

Turkey

Special Report

Elouisa Dalli and Nicholas de Weydenthal of Global Business Reports explore the potential of and the challenges facing the Turkish chemicals industry and investigate investment opportunities and risks in Turkey





Synthesis & decomposition in the

Along with its position at the crossroads of Europe, Asia and the Middle East, Turkey continues to attract attention and interest for its complex mix of modern industry and commerce. With a young and growing population of nearly 70 million and a booming industrial sector, Turkey seems like a gold mine waiting to be tapped.

As EU accession talks began in October 2005, Turkey has moved closer to the old continent and will be able to count on increased foreign investment to bolster and expand its industries, from chemicals to high technology and energy. The hope of EU membership has indirectly worked as a catalyst for the whole economy and especially the chemicals sector.

Turkey has enjoyed a strong recovery from the severe economic contraction it experienced due to a devastating financial and currency crisis in November 2000 and February 2001. During 2004, real GDP grew by a healthy 8.9%, though with an inflation rate of 9.3%. In 2005, real GDP growth was at 5%, with inflation at 7.5%. Unemployment was around 9.3% in 2005.

The IMF began working closely with Turkey following the 2001 economic crisis. In early 2002, the two parties jointly agreed to a €15.7 billion standby assistance package. On 11 May, 2005, they agreed to a further €8.4 billion, three-year package. The condition is the implementation of a variety of measures to address the root causes of the country's economic problems.

Consequently, Turkey has pledged to cut state spending and subsidies, reform the banking sector, accelerate the privatisation of state-owned industries, lower the inflation rate, reduce its heavy debt burden, and in general, create "a stable macroeconomic environment conducive to economic growth".

In May 2005, the IMF stated that "Turkey's economic performance is the strongest for a generation" and called for measures ranging from the continued independence of the central bank to full inflation targeting in order to facilitate further reductions in interest rates and generate sustained growth.

Despite the positive signs seen recently, Turkey continues to face numerous economic challenges, including: a large 'grey' economy; sharp income inequalities; a large and inefficient state sector; overly complicated legal and administrative procedures; a relatively inhospitable foreign investment climate; and, a stalled privatisation programme. Hence, careful planning and patience are the keys to success in Turkey.

Turkey's move toward EU membership offers an excellent opportunity to adopt European business regulations and standards, ultimately making it easier to conduct business here. Because it is the commercial hub of Central Asia, Turkey's resources can eventually be used to expand business opportunities throughout Central Asia, the Middle East and the Caucasus.

The value-added Turkish chemicals industry is one of those that have been able to raise their standards and it can count on some steady foreign investment. The industry is fundamental to Turkey's overall industrial development and has been able to work on its comparative advantages as well as define its goals for the future.

Certain natural attributes and new prospects have structured the chemicals industry into the form it takes today. Turkey's natural reserves of soda ash, chrome and boron have helped to create advantages by supplying valuable raw materials. The speciality pharmaceuticals, paints and coatings industries have also performed well in terms of production capacity and exports.

However, the industry still depends heavily on imports for both raw materials and more advanced technological requirements, with its import/consumption ratio steadily increasing, from 40% in 1990 to 55.5% in 2003. Niche product specialisation and foreign investment have become the ultimate solutions to Turkey's chemical dilemma.

Both Mustafa Bagan, secretary general of the Turkish Chemical Manufacturers Association (TCMA), and Turgut Doyran, chairman of the board of the Istanbul Chemicals & Chemical Products Exporters' Association stress that foreign investment is essential for the next stage of development of the speciality chemicals industry.

Large-scale chemical production in Turkey began in the 1960s as the government adopted import substitution policies that directed public sector investments in the areas of petrochemicals, fertilisers and basic organic and inorganic chemicals.

These capital-intensive investments, however, did not yield high profitability. With the liberalisation of the economy in the 1980s, the private sector and foreign investors mushroomed, predominantly in the production of pharmaceuticals, specialised textile chemicals and cleaning materials.

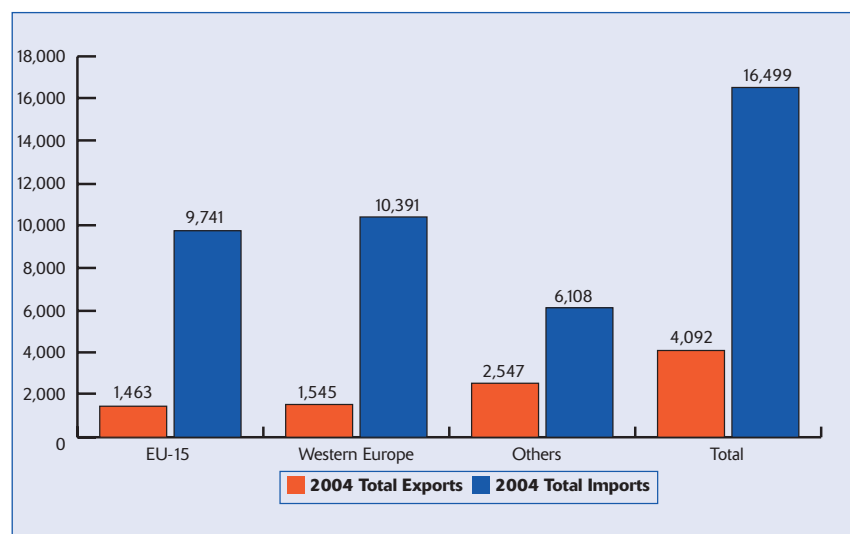
The Turkish chemicals industry in recent years has been characterised by import dependency, technological improvement and sporadic foreign investment. Approximately half of Turkey's overall chemicals demand is met by imports.

This ratio rises to over two-thirds in base chemicals and organic chemicals, and even higher in some categories. Many varieties of base chemicals are 100% imported (as are 90% of dyestuffs and pigments), although they then go through a process of specialisation and value-addition.

Certain products are largely produced locally, usually because of easy access to certain raw materials. Since sodium and boron products and their intermediates are locally produced items, import levels are as low as 36%. Therefore boron and sodium derivatives and speciality paints and coatings have export potential.

Despite high import requirements, chemicals still constitute one of Turkey's major export items. The sector is becoming more import-dependent as the economy develops, since production falls short of domestic demand and new investments are small in scale, often being directed at expanding existing production lines.

Figure 1 - Foreign chemical trade of Turkey, 2004



The Turkish chemical Industry

On the other hand, the speciality chemicals sector, which involves the utilisation of technology and capital-intensive production techniques, requires large-scale investments. Capacity utilisation during the last three years averaged 77%.

Market size

Around 1,800 manufacturing companies exist in the Turkish chemicals sector, excluding plastics and rubber processing. About 100 are large, 210 mid-sized and the rest small-scale. The TCMA has 65 members and they account for 60% of the chemical sector's turnover. 84% of production originates from the private sector.

Production grew by an average of 4.3%/year between 1990 and 2002. Parallel with demand, it declined by 10% in 2001, but rose by 9.5% in 2003 and totalled €8.7 billion, with textile chemicals and auxiliaries and paints and coatings benefiting most. Total production is now €11.8 billion/year, growing at an estimated 4%/year. Chemicals accounts for about 8.4% of Turkey's total industrial output.

Most of Turkey's chemicals production is based on domestic raw materials. Turkey has the largest soda factory in the Middle East, with a capacity of 750,000 tonnes/year. It also has a reserve of 200 million tonnes of trona (natural soda ash) near Ankara, the second largest after the US. The foundations of trona production units were laid out in mid-2004. Plans are to produce 1 million tonnes/year of soda ash and 100,000 tonnes/year of bicarbonate from 2006.

Turkey is also among the top five suppliers of chrome ore. It produces and exports some of the most important chrome chemicals and derivatives, such as sodium bichromate, basic chrome sulphate, chromic acid and chrome oxide. It has two thirds of the world's boron reserves and is the second largest producer of boron minerals. Thus it enjoys a comparative advantage in boron chemicals (borax decahydrate, borax pentahydrate, boric acid and sodium perborate).

Local producers meet about 20% of world demand for textile dyes and pigments and paint additives. Since the textile sector is well developed, specialised polymer production related to textiles and the production of textile chemicals have progressed simultaneously. Large production units for polyamide, polyester and acrylic fibres have been built for both export and domestic markets. Total synthetic fibre production is around 850,000 tonnes/year.

There is considerable foreign involvement in the chemicals sector, particularly in the pharmaceuticals, paints and coatings, cleaning materials and textile auxiliaries sub-sectors. Chemicals is among Turkey's top five industries in terms of direct foreign investment, with over 200 firms involving some degree of foreign capital. However, during recent years direct foreign investment has mainly involved buying into existing companies rather than making new capital investments.

With increased globalisation over the last seven to eight years, many international chemicals companies, including BASF, Cognis and Clariant, have enhanced the regional responsibility

Adding color to life in Turkey

DYO is the largest paint producer in Turkey. It operates in every branch of the paint industry from decorative to OEM as well as car refinishing systems, printing inks, polyester and furniture lacquers. DYO is a manufacturing giant that produces 950 different products sold in 3.200 different packages and 60.000 colors, creating employment for 2.100 and generating exports to 40 countries.

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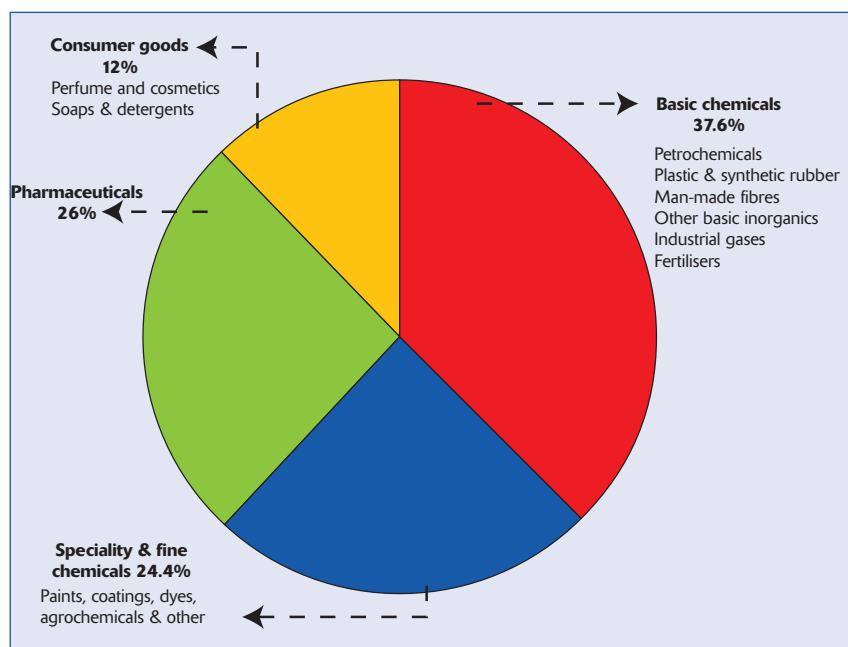


Figure 2 - Turkish chemicals industry by sector

for their offices in Turkey. BASF, for example, has established the Business Centre Turkey, Middle East & North Africa here, while Cognis Turkey is also responsible for those regions.

The chemicals sector is highly vulnerable to the fluctuations in the other industrial sectors and the overall economic developments, since 80% of the total chemical production (excluding pharmaceuticals) is intermediate in nature.

With the exception of medium- and large-scale players, the industry is far from being modern and competitive. The integration between the production of basic and intermediate chemicals seems inadequate, except in petrochemicals and fertilisers. However, companies have started to invest in niche products, thereby raising the cash to reinvest in R&D and technology to produce the high value-added speciality products, that local chemicals industry executives regards as the key to the future.

Moreover, there have been considerable improvements in terms of quality, productivity and environmental protection. All large companies in the sector have ISO 9000 quality certificates. Responsible Care, the chemicals industry's trademarked initiative on environmental, health and safety issues, has been successfully implemented since 1992, though it still needs to be extended to all SMEs.

Trade & prospects

In 2004, Turkey's chemicals exports totalled €4.2 billion, 7.95% of total exports, while imports amounted to €13.9 billion. The EU countries account for around 60% of the imports (a total of €5.65 billion in 2003) and around 30% (€518 million) of the exports. The growth in exports was attributable mainly to pharmaceuticals, paints and coatings, textile chemicals and their speciality derivatives, the growth in imports to raw materials for plastics and rubber, and dyestuffs.

Despite the problems it faces, however, the future of the Turkish chemicals sector remains bright. The low current per capita consumption of chemicals and the move towards sustainable growth rates in the general economy should help to attract new investments into a chemicals industry with good natural resources but inadequate capital.

Indeed, the capital- and technology-intensive nature of the Turkish chemicals industry makes it an ideal field for foreign investors. Foreign companies would benefit from the investment opportunities in the speciality chemicals sub-sector, provided that they bring new and advanced technologies allowing lower production costs.

Turkish companies are interested in cooperating with foreign companies in manufacturing organic and inorganic chemicals, including specialised resins. Investing in technology, specialising in certain niche product categories or supplying booming industries such as textiles, automotive or construction sectors offer real potential.

Even though 60-80% of paints consumed in Turkey are imported from the EU, it has been argued that Turkey could be a paints, coatings and dyestuffs production centre for foreign investors investing there and then exporting to third countries.

Major paints and coatings producers think that Turkey has reached the stage where it should be looking to produce paint raw materials and additives locally as price competition forces producers to look at the cost of imports more closely and the volume of imports grows. Furthermore, with the rise in the construction and automotive industries, speciality paints, dyes and coatings are in high demand.

On the other hand, the Turkish pharmaceuticals sector is reinventing itself to create not only generics but also original products. Turkish companies are investing heavily into fine chemicals, predicting that the future will be based on innovation. Some foreign players have entered the market but many more are still needed to supply the market with more technological know-how and capital that realising its full potential requires.

Acknowledgements & useful contacts:

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Curing Turkey's pharmaceutical problems

Turkey's pharmaceuticals industry accounts for approximately 10% of the nation's chemicals production and Turkey ranks 16th among the world's drugs-producing countries. This indicates that the market is promising for international companies intent on entering joint ventures and other forms of mutually beneficial cooperation with local counterparts.

With patent protection legislation in place, foreign businesses are now more sheltered and can freely market their innovations. However, shortcomings and pitfalls can be encountered at every turn. In a generics-focused market with a new pricing scheme, multinationals are at an apparent disadvantage to their Turkish counterparts. The latter, however, must adapt to the data exclusivity laws to stay competitive.

Currently, generics dominate the sector but the future of Turkish pharmaceuticals clearly belongs to innovation. Forays abroad and foreign investments will be the name of the game for the years to come. Many players have started to restructure their business plans and are ready to take advantage of the opportunities that are currently beckoning.

The size of the market, at factory prices, was around €2.95 billion in 2003 and it is expected to grow to just over €5 billion by 2008. This implies a total market size of around €3.8 billion in 2003 at consumer prices, taking into account 9% distributor and 25% retail margins.

Urbanisation, population growth and the growing per capita income are the main drivers of consumption. Per capita consumption of pharmaceutical products in Turkey, at €50.5/year in 2003, is a fraction of the OECD average of €211 in 2001. As the population grows older, the consumption of higher margin drugs for heart diseases and cancer will increase at the expense of antibiotics.

Generic drugs currently account for 60% of the market, compared to only 15% eight years ago, due largely to official policy - since 2003 - of buying the cheapest drugs available. With many important patents expiring between 2005 and 2010, generics are expected to gain further ground. Government buying accounts for 70% of the market.



Birol: Foreign firms use data protection to own ends



Eczacibasi's headquarters

A total of 134 companies operate in the Turkish pharmaceuticals industry, according to the Ministry of Health. These are made up of 85 manufacturers, 11 raw material producers and 38 importers. Since 1984, foreign investments have increased and 19 foreign firms have entered the Turkish pharmaceuticals market.

37 of the 134 were established with foreign capital, of which eight have built their own plants in Turkey: Bayer, Roche, GlaxoSmithKline, Sanofi and Aventis (prior to their merger), Pfizer, Novartis and Baxter. The rest supply by importing or using local subcontractors.

The top 20, of whom 13 are multinationals, have 84% of the market; the market leader's share is only 6.5-7%. Domestic companies have 47% of total sales (of which 24% belongs to what can be deemed as large companies), multinationals the remaining 53%. The leading Turkish manufacturers are EIS Eczacibasi, Abdi Ibrahim, Mustafa Nevzat and Bilim.

Capacity & production

Pharmaceutical production trends are closely related to domestic and foreign demand. Capacity utilisation was 70% and production totalled 969 million units in 2002. Domestic industry meets 90% of demand but new products for cancers, vaccines and hormones are imported.

Domestic production is dominated by generic preparations. As of today, the number of products in the market is over 5,000, including non-prescription products. Leading products in Turkey, by consumption, include antibiotics, analgesics, anti-rheumatics, cough and cold products, vitamins and minerals, cardiovascular preparations, antacids and antiseptics.

Although there is not yet a significant local high-tech or biotechnology and research-based manufacturing segment, basic production techniques have reached international standards. Since 1995, manufacturers have had to abide by GMP and GLP standards, which required heavy investment. In 2004, a reference pricing system was introduced. At the start of 2005, new data protection measures and registration legislation were implemented.

In 1999, patent protection legislation started its implementation phase. Turkey started recognising patents from 1995 but, given the long development duration for new pharmaceutical products, there are

few patented products on the market. Patent-protected products will only become more prevalent between 2005 and 2007. The new law will definitely spur more companies to concentrate on API production, fine chemicals and specialities.

However, according to Sedat Birol, vice president of the pharmaceutical division at EIS Eczacibasi, the effect of data protection on generics manufacturers will be limited. Data protection is the period (typically six years) during which a producer may not apply for the marketing rights of a product, referring to earlier submitted clinical and test results by the original manufacturer.

Turkey will have to implement data protection during the EU accession negotiations. Although the data protection period appears as an additional protection on top of patent protection, there are cases where the two overlap. Data protection will probably have to be implemented retroactively, reducing its effect.

Birol admits that many foreign companies exaggerate the threat that this will pose to their position on the market. "They are using this as a tool to create exclusivity," he says - though he does agree that international property investments are very important and that they could encourage R&D in Turkey.

Eczacibasi itself illustrates this. Eczacibasi Pharmaceuticals Manufacturing produces more molecules (189), products (341) and dosage forms (959) than any other Turkish company. Additionally, Eczacibasi Fine Chemical Products manufactures 27 kinds of APIs in its chemical synthesis, cephalosporin, penicillin, fermentation and hydrogenation units, giving it the largest range of any Turkish APIs producer.

Recent process development activities have led to 10 patent applications, one of which, a process patent for alendronate - an API used for the treatment of osteoporosis - has been granted a patent by the US and EU Patent Offices.

Pumping 3% of its €640 million/year turnover back into R&D is clearly paying off. Eczacibasi Fine Chemical Products increased its net sales by 6.3% in 2004 to €21.5 million. The branch is steadily increasing the production volume and range of output at the fermentation and hydrogenation facilities it opened in 2003.

Investment into R&D and increased API production is apparently the future for many generics producers in Turkey with some exceptions. However,



Eczacibasi's newly opened facility

Bulent Karaagac, president of Bilim Pharmaceuticals, believes that generic products are the future and he aims to focus on end-user products more than fine chemicals and APIs.

Bulent Atabay, president of Atabay Pharmaceuticals also believes that generics are the future, even though he has promoted back-integration and entered the manufacturing of fine chemicals. Atabay's fine chemicals facility specialises in hydrogen gas production for paraminophenol and paracetamol, high and low pressure hydrogenations, aminations, cyanide chemistry and resolutions.

Atabay himself says that his company is the world's leading producer of paracetamol and that he would like to specialise in this product. He wants to start making end-user generic branded products for the rapidly growing domestic market. His daughter, the firm's QA manager, Zeynep, is looking for new markets, with the US high on her wish list.

On the other side of the data exclusivity scale are innovator multi-nationals, for whom patents are very important. For George Hadjiev, general manager of Roche Turkey, data exclusivity is crucial to the future development of the industry. He argues that if Turkey could attract more foreign investment, then R&D activities could evolve.

Though data exclusivity is a concern, however, it has not hampered Roche in its business development. Hadjiev says that Roche has been successful in adopting the global strategy of innovative health care in Turkey.

"In 2004, the split between generic and original production was 50/50. In three years we plan to make it 70/30 or even 80/20 in favor of original products," he says. Speciality care is a niche market with value-added products that also promise higher margins. Concentration on fields such as oncology and virology has given Roche a comparative advantage over many of its Turkish competitors.

On one hand, Turkey's pharmaceutical sector is in dire need of foreign investment. On the other, legislation is being passed that ultimately favours local manufacturers.

The industry has great potential and is very attractive, but has only attracted limited amounts of foreign direct investment - 1% of the global total in recent years. Chaotic legislation, recurrent economic instability, lack of transparency and a large black market have scared potential investors away.

Ironically, more obstacles in the form of new pricing schemes have been put into place to hinder foreign business, and this, high VAT rates and issues in the distribution channels have decreased the industry's profitability.

The 'cost plus mark-up' pricing mechanism and margin caps were both abolished in 2004. Under the new mechanism, drug prices are adjusted in line with the lowest price of the equivalent product in the EU.

Adjustments need to be approved by the Ministry of Health and are quoted in Turkish lira. Accordingly, a reference factory price is calculated using the average price in the two countries where the prices are lowest of identified EU countries. The price is then set at 90% of the reference price.

However, the price of a generic product may not exceed 70% of the original product price, set



Roche's new facility in Gebze

according to the above method. Prices are adjusted if the lira depreciates by more than 5% in a 30-day period. Companies may apply to the Ministry of Health for price revisions, which need to be evaluated within ten days of applications.

The old system had encouraged transfer pricing by large multi-national manufacturers, importing large amounts of medicines and active ingredients, thus creating an unfair competitive environment for local companies. In addition, delays in price adjustments have occasionally pressured the margins of domestic producers.

All in all, local generics manufacturers have benefited from the new pricing scheme, which poses a disincentive for multinationals to import large amounts of medicines and APIs and encourages the production of raw materials in Turkey. This is mainly based around the production of antibiotic and analgesic APIs via fermentation, extraction and synthesis.

11 private sector plants and one in the public sector are in operation producing pharmaceutical raw materials in Turkey. Most investments are made by privately owned companies. 80% of raw material requirements are met by imports.

In 2002, 3,909 tonnes of raw materials were produced in Turkey. The country is self-sufficient in certain drugs such as morphine and its derivatives and paracetamol, which is also exported. Imports have increased steadily over the years and reached €2,572 million in 2004, including some products in finished forms.

Most come from Germany, Italy, the UK, France, Switzerland and the US. The main categories are biotechnological preparations, implanted products, new transport systems, vaccines, blood factors, products with controlled secretion systems, insulin, cancer drugs, several hormones, radionuclides, certain ophthalmic preparations and antidotes.

Exports by Turkish companies have also increased steadily in recent years, reaching €243 million in 2004. About 60% are packed ready-for-use pharmaceutical products, notably those containing peni-

cillin, antibiotics and alkaloid medicaments. Germany, the US, Austria, Belgium, Finland, the Netherlands, the UK, Switzerland, Italy and Japan are the main export markets.

To succeed in foreign markets where both the cost of adopting technical rules and the intensity of competition are increasing, the Turkish pharmaceuticals industry needs to make both technical and marketing investments or start joint ventures and alliances with foreign players.

MN Pharmaceuticals recently established a strategic alliance with PAR Pharmaceuticals to develop and market generic versions of injectable pharmaceuticals. The companies will collaborate on the development of up to ten generic injectable drugs.

Meanwhile, Bilim's Karaagac puts exports, especially to the US, at the top of his agenda. Eczacbas's Fine Chemicals export sales were €1.7 million in 2004, €3.4 million in 2005 and are expected to reach €8.4 million in 2008 as the company reorganises its structure to increase its exports from 10% to 30% of sales.

One major goal of Eczacbas Pharmaceuticals Manufacturing's product development activities, in addition to supplying new products to the domestic market, is to be the first to launch generic pharmaceuticals into international markets, particularly in the EU. Evidence of its success in this area was the development of the first four injectable forms of Ceftazidime, a cephalosporin molecule, for Europe.

Eczacbas has also signed an agreement with Ivax to develop, register and manufacture 20 pharmaceuticals for Eastern and Western European markets. This is expected to make a significant contribution to the company's exports from 2006.

For some firms, forays abroad are paying off. Abdi İbrahim, Turkey's pharmaceuticals leader has established its own organisations in markets with big potential, such as Russia and Kazakhstan, and supplied licences to countries such as Indonesia and Lebanon, while also obtaining pharmaceutical production licences for EU member countries. Sales to Denmark, Germany and France should begin soon.

Erman Atasoy, general director of Abdi İbrahim Pharmaceuticals says: "We follow the developments in the world's drug sector and the production technologies very closely. We assess the developments, taking into consideration the requirements of the Turkish drug sector, and thus maintain our leadership in market share. We also introduce the new international molecules to the domestic market through our licensors and take advantage of investments abroad."

Strategic planning has never been so high on companies' agendas. Having recovered from a financial crisis and started negotiations with the EU, many pharmaceuticals businesses have restructured their business plans to pair generics with originals and can fulfill the demands of the domestic market while looking abroad and are investing in R&D.

The presence of multi nationals has helped Turkish companies to be more technologically advanced. The foreign players themselves have brought with them their know-how and capital to tap an extremely large market. With key legislation in place, the future has never been so bright. Both domestic and foreign companies have many obstacles ahead of them, but the perspectives have become much clearer.



Hadjiev - Roche will focus on original products



Painting a colourful future

Turkey's paints and coatings sector has flourished alongside development in the construction and automotive industries and has become one of the most dynamic of its industry sectors. Foreign investors have sensed this current and have managed to secure a foothold in the market over the past few years.

The paint industry has developed its technological infrastructure and production capacity, achieving a base for export regionally and to the EU. It now adds €1.3-1.7 billion/year to the economy. Consumption has increased, but is still estimated at 5 kg/head/year in Turkey compared to 18-20 in EU member states and other developed countries.

The paint sector is closely related to and dependent on the construction industry, due to its economic and commercial structure. The stagnation experienced in the construction sector in 2004 directly decreased paint demand. However, 2005 has seen a rebound in construction, provoking a hike in paint sales.

There are about 15-20 large-scale paint companies with technical production facilities and about 400 small and mid-size companies. Unregistered manufacturers constitute about 15-25% of the market. The industry depends heavily on imports for raw materials.

Ongoing plans for infrastructure and development guarantee continued high demand for the foreseeable future. Turkey's young and rapidly growing population will require the construction of an estimated seven million new homes by 2010, all demanding superior building products and technology.

Turkey also has the only highly developed automotive industry in the region. The development of all of the end-use sectors suggests that the Turkish paint market will continue its annual growth of 10% for the remainder of the decade.

The current capacity of Turkish paint sector is about 750,000 tonnes/year. However, its capacity/usage ratio is 40-60%. An immediate halt to investment incentives in the sector is required to prevent creating unusable and empty capacity.

The total production volume reached 420,000 tonnes in 2000, it dropped to 280,000 in 2001, then, following an overhaul that began in 2002, leapt to 340,000 in that year. In 2003, it reached 370,000 tonnes and this should grow to 400,000-450,000 tonnes with the economic development and enlargement in the sector in 2006.

The main reason behind the bounceback is the rise in domestic consumption, which is linked to the expanding middle class. After the Turkish lira was floated in 2001, minus six zeros, the population had greater spending power.

The industry has moved away from the previously dominant industrial coatings towards the decorative paints segment. Most manufacturers are following this trend. On the other hand, the industrial paints and coatings segment has moved towards higher value-added speciality products in smaller volumes.

Competition has evolved dramatically and has helped the paint sector to reach world quality standards. The biggest manufacturers have invested heavily in new technologies. Dr Ismail Yiginsu, R&D manager at decorative paint market leader, Marshall Boya, enthusiastically proclaims that "time is innovation" and about one third of Marshall's sales come from new products.

Another key domestic player, Yasar Paint, has put approximately €750,000 into R&D for its Dyo line in the past year and has consequently introduced a product range based on nanotechnology, the first of its kind in Europe under the trade

names Nanotex, Nanomat and Nanosön. The technology has already been registered with the Turkish Patent Office.

Yasar Paint's 2004 turnover was about €220 million and it expects an extra €8-9 million from the nanotechnology products. By using nanotechnology, says chairman Ahmet Yigitbasi, the company is able to produce more flexible and at the same time longer-lasting products.

The nanotechnology-based paints clean themselves through a photocatalytic process. "The salts on the surface are cleaned by wind and rain water. This avoids further dirt stains and even transmits water inside. It enables humidity to be thrown out by its breathing capability," Yigitbasi says. They also possess flame-retardant, energy-storing, scratch-resistant and anti-bacterial characteristics.

Other noteworthy products include Dyotex, an exterior paint based on pure acrylic binders, which is said to have better performance and durability than conventional acrylic copolymer-based paints. Another is a series of speciality aerosol paints, which feature several products from special effect paints to heat-resistant paints.

Gulsen Celiker, R&D coordinator at Dyo and wife of the vice-president of paint business operations, insists that the only way to stay ahead of the competition is constantly to launch new, technologically advanced products. This strategy has translated into a 10% increase in turnover. Yigitbasi expects the whole paint industry to grow by 12%/year, Dyo at 20%, giving it total net sales of €277 million.

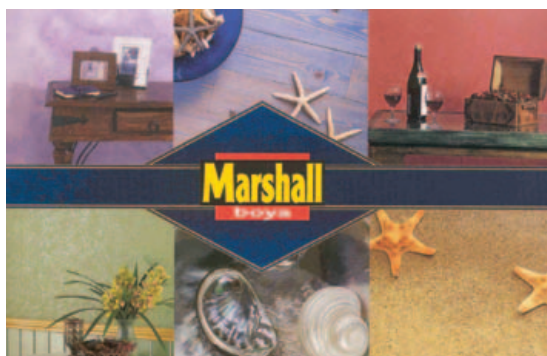
Dyo also forms strategic alliances with international chemicals companies to co-produce speciality products for specific industrial sectors. In its furniture and industrial paints business unit, it is maximising its technology-based competitive advantages by allying with Salchi-BASF to produce advanced furniture paints and with BASF to produce powder paints.

Yasar has established a joint venture with BASF in paints and auxiliaries in the car refinishes and OEM sectors. The product range includes speciality topcoats, undercoats, pastes, varnishes and auxiliaries. The products were awarded 'exclusive supplier' status at Mercedes Benz and 'leading supplier' status at Oyak Renault.

Dyo also has its own growing chemicals business unit. Its products include those for the leather and textile industries such as: water-based polymers for dyeing and in a variety of adhesives, water- and solvent-based pigment pastes, leather finishing chemicals, fat liquors and retanning agents, polyester resins, chemical-resistant polyesters, button and adhesive cement polyesters, gelcoat and polyester pigment pastes, alkyd resins, saturated polyester resins, amino resins, acrylic resins,

epoxy ester resins, maleic modified rosin resins, alkyd resins thinned with water, polyisocyanate resins and UV-cured epoxy acrylic resins.

Yasar Paint is also seeking to establish its brand abroad. One of the first steps, in early 2003, was an investment in a production facility in Romania. Dyo's export manager, Reza Asgari adds that Yasar has also managed to lay foundations in the



Marshall Boya is Turkey's largest paint firm

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Since 1958, Roche has been working in and for the Turkish pharmaceutical industry, manufacturing and marketing world-class therapeutic solutions and supporting local scientific studies.

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Russian market by establishing Kemipex to conduct its operation on the spot. With its rapidly expanding distribution network, Kemipex has made the Dyo brand a household name in Russia.

Before Dyo conquers the regional paint market, it will have to reach the level of its main domestic competitor, Marshall Boya. Acquired in 1998 by Akzo Nobel, Marshall has become Europe's sixth largest producer of decorative and professional paints.

Integration into Akzo Nobel has given Marshall considerable comparative advantages. Acrylic isolation coatings, pigmented and transparent primers and silicone acrylic-based and acrylic copolymer-based coatings are some of its key speciality products.

As with Dyo, Marshall has discovered potential markets in the Balkans, the Middle East and the former Soviet Union. Marshall's production and logistics manager, Atilla Discioglu indicates, however, that the future lies in Iraq and Iran. The only impediments are political instability and logistics. Back in Turkey, the only obstacles to further growth are legislative.

"Legislation", Dr Ismail Yiginsu points out, "is not at EU levels. We apply all of the EU standards but are waiting for these to become commonplace here in Turkey". Furthermore, environmental conditions in Turkey are iffy, to say the least. When the new legislation is espoused, he says, Marshall will be ready and a pioneer again.

Nevertheless, the outlook is positive, since Marshall is well-established on the market and has 15,000 distribution points. Moreover, the company trains 6,000 professional painters every year to use their products. Discioglu himself says that Marshall is "thinking globally and acting locally".

Akzo Nobel's acquisition activity in the Turkish market was not limited to Marshall, as it also established a joint venture with Kemipol Industries, an Izmir-based industrial coatings manufacturer specialising in the automotive sector, in 1990. Akzo Nobel Kemipol focuses on speciality coatings for construction materials, heavy agricultural equipment, metal furniture, domestic appliances, mirror coatings, non-stick coatings and industrial plastic components, automotive coatings and car refinishes.

Headquartered in the same office in Izmir is Akzo Nobel Boya-Interpon, which was founded in 1999 to produce electrostatic thermosetting powder coatings. Production started in August 2000 and investment boosted capacity from 2,000 to 7,000 tonnes/year by the end of 2003.

Today, Interpon is one of the market leaders in epoxy powder coatings, epoxy-polyester powder coatings, polyester powder coatings and non-stick powder coatings for domestic appliances, building materials, automotive parts, industrial materials and functional materials.

With Yasar, Dyo and Akzo Nobel fighting it out in the construction, automotive and textiles sectors, Polisan, a member of the Polisan Group, has quietly succeeded in becoming one of Turkey's leading paint, glue and resin producers.

Via carefully planned investments, none of them from foreign sources, Polisan, has grown rapidly to the point where it can meet the sector's raw material and speciality needs. It now offers decorative, furniture, industrial and heavy duty paints, as

well as primers, varnishes, thinners, formaldehyde resins and glues, among many other products.

Recently, Polisan's R&D department has concentrated on expanding its industrial products group, such as in formaldehyde and formaldehyde resins, alkyd resins and polymer emulsions for the textile, paper and wood sectors.

Other key niches are urea, melamine and phenol formaldehyde resins for paper and fabric impregnation and paper lamination productions, water-based emulsions of vinyl acetate homopolymers stabilised with polyvinyl alcohol and surfactants that are used as back coating binders for the textile industry.

Turkey is also home to many traders and agents from foreign companies that provide specialised paints and coatings. One, Ucggen Boya, which acts as an agent for Great Lakes, Johnson Matthey, Fine Organics and Nubiola, has managed to put together the most extensive range of pigments and polymer additives on the market and is now the third largest supplier of paints and pigments in Turkey.

Organic, inorganic, effect and anti-corrosive pigments and pigment dispersions make up 75% of Ucggen's product portfolio but, according to managing director Ulvi Ozguven, the remaining 25% of the portfolio, which encompasses polymer additives, is growing rapidly.

Specialty products such as flame retardants, antioxidants, UV stabilisers, slip agents and antistatic agents are in greater demand. As the paints and pigments sector expands, customers are calling for higher quality products, which directly push the need for specialty additives. Ozguven says that flexibility and new products will help Ucggen to retain its role as front-runner in its business.

Vibrant foreign trade

Besides meeting the increasing domestic demand, the Turkish paints and coatings sector has recently tended to export more. The sector is developing its exporting capacity especially focusing on the Balkans, the Middle East, the former Soviet Union and East European countries after the crisis and stagnation period. Turkey now exports paints to over 80 countries.

In 2004, the total value of paints and coatings exports reached €148.4 million, headed by paints and varnishes (€59.5 million) and followed by putties, resin cements and other mastics (€22.6 million), synthetic tanning substances (€17.6 million), synthetic organic colouring matter (€14.3 million) and printing inks (€12.6 million).

Turkey's dyes, paints and coatings imports, meanwhile, totalled some €840 million in 2004, most coming from Germany, Italy, the UK, France, Belgium, China, Switzerland, Spain and India. The major import products are: synthetic organic colouring materials and other colouring materials, and paints and varnishes based on synthetic polymers or chemically modified natural polymers.

The Turkish paints industry is expected to double in size within the next five years. With the construction and automotive sectors booming, the need for speciality products will be even greater. As the textile sector is saturated and beginning to shrink, with production moving to the Far East, textile dyes and chemicals producers will have to concentrate on high value-added products to stay in business.

With the economic crisis over and strong marketing and educational campaigns running, the opportunities are endless. As the legislation improves, unregistered paint manufacturers will be on the losing end, while the big players, many of them with foreign capital, will be able to strengthen their market positions. Consolidation of power at home will come through acquisitions and R&D. These strong brand names will then be able to travel abroad to pastures that could be just as green or even greener.



Growing demand for housing is driving the paints and coatings sector

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Adding value to Turkey's chemicals

Many of Turkey's chemicals companies specialise in a certain product and create niches where they enjoy a comparative advantage. Often these are products derived from the abundant raw materials in Turkey.

Others manufacture for industries strongly present there, such as auxiliaries for textiles and leather, paints and coatings for the construction and automotive sectors or additives for the plastics sector.

For many of these companies, R&D and technical service are the vital elements that distinguish them from the competition. They research all aspects of their products, from raw materials and production methods to new applications. Constantly seeking to extend their production range, these companies have become the flag-bearers for the industry.

These firms are aware of the key role of R&D in the production of high quality chemicals, and are investing heavily in technical development and staff training. The arrival of foreign investment has provided the Turkish chemicals industry and its domestic players with a healthy boost.

Turkey is among the main producers of soda ash, chrome and boron chemicals in the world. Soda Sanayi, which belongs to the chemicals business of the glass-producing Sisecam Group, is the sole producer of soda ash and chromium chemicals in Turkey and produces both raw materials and compounds for the textiles, detergents and glass sectors.

Key products include heavy and light soda ash, technical and food grade sodium bicarbonate and sodium silicate for many industrial sectors. Meanwhile, Soda Sanayi's Kromsan plant is the main supplier to the leather, metal plating and wood protection industries, plus others that consume sodium bichromate, basic chromium sulphate, chrome syntan and chromic acid.

Turkey is also strong in sodium sulphate. Alkim is Turkey's biggest and the world's sixth biggest producer, with a capacity of 300,000 tonnes and plans to expand by 20% by March 2006. As a major supplier of the detergent, glass, pulp and textile industries, Alkim is looking to diversify and invest in more value-added products.

In the pipelines, Reha Kora, Alkim's CEO reveals, is the production of caustic soda, potassium chloride and potassium sulphate. The latter is not produced locally as yet, but Alkim is currently building a potassium sulphate plant, with a capacity of 80,000 tonnes/year near the Acigol-Dazkiri sodium sulphate plant.

The company will use modern technology to obtain very pure and high-quality potassium sulphate, free of heavy metals and acids. Its solubility will be very high, which is important for agricultural and horticultural applications. Alkim is also investing in the paper sector, forward-integrating from sodium sulphate production.

Other Turkish companies, meanwhile, have decided to diversify their product range. Akkim Kimya Sanayi, a member of the Akkok industrial group, boasts a product range that spans mono-, di- and tri-ethylamines, dimethylacetamide, dimethylformamide and acetic acid in its organic portfolio.

On the inorganic side, Akkim has started to develop many more speciality, higher margin products. These include sodium metabisulphite, sodium hypochlorite, sodium hydroxide,

ammonium persulphate, potassium persulphate, polyaluminium chloride and hydrogen peroxide.

With a large textile industry and growing mining, metallurgical, pharmaceuticals and food industries in Turkey, Akkim wants to invest more into the production of hydrogen peroxide. Akkim's general manager Refik Onur indicates that he will keep investing in new technologies and bring to the market high value-added products. A new sodium percarbonate plant is in the works. He also believes that the Turkish chemicals industry is in a transition phase and that nanotechnology will be the future.

Product diversification, investment in new technologies, concentration on higher value specialities and synergies with sister companies within the Akkok group will give it a competitive advantage, Onur adds. Akkim is already the main player in certain products and enjoys market shares from 30% to 100%. It also exports 25% of its production.

Akkim's sister company Aksa is the world's largest acrylic fibres producer and has more than 80% of the Turkish market. Akkim takes advantage of this partnership by moving many of its inorganic and textile chemicals, such as preparation agents, spinning lubricants, textile dyeing auxiliaries, softeners, lubricating agents and emulgators, downstream to Aksa.

Since the textiles sector is Turkey's largest manufacturing industry and the second largest exporter after the automotive sector, many chemicals are produced to cater to it. Apart from some of the bigger Turkish textile chemicals producers like Akkim, the market is fragmented into many SMEs that deliver various speciality auxiliaries such as synthetic thickeners, polymer emulsions, lubricants, sequestrants, stabilisers and other agents.



Akkim exploits Turkey's abundant raw materials

With the rise in competition from the Far East, the textiles sector has moved to areas where raw materials and labour costs are cheaper. This has impacted on textile chemical producers in Turkey. Nonetheless, with their experience and know-how, many of them are reinventing themselves domestically and exporting speciality products to China or India.

One such company is Arkimya. A producer of sophisticated leather chemicals (fat liquors, re-tanning agents, synthetic oils etc.) and textile paraffin emulsions, Arkimya has decided to concentrate on different areas where it enjoys a comparative advantage - Vaseline, in which it has a 60-70% domestic market share, and paraffin wax.

The company is looking to export many of its textile chemicals because the Turkish market is already saturated. By lowering its costs, Arkimya is becoming more competitive domestically and in the export market. This approach was also taken by Argon, a 30 year-old producer of textile auxiliaries (polymer emulsions and synthetic thickeners) and softening oils for the leather industry.

Following global trends in the textile sector, Argon has been steadily exporting its products to over 30 countries. The company is even planning to open a production facility for synthetic thickeners in China within the next five years. It has already established the Argon Chemistry & Trading Company in the Pudong New Area Waigaoqiao Free Trade Zone in Shanghai.

Cem Margunato, vice-president of Argon, says that the future of textile chemicals in Turkey is niche speciality products since most raw materials have already moved to the Far East. Izi Morhayim, president of Ilmor Kimya would agree with this statement.

Ilmor is a key textile chemicals distributor which makes anionic, amphoteric, nonionic and cationic surfactants, phosphonates, complexing agents, fatty acids and emulsifiers. Morhayim is now looking for partners in China and India for textile chemicals while shifting his domestic concentration to food additives and antioxidants sectors.

BASF, Clariant, Cognis and Bayer are among a handful of companies that have established production facilities as well as offices in Turkey. Having realised that certain industries have developed or are developing exponentially, such as construction, automotive and textiles, they have increased their presence in the region.

Clariant Turkey is the number one in textile, leather and paper chemicals. Raymond Bilger, Clariant Turkey's president, sees Turkey as a rapidly growing market and wants Clariant to grow faster than GDP. Bringing to the market the newest innovations from Switzerland, Bilger believes that Clariant can remain at the top. He views Turkey as a key investment destination for foreign businesses.

Bayer already knows this and consequently its Material Science division, run by Omer Bakir, has successfully established itself in the most important developing Turkish sectors, such as construction, automotives, white goods and furniture. Bakir says that Bayer has achieved market leadership in nearly all its segments and is optimistic that the company can further consolidate and expand its position.

Besides being present in developing sectors and witnessing stagnation in textiles and leather, Cognis Turkey has targeted the care chemicals sector. Ferit Eroglu, general manager, and Hakan Kizildag, chemical engineer and sales manager for Turkey and the Middle East, say that the business plan has been redrawn to concentrate on care products over the next five years.

BASF's 'Business Centre Turkey, Middle East, North Africa' consists of eight daughter companies and serves a total of 16 countries, reaching from Turkey, Iran, the whole of the Middle East and North Africa, acting as a service platform for all of the BASF companies in the region.

The textile and leather industries are clearly shrinking in Turkey, according to Dr Gerhard Schwarz, BASF Turk's general manager. "When we see export statistics we can tell that this is a sunset business. Of course, I think the strongest will survive and, with a 20% market share, we want to remain in this market."

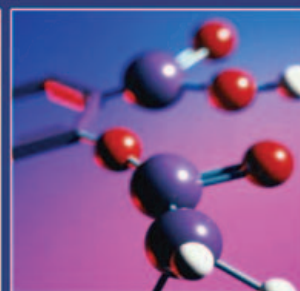
BASF, with its extremely diversified product range and expertise has tapped other sectors, the most important being electrics and electronics. Schwarz points out that "every fourth TV set sold in Europe comes from Turkey." BASF is strong in the related area of plastics. It is also very strong in construction and has strong ties within the Turkish automotive sector.



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By investing in Turkey, these companies have invigorated the chemical industry, supplying the key industries with the most technologically advanced speciality chemicals, turning Turkey into a chemical hub in the region. Having set up regional business centres, they have increased their presence and are all eyeing the surrounding regions as potential markets for the future.

Some Turkish companies have used the multi-national model as a catalyst for their own businesses. One such is Akdeniz Chemicals, champions of the speciality chemicals sector in Turkey. Akdeniz manufactures PVC stabilisers and various industrial chemicals for the domestic market.

The company supplies various industries around the world with metallic soaps, several basic stabilising components, mixed metal compounds, lubricants, acrylic-based processing aids and other speciality chemicals. Its R&D facility is working on the development of new applications and formulations, including the lead-free, new generation stabiliser systems.

"Akdeniz has been growing so dynamically that its sales stretch from the US to Europe, Africa, the Middle East and Asia. It has already invested over €11 million in expanding production capacity and R&D in the last four years" says Cenker Heris, Akdeniz's assistant general manager and second of three sons of Unal Heris who founded the firm in 1976.

The company now has a 7-8% global market share and a 2004 turnover of €67 million, which is expected to grow by 20-30%/year. Key aims for the 30th anniversary in 2006 include investing in acrylic processing aids, creating new high-tech products, increasing production capacity and expanding in the EU, the US, China and Iran.

Also celebrating its 30th anniversary this year is MKS Marmara, the sole producer in Turkey, the Middle East, Eastern Europe and the Balkans of pentaerythritol, a speciality polyhydric alcohol, which has four primary hydroxyl groups around one carbon atom, and sodium formate.

MKS Marmara first started production with formaldehyde and urea formaldehyde resins in 1979. It has always pursued organic growth, first by expanding the formaldehyde plant, later by adding pentaerythritol and sodium formate production in 1988. To increase the production capacity, it built its second pentaerythritol and sodium formate units in 1996 and subsequently activated its third formaldehyde plant in the following year.

With a further expansion of the capacities in 1998, MKS Marmara currently possesses production capacities of 140,000

tonnes/year of formaldehyde, 75,000 of formurea, 65,000 of urea formaldehyde resins, 17,000 of pentaerythritol and 10,500 of sodium formate.

Being the sole producer of pentaerythritol is a valuable trump card. Since this is used primarily in the production of alkyd resins and also of such varied products as resin esters, oil-modified urethane resins, modified drying oils, synthetic lubricants, plasticisers, intumescent paints, plastics and stabilisers for plastics, MKS Marmara is naturally an important partner for many paints and coatings producers in Turkey.

Other specialised fields that have a handful of local manufacturers are water treatment and the general industrial segment. "With the low water reserves inland, water treatment is essential to the future industrial development of Turkey," explains Taskin Ozturk, founder and general director of Deren Kimya.

Having concentrated on water treatment, Deren is the local market leader, with a 20-22% market share. Ozturk has decided to integrate vertically in order to increase this share. He stresses that Deren "does not want to sell its products separately to its competitors but provide a whole range of services. By controlling the whole process we can assure its success. We provide the whole solution to our clients."

Today, Ozturk is looking at regional markets in the Middle East and the Balkans to export his know-how. "Anyone that is interested in water treatment in these regions will have to do business with us. With the same technology and price as Western companies we are the option of choice in these emerging markets," he claims.

Basse Kimya's general manager, Ali Basusta, says that the Turkish market is large but the export market is lucrative. Bringing in know-how from Sweden's Green Apple Chemicals, Basusta aims to build a brand name in Turkey and the region. He would also like to expand his niche business to detergent specialities due to the growing cleaning materials market. All of his chemicals are environment- and user-friendly, he adds.

Many companies in the Turkish chemical industry have done their homework, analysed the market and adapted their strategies accordingly. Having perceived what is readily available or what is needed in certain key industries, many have decided to invest in advanced technologies and specialise in niche markets.

The Turkish chemical industry has also been fuelled by the presence of multinational giants. These have injected capital and presented technological know-how. With certain industries expanding, the need for advanced specialties has risen. As companies consolidate market presence at home, many are looking for ventures abroad, and Turkey is nurturing some very promising young future multinationals of her own.

**Paints and coatings are one
of Turkey's strongest
sectors**

