

2030 and Beyond Turkish Chemicals

June 2022



2030 and Beyond: Despite recent figures, achieving sustainable growth remains a challenge for the Turkish Chemicals Industry

The Turkish chemicals industry achieved significant growth driven by Turkey's cost advantage, proximity to major consumption markets, disruptions in global supply chains, innovation and changing regulatory environment.

We believe, that going forward, Turkish chemicals companies need to identify a unique market positioning (way-to-play) and invest in their capabilities to benefit from future trends underpinning growth.

As Strategy&, we foresee eight future trends ranging from ESG and sustainability to shifts in global economy, rising ecosystems, a reset of the global supply chain, novel business models, disruptive technologies, power of M&A and war for talent.

The Turkish chemicals industry is one of the key growth industries in Turkey, second largest industry consisting 14% of the country's total exports. Although several challenges from FX fluctuations to increasing input costs impacted the industry, last year the export and production figures of the Turkish chemicals industry reached a peak since 2016 with the impacts of shifts in the global supply chains between Asia and major consumption markets such as EU and US and increasing logistics costs.



Growing import and export figures

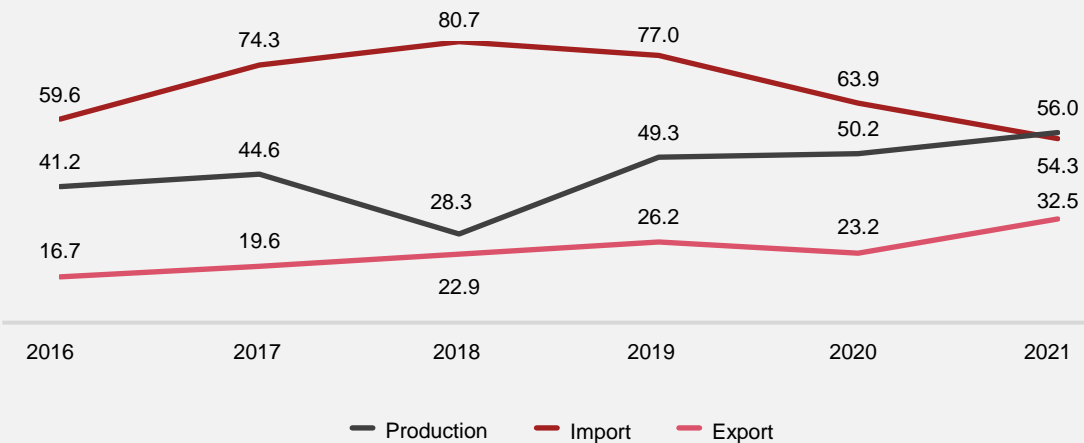
With the impact of Covid-19, the size of exports and imports had decreased to USD 23.2 bn and USD 63.9 bn in 2020, respectively. In the same period, the size of chemicals production in the country slightly increased from USD 49.3 bn in 2019 to USD 50.2 bn in 2020.

In 2021, the downward trend in imports and upward trend in production and exports continued with chemicals production surpassing imports, whereas local consumption decreased to below 2016 levels at USD 77 bn.

In the first quarter of 2022, the Turkish chemicals export reached USD 7.5 bn and achieved ~40% y-o-y growth.

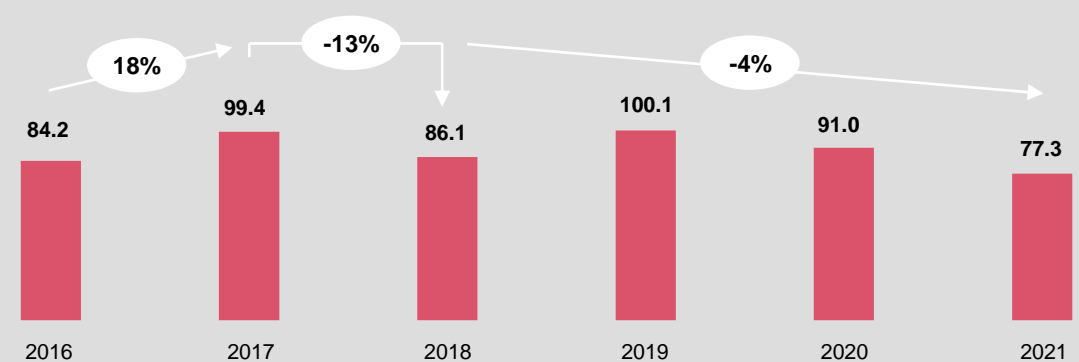
Production, import and export size of Turkish chemicals industry¹

Turkish chemicals production, import and export² (2016-2021, USD bn)



Source: TUIK, CEFIC, Strategy& analysis

Domestic chemicals consumption (2016-2021, USD bn)



¹ Exchange rates from USD to TRY are taken as follows for each year: 2016: 3.0253, 2017:3.6462, 2018:4.8456, 2019:5.6828, 2020:7.0194

² According to IKMIB, Turkish chemicals export value increased from USD 18.3 bn in 2020 to USD 25.3 bn in 2021

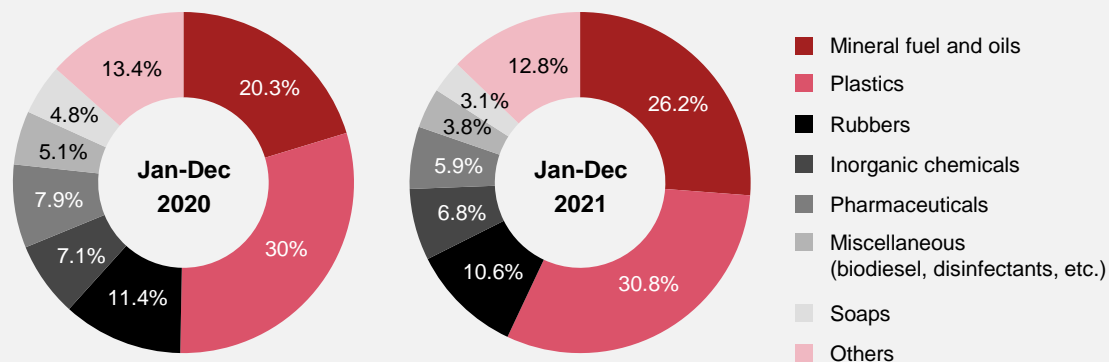
Growing import and export figures (cont'd)

In 2021, **capacity utilization** of the chemicals industry increased by 4,2 p.p. (from 74,3% in 2020 to 78,5% in 2021) ~80% driven by increasing production volume. In January 2022, these figures reached 79,5%, the highest level in the last decade.

Furthermore, the domestic price index in TRY terms for chemicals increased by 50-150% depending on the chemicals sub-market (~150% for fertilizers and man-made fibers, ~50% for soaps) due to increasing raw material, energy and labor costs. On a **positive note**, the depreciation of Turkish Lira against the USD by 80% provided Turkish chemicals players a cost advantage for export to EU and US markets. Especially, EU markets including Netherlands, Germany, Italy and Belgium and US manufacturers started to **prefer** Turkey as a **major supplier** with the changing global trade flows and macro-economic policies. Furthermore, Turkish chemicals exports saw a hike to regional countries such as Lebanon and neighbors such as Greece and Iraq.

Considering chemicals sub-segments, mineral fuels exports became the highest growing segment with 81% y-o-y growth and increased its share in Turkey's total chemicals export from 20% in 2020 to ~26% in 2021. Plastics, rubbers and inorganics segment recorded 44%, 30% and 33% y-o-y growth in 2021, respectively. One of the **main drivers** in the export value of mineral fuels and plastics was Turkey's reliance on imported raw materials and their increasing prices in USD terms. In 2021, the prices of the crude oil increase by ~60%, whereas the prices for polyethylene (PE) and polypropylene (PP) increased by more than 80% and 100% globally. Furthermore, local production from SOCAR's Star Refinery stimulated growth in the export of the mineral oils and fuels with its 10 million processing capacity.

Share of export by segments



Source: TUIK, Desktop research, Strategy& analysis

Segment

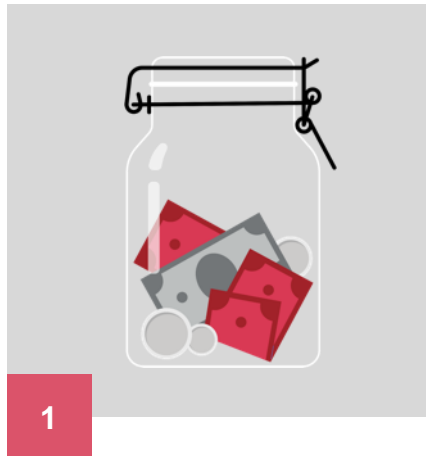
Export value
(USD mn, Jan-Dec '20) (USD mn, Jan-Dec '21)

Y-o-Y Growth

Segment	Export value (USD mn, Jan-Dec '20)	Export value (USD mn, Jan-Dec '21)	Y-o-Y Growth
Mineral fuels and oils	4,715	8,511	81% ↑
Plastics	6,971	10,017	44% ↑
Rubbers	2,656	3,455	30% ↑
Inorganic chemicals	1,648	2,195	33% ↑
Pharmaceutical	1,826	1,905	4% →
Miscellaneous	1,157	1,222	6% →
Soaps	1,125	1,016	-10% ↓

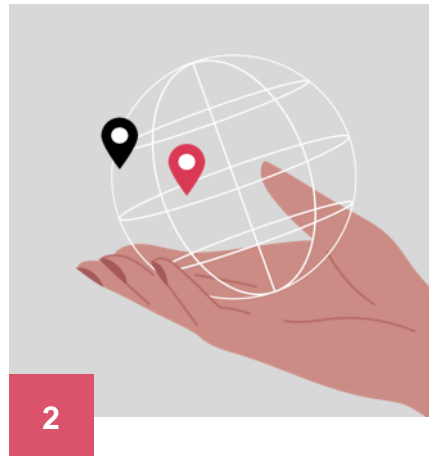
Impact of growth drivers, competition and regulation

Five growth drivers impacted the Turkish chemicals industry during the last years. These key trends consist of the following five drivers:



1

Cost leadership with TRY exchange rate fluctuation



2

Geographical proximity with major markets including US and Europe



3

Disruptions in the global supply chain from APAC



4

Major investments and innovations from the leading Turkish chemicals



5

Supporting regulations

Five key growth drivers

Leading Turkey to also become a favorable near-proximity supplier country with competitive labor costs, although the local chemicals industry is still reliant on foreign currency denominated import of feedstock.

Five main drivers of Turkish chemicals market



Cost advantage in export

With **devaluation of TRY**, Turkey strengthened its positioning in **production** and **export** with relatively lower costs (e.g., labor, energy)



Proximity in logistics

As **average freight costs** increased due to **container** and **labor shortage**, Turkey leveraged its proximity to both Europe and Asia, becoming a **logistics hub** for exports and imports



Global supply chain disruptions

Turkish chemicals industry benefited from the **disruption of global trade** flow between **US, Europe and APAC**



Investment and innovation

Several Turkish players took significant steps **for innovation, capacity increase, acquisition** and **IPO**, while **global companies** continued their investments in Turkey



Supporting regulations

Regulations and **incentives** such as Chemicals Technology Center and Technology-focused Industry attempt support and accelerate development of Turkish chemicals industry

Source: Desktop research, expert interviews, Strategy& analysis

Competitive landscape

There are more than five thousand active players in the Turkish chemicals market. Top ten players include petrochemicals (e.g., Petkim), mining, consumer chemicals (e.g., Hayat Kimya) and specialty chemicals (e.g., Betek Paints) players and they represent nearly 30% of the total chemical sales in Turkey.

In 2021, the Turkish chemicals industry saw significant steps for innovation, capacity increase, acquisitions and consolidations of players, IPOs, while global companies continued their investment into the Turkish market.

R&D and Investments: For instance, Petkim established an R&D subsidiary and developed the project of Circular TwAIIn (digital twin for circular economy). SOCAR (State Oil Company of Azerbaijan) acquired Petkim in 2008 and still investing in Petkim, the largest petrochemical facility in Turkey. Their investment of USD 6.3 bn into Star Refinery became one of the drivers behind the growth of the Turkish chemicals industry with 10 mn tonnes processing capacity, which satisfies nearly 18% of the domestic demand. OYAK's chemicals subsidiary, Akdeniz Chemson decided to invest abroad and announced that their investment of USD 27 mn for a new production capacity in China in November 2021.

Acquisitions & IPOs: In a vibrant competitive landscape, key chemicals players continued realizing their growth strategies with acquisitions and IPOs. For instance, Vinmar acquired Alfa Kimya and Ravago purchased 51% of Turkuvaz Kimya, a leading chemicals distributor in Turkey. Mercan Kimya raised TRY 162.5 mn through IPO on Istanbul BIST exchange and Kimpur received approval on public offering of 28% of its shares in December. With the increasing difficulties for access to raw materials and production costs, the chemicals industry might see further mergers and acquisitions.

Major changes in the competitive landscape (2021)



Innovation

- New chemicals for different application markets (e.g., tech)
- New technologies for energy efficiency



Capacity increase

- Capacity investments for existing facilities
- New facilities for new production lines



Acquisitions

- Acquisition for product portfolio diversity
- Acquisition of sales & distribution companies (downward integration)



IPO

- One Turkish chemicals company offered shares to the public in 2021
- Another PU producer received approval on public offering



Established R&D subsidiary and developed Circular TwAIIn for energy efficiency



Focused on thermal interfaces for 5G and adhesive tech



Established Gebkim Campus for adhesive production as TRY 315 mn investment



New capacity for yarn production with an investment of USD 27,5 mn



Increased its capacity by 30% with 150 k tonnes additional volume



Acquired USK Chemicals, leading CMC producer for USD 63 mn



Acquired Alfa Kimya, textile and cons. chemicals distributor



Acquired 51% of Turkuvaz Kimya, leading chemicals distributor



Purchased remaining shares of the AkzoNobel Boya Sanayi ve Ticaret A.Ş.



Approval on public offering of ~28% of shares in December



Raised TRY 162,5 mn through IPO on BIST

Source: Desktop research, Strategy& analysis

Supporting regulations

On the regulatory front, the Ministry of Commerce took major steps towards achieving the Turkish industry's compliance with EU's Green Deal initiative by preparing the Turkish Green Deal action plan. Moreover, the Ministry of Industry and Technology encouraged the growth of the chemicals industry, by incentivizing 281 chemical products within Technology-focused Industry program. The industry stakeholders are discussing about the contribution of a Chemport to be established in Eastern Thrace, while the Turkish government plans to launch a mega petrochemicals industrial zone that will be jointly managed by Port of Rotterdam and Rönesans Holding in the Adana province.

Government initiatives and incentives

Regulatory initiative and incentives	Regulatory Body	Effective date	Key remarks
 11th Development Plan	Presidency of the Republic of Turkey - Strategy and Budget Presidency	July 2019	<ul style="list-style-type: none"> 11th Development plan aims to establish a «stable and strong» economy and accelerate the structural transformations of Turkish economy going forward High value-added production, decreasing dependency on imports, superior testing and analysis infrastructure, competitive and environmentally friendly products, skilled workforce and orientation to alternative input sources are among key imperatives for the Turkish chemicals industry
 Green Deal Action	Republic of Turkey, Ministry of Trade	August 2021	<ul style="list-style-type: none"> Green Deal Action Plan was developed as a roadmap for Turkey to comply with the EU Green Agreement Especially, carbon border regulations, green and circular economy, green finance, clean, affordable and secure energy supply, sustainable agriculture and combatting climate change might bring new implications for the Turkish chemicals companies
 Technology-Focused Industry Attempt	Ministry of Industry and Technology	September 2019	<ul style="list-style-type: none"> The Technology-Focused Industry Attempt provides several incentives for the development and production of 900+ priority products that require advanced technology & play vital role in trade balance In 2021, 281 chemical products were included in the priority incentive list
 Chemicals Technology Center	Istanbul Chemicals and Products Exporters' Association (IKMIB)	Ongoing	<ul style="list-style-type: none"> Chemicals Technology Center was established by IKMIB to enhance R&D capabilities and decrease external dependency by nurturing testing and analysis processes
 Export Improvement Fund	Turkish Exporters Assembly	January 2022 (Expected)	<ul style="list-style-type: none"> Export improvement fund will enable exporting companies use the resources of the Central Bank of the Republic of Turkey (CBRT) through Eximbank
 Restructuring of Eximbank	Republic of Turkey, Ministry of Trade	2022-2024	<ul style="list-style-type: none"> To improve positioning in foreign trade, the funding opportunities of Eximbank will be re-activated to meet export financing needs of exporting chemicals companies
 Establishment of Chemport	Turkish Chemical Manufacturers Association	Not applicable	<ul style="list-style-type: none"> The industry stakeholders discuss about a potential project, namely Chemport Project in Thrace, to bring several chemicals players with different capabilities together at one location for integration and synergy creation

Source: Desktop research, Strategy& analysis

Creating a sustainable growth strategy

Going forward, Turkish chemicals companies need to assess their growth strategy around the uniqueness of their market positioning and their existing and future capabilities. As Strategy&, we believe each chemicals company needs to claim a unique market position based on their value proposition to their clients; sharpening 3-4 differentiating capabilities in line with market trends to sustain their competitive edge and ensure their right-to-win in the market.



Identify a unique market positioning for your company



Trader/ transactional supplier

Trader for large scale standard petro/ -basic chemicals & polymers executing orders to buy/ sell commodity contracts



Reliable low-cost supplier

Low-cost provider guaranteeing supply availability and lean technical support for standard petro/ -basic chemicals & polymers



Customized products/ services supplier

Provider of tailored products and technical services leveraging deep customer insights, market intelligence and excellent reputation



Solutions innovator

Introducer of new and creative bundled materials and service solutions by fitting together disparate (customer) technologies



Ecosystem integrator

Integrator of differentiating elements of chemicals and customer ecosystems, acting as one-stop solution in the customer value chain and serving fundamental needs

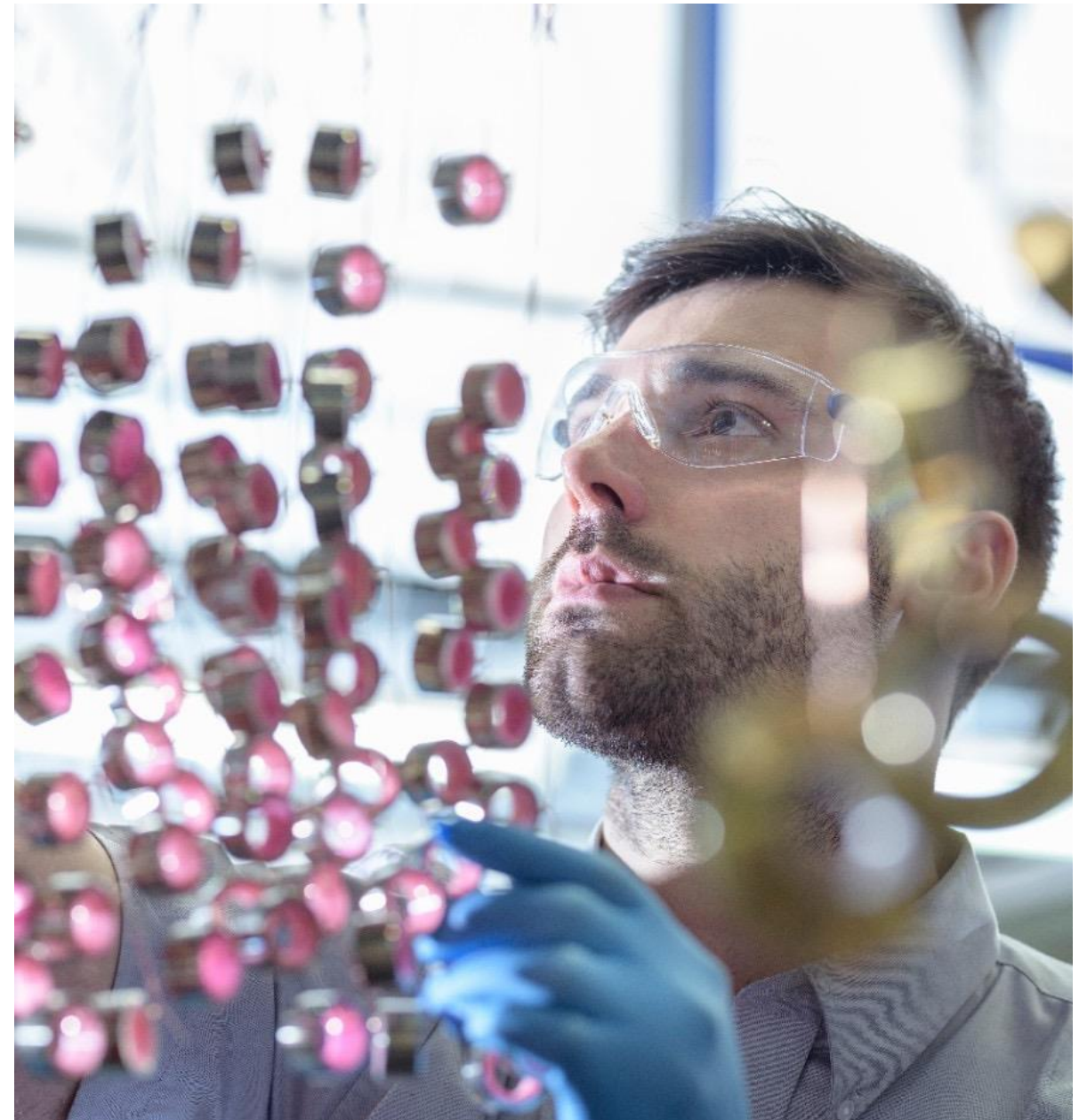
Source: Strategy& analysis

Now, what are the future trends that chemical companies need to develop their capabilities towards? Let's look at them...

As PwC Strategy&, we foresee eight future trends that will shape the future of the global chemicals industry:

-  1 ESG and sustainability disruptions
-  2 Shifting of global economy
-  3 Rising of ecosystem interplay
-  4 Reset of supply chain footprint
-  5 Novel business models
-  6 Disruptive technologies and innovations
-  7 Powerful mergers and acquisitions
-  8 War for talent

A successful chemicals company needs to develop a unique set of differentiating capabilities. Each capability is a combination of processes, technology, organization and skills. When a company focuses their investments and efforts to improve their capabilities towards future trends, they increase the likelihood of future commercial success.



The eight future trends influencing existing and future capabilities

With the disruptions shaping the chemicals industry, the competitive landscape has shifted to a more fragmented structure. For instance, the business model of a trader / transaction supplier is based on buying/selling large scale products. On the other hand, an ecosystem integrator aims to provide end-to-end value chain coverage by developing capabilities to respond to different customer needs. Customer proximity, agile mindset, multi-lateral collaboration, open innovation and quick integration are vital capabilities for becoming a successful ecosystem integrator.

Turkish chemicals companies are hence trying to assess their potential ways-to-play in the market, by answering the critical question of “what is the value we create for our clients?”. This assessment is critical to define the differentiating capabilities, since each way-to-play requires a different capability set to deliver the right value proposition.

Chemical industry future trends



1. ESG and sustainability disruptions

- ESG driven transformation and net zero commitments
- Fast changing business model incl. circular economy
- Value creation beyond “compliance” and “license to operate”



2. Shifting of global economy

- Shift of economic power to emerging players
- Increasing trade conflicts among incumbents
- Emerging deglobalization and national focus



3. Rising of ecosystem interplay

- Increasing importance in ecosystem collaboration
- Building complimentary capability to act as a one-stop-shop
- Reconfiguration of whole value chains with rising new players



4. Reset of supply chain footprint

- Ensuring supply chain resilience
- Securing access to critical materials
- Balancing environmental, social and IP impact



5. Novel business models

- Integrating essential eight of tech to achieve business agility
- Emphasizing customer centricity and needs
- Coherent to company’s authentic identity and value proposition



6. Disruptive technologies and innovations

- Technological advancement for new product development
- Investments to become sustainable and tech driven
- Enabling new ways of operation and governance



7. Powerful mergers and acquisitions

- Sustainability driven portfolio consolidation and diversification
- Fast capability buildup and resource security via synergy realization
- Cross-national engagement of emerging markets players



8. War of talent

- High urgency of upskilling requirements
- Adoption of new way of working in the new normal
- Sustainable development and diversity agenda

Source: Strategy&

ESG and sustainability disruptions

Sustainability is becoming table stakes (industry standard), which calls for a change in the chemical industry. Based on the UN Sustainable Development Goals (SDG) Compact, responsible consumption and sustainable production, developing a resilient structure to climate-related hazards and building a more sustainable and robust infrastructure are the key sustainable development goals for the chemicals industry.

To achieve United Nation's sustainable development goals (SDGs), several leading global chemicals companies have already set ambitious commitments for reducing CO2 emission levels, energy and water usage by 2030 to achieve net zero by 2050. For instance, European players such as BASF, Covestro, Bayer and Middle Eastern players such as SABIC defined their strategy to become carbon neutral by 2030 and 2050. The Turkish chemicals companies working with European and US business partners need to announce their sustainability commitments and focus their efforts to comply with the regulations of these territories.



Novel business models

Novel business models are emerging with digitization for higher accuracy, efficiency and transparency. Companies are integrating the essential technologies (i.e., AI, IoT, 3D printing, robotics, blockchain, drones, VR and AR) into their business processes to achieve digital business agility, fast execution and decision making, hyper-awareness and insights, real-time response, and broader collaboration.

Among several examples, Clariant introduced a self-service distributors web shop for fast and flexible offer placement and accelerated the innovation by using data analytics and high throughput experimentation (HTE) to synthesize new molecules and test new formulations. Another end-consumer focused example came from Neutrogena with the introduction of a skin scanner (Skin360TM) and a personalized micro-3D printed face mask (MaskiDTM). In Turkey, Petkim established a new subsidiary to develop a broad R&D and innovation funnel in 2019 and focused on the development innovative, sustainable and commercial products, catalyzer and digital technologies for all their stakeholders across the value chain. Turkish chemicals companies need to identify the critical digital technologies and the benefits of their use-cases on their commercial success and operational excellence.



Powerful M&As

With the increasing competition, companies also consider inorganic growth opportunities. Geographic expansion, portfolio adjustments and segment consolidation are the main drivers for an inorganic growth, accounting to ~77% of the chemical M&As between 2010-2019 globally. Short-term opportunities arise from unexpected shocks (e.g., pandemic, bankruptcy) while the industry consolidation and diversification remain the source for long-term inorganic growth moves.

According to MergerMarket, nearly 25 M&A transactions took place in the Turkish chemicals market since 2017. 10 of these transactions disclosed a total transaction value of USD 3bn and 2019 had the highest number of 8 M&A transactions. The most remarkable transactions in 2021 included the acquisition of Alfa Kimya by Global Chemplast (Vinmar) in 2021, the acquisition of USK Chemicals by Ak-Kim and the acquisition of 51% shares of Turkuvaz Chemicals, a leading chemicals distributor in Turkey by Ravago, which achieved 4 major acquisitions in Turkish market since 2013.

Critical questions to be answered before a bold move

In summary, in line with their unique way-to-play, leading Turkish chemicals companies need to focus their efforts and investment around eight future trends shaping the global chemicals industry.

They need to answer the following critical questions to determine their growth strategy:

- 1 What is the way-to-play (market position) in the chemicals market?
- 2 Which capabilities do we need to sharpen against the global competition?
- 3 How can we align our product and services portfolio?
- 4 How can we leverage the global chemicals trends for our commercial success?
- 5 What are the strategic options for a sustainable growth in mid to long term?
- 6 Which partnership opportunities are necessary for an ecosystem play?
- 7 Which options should we pursue? How can we realize these options?

After answering these critical questions, Turkish chemical companies will be able to sustain their growth by developing new capabilities or improving their existing capabilities around these eight global chemicals trends so that the Turkish chemicals industry can pave the way towards achieving 2030 targets.

As Strategy& Turkey we have helped numerous chemicals players to answer these strategic questions and develop a future-proof growth strategy with a five-years implementation plan, which included 20+ initiatives targeting at above 30% revenue growth.

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