amount of imported inputs is growing each day together with the growing amount of paint production.

- Due to the lack of economies of scale and high raw material prices, domestic prices have generally been higher than world prices. Industrialists for example complain about the high prices of Eti Holding's (the state mining company) boron chemicals and import these chemicals to a great extent. Turkey needs extraction and production of boron chemicals at lower costs of production. Eti Holding said it is open to collaboration with third parties. Surfactants are also competitive markets open to new entrants, which supply quality inputs. Manufacturers complain about high surfactant prices of current suppliers. Petkim and a few other private companies have or had plans to produce LAB.