

Chem PetroChem

December 2019 | Issue 1

Pakistan

**Chemical
is 4th Largest and 3rd Fastest
Growing Sector in International Trade**



Transforming Chemical Industry

National News | **PCMA Activity** | **Inovative Project** | **Country Report**
Clean Energy | 4th AGM 2019 | The Green Surfactant | Thailand Chemical Sector

PCMA
Pakistan Chemical Manufacturers Association
www.pcma.org.pk

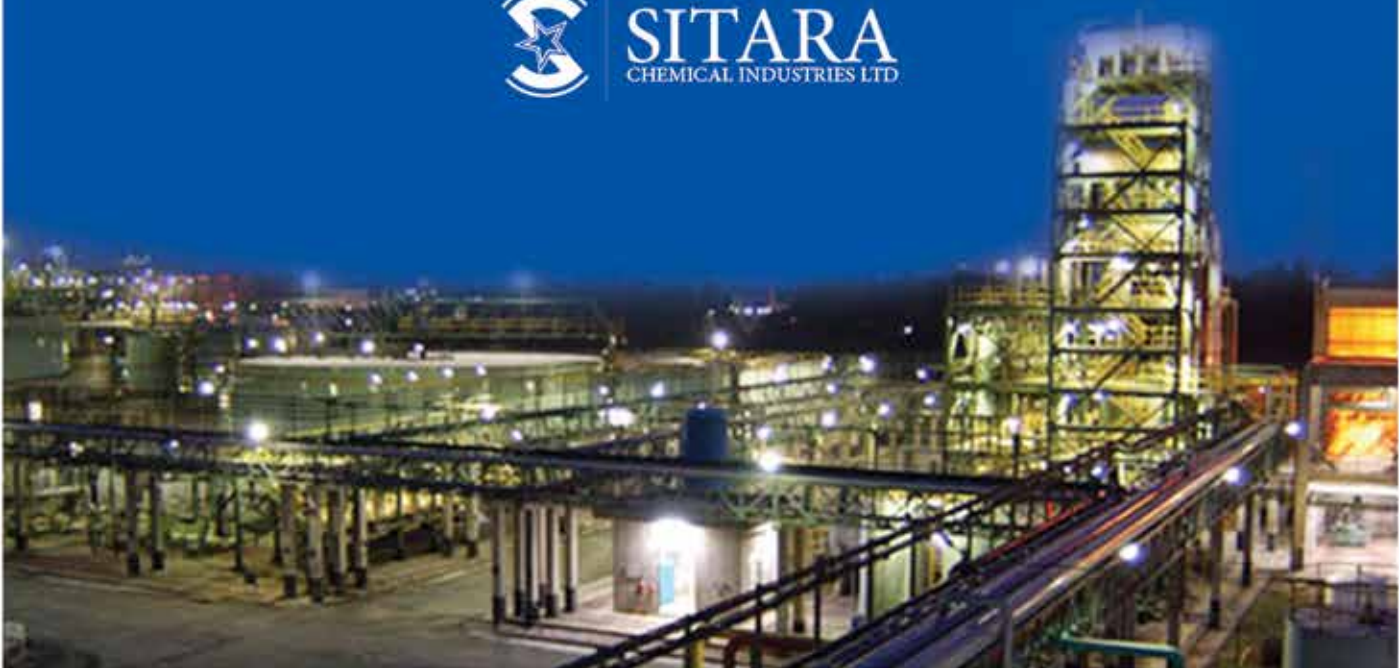


Mian Muhammad Adrees

I
Congratulate
PCMA
for inaugural edition of
MAGAZINE



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Editorial

Towards a Vibrant Chemical Industry

Greetings to all well-wishers of the chemical industry in Pakistan. You have before you the inaugural edition of your monthly magazine in its new format.

Driven by the shared motivation of developing the chemical sector in Pakistan, it has been the assessment of PCMA that a regular industry publication provides an added launch platform towards this end. The coverage of key areas in the publication is intended to provide a forum for reflection, formulation of concepts,

- Organic/Inorganic chemicals
- Petrochemicals, with an overall, massive benefit to national development
- Biotechnology, benefitting a range of industrial and social sectors
- Effluent treatment and utilization, with immediate and long term gains to industry and society
- Waste recycling, giving business, economic and social benefits.

At the same time, attention will continue to be demanded in established sectors such as inorganic chemicals, pharmaceuticals, petroleum refining, and others, with emphasis on enhancing productivity and competitiveness, improving product quality, and raising production volumes in response to growing market demand.

With increasing global economic connectivity, it is well understood by us that our industry is required to be in alignment with the sector worldwide, in terms of its adherence to technical standards and utilization of key areas of expertise, such as:

- R&D in materials/ processes/ products
- Process design, incorporating new advances in knowledge such as in artificial intelligence/ simulation & modeling techniques/ inherent safety considerations
- Detailed engineering approaches in mechanical design/ instrumentation & control, with advanced techniques in remote operation and trouble shooting/ operational safety/ materials properties and applications, with continuous upgrading of analytical tools and methods
- Design/ fabrication/ testing of process equipment, necessitating continued interaction with and support to suppliers of plant by PCMA and its member companies
- Project management, where efficient utilization of modern methods will facilitate efficient execution and commissioning
- Looking forward to the collective and individual actions of PCMA and its member companies, and contributions from personnel with vision and commitment, we strive for a growing and prosperous chemical sector as a vibrant component of our national economy.

Guest Editor: Asghar Abbas
CEng FIChemE (U.K.), PE (P.E.C.)
Technical Consultant

mutual consultation, and detailed analysis, resulting in coordinated action for members and supportive entities, individual and institutional.

There is an increasingly widespread perception among us about the turning point at which the chemical industry in Pakistan is now positioned. Pivotal sectors demanding immediate attention, where the global industry does not wait, and shows no mercy towards the slow and unduly relaxed, await our determined action, including:

Editorial Board

|
Kashif Chaudhry
(Head of Editorial Board)

|
Haroon Ali Khan
Iqbal Kidwai

Creative Head
Husnain Anjum

Lead Researcher
Arsalan Nadeem

|
Contributor
Raja Umair Ali
Zayyab Majid
Muhammad Tayyab

CHAIRMAIN Message



Chemical is the 4th largest sector in international trade and contributes 7% to the global GDP. While, the chemical sector of Pakistan contributes around 3% in export and its share in imports is 16%. PCMA wants to make this sector self-reliance by making strategic roadmap which can create the thousands of new jobs. As, each job in chemical industry creates 7 additional jobs in the economy. This sector can play vital role in the development of forward linked industries e.g. textile, leather, footwear, furniture, automobile, food and beverages. Chemical products are also used in backward linked industries. Such as, surfactants which are used by oil refineries and oil extracting companies. This Magazine will create awareness for readers about chemical industry and spotlight the investment opportunities for entrepreneurs with the prime focus of Import substitution via adopting the approach of quality production, process optimization techniques and the advancements in the existing process technologies. Adoption of new environmental laws make it difficult for chemical manufacturers to keep their production smooth. This magazine will try to provide solutions and technology synchronized methodologies to counter these challenges.

Abrar Ahmed
Chairman, PCMA

Senior Vice CHAIRMAIN Message



Where there are bigger challenges there are certain big treasures of opportunities rightly so Pakistan stands a land of opportunities especially in Chemical sector. As there are only few groups focusing on chemical sector and are growing rapidly. The reason behind this is the companies having Potential are focusing on traditional industrial sector i.e Cotton Spinning, Sugar Industry together with Ethanol projects to consume molasses Within Pakistan, Steel industry, Cement Industry, Edible Oil Refinery, Paper & Packaging industry, Poly Olefin's downstream industry, Cotton weaving / Denim, Textile Dying, Polyester Fiber and Filament Yarns, Surfactant manufacturing industry. There is big gap between domestic demand of Petrochemical and its Downstream products. All this situation depicts that there is a big provision to invest in chemical industry of Pakistan. Keeping in view the vacuum in chemical sector, Pakistan requires the experienced chemical manufacturers to join hands either in joint ventures or by way of technical collaborations to fill this vacuum.

Pervez Tufail
Senior Vice Chairman, PCMA

Post Event Report

held at PC Lahore, on 30th Sep 2019

4th AGM of PCMA started formally with the recitation from the Holy Quran. Pervez Tufail took the honor to recite verses from the Holy Quran.

Taimur Dawood

Chairman PCMA

after welcoming the participants in the AGM said that PCMA formed in 2015 with only 4-5 active initiator members has come up now of a squad of 80 companies. He said that we were well introduced both globally as well as in country. Mentioning the international organizations he said that he along with SG, he also attended GPCA



and had a couple of meetings with international organizations including IHS & ICIS etc at Dubai. He said that we discussed the matters of holding an international forum and creating a road map for Pakistani chemical industry with ICIS while in Dubai to attend GPCA Annual Forum. He said with reference to chemical safety and security, a highly important area, SG has been traveling overseas representing our industry and presenting in these important organizations including OPCE, CWC, Interpol etc. Mentioning the domestic front, Chairman PCMA said that our interaction with the ministries generally and with MoC, FBR particularly has been quite strong. He said that more than one third of our proposed items were included in annual budget and hundreds of items relating to reducing of duties from 3 to 0% were approved. He also mentioned that PCMA was now on Tariff Rationalization committee of NTC as a member. He requested the members to spare time and volunteer for PCMA activities including volunteering to work in working committees. He said that, this has been a weak area during the

year. He said it was crucially important that members took the ownership of PCMA and its activities in order to make this organization more meaningful.

Iqbal Kidwai

SG thrashed out item by item of the progress report and presented the report in greater detail. He said that with scarce staffing in PCMA's Secretariat we were able to accomplish several activities including the progress report that was printed first time in more presentable booklet form. SG started with presenting the last year's AGM minutes and explained the progress achieved on these. Regarding our efforts of having first ever Naphtha Cracker Complex, he said we have not gave it up. He explained the lobbying PCMA had been doing for the project including his personal efforts of placing a Pakistani senior chemical engineer/ professional in the ministry of Petroleum to promote and take forward the MoU that was signed between ARAMCO KSA and GoP for around \$ 20 billion in Petrochemical and Petrochemical Complex (the Cracker). He hoped that after this technical Cell was up and running in the Petroleum ministry, our journey for establishing the Cracker will start on



solid footings. SG mentioned about the PCMA International Forum that was planned last year but it could not be implemented. He however said that PCMA was not in any rush to hold the event, we rather would like to get prepared, chalked out its objectives and outcomes before launching the event. He emphasized on the need and the members agreed, of tagging the event with a big name. He gave example of GPCA that out-sourced its first forum to IHS & in the later

years the event was won by ICIS and currently ICIS was holding the event. GPCA's forum is a hallmark of quality & elegance; more than 2000 delegates of world fame participate each year. SG mentioned the SME facilitation of PUM Netherlands & Senior Expert Services Germany and informed that 7 PCMA member companies have signed up application for requisitioning the technical services of these two organizations. He said that the services of these organizations



are available on nominal costs. Mentioning the segments of Pakistan Chemical industry, SG emphasized on the need of having a road map and Chemical Vision for Pakistani Chemical industry. He informed that negotiations with ICIS were in advance stage in that respect. He said that ICIS had sent us their initial thoughts with scope of work on the vision 2040 (Annex 1) and shared the same in later stage of his presentation with audience. He informed that ICIS has asked for \$ 120, 000 for the assignment that may come down to \$ 100,000 after negotiations. SG requested the members to pool up the money while concurrently PCMA will send a request to GoP for financial assistance. Jay Kumar, CEO Reliance present in the meeting acknowledging the excellent work of PCMA generally and in tariff rationalization particularly, announced Rs. 1 million contributions from his company. This gesture was highly applauded by the members. SG walked through the audience on the rest of the activities implemented during the year, mentioned in the booklet. He added that at the end of the day activities done on self-help basis would be more sustainable than done thru external help. Moreover this spirit of our members will have positive demonstration effect for members and stakeholders.

Official Results of PCMA Elections 2019-20 were announced by PCMA Election Commission consisted of Imran Qureshi (Descon Oxychem), Abdul Qayoom (Choromatex) & Khalid Majeed (could not join). According to these following members were elected un-opposed as PCMA Executive Committee members:

Zafir Hussain

Archroma Pakistan Limited

Arshaduddin Ahmed

ICI Pakistan Limited

Shahid Azeem

Leader AG

Pervez Tufail

Tufail Chemical Industries Ltd

Mansoor Haider

Rudolf Pakistan Private Limited

Khalid Majeed

Sitara Chemical Ind Ltd

Imran Ghafoor

Sitara Peroxide

Abrar Ahmed

SRC

Humaira Shazia

DIC Pakistan Ltd (Women Seat)

Nabeela Intisar

Waleed Tech (Women Seat)

While the existing carried forward EC Members are as follows:

Moazzam Rasheed

Bin Rasheed Colors & Chemicals

Pervaiz Khan

Agrow Ltd.

Zafar Qidwai

Berger Paints Pakistan Ltd.

Faisal Akhtar

BASF Pakistan Pvt Ltd

Muhammad Anees Arain

Multi Resins

Harris Aizad Sheikh

Harris Silicones & Glass Pvt Ltd

Jawad Amin

Zafa Pharmaceuticals Laboratories Pvt Ltd

Khalid Qazi

Nimir Resins Ltd

The above total Eighteen (18) EC members, that included Two Women Seats, were declared the new EC of PCMA for the year 2019-20.

Official Results of PCMA Office Bearers were also announced by the Election Commission as elected un-opposed as following:

Chairman:



Abrar Ahmad
SRC

Senior Vice Chairman:



Pervez F. Tufail
Tufail Chemicals & Surfactants
Vice Chairman



Zafar Qidwai
Berger Paints

Under heavy applause & clapping bouquets were presented to newly elected Office Bearers

PCMA Shields were presented to Out-going Office Bearers for their services by the in-coming Office

Bearers.

Brief speeches were delivered by the out-going Office Bearers. Moazzam Rasheed, out-going VC acknowledged the PCMA Secretariat's work and said that under trying conditions due to lack of proper staffing, SG spearheaded the activities very well and with confidence both at domestic as well as at international front. He wished all the best to the new Office Bearers and extended his full cooperation in the work ahead.

Out-going Sr VC, Faisal Akhter of BASF could not make it to the AGM due to his official commitments. BASF was however represented through its Lahore based focal person Nadeem Chughtai.

Out-going Chairman, Taimur Dawood, thanked the members for their cooperation during the year. He however urged the members to spare time for active participation of the activities of PCMA to strengthen it. He also acknowledged the work of PCMA Secretariat and said that despite their scarcity in human resource, SG accomplished several activities during the year by involving the office bearers including him (the chairman). He wished best of luck and offered his full support to the newly elected Team in their future endeavors.

Speeches of In-coming Office Bearers were delivered by Zafar Qidwai, VC, Pervez Tufail, Sr VC & Abrar Ahmad, Chairman.

Zafar Qidwai, for the benefit of new members present in the AGM, introduced himself and said that he was involved with chemical industry for the last around 30 years. Starting his journey from Hoist Pakistan,





worked in UAE based companies and currently working for Berger Paints. He acknowledged that during last year maximum activities were performed, predominantly among these were achievements in tariff rationalization. He congratulated Taimur Dawood for his invaluable assistance resulting in excellent facilitation to PCMA members in tariff rationalization. He also mentioned his experience of interacting with regulatory bodies, understanding of tariff related matters, and offered his services for any facilitation for PCMA.

Pervez Tufail, Sr VC applauding the achievements of last year, mentioned that global chemical industry was of \$ 5.4 trillion and Pakistan's share in this is embarrassingly low. Mentioning of several names of chemicals, he indicated the tremendous opportunity available in different segments of chemical industry in Pakistan. He

urged the members to join hands for new investments and growth of the industry to contribute in the economy of Pakistan. Offering his full physical & financial support, he requested the members to think beyond self and let's work for Pakistan.

Abrar Ahmad, the new Chairman delivered a presentation showing the statistics of world chemical manufacturing. He said that Chemical industry is 4th largest and 3rd fastest growing industry of the world. He compared and cross examined the achievements of countries like Thailand, India, China, Vietnam etc in chemical sector in brief period of time. He excited the participants through his motivational speech and passion to work for the growth of chemical industry of Pakistan thereby the country's growth. He mentioned two approaches to have first ever Naphtha Cracker in Pakistan viz, Bottom up and Top Down.

However, he preferred the Top Down but suggested to work concurrently on Bottom up as well. He discussed the Feed Stock options available for Pakistan to have the Cracker as a feasible option. Mentioning the key driver chemicals e.g., Ethylene, Methane, Propylene etc and their domestic demand and international suppliers, he said the Cracker very much makes a business sense and we must lobby to have one as soon as possible. He acknowledged the excellent work done by out-going Team and said that I along with new Team would endeavor to click the high benchmark set forth by our predecessors. At the end the new Chairman thanked the participants for their patience and urged the outgoing office bearers and all the members for their continued cooperation in collective pursuits to build Pakistan. With vote of thanks, the participants were invited to join in the dinner.



Asia

China and Russia to build the biggest petrochemical project in the world, valued at US \$ 13 billion, to be located on the Baltic coast. Feedstock: Russian natural gas. Products: Ethylene 2.8 million tons, PE matching capacity with 6 lines.



Linde opens two air separation units with combined capacity of 29,000 Nm³/h in Taixing chemical park in China



China plans to end illegal hazardous chemical dumping by 2025. (Reuters October 21, 2019)



Arkema announced that they will increase capacity for its Kynar polyvinylidene fluoride (PVDF) polymer at Changshu, China, by approximately 50%.



PhosAgro (Moscow), a leading producer of phosphate-based fertilizers, in 2017, two years ahead of schedule, completed a five-year investment program, which raised production capacity from 5.9 million metric tons/year (MMt/y) to 9 MMt/y last year.



Ethane cracker Qatar/ Chevron: 1.9 m tons/ year, with 2 HDPE units, completion 2025.

Tianqi Lithium (Chengdu, China) said that it has signed a contract with Northvolt (Stockholm, Sweden) to supply lithium hydroxide to manufacture batteries for electric vehicles (EVs). Tianqi Lithium will supply lithium hydroxide from 2020 to 2025.



W.R. Grace & Co. (Grace; Columbia, Maryland) has licensed its Unipol process technology to Bharat Petroleum Co. Ltd. (BPCL; Mumbai) for use in a planned 450,000-metric tons/year polypropylene (PP) plant in Rasayani, India.



Europe

LyondellBasell will build a small-scale pilot facility at its Ferrara, Italy, site to demonstrate the company's molecular recycling technology.



Total says it has shut down several units at the company's Feyzin refinery and petrochemical complex in

France and continues to operate its 240,000-metric tons/year naphtha cracker at an unspecified reduced rate, due to ongoing strike action by trade unions.



Novozymes says it now expects its full-year 2019 sales to be flat to down by 2%, compared with a forecast of 1–3% growth previously. The company's

2018 sales totaled about 14.4 billion Danish krone (\$2.21 billion). Full-year 2019 net profit is expected to be flat to down by 5%



Shell chemicals sales volumes in the third quarter of 2019 are expected to be slightly down from the comparative period last year, says the company in its latest quarterly update. Chemicals

sales volumes are forecast to be between 3.9 and 4.0 million metric tons for the third quarter.



The European Commission's Circular Plastics Alliance, a group of key industry stakeholders covering the complete plastics value chain, has

signed and adopted a declaration outlining key milestones for its vision of achieving the use of 10 million metric tons/year (MMt/y) of recycled plastic by 2025.



EuroChem Group (Zug, Switzerland) said today that it has concluded a

multiyear agreement with American Plant Food (APF; Houston) for the supply of fertilizers to its blending business. EuroChem will supply mixed shipments of fertilizers to APF. (including urea, phosphate, and potash)



EUROCHEM
MINERAL AND CHEMICAL COMPANY

Rest of the world

Dow complex in Louisiana being retrofitted to increase polypropylene capacity, with feedstock changes, as a result of more ethane use.



Company performance reports in last quarter: Decrease in profits for some big players such as Dow/ BASF, improved performance for some others such as Air Liquide/ Axalta. No dominant trends were seen, other than provision for environment regulation/ internal restructuring.



Braskem says a \$675-million, 450,000-metric tons/year polypropylene (PP) production facility that it is building in La Porte, Texas, is 75% mechanically complete, and construction is on schedule to be finished by the first quarter of 2020.



Brenntag says it has agreed to acquire Quimisa SA (Brusque, Brazil), a distributor of industrial and specialty chemicals in Brazil. Terms of the transaction, including purchase price, were not disclosed. Quimisa generated sales of about €60.8 million (\$66.7 million) in 2018.



Mosaic (Tampa, Florida) says it will temporarily curtail production at its potash mine in Esterhazy, Saskatchewan, Canada, bringing total curtailments at the facility to up to 600,000 metric tons. The measure could reduce fourth quarter adjusted EBITDA by up to \$150 million, says the company.



American Vanguard says it expects full-year 2019 net sales to total \$480 million, up by 6% year on year (YOY) but down from prior guidance of \$500 million due to weak domestic demand in the US. Third-quarter net sales are expected to be about \$123 million, up about 10% YOY.



Teijin has announced that its subsidiary Continental Structural

Plastics (CSP; Auburn Hills, Michigan), an automotive composite supplier, broke ground for a composite component plant at Seguin, Texas. The planned \$70-million facility is expected to be operational by 2021.



Piedmont Lithium Limited (Perth, Australia) says it is accelerating development of its proposed lithium hydroxide chemical plant in North Carolina, US, targeting production by late 2022



Genesis Energy (Houston, Texas) says it will invest \$300 million to expand its Granger production facility at Green River, Wyoming, to increase soda ash production by approximately 750,000 metric tons/year. Construction work is scheduled to start before the end of this year.



Dow says it will partner with UPM Biofuels (Helsinki, Finland) on commercialization on plastics for the packaging industry made from biobased renewable feedstock. Dow is integrating wood-based UPM BioVerno renewable naphtha—a key raw material used to develop plastics

Engro



Engro Polymer and Chemicals Limited will invest \$22 million in a new production line along with an upgrade of its PVC plant. This plan includes the investment of \$6 million to produce linear alkylbenzene sulfonic acid (LABSA) with the annual production capacity of 24,000 tons. The company has targeted to complete the project by the fourth quarter of 2021.

Employers Federation of Pakistan Awarded Engro polymer Best HR practices 2018 in Large National Companies category.

ICI Pakistan



ICI Pakistan Ltd, Unibrands (Private) Ltd & Morinaga Milk Industry Co. Ltd has built first-ever Morinaga manufacturing facility in Pakistan.

At a project cost of PKR 5.1 billion, A new, state-of-the-art manufacturing plant of NutriCo Morinaga (Private) Limited, was inaugurated on September 20, 2019 in Sheikhpura by The Governor of Punjab Chaudhry Mohammad Sarwar. The joint venture includes the distribution, marketing and sales of the locally manufactured Morinaga infant/growing up formulae. The 12,000 tonnes per annum facility, which adheres to international standards, is aimed at ensuring that children are provided with safe, clean and hygienic formula at competitive prices. In addition to creating jobs, this joint venture is focused on technology transfer of infant nutrition

manufacturing in Pakistan. ICI Pakistan Limited's equity stake in the joint venture is 51%. The combined equity stake of Morinaga Milk Industry Co. Ltd and Unibrands (Private) Ltd is 49%.

ICI Pakistan Limited Announces Results for the Quarter ended September 30, 2019

The Board of Directors of ICI Pakistan Limited is pleased to announce the Company's financial results for the quarter ended September 30, 2019. Financial Highlights · On a consolidated basis, including the results of the Company's subsidiaries, ICI Pakistan PowerGen Limited, Cirin Pharmaceuticals (Private) Limited and NutriCo Morinaga (Private) Limited, net turnover for the period under review increased by 9% to PKR 14,516 million compared to the same period last year (SPLY), owing to improved performance across all Businesses. · The consolidated operating result at PKR 1,639 million is higher by 59% in comparison to the SPLY, on the back of improved margins in Polyester, Soda Ash and Chemicals & Agri Sciences Businesses. Further, improvement in operating results of the Life Sciences Business was on the back of favourable operational efficiencies and improved sales mix. · On a consolidated basis, Profit After Tax (PAT) for the period under review at PKR 836 million is 53% higher than the SPLY. These results are driven by improved operational performance, along with exchange gain in comparison to the exchange loss during the SPLY, partially offset by higher finance cost during the current year due to higher interest rates. On a standalone basis, PAT at PKR 926 million and EPS at PKR 10.03 are higher by 41% compared to the SPLY.

Businesses achieve new milestones; future outlook remains positive During the quarter under review, the Businesses achieved new milestones that will position the Company to maintain its growth momentum in line with its strategic aspirations. · Backed by a conducive environment for exports,

the Polyester Business strengthened its base in the export market by introducing specialised variants into USA and Turkey. Further, the Soda Ash Business has been able to establish a stronghold in Bangladesh, while also making in-roads in the African market. The Masterbatches Division has achieved the milestone of 100 tonnes sales. The Division has been successful in market penetration through product development and extended focus on customer acquisition. · The construction of a state-of-the-art NutriCo Morinaga manufacturing facility was completed and the Plant was inaugurated in September 2019. The 12,000 tonnes per annum facility, which adheres to international standards, is aimed at ensuring that infants are provided with safe, clean and hygienic formula at competitive prices. Commercial operations at the facility are expected to commence by the end of November 2019.

CHT Pakistan



CHT won the Responsible Care award 2019 for medium sized companies

Customer Impact is one of our seven competencies at CHT Pakistan. For us, Customer Impact is about bringing the customer into everything we do, seeing our products & services through the customers' eyes and realizing that what impact our work quality would make on the internal & external customers. To reinforce this spirit, we have organized a series of four in-house half-day workshops for our employees in October 2019, facilitated by Muhammad Tahir (Manager Talent & OD).



Berger Paints

Berger Paints decided to join hands with Roshni Helpline and



Samar Minallah Khan to create a unique campaign called "Truck Art Child Finder" to help in find missing children.

Every year, over 3,000 children go missing in Pakistan. Berger is using the form of truck art to locate these children. They decided to replace the portrait of famous personalities on the back of trucks with portraits of missing children, turning these trucks into moving billboards that travel across the country. In its 1st phase, Berger provided paint for 20 trucks to be painted and used for this noble activity.

Berger Paints joined hands with Karachi management intended to effectuate the beautification of Karachi city.

Karachi management intended to restore its' Zoo. Provincial government and Metropolitan Commissioner Dr Syed Saif Ur Rehman have been asked to complete the rehabilitation and improvement work under the Annual Developmental Program (ADP) before June 30.

Berger Paints joined hands with KMC to effectuate the beautification of Karachi city. For this project, Karachi Zoological Garden's outer walls, with total area of 20,000 sq. feet (approximately 157 wall panels), were brought to life by painting wildlife murals on them.

Lotte Chemicals



Lotte Chemical earns Rs1.764 billion in 2nd quarter

Lotte Chemical Pakistan Limited on Monday announced a profit after tax of up to Rs1.764 billion for the quarter ended June 30, 2019, which translates into earning per share (EPS) of Rs1.17. The company said its net sales for 2QCY19 increased 28 percent year-on-year to Rs1.7066 billion, chiefly on account of a 26 percent devaluation

of rupee against the US dollar. The gross margins also increased by 2.37% year-on-year to 15 percent during the second quarter, which the company said was due to 14 percent year-on-year increase in international PTA (purified terephthalic) margins (average \$200/ton) coupled with rupee depreciation.

LOTTE Chemicals wins the BEST CORPORATE REPORT AWARD 2017

The Best Corporate & Sustainability Report Award 2017 Ceremony was held on 07th August 2018, at a local hotel in Karachi.

Lotte proudly won the fourth position in the Chemicals and Pharmaceuticals category. Lotte has been winning the Best Corporate Report Award since the last couple of years for providing comprehensive explanation of its business performance. With its effective and transparent reporting, Lotte has been able to maintain accountability to its shareholders and instill a sense of continuous improvement in its employees.

Rudolf



RUDOLF's strong engagement for sustainable developments was awarded in 2016 with the Responsible Care price "25 YEARS OF RESPONSIBLE CARE – OUR BEST PROJECT" of VCI (Association of the Chemical Industry) for the development of a trendsetting product for the fluorine free hydrophobic finishes. Backwards integration, development know-how, market requirements and technical expertise makes RUDOLF GmbH an experienced and competent partner for the customers of the textile finishing industry. RUDOLF offers products that comply with the OEKO-TEX Standard and GOTS, is committed to ZDHC with its own MRS-list and is a blue sign system partner."

BASF



BASF collaborates with government to improve safety in locust control in Sindh and Punjab

Partnership with the Department of Plant Protection to create safety awareness among locust control teams



Education for pesticide sprayers on the importance of personal protective equipment in pest control

Karachi, Pakistan — BASF is collaborated with the Department of Plant Protection (DPP) and the Department of Agriculture Extension to increase safety awareness of locust control in Sindh and Punjab provinces. BASF recently conducted a series of workshops in the locust-hit areas to share knowledge and experience with local agricultural communities, helping them understand the importance of safety in pest control. "Safety is at the heart of our operations. As a leading producer of agricultural solutions, we are committed to sustainable agricultural development by providing expertise and technical support to the farming communities. The safety awareness campaign provides farmers and sprayers with knowledge and tools to implement safe agricultural practices," said Faisal Akhtar, Managing Director, BASF Pakistan.



BASF also distributed 300 Personal Protective Equipment (PPEs) safety kits for pesticide applicators and navigators working in the locust-affected areas. The PPE kits consist of a pair of nitrile gloves, three

particulate filter masks and a set of protective eyewear as recommended in the material safety data sheets of the pesticides being used by DPP. These items are accompanied by an easy-to-understand picture-based instruction leaflet.

Sindh and Punjab provinces are currently battling a massive swarm of desert locusts which is threatening the country's main crops: cotton, mango, banana and vegetables. Pakistan is an agriculture reliant economy with the sector being one of the major employers, providing jobs for tens of thousands across the country.

"We have been combatting this voracious pest in Balochistan, Sindh and Punjab provinces. The operation involves the use of highly toxic pesticides that can adversely affect the health of the field staff. We are thankful to have BASF helping us in creating awareness and providing personal protective kits to our teams. The support will help create safe farming practices in the country," said Muhammad Tariq Khan, Technical Director, Department of Plant Protection.

A team from BASF conducted safety awareness sessions in the district offices of major affected cities, such as Hyderabad, Mirpurkhas, Benazeerabad Shaeed, Khairpur, Sukkur, Saalehpat, Naran Desert, Sadiqabad and Bahawalpur. About BASF's Agricultural Solutions division

With a rapidly growing population, the world is increasingly dependent on our ability to develop and maintain sustainable agriculture and healthy environments. Working with farmers, agricultural professionals, pest management experts and others, it is our role to help make this possible. That's why we invest in a strong R&D pipeline and broad portfolio, including seeds and traits, chemical and biological crop protection, soil management, plant health, pest control and digital farming. With expert teams in the lab, field, office and in production, we connect innovative thinking and down-to-earth action to create real world ideas that work – for farmers, society and the planet. In 2018, our division generated sales of €6.2 billion. For more information, please visit www.agriculture.basf.com or any of our social media channels.

About BASF in Pakistan

BASF has been present in Pakistan for five decades. BASF offers innovative solutions to Pakistan's most important business sectors. BASF maintains offices in Karachi, Lahore, Islamabad and Sialkot, and operates a production site for construction solutions in Karachi. In 2018, BASF posted sales of approximately €102 million to customers in Pakistan and had 68 employees as of the end of the year. Further information on BASF in Pakistan is available on the Internet at www.basf.com/pk.

Agricultural Solutions team, BASF Pakistan distributing Personal Protective Equipment (PPE) kits among the pesticide control team working in the affected areas

BASF collaborates with government to improve safety in locust control in Sindh and Punjab Partnership with the Department of Plant Protection to create safety awareness among locust control teams

Education for pesticide sprayers on the importance of personal protective equipment in pest control

Ittihad Chemicals



ITTEHAD CHEMICALS LIMITED

Ittihad Life Sciences will be Pakistan's first state of the art BSL-III animal vaccine manufacturing facility. Ittihad chemicals Limited (ICL on Karachi Stock Exchange) has partnered with Invitro Vogue Pvt. Ltd, University of Veterinary and Animal Sciences, University of Agriculture Faisalabad, and University of Karachi to envisage to the country's first veterinary vaccine contract manufacturing organization (CMO) based on Good Manufacturing Practice (GMP). The Vaccine Manufacturing facility of Ittihad Life Sciences will be Pakistan's first state of the art BSL-III animal vaccine manufacturing facility.

SRC



Sustainable international quality standard chemicals and clean energy is primary goal of SRC. SRC is following environment friendly policies to keep the Pakistan healthy & green. SRC installed solar water heating and electric system for the benefit of environment and natural resources. Solar electric power system will reduce

30,000 kg carbon credit per year.

Nimir



AEROSOLS are becoming the mass market demand for wide range of consumer and industrial products emerging from personal care to house hold needs and for various industrial requirements. This rapidly growing demand is creating an opportunity for various consumer goods and industrial manufacturers to cater the market demand in form of different aerosol products. Pakistan market is also having a huge potential of aerosols products but due to not having a reliable and efficient filling plant, companies were urged to import it from different countries resulting into paying high cost and import duties, high quantities, facing import hassles and most importantly having the forex loss.

Nimir Group is always keen to grab the challenging opportunities and hence decided to avail this prospective opportunity by over US\$ 4 million on setting up Pakistan's largest state of the art, fully automatic, green field & high speed aerosol filling plant, complying all international quality, safety & environmental standards i.e. BAMA & NFPA. Plant is capable for producing a wide range of non-gas and gas based aerosols like body sprays, deodorants, hair sprays, shaving foams, insecticides, air fresheners, house hold products/cleaners, spray paints, metal & automobile cleaners. This investment is in aligning GOP initiatives to strengthen the Pakistan's economy by minimizing the imports and to boost the GDP through industrialization.

Nimir Aerosol Plant will also be generating various economic activities i.e.

- Creating employment opportunities
 - Saving precious forex by providing local manufacturing facility instead of imports
 - Resourcing local industry to supply raw materials i.e. Ethanol, LPG and Packing materials
 - Providing a reliable source for MNCs and large national companies to initiate the local production in Pakistan without any import hassles
- Eventually, it will lay a foundation to localize and add more products to be supplied in Pakistani market with international quality standards but "Made in Pakistan".

PCMA'S SUCCESSSES

Tariff & Taxation

- PCMA was part of the Tariff Rationalization Committee which finalized the Tariff Policy and has recently approved by the cabinet.
- PCMA prepared comprehensive documents and presented to the Government on tariff rationalization and to give sufficient protection to local chemicals industry. PCMA has been successful in securing such tariff protection in most of the cases.
- PCMA has remained in continuous consultation with Ministry of Commerce while finalizing second phase of Free Trade Agreement with China and ensured to protect the interest of chemicals industry.
- PCMA has been successful in removing regulatory duty on input raw materials for the chemicals industry.
- PCMA has played its key role in ensuring reduction in duty to zero on hundreds of feedstock used in chemicals industry.
- PCMA remove the anomaly in DTRE scheme regarding imposing anti-dumping duty. In the recent budget, the anomaly has been removed and anti-dumping duty is now chargeable on all imports irrespective who is importing.
- PCMA is currently in negotiation with FBR for providing level playing field to chemicals industry by imposing sales tax on imports by Export Oriented Units. Currently there is no sales tax on imports and 17% GST while they buy the same material from local industry.



OTHERS

- Signed MOUs with NUST and had meetings with LUMS, UMT, UET and other institutions for industry-academia relationship
- Became part of Responsible Care. Member companies are gradually moving towards adoption of RC.
- PCMA became part of international forum on chemicals security initiatives. SG is official member of the international team attending the seminars and conferences on the subject within and outside Pakistan.
- PCMA conducted Demand driven Trainings for members.
- PCMA helped members in getting approval of annual quota and issuance of annual NOCs by NCD



Our Strength



Leather Chemicals

- SRC (Pvt) Ltd
- Gulf Chemicals (Pvt.) Ltd.
- Mian Chemical Industries.
- Beta Chemical (Pvt.) Ltd.
- Pulcra Chemical Pakistan (Pvt.) Ltd.
- Yutian Chemicals Pakistan (Pvt.) Ltd.
- BASF Chemicals & Polymers Pakistan (Pvt.) Ltd.



Textile Chemicals

- Alka (Pvt.) Ltd.
- Pulcra Chemical Pakistan (Pvt.) Ltd.
- Archroma Pakistan Ltd.
- Beta Chemical (Pvt.) Ltd.
- Rudolf Pakistan (Pvt.) Ltd.
- CHT Pakistan (Pvt.) Ltd.
- Sultan Chemical Industries.
- Waleed Tech (Pvt.) Ltd
- Nimir Resins Ltd.
- Multi Resins
- Lotte Chemical Pakistan Ltd.
- Power Chemical Industries Ltd.
- Chromatex Chemicals
- Emcon Chemicals (Pvt.) Ltd.
- BASF Chemicals & Polymers Pakistan (Pvt.) Ltd.



Paints, Inks, Coatings, Dyes, Pigments & Solvents

- Berger Paints Pakistan Ltd.
- Diamond Paints
- Brighto Paints
- DIC Pakistan Ltd.
- Bin Rasheed Colors & Chemical Mfg. Co. (Pvt.) Ltd.
- Sultan Chemical Industries.
- Intra-Keck (Pvt.) Ltd.

- BASF Chemicals & Polymers Pakistan (Pvt.) Ltd.
- SRC (Pvt) Ltd
- Gulf Chemicals (Pvt.) Ltd.
- Nimir Resins Ltd.
- Sultan Chemical Industries.
- Waleed Tech (Pvt.) Ltd
- PureChem (Pvt.) Ltd.
- Hi Tech Inks
- Faras Combine Marketing Co. (Pvt.) Ltd.
- Power Chemical Industries Ltd.
- Faiz Chemical Industries (Pvt.) Ltd.
- Chaman Chemical Industries
- Premier Industries Chemical Manufacturing (Pvt.) Ltd.
- AQSA Industries



Pharmaceuticals & Active Pharmaceutical Ingredients:

- Pharmagen Ltd.
- ZAFSA Pharmaceutical Laboratories (Pvt.) Ltd.
- Shafi Gluco-chem (Pvt.) Ltd.



Pesticides & Insecticides:

- SunCrop Group
- Leader AG
- Nimir Resins Ltd.
- Sayban International
- Agrow Ltd.
- BASF Chemicals & Polymers Pakistan (Pvt.) Ltd.



Adhesives & Resins:

- SRC (Pvt) Ltd
- Intra-Keck (Pvt.) Ltd.
- Nimir Resins Ltd.
- Multi Resins

- Power Chemical Industries Ltd.
- Shalimar Resins Industries (Pvt.) Ltd.



Petrochemicals / Intermediates:

- Nimir Chemicals Pakistan Ltd.
- ATS Synthetic (Pvt.) Ltd.
- Nimir Resins Ltd.
- Engro Polymer & Chemical Ltd.
- Ittehad Chemicals Ltd.
- Lotte Chemical Pakistan Ltd.
- Qaiser LG Petrochemical (Pvt.) Ltd.
- Dynea Pakistan Ltd.
- Faras Combine Marketing Co. (Pvt.) Ltd.
- BASF Chemicals & Polymers Pakistan (Pvt.) Ltd.
- Relaxo (Pvt.) Ltd.



Chlor Alkali, Alkali & Salts Products

- Nimir Industrial Chemicals Ltd.
- Olympia Chemicals Ltd.
- ICI Pakistan Ltd.
- Sitara Chemical Industries. Ltd.
- Ittehad Chemicals Ltd.
- Tufail chemicals & surfactants (Pvt.) Ltd.
- Chaman Chemical Industries
- Akbari Chemicals



Industrial Gases

- Sitara Chemical Industries. Ltd.
- Ghani Gases



Oleo Chemical Products

- Nimir Industrial Chemicals Ltd.
- Gamalux oleochemicals (pvt) Ltd.



Acids

- Crescent Chemical Ltd.
- Tufail Chemical Industries Ltd.
- Sitara Chemical Industries. Ltd.
- Akbari Chemicals.
- Ittehad Chemicals Ltd.
- Engro Polymer & Chemical Ltd.
- Faras Combine Marketing Co. (Pvt.) Ltd.



Hydrogen Peroxide

- Sitara Peroxide Ltd.
- Descon Oxychem Ltd.
- Fazal Chemical (Pvt.) Ltd.



Minerals & Minerals Processing

- Phoenix Chemical (Pvt.) Ltd.
- Shaheen Grinding Mills (Pvt.) Ltd.



Water Treatment Chemicals

- Radiant Chemical (Pvt.) Ltd.
- Chemical Kinetics



Silicone Sealants

- Harris Silicones & Glass (Pvt.) Ltd.



Construction Chemicals

- Power Chemical Industries Ltd.



Soap & Cosmetics

- Nimir Industrial Chemicals Ltd.
- Azhar Corporation.
- Paracha Chemical Industries.
- Gamalux oleochemicals (pvt) Ltd.
- CosChem (Pvt.) Ltd.



Paper Chemicals

- Nimir Resins Ltd.
- Archroma Pakistan.

The Green Surfactants

Engr. Muhammad Kamran
B.E Chemical, MS Engg Environmental
Process Engineer
SRC Pvt. Ltd.

Surfactants are compounds that reduce surface tension between two liquids, between a gas and a liquid, or between a liquid and a solid. Bio-surfactants (Green Surfactants) performs same task and are more environmentally friendly.

Bio surfactants are the surface-active biomolecules produced by microorganisms with a wide range of applications. The market

size of "Green Surfactants" was estimated at \$2.2 Billion or 442,330 tons in 2018 and expected to reach \$2.3 Billion or 462,000 Tons by 2020 with an expected annual growth rate of 4.3%. Europe is the largest market for Bio-surfactants consuming more than 50% of global production¹. In 2018, Bio-surfactants estimated market share was 5% of the global surfactant market.

SOLUTIONS TOWARDS ENVIRONMENTAL CONCERNS

Synthetic surfactants are being used in the global petrochemical industry for years at the different stages of oil processing. These are mainly produced from non-biodegradable ingredients which cause a toxic effect to the ecosystem. These compounds bio-accumulate, the production

process and side-products are hazardous to the environment. With increasing concerns of environmental law enforcing agencies about safe disposal of compounds, the use of surfactants from microbial origin is the most suitable solution towards environmental concerns².



The unique and distinct properties of bio surfactants when compared to their chemically synthesized counterparts and broad substrate availability make them suitable for commercial applications. The distinctive features of microbial surfactants are related to their surface activity, tolerance to pH, temperature and ionic strength, biodegradability, low toxicity, emulsifying and demulsifying ability and antimicrobial activity³.

BIO SURFACTANTS ARE CURRENTLY BEING MANUFACTURED FROM AGRICULTURAL RESOURCES AND BOTANICAL WASTES

High production cost of Bio-surfactants was the major constrain for this sector. With the improved technology, these compounds are currently being manufactured from agricultural resources and botanical wastes which have reduced the cost significantly [1]. The commercial production of bio-surfactant involves culturing of microbe in liquid media, i.e. , strains of bacillus are used for the production of inoculum.[4] Mostly the culturing media use agro-based products or commodities with high glycerol content.[4] For example, Vinasse (A thick black-reddish liquid), is a waste product of sugar industry which is disposed by incineration (burning). It is a good cost-effective raw material



for production of bio-surfactants. There are many other potential raw materials available with high carbon source for the production of bio surfactants⁵.

- Bio-surfactants can be used as emulsifiers as well as demulsifiers, wetting agents, foaming agents, spreading agents, functional food ingredients and detergents. The interfacial surface tension reducing ability of bio surfactants gives them an important role in oil recovery and bioremediation of heavy crude oil.

- Bio surfactants such as Cyclic Lipopeptide (CLP) are stable over a wide pH range (7.0-12.0) and heating them at high temperature does not result in any loss of their surface-active property [6]. They are ecofriendly and natural substitutes of chemical surfactants in laundry detergents.

- Lipopeptide biosurfactants produced by several bacteria exhibit insecticidal activity against fruit fly *Drosophila melanogaster* and hence are promising for use as bio pesticide⁷.

- Several bio surfactants have strong antibacterial, antifungal and antiviral activity; they play the role of anti-adhesive agents to pathogens (anything



that can produce disease) which makes them useful for treating many diseases. They are also used as therapeutic and probiotic agent. A good example is the bio surfactant produced by marine *B. circulans* that had a potent antimicrobial activity against Gram positive and Gram negative pathogens and Semi pathogenic microbial strains including MDR strain⁸.

- Bio surfactants have been found to inhibit the adhesion of pathogenic organisms to solid surfaces or to infection⁸.

- Bio surfactants have been used for various food processing

applications, usually playing a role as food formulation ingredient and anti-adhesive agents. As food formulation ingredient they promote the formation and stabilization of emulsion due to their ability to decrease the surface and interfacial tension. They are also used to control the agglomeration of fat globules, stabilize aerated systems, improve texture and shelf -life of starch-containing products, modify rheological properties of wheat dough and improve consistency and texture of fat based products⁹.

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INTRODUCING AEROSOLS

NIMIR

PAKISTAN'S LARGEST STATE OF THE ART FULLY AUTOMATIC AEROSOL FILLING PLANT

- Following all international quality and NFPA safety standards
- Ability to handle Non-Gas and Gas based variants in all sizes of cans
- Commercial production in Q1'2020



RANGE OF AEROSOL PRODUCTS

- BODY SPRAYS
- DEODORANTS
- ANTIPERSPIRANTS
- AIR FRESHENERS
- INSECTICIDES
- SHAVING FOAMS
- HAIR SPRAYS
- HOME CLEANERS
- STARCH SPRAYS
- SPRAY PAINTS
- AUTOMOBILE CLEANERS
- METAL CLEANERS

FULL RANGE OF NIMIR'S PRODUCTS

1. OLEO CHEMICALS

- SOAP NOODLES
- STEARIC ACID
- GLYCERINE
- DISTILLED FATTY ACID

2. CHLOR ALKALI

- CAUSTIC SODA
- SODIUM CHLORIDE
- HYDROCHLORIC ACID

3. COATING

- RESINS
- EMULSIONS
- UPR

4. TEXTILE CHEMICALS

- BINDERS
- AUXILIARIES
- OPTICAL BRIGHTENERS

5. PAPER

- INNER SIZING (AKD)
- SURFACE SIZING AGENTS
- FORTIFIED ROSIN
- OPTICAL BRIGHTENERS

6. ADHESIVES

7. SOLVENTS & MONOMERS

8. AEROSOLS *

9. TOILET SOAP BARS*

10. LIQUID FORMULATIONS*

* Third party contract manufacturing

PAKISTAN'S ACTIVE PHARMACEUTICAL INGREDIENTS (APIs) SECTOR

CURRENT STATUS/OPPORTUNITIES/CHALLENGES/WAY FORWARD

The Market size of Pharmaceutical (finished medicine) in Pakistan is about Rs. 468 billion growing at around 10% p.a. 80% medicines are produced locally by around 600 manufacturing units duly licensed by Drug Regulatory Authority of Pakistan (DRAP) while around 20% are imported in finished form. Pakistan's pharmaceutical exports are around US\$ 200 million p.a. (as mentioned in table)

The Active Pharmaceutical Ingredients (API) are the essential raw material of the pharmaceutical Industry. APIs are used to produce finished medicine (tables, capsules etc.). Currently, 30 APIs are being manufactured mostly by about 6/7 local API producers. These APIs meet international quality standards and are being supplied to multinational and large pharma companies. As shown in Table, around 10% APIs are being locally produced and remaining 90% being imported. This means that domestic API manufacturers can target a Pakistani market of around Rs. 80 billion p.a.

Categories	US \$ Billion	
	Pakistan	India
Pharma exports	0.2	17
API exports	--	3.5
Drug exports	0.2	13.5
APIs locally produced	0.1	12
APIs imported	0.9	3.5
Local APIs as % of local pharma consumption	10%	70%
Local pharma market size	3	19

Level Playing field should be given to local API producers

China & India are major sources of APIs import for Pakistan. Chinese and Indian Manufacturers are enjoying significant cost advantage over Pakistan due to their economies of scale, large market size, local availability of raw materials and advance technology. In order to compete and grow, Pakistan's API industry needs to be protected with reasonable Tariff protection. Currently, government imposes 15%-20% import duty along with Sale Tax on 17 locally manufactured API's. If government impose 10%-15% Regulatory Duty (RD) on new APIs as and when they are locally produced, 50% of domestic API demand can be fulfilled through local production. Government medicine tenders' SOPs should give preference to those medicines which are being produced through these APIs. Import duty on raw materials of API should not exceed from 3% along with duty/sales tax free import of plant and machinery (as its already covered in National Drug Policy) Local API industry not only can fulfill 50% of domestic demand but also has a sizeable export potential. This industry can save millions of dollars in foreign exchange.

Earlier mentioned Comparison table highlights that there is huge potential lies in Pharma & API export.

We must consider below mentioned actions to realize the potential of API export

1. Import quota for any controlled substances must be allocated to licensed API manufacturers at the earliest.
2. DRAP should award GMP Certification to API manufacturing plants/products for 3 years instead of 1 year. As, this a fundamental condition for exports.
3. To support APIs export, DRAP should grant export approval within 3 days of submission of requisite application by API manufacturers.
4. Trade and Development Authority (TDAP) should provide financial and logistical support to API producers to achieve regulatory approvals/certifications in targeted foreign markets and to encourage their participation in relevant API related Trade Fairs.
5. Reimbursement by Government of duties/taxes/additional energy and financial costs etc. (compared with international rates) levied on locally produced APIs which are exported to ensure their competitiveness in international markets.
6. APIs manufacturing should be placed in the "High Export Potential" category meriting funding support from financial institutions along with fair taxation levies.

By:
Pervaiz Hussain Sufi
CEO Pharmagen Limited



2020

TRAINING COURSES



A Practical Introduction to the Biocidal Products Regulation

18 December 2019
Austria



Guidance for Identifying Endocrine Disrupting Chemicals

13 February 2020
Germany



Introduction and understanding of physical chemical properties of biocidal products

19 December 2019 Vienna,
Austria



The science behind the (extended) safety data sheet

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United Kingdom



Two days of intensive training with a comprehensive overview of ERA and HHRA

12-13 February 2020
Germany



Toxicology for the Non-Toxicologist

5 March 2020 London,
United Kingdom

2020

CONFERENCE



Food Contact Regulations Europe 2020

11-12 February
2020 Brussels,
Belgium



Biocides Europe 2019

13-14 December
2019 Vienna,
Austria

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February, 2020

IMPROVE EFFICIENCY AND REDUCE COSTS IN CHEMICAL PLANTS

Tue, Dec 17 at 11:00 AM EST, 1 hour

Process control engineers and analyzer technicians are increasingly challenged by plant management to guarantee consistent, quality throughput and lower costs – often with fewer and sometimes less-experienced resources. This is especially evident within chemical processing companies for whom globalization continues to exert tremendous downward price pressure.

In this webinar, learn how digital sample systems enable you to leverage the three pillars of a successful digital program – data, analysis, and tools – so you can increase operational effectiveness, optimize asset availability, get the most out of limited human resources and cut costs.

You'll discover how connected digital sample systems technologies differ from traditional sample systems and why digital connectivity supports more cost-effective predictive maintenance practices.

Plus, for a real-world perspective, LyondellBasell will share insights into what prompted them to implement a digital sampling system and how this new technology has impacted its operations.

Hear from these experts:



Tracy Dye

Global Process GC
Product Line Manager
ABB



Paul Barnard, Ph.D.

Consulting Analyzer Engineer
LyondellBasell

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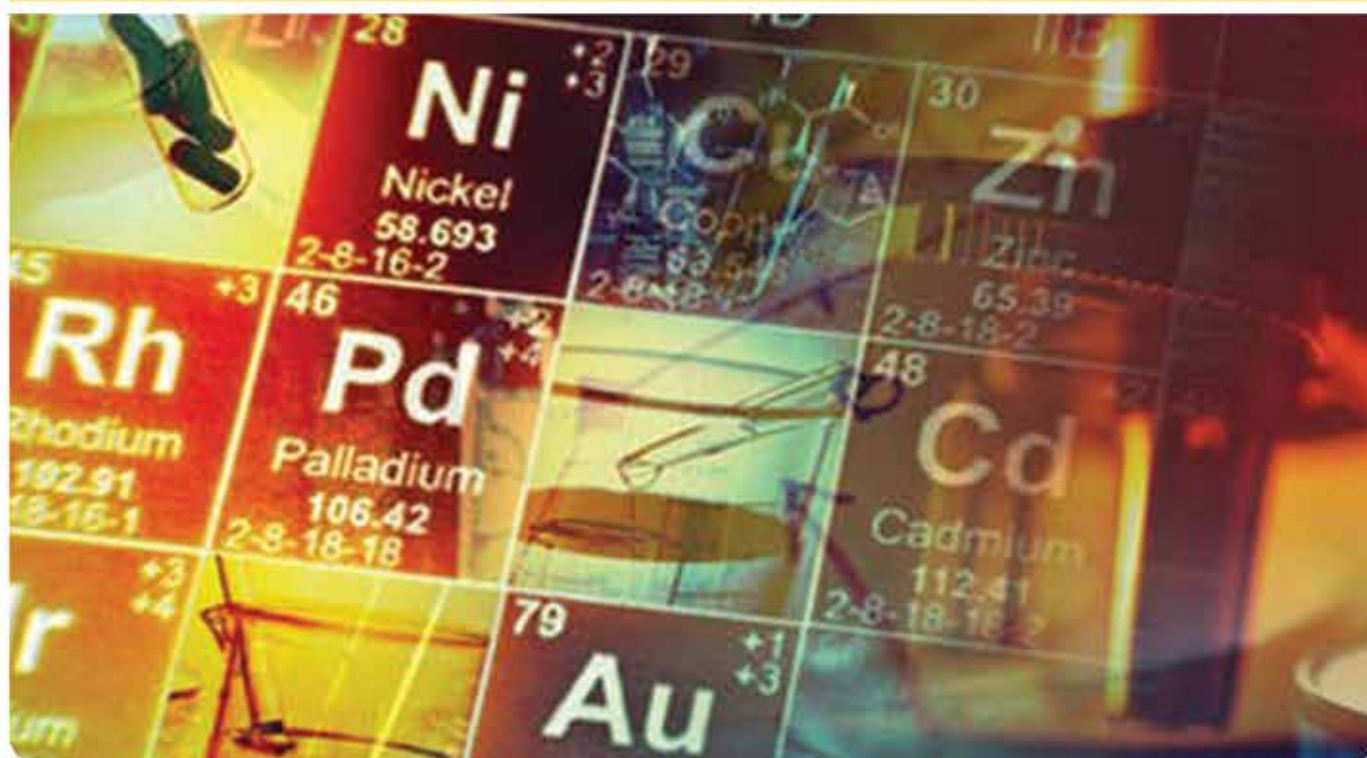
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Chemistry and the Economy: 2020 Outlook

The current decade is coming to a close, what will the next one bring? Conditions around the globe continue to affect supply chains, while shifts in consumer preferences and demographics are occurring to create new paradigms. Join Paul Hodges of International eChem and Bill Carroll of Carroll Applied Science for their bi-annual predictions about the chemical markets that are displaying a lethal mix of politics, economics, and trade.



What You Will Learn

- An examination of the contrast between the downbeat outlook with the chemical market and the upbeat stock market
- Will the exceptional growth in share gas polyethylene continue, or will it be overtaken with recycled feed stocks
- How the international expansion of pharmaceutical supply chains is affecting their stability and what can be predicted about their safety and security

Webinar Details

- Friday, December 20, 2019 at 2-3pm ET
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Join Today

How Artificial Intelligence is

Transforming Chemical Industry

Artificial intelligence (AI) is continuously improving our consumption habits and production methods. According to the estimate of Cisco, around 50 billion devices worldwide will be connected to the Internet by 2020. Perhaps 33% of them will be computers, smartphones, laptops, and TVs. The remaining 67% will be sensors and actuators that monitor, control and optimize our world, and intelligent devices that were newly invented. This will not transform global chemical industry, but it can change the outlook of global economy.

Chemicals companies have increased reliability, reduced costs, and created greater operational efficiencies in production and supply chain management by investing billions of dollars in automation and information technology. It seems that frontier of value creation in the chemicals industry can be reached by realizing the metamorphic potential of the digital revolution.

According to PwC Breakthrough Innovation and Growth survey of nearly 1,800 C-suite executives including some 50 chemicals industrial participants from 12 countries. Ninety-five percent of respondents said they foresaw digital technology innovation at their company and 50 percent expected radical advances.

According to PwC's observation, Companies are making digital moves in four areas:

Improvement on production efficiencies.

Nearly all the equipment in the manufacture, storage, and transportation of chemicals can be redesigned with digital technologies. For example, pumps and compressors can have sensors that signal when a problem or failure is imminent, preventing



By 2020, an estimated 50 billion devices around the world will be connected to the Internet.

costly outages. Currently, utility companies are investing in smart grids while oil and gas companies are designing digital oil fields. There are many ways the chemicals industry leaders should adopt these intelligent devices to achieve the next generation of performance and agility.

Customer interface.

Customer-facing staff who can access massive flows of data can become business partners with customers rather than a salesperson. Agribusiness has been an early adopter. For example, in 2013 Monsanto acquired Climate Corporation, a software and data science firm. Chemicals companies

will work with farmers to integrate cheap sensors that constantly monitor soil conditions, satellite imagery, and market price data to create customized, soil-specific solutions for maximizing crop yield

customized parts to meet dynamic customer requirements with less time and cost. This technology has the potential to change the infrastructure for plastic parts molding and fabrication without

Improvement of Organizational structure.

Many internal processes of chemicals companies, such as HR and supply chain planning are scattered across different geographies which cause the reduction in efficiency. To counter this pattern, companies are using collaboration platforms to drive more seamless employee and customer experiences. However, the potential for organizational transformation goes well beyond better collaboration. The ubiquitous availability of data can devolve decision rights to local regions and creating new forms of organization that will make chemicals companies nimbler, leaner, and more exciting workplaces for a new generation of employees. Integrating and centralizing data can enable companies to apply predictive analytics to smooth supply chains, boost the speed, responsiveness, and profitability of R&D programs. The environment of uncertain GDP growth and shifting market dynamics present challenges and opportunities for chemicals companies. Companies who will improve their business model, embrace digitalization and focus on emerging markets can secure their market share in years to come.



and the globe will be connected to the Internet.

and profitability.

Research and Development.

Digital technologies are creating structural changes in the sectors that chemicals industry serves, such as automotive and electronics. The flexibility of 3D printing enables manufacturers to make

significant capital investment. 3D printing will also require new materials with unique or modified properties. Collectively, these shifts will favor chemicals companies that can innovate quickly, draw accurate customer insights, and manage complexity.



VISIONARY OF THE MONTH



Mr. Haroon Ali Khan (CHT Pakistan)

Question: Please give brief overview of yourself, with 03 key accomplishments in your life, and your organization along with the detail of the companies / Groups, working under your umbrella.

Answer: Presently, I am leading CHT Pakistan (Private) Limited as the Managing Director. This role since 2006, has been an amazing journey of learning and success. In this period, we have established CHT as a well-recognized and top ranked brand in the country for textile chemicals and auxiliaries.

We have transformed the organization altogether which is very rare in the corporate sector. Building and adhering to a values based culture successfully, developing a very strong & competent team which is always eager to deliver results even under highly uncertain circumstances are the top achievements. These accomplishments have a direct impact on the bottom line and, Alhamdulillah, now CHT Pakistan is the 5th largest subsidiary among CHT Group on the basis of Group Performance Contribution.

Question: Please share the influence of a leading person or event, in chemical industry, that shaped you for who you are today.

Answer: CHT Group has the biggest influence on me, I love to work for this organization. This is an organization that inspires you every day in exciting ways that strengthens our commitment & courage to outperform challenges and place us ahead of the competition. I got my professional trainings done at CHT Germany. This exposure revealed a new world altogether and transformed me into a different person with high-end professionalism and leading edge c-suite competencies.

Question: What are the key strengths of your organization? Also, share the arguments / fact

& figures for describing those particular areas as strength.

Answer: I would place Sustainability on top of the list of our key organizational strengths. We continuously strive to keep this world a safe place to live for everyone. We are focused on resource conservation and minimizing environmental impacts of our products. Based on the Sustainability approach, our products are designed to reduce water and energy consumption in manufacturing processes. CHT Group has been the Bluesign® supporter since 2008 and also a member of ZDHC. Overall products range of CHT Group has been analyzed and 836 products are registered/approved in accordance with ZDHC's "Manufacturing Restricted Substance List".

Next is Innovation. Innovation approach is part of our lives, we are keen to improve our products and services every day. In Pakistan, we are mainly serving the textile sector. Through our innovative solutions customized to customer needs, we are playing an important role to support textile sector to be competitive at the international level.

Another key strength is our organizational culture. A culture where diversity is respected, uniqueness of every employee is recognized, individual talents & contributions are appreciated and team achievements are celebrated. These all features make our organization a great-place-to-work and employees put us as their first choice employer. We are just 14 years old organization in Pakistan and today, over 30% of our employees are those working with CHT Pakistan for over ten years minimum.

Our strengths are well recognized by our customers too. Since 2006, CHT Pakistan's product range has expanded from 70 to 500+ products and we have been serving over 700 customer companies directly and through distributors which endorse their trust on us.

Question: Please share your thoughts on how the lives of Human Beings are being affected by the Chemical Industry, particularly in terms of environment?

Answer: Chemicals are a main raw material in every industry and there is no question about value-addition to the manufactured products through or with chemicals. Chemicals, especially in food, textile and pharmaceutical sectors are directly contributing to the quality-of-living of Human Beings.

Chemical industry has been positively impacting overall life on earth. However, there are certain challenges attached as well. In order to reduce adverse impacts on health and environment, Chemical Industry has to take all necessary precautions and measures. The cost of such initiatives should be taken as an investment for our Social Responsibility and long run service to humanity. Prominent examples are installation of ETPs and conservation of natural resources through extensive R&D and process improvement.

Question: What key change you want to bring in your organization in coming 5 years and how would you facilitate that change to take place?

Answer: I would like to see CHT Pakistan taking a role from domestic to regional player with emphasis on core chemistry and backward integration. For this we would work more closely with Head Office at Germany for R&D, product development, and exploring exports potentials in different countries.

To facilitate this change to happen, I would focus on developing key competencies in-house which are critical to serve customers in the region. Fostering the culture of change, enhancing the level of empowerment among employees for innovation & creativity would also be my areas of concentration.

Question: Please share your experience of having observed any other country's Chemical Industry. Also, please specify 03 key factors / practices that impressed you the most.

Answer: Germany has the largest chemical industry in Europe. Their well-trained workforce, tremendous research and operational excellence are key factors behind their success. These strengths differentiate them from the rest of the world. They have developed competence centers and have a structure for public-private partnership to promote R&D. They spend over 4 billion EUR annually on R&D in chemical industry, that's why their name is synonymous with cutting-edge innovation and superior quality worldwide.

Question: What is your definition of Leadership? What are your strong areas as a leader and what leadership traits you practice to keep your team in high spirits?

Answer: I believe that Leaders are enablers. Our role is to create an environment where desired competencies & strengths, in line with future needs, could be nurtured and practiced. You may not always have a team of extraordinary people with you, but as an effective leader, you can produce extraordinary results with ordinary people.

Having a clear direction about organizational future that where you are heading to, keeping company core values at the heart of your decision making, facilitating a culture for innovation, managing complexity & making proactive decisions, communicating in a manner that you convert personal vision among all employees, for the business into a shared-vision, delegating to empower people and creating lasting professional relationships, more than just inspiring people, are key leadership traits that I follow, and last but not the least, practicing self-accountability is absolutely critical to establish your credibility as a leader to drive the organization into future.

Question: Do you think 4th Industrial Revolution will affect our industry? If yes, how are you and your organization gearing up to meet the potential needs?

Answer: 4th Industrial Revolution, also known as the Cyber revolution is touching our lives rapidly and the future shape of our lives (as individuals), societies (the way we interact) and organizations (the way we work) would be much more different and agile than today. This revolution is not something driven or imposed by someone, it is basically a reflection of our desires and choices.

CEOs have a role to play to transform their people and reshape their organizations in this digital era. We have to focus on automation, digitization and setting new performance standards that's why I purposefully emphasize on innovation.

We have to prepare our people and organizations for tomorrow proactively otherwise the pace-of-innovation will not let the unprepared survive. The future is for artificial intelligence, renewable energy, autonomous vehicles and much more we call the Internet of Things.

If we prepare & navigate wisely, align technology with vision and do forward planning inevitable change, our businesses will be able to sustain and grow further. Those who prepare now and develop agile ways of addressing transformation will



likely lead the future and benefit from their proactive actions.

Question: Are there any plans of expansion for your organization? If yes, please describe briefly.

Answer: We have certain strategic targets to expand our business in terms of revenue and structure. We want to modernize our production facility, enhance the level of automation in our business processes and establish a state of the art Competence Center for textile chemicals and auxiliaries. This center would expand our R&D and extend the technical support to our Sales and Production teams as well as customers.

Question: In your opinion, what are the potential growth sectors in our

industry?

Answer: Pakistan has immense potential in all segments of Chemicals. Our imports of petrochemicals, agricultural chemicals and pharmaceuticals indicate the true potential we have. According to the 2018-2019 Economic Survey of Pakistan, the collective imports bill of pharmaceutical and chemicals other than fertilizer and petrochemical was around PKR 727 billion while we exported only PKR 111 billion in the same categories together.

The chemical industry in Pakistan needs to shift its focus from Imports to Exports. We should capitalize on the opportunities where we can reduce imports and produce value-added products and Speciality chemicals along with raw materials which are inputs for other industries in the country. By reducing import bills, we can contribute to national economy by preserving foreign reserves and reducing trade deficit.

The second area of focus is producing raw materials which has linkage with downstream industries including textiles, food & beverages, home & personal care, vegetable oil, fertilizer, pesticides etc. Our approach towards self-reliance, to the maximum possible level, will contribute to the GDP and we will see an economic boom in the country.

Question: How PCMA, as a platform, could contribute towards creating better opportunities for our industry?

Answer: PCMA has a vital and diversified role. PCMA is already making good efforts, however, more steps are required to bring different stakeholders together like government, manufacturers, investors and universities.

There are many dimensions in which PCMA can contribute significantly. One important dimension is PCMA-Government linkage. PCMA has a role to convince government to see Chemical Industry as the best place to increase Foreign Direct Investment in country. PCMA is already making efforts for the Cracker Complex. Only one Cracker Complex can transform the picture of whole chemical industry in Pakistan. India has 7 and China 26 Cracker Complex and many in progress. These numbers are enough to justify that why are they among top global chemical industries and chemical exporters.

Industry-Academia linkage is another area of attention. PCMA should take steps to strengthen the link between chemical industry and universities. This will bring innovation and the utilization of youth which has fresh minds and great ideas to enhance the chemical industry resulting in qualitative and quantitative perfection in the chemical products.

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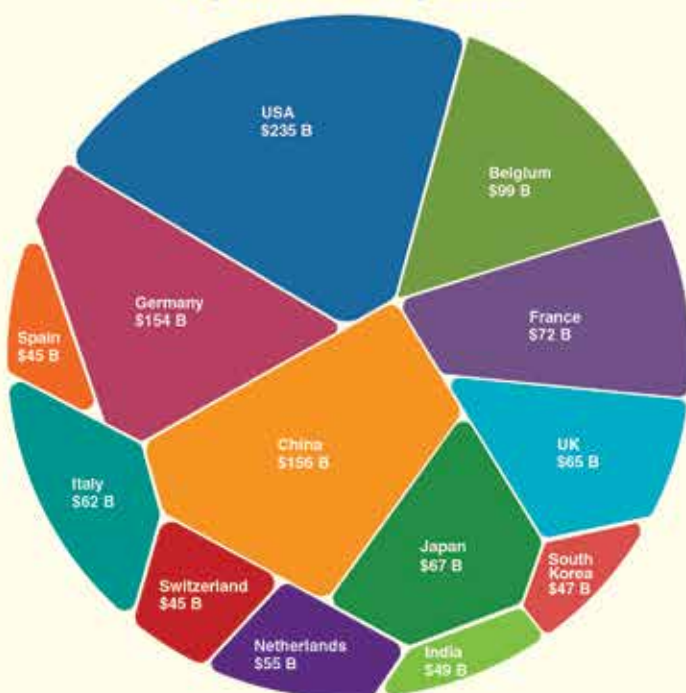
Leading sectors in International Trade



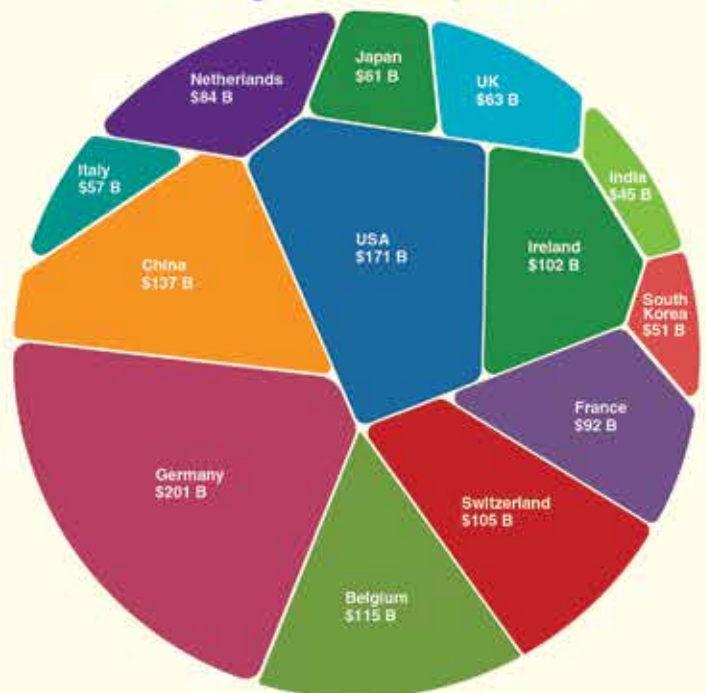
Chemical is the 4th Largest and 3rd fastest growing sector in international Trade. According to cefic, the global size of chemical industry is \$5.7 Trillion of which 67% is consumed domestically and remaining 33% is traded in international market

Classification Based on: World Integrated Trade Solution.

Top Chemical Importers



Leading Chemical Exporters



These Graphs include only top chemical importers and exporters

Data Source: ITC Trade Map, 2018

Pakistan's Chemical imports in 2018

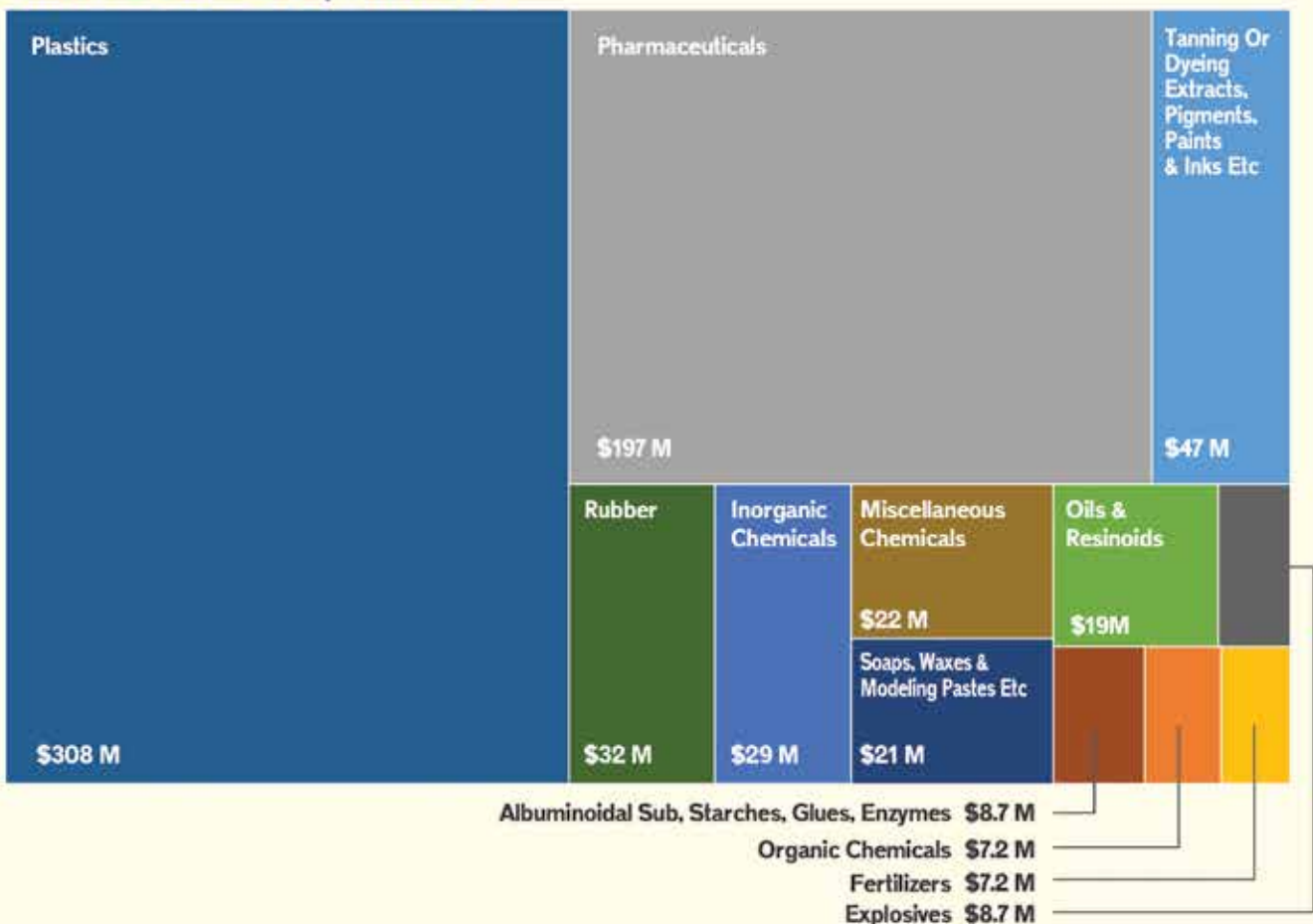
Total: \$10 Billion



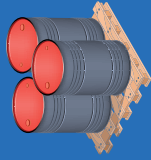
Data Source: ITC Trade Map, 2018

Pakistan's Chemical exports in 2018

Total: \$706 Million



Data Source: ITC Trade Map, 2018



Top Chemical Imports of Pakistan 2018 (Chapter Wise)

28 Inorganic Chemicals

Total: \$529 Million

HS Code	Product label	Import in USD Million	CAGR 2014-18 Value	Import in Tons	CAGR 2014-18 QTY.	USD/Ton	World's Import in USD Million	Share in Pakistan's Import (%)
280920	Phosphoric acid	265.7	1.9%	220,030	5.1%	1,207.5	4,670	2.3%
280300	Carbon	23.9	18.1%	18,485	18.9%	1,292.2	5,671	1.8%
283329	Sulphates (excluding of sodium, magnesium, aluminium, nickel, copper, barium and mercury)	15.5	0.7%	6,963	13.0%	2,228.8	1,550	13.4%
283311	Disodium sulphate	14.5	0.9%	101,752	-1.5%	143.0	706	0.4%
283010	Sodium sulphides	13.5	8.1%	11,883	16.9%	1,138.3	316	6.1%

29 Organic Chemicals

Total: \$2,759 Million

HS Code	Product label	Import in USD Million	CAGR 2014-18 Value	Import in Tons	CAGR 2014-18 QTY.	USD/Ton	World's Import in USD Million	Share in Pakistan's Import (%)
290243	P-Xylene	365.5	1.1%	210,598	-5.0%	1,735.6	23,799	5.4%
290531	Ethylene glycol "ethanediol"	333.8	13.3%	195,591	3.8%	1,706.6	15,092	0.5%
291736	Terephthalic acid and its salts	171.7	70.9%	33,732	66.8%	5,090.2	6,068	-4.0%
292690	Nitrile-function compounds	112.8	34.3%	12,858	23.2%	8,774.1	2,886	1.8%
292910	Isoyanates	99.4	30.2%	29,852	20.1%	3,329.3	7,783	7.8%
290121	Ethylene	89.7	-4.2%	60,958	-2.4%	1,472.0	9,452	3.0%
293499	Nucleic acids and their salts; heterocyclic compounds	82.9	11.5%	1,913	10.8%	43,331.9	15,494	-4.7%
294190	Antibiotics	76.9	4.1%	722	20.5%	1,065.7	8,802	-0.7%
290250	Styrene	73.7	-5.0%	52,290	-1.6%	1,410.3	12,882	-6.6%
290511	Methanol "methyl alcohol"	61.5	5.4%	86,816	-4.6%	708.9	13,045	2.4%

30 Pharmaceuticals

Total: \$878 Million

HS Code	Product label	Import in USD Million	CAGR 2014-18 Value	Import in Tons	CAGR 2014-18 QTY.	USD/Ton	World's Import in USD Million	Share in Pakistan's Import (%)
300490	Medicaments for therapeutic or prophylactic purposes.	432.8	11.5%	-	-	-	299,924	1.2%
300220	Vaccines for human medicine	247.6	-3.8%	3,160	-14.3%	78,354.4	28,439	-0.7%
300230	Vaccines for veterinary medicine	55.5	15.4%	772	3.3%	71,866.6	4,439	4.7%
300431	Medicaments containing insulin but not antibiotics.	47.2	17.6%	884	5.2%	53,354.1	9,263	-7.1%
300420	Medicaments containing antibiotics.	23.9	-1.9%	824	-0.6%	29,012.1	16,392	0.0%

31 Fertilisers

Total: \$992 Million

HS Code	Product label	Import in USD Million	CAGR 2014-18 Value	Import in Tons	CAGR 2014-18 QTY.	USD/Ton	World's Import in USD Million	Share in Pakistan's Import (%)
310530	DAP	842.3	15.2%	1,928,895	17.0%	436.7	7,548	2.3%
310210	Urea	41.8	-34.1%	109,056	-34.3%	383.3	13,659	-5.1%
310430	Potassium sulphate	29.0	34.7%	63,008	46.1%	459.9	933	-4.4%
310540	Monoammonium phosphate	22.3	198.8%	39,294	196.3%	566.3	4,861	2.0%
310221	Ammonium sulphate	12.6	21.3%	39028	3.8%	322.5	2209	0.1%

32 Tanning and Dye										Total: \$519 Million
HS Code	Product label	Import in USD Million	CAGR 2014-18 Value	Import in Tons	CAGR 2014-18 QTY.	USD/Ton	World's Import in USD Million	CAGR 2014-18 World Value	Share in Pakistan's Import (%)	
320416	Synthetic organic reactive dyes	84.6	-1.4%	-	-	-	1,718	-2.3%	India 59, Korea 20, Turkey 4,5	
320611	Pigments and preparations based on titanium dioxide	82.8	11.2%	30,132	8.3%	2,747.5	10,168	6.6%	China 64, Germany 9, Australia 7	
320415	Synthetic organic vat dyes	48.5	12.2%	10,443	22.3%	46.4	615	6.5%	China 57, Germany 30, Belgium 4	
321519	Printing ink, (excluding black ink)	36.6	30.2%	8,784	39.9%	4,162.6	6,275	-2.1%	Switzerland 44, China 17, Netherlands 11	
320417	Synthetic organic pigments	30.8	4.8%	5,483	9.4%	5,617.4	5,667	-0.3%	China 38, India 36, Korea 8	
320411	Synthetic organic disperse dyes	27.8	3.7%	7,345	-0.9%	3,786.7	1,679	4.4%	India 42, China 37, Korea 10	
320419	Synthetic organic colouring matter; preparations of the kind used for colouring any materials or for the production of prepared colours	21.6	15.6%	-	-	-	1,769	5.1%	China 86, India 5.5, Spain 5	
320210	Synthetic organic tanning substances	18.1	0.2%	11,840	2.2%	1,525.3	456	-3.8%	Germany 26, India 20, Italy 15	
320740	Glass frit and other glass in the form of powder, granules or flakes	18.0	15.6%	33,210	29.1%	541.4	1,124	2.6%	Spain 57, China 47	
320412	Synthetic organic acid dyes	17.6	-0.5%	3,955	3.6%	4,447.8	1,040	-4.7%	India 62, China 10, Thailand 9	
320890	Paints and varnishes based on synthetic polymers or chemically modified natural polymers, volatile organic solvents, containing > 50 solvent by weight	17.5	3.6%	-	-	-	7,636	1.6%	China 27, Taipei Chinese 15, UAE 12	
33 Essential oils and resinoids; perfumery, cosmetic or toilet preparations										Total: \$201 Million
HS Code	Product label	Import in USD Million	CAGR 2014-18 Value	Import in Tons	CAGR 2014-18 QTY.	USD/Ton	World's Import in USD Million	CAGR 2014-18 World Value	Share in Pakistan's Import (%)	
330290	Mixtures of odoriferous substances (excluding food or drink industries)	63.0	13.3%	4,892	14.3%	12,881.4	8,689	3.2%	India 48, Singapore 15, Netherlands 9	
330210	Mixtures of odoriferous substances used for the manufacture of beverages	48.0	14.8%	2,266	6.9%	21,172.6	17,078	3.9%	Ireland 25, Switzerland 21, Singapore 10	
330499	Preparations for Beauty and skin care, incl. sunscreen or suntan preparations	16.4	6.8%	6,438	8.7%	2,554.8	43,619	11.9%	Indonesia 11, India 10, UAE 9	
330510	Shampoos	14.3	-17.8%	7,936	-14.8%	1,806.5	5,758	2.8%		
330590	Preparations for use on the hair (excluding shampoos, preparations for permanent waving or straightening and hair lacquers)	11.5	11.3%	4,177	5.9%	2,749.3	8,267	1.7%		
34 Soaps, Organic surface-active agents, washing preparations, lubricating preparations										Total: \$203 Million
HS Code	Product label	Import in USD Million	CAGR 2014-18 Value	Import in Tons	CAGR 2014-18 QTY.	USD/Ton	World's Import in USD Million	CAGR 2014-18 World Value	Share in Pakistan's Import (%)	
340213	Non-ionic organic surface-active agents, (excluding soap)	38.7	4.8%	17,691	6.8%	2,184.8	5,190	0.2%	China 22, India 17, Germany 15	
340211	Anionic organic surface-active agents, (excluding soap)	38.0	4.5%	24,663	4.2%	1,540.3	3,016	1.2%	India 32, China 29, Thailand 12	

340319	Cutting-oil , bolt or nut release, anti-rust or anti-corrosion and mould-release, based on lubricants and containing petroleum oil or bituminous mineral oil	19.4	10.6%	-	-	-	-	4,633	3.4%	Korea 66, Singapore 6, Hong Kong 4
340391	Textile lubricant preparations used for the oil or grease treatment of leather, not containing petroleum oil or bituminous mineral oil	21.4	-1.8%	11,053	0.0%	1,939.0	966	966	2.1%	Germany 31, Spain 12.5, Japan 12
340490	Artificial waxes and prepared waxes	13.8	4.3%	4,432	8.6%	3124.5	2711	2711	1.3%	
35 Albuminoidal substances; modified starches; glues; enzymes										
HS Code	Product label	Import in USD Million	CAGR 2014-18 Value	Import in Tons	CAGR 2014-18 QTY.	USD/Ton	World's Import in USD Million	CAGR 2014-18 World Value	Share in Pakistan's Import (%)	
350790	Enzymes and prepared enzymes	25.6	1.0%	-	-	-	5,370	1.4%	China 41, Finland 22, Denmark 8	
350691	Adhesives based on polymers or on rubber (excluding products suitable for use as glues or adhesives put up for retail sale as glues or adhesives, with a net weight of <= 1 kg)	22.9	15.9%	-	-	-	8,159	2.9%	China 31, Saudi Arabia 15, Malaysia 15	
38 Miscellaneous chemical										
HS Code	Product label	Import in USD Million	CAGR 2014-18 Value	Import in Tons	CAGR 2014-18 QTY.	USD/Ton	World's Import in USD Million	CAGR 2014-18 World Value	Share in Pakistan's Import (%)	
382200	Diagnostic or laboratory reagents on a backing, prepared diagnostic or laboratory reagents whether or not on a backing, and certified reference materials	110.5	16.9%	-	-	-	29,540	4.3%	Germany 33, USA 22, China 10	
380891	Insecticides	87.7	10.9%	10,861	-1.0%	8,074.0	9,204	0.6%	China 59, India 15, USA 5	
381700	Mixed alkylbenzenes and mixed alkylnaphthalenes produced by the alkylation of benzene and naphthalene	85.6	-1.3%	66,193	7.3%	1,293.1	2,469	-4.0%	China 40, Saudi Arabia 23, Qatar 21	
381121	Prepared additives for oil lubricants containing petroleum oil or bituminous mineral oil	69.4	8.3%	21,412	10.2%	3,242.5	9,508	-0.3%	Singapore 56, France 19, USA 15	
380893	Herbicides, anti-sprouting products and plant-growth regulators	50.2	-1.2%	-	-	-	13,108	0.2%	China 39, India 27, USA 17	
39 Plastic										
HS Code	Product label	Import in USD Million	CAGR 2014-18 Value	Import in Tons	CAGR 2014-18 QTY.	USD/Ton	World's Import in USD Million	CAGR 2014-18 World Value	Share in Pakistan's Import (%)	
390210	Polypropylene, in primary forms	539.1	4.1%	424,427	9.4%	1,270.3	28,688	-1.5%	Saudi Arabia 54.5, India 14, UAE 9	
390110	LDPE including LLDPE, in primary forms	337.0	2.6%	-	-	-	29,125	-1.6%	Saudi Arabia 39, Qatar 29, UAE 8	
390120	HDPE, in primary forms	298.9	7.7%	226,516	11.9%	13.2	33,012	1.0%	Saudi Arabia 38, UAE 29, Qatar 19	
390230	Propylene copolymers, in primary forms	153.0	5.3%	115,556	11.2%	1,324.1	15,703	1.1%	UAE 28, Korea 22, Saudi Arabia 21	
390720	Polyethers, in primary forms	91.9	-4.6%	48,225	-0.9%	1,905.8	13,625	0.6%	China 56, Saudi Arabia 27, Singapore 7	
390950	Polyurethanes, in primary forms	88.1	34.5%	31,783	39.8%	2,772.0	7,758	5.0%	China 53.5, Singapore 14, Korea 9	
390410	PVC, in primary forms, not mixed with any other substances	74.0	16.9%	-	-	-	12,396	1.4%	USA 25, Indonesia 16, Switzerland 13	
390690	Acrylic polymers, in primary forms (excluding poly "methyl methacrylate")	67.6	11.8%	-	-	-	15,968	1.1%	China 22, Singapore 17, Taipei Chinese 11	
390330	Acrylonitrile-butadiene-styrene copolymers "ABS", in primary forms	52.6	16.1%	26,439	17.3%	1,990.5	10,494	2.7%	Korea 52, Taipei Chinese 26, Saudi Arabia	
391000	Silicones in primary forms	52.1	13.0%	-	-	-	8,938	4.7%	Germany 32, China 29, India 21	

Data Source: ITC Trade Map, 2018



These tables show the detail of section wise chemical imports of Pakistan at HS 6 level. The Value, Quantity and price of 2018 are taken along with Compound Annual Growth Rate in values and quantities for last 5-years, to highlight local and international trends in trade. Last column indicates top suppliers along with their percentage share in Pakistan's import.

In some cases, we notice the high growth rate of import may appear due to low volume of import. (Researchers view)

Note: CAGR's Calculation based on following formula

$$\text{CAGR in value} = \left(\frac{2018\text{'s value}}{2014\text{'s value}} \right)^{\frac{1}{n-1}} - 1$$

n=5 because data ranged from 2014 to 2018



Top Chemical Exports of Pakistan in 2018

Code	Products	Export in USD Million	CAGR 2014-2018 Value	Export in tons	CAGR 2014-2018 QTY.	USD/Ton	World Export in USD Million	CAGR 2014-2018 World Value
390760*	Poly"ethylene terephthalate", in primary forms	203.3	12%	157,690	11%	1,273	15,630.6	3%
300490	Medicaments for therapeutic or prophylactic purposes, put up in measured doses for retail sale	73.5	-4%	3,993	-6%	18,418	279,136.7	1%
300439	Medicaments containing hormones or steroids used as hormones but not antibiotics, put up in measured doses for retail sale	60.5	28%	3,213	31%	18,825	23,178.2	5%
390319	Polystyrene, in primary forms (excluding expansible)	23.4	-21%	15,435	-15%	1,519	5,408.7	-1%
320415	Synthetic organic vat dyes used to dye fabrics or produce colorant preparations	18.4	816%	1,850	556%	9,936	623.0	6%
392490	Household articles and toilet articles, of plastics	17.6	1%	6,849	5%	2,565	7,947.1	3%
300339	Medicaments containing hormones or steroids used as hormones, not containing antibiotics, not in measured doses for retail sale (excluding those containing insulin)	15.3	-13%	790	-19%	19,318	537.2	-12%
300420	Medicaments containing antibiotics, put up in measured doses for retail sale	15.0	3%	801	2%	18,719	15,359.7	0%
283620	Disodium carbonate	11.9	3%	46,642	21%	254	3,529.4	4%
392062	Plates, sheets, film, foil and strip, of non-cellular PET, (neither reinforced nor laminated)	11.2	-12%	5,759	-11%	1,940	8,388.5	1%
320810	Paints and varnishes, solutions based on polyesters in volatile organic solvents, containing > 50% solvent by weight	11.0	-10%	5,443	-6%	2,026	2,932.0	-1%
300410	Medicaments containing penicillins or derivatives thereof with a penicillanic acid structure, or streptomycins or derivatives thereof, put up in measured doses for retail sale	9.7	-5%	505	-4%	19,293	3,648.9	-3%
300390	Medicaments consisting of two or more constituents mixed together for therapeutic or prophylactic uses, not in measured doses, for retail sale	9.6	-8%	611	-7%	15,686	13,532.7	21%
400400	Waste, parings and scrap of soft rubber and powders and granules obtained therefrom	9.3	26%	18,364	28%	509	240.7	2%

Data Source: ITC Trade Map, 2018

Code	Products	Export in USD Million	CAGR 2014-2018 Value	Export in tons	CAGR 2014-2018 QTY.	USD/Ton	World Export in USD Million	CAGR 2014-2018 World Value
382490	Chemical products and preparations of the chemical or allied industries, incl. those consisting of mixtures of natural products	8.7	15%	-	-	-	36,045.1	0%
360500	Matches	8.7	-18%	4,700	-17%	1,849	184.7	-3%
391590	Waste, parings and scrap of plastics (excluding that of polymers of ethylene, styrene and vinyl chloride)	8.0	-19%	11,813	-23%	678	2,005.3	-18%
300310	Medicaments containing penicillins or derivatives thereof with a penicillanic acid structure, or streptomycins or derivatives thereof, not in measured doses or put up for retail sale	7.7	11%	236	-15%	32,445	367.4	2%
310229	Double salts and mixtures of ammonium sulphate and ammonium nitrate (greater than 10 kg packs)	7.2	0%	34,931	-	205	246.7	-6%
350300	Gelatin, and gelatin derivatives; isinglass; other glues of animal origin (excluding those packaged as glue for retail sale and weighing ≤ 1 kg, and casein glues of heading 3501)	6.8	-3%	1,317	2%	5,144	1,673.6	-1%
320910	Paints and varnishes, incl. enamels and lacquers, based on acrylic or vinyl polymers, dispersed or dissolved in an aqueous medium	6.0	7%	2,375	16%	2,536	3,680.6	3%
340220	Surface-active preparations, washing preparations, auxiliary washing preparations and cleaning preparations put up for retail sale	5.9	8%	4,838	8%	1,220	14,859.2	1%
392690	Articles of plastics	5.5	-16%	1,902	-18%	2,912	63,562.5	5%
401390	Inner tubes, of rubber (excluding those of a kind used on motor cars, incl. station wagons and racing cars, buses, lorries and bicycles)	5.3	38%	1,394	51%	3,816	403.3	-4%
340120	Soap in the form of flakes, granules, powder, paste or in aqueous solution	5.2	22%	-	24%	-	1,916.8	0%

*The value and quantity of HS-code 390760 is calculated by adding the values & quantities of HS-code 390761 & 390769. Prices is calculated on the base of weighted average method.

As, World use HS-code 390760 for Poly"ethylene terephthalate" (PET) in primary forms while Pakistan use HS-code 390761 & 390769 for the same product.

PROCESS SAFETY CODE OF MANAGEMENT PRACTICES



RESPONSIBLE CARE



Responsible Care®
OUR COMMITMENT TO SUSTAINABILITY

Purpose and Scope

The American Chemistry Council's (ACC) Responsible Care companies are committed to the safe operation of their chemical processes. The Process Safety Code sets forth our collective commitment to a culture of process safety throughout our chemical processing operations, management systems and leadership organizations.

This Code aims to supplement existing process safety requirements contained within the Responsible Care Management System® (RCMS®) and RC14001® technical specifications, by specifically addressing process safety concepts such as leadership, accountability and culture in order to drive overall process safety performance improvement. It is also intended to complement regulatory requirements (e.g., OSHA's process safety management (PSM) standard and EPA's Risk Management Program (RMP) standard). Regulatory standards, by necessity, focus on process safety at an individual facility. In contrast, the Process Safety Code addresses issues at a more universal level, such as across a division or corporation, and includes a company commitment to set expectations regarding process safety, define accountability for process safety performance and allocate adequate resources to achieve performance expectations.

These higher level considerations, contained within this Code, are critical elements of effective management of process safety.

This Code is a manifestation of the leadership that Responsible Care companies will undertake to seek systematic continuous improvement in process safety, drawing from the most current learning and advances. When implemented alongside the integrated Responsible Care management systems, this Code will help advance

the chemical industry's commitment to process safety by embedding state-of-the-art concepts within Responsible Care, strengthening process safety leadership, culture, management and ultimately, performance. Implementation of the Process Safety Code is mandatory for all ACC Responsible Care companies. The Code will be applied to chemical operations over which the ACC Responsible Care company has control, commensurate with risk.



Management Practices

Taken together with the RCMS® or RC14001® , implementation of the following management practices enables chemical manufacturers to systematically evaluate, demonstrate, and continuously improve their process safety performance. Each Responsible Care company's management system must include the following process safety management practices:

Leadership and culture.

Senior leaders establish and communicate process safety performance expectations, including measurable goals, objectives and targets; allocate sufficient resources to meet performance expectations; and promote an observable culture of process safety across the organization. Senior leaders will promote and develop a process safety culture within their organizations, encouraging openness in raising concerns and identifying opportunities for improvement.

Accountability.

Process safety roles and responsibilities across the organization are clearly defined and include an expectation to raise, and authority to respond to process safety concerns. Senior leaders are held accountable for process safety performance. Employees understand the importance of process

safety as it applies to their jobs and are responsible for following and contributing to the work processes to achieve improvement in company process safety performance.

Knowledge, expertise and training.

Process safety competency requirements are established and executed for management, engineering and operational personnel, as well as contractors and third-party service providers, commensurate with the activities performed. Employees and contractors are trained on process safety, commensurate with their process safety responsibilities. Company process safety experts are provided continuing education related to emerging process safety tools and techniques.

Understanding and prioritization of process safety risks.

Companies will identify and understand the hazards and risks of their processes. Companies will implement systems for documenting and accessing comprehensive and current information on process-related hazards and risks to enable informed decision making.

Comprehensive process safety management system.

Companies will design systems to manage and mitigate identified risks with adequate safeguards. Management of process safety will

take into account passive controls; engineering controls; operational controls; inherently safer approaches; inspection, maintenance and mechanical integrity programs; management of change procedures; and scenario planning.

Information sharing

Companies establish processes fostering two-way flow of information between management, employees, contractors and other stakeholders to share process safety information. These processes will provide that experiences from process safety reviews, inspections, audits, and incident and near-miss investigations are shared, as relevant, across the company in a timely manner. The processes should also promote sharing of process safety concerns.

Monitoring and improving performance.

Senior leaders, including the company's senior operating committee, where applicable, monitor process safety performance. Routine evaluation of process safety management systems, independent of regulatory audits, is performed to confirm that desired results are achieved, using appropriate leading and lagging indicators. Results are reviewed at planned intervals to determine progress against process safety performance expectations and to take action to improve performance when needed.



PLUG & PLAY Industrial Zones

Kashif Chaudhry
CEO, Mian Chemical Industries

Small and Medium enterprises are key to growth of any industrialized society. The contribution of Pakistani SMEs is less as compared to other countries, yet their significance cannot be denied. This article proposes to engage and revolutionize SME sector of Pakistan through “plug and play” industrial zones.

Industrial “Plug and Play” zones are generally operated on leasehold basis where either government and or industrial park authorities provide built-in spaces with basic facilities like electricity, natural gas, water, sewage, telecommunications and sometimes steam through a central generation facility. The government and or industrial park authority can charge for these facilities and no subsidy should be allowed on these amenities. This eliminates the need for complicated processes like land acquisition, infrastructure development and construction which the start up may not have an adequate knowledge or expertise on. Industrial “Plug and

Play” zones considerably reduce start up investment costs and risks for SMEs at a phase in their development where they are still too risky for bank loans.



The concept of “plug and play” industrial zones has been around for quite some time and some successful models of the last three decades include China, South Korea, Vietnam, Egypt and most recently various Indian states who are investing in such facilities. “Plug and play” industrial zone may organically develop into an industrial cluster allowing tremendous economies of scale and scope for both domestic as well as foreign markets. Efficient provision of public goods and

market information will facilitate SME development and thus help government to achieve its medium-term goal of creating 10 million jobs.

In some of the Chinese “plug and play” industrial zones free and decent housing for workers has also been established thus saving travel time and eliminating the need for workers to rent expensive properties. The average worker in such zones save up to 80% of their salary which is enough for him or her to change their lives with the savings of few years. “Plug and play”

industrial zones is therefore also be an opportunity for the government to partially fulfill their election promise of building 5 million houses.

It is a well known fact that land (FBR property evaluation table) and construction costs are prohibitive for start up businesses while government support in this area can fast track industrialization of Pakistan; creating both housing opportunities as well as job creation on sustainable basis.

RAGS TO RICHES

The Green Way

Engr. Armaghan Ahmed
Process Design Engineer

Biogas is a type of biofuel that is naturally produced from the decomposition of organic waste. Biogas can be used as an alternate to natural gas.

According to economic survey of Pakistan, the production of natural gas is witnessing a consistent negative growth.

Year	2016-17	2017-18	2018-19
Natural Gas Production (million cubic feet per ton)	1,471,854	1,458,935	1,430,097
Growth rate	-1.1%	-0.9%	-2%

Source: Economic Survey of Pakistan 2018-19

Currently, Pakistan is importing RLNG from Qatar to meet natural gas shortage while an indigenous source can save precious foreign currency. Biogas can be produced through waste and which is widely available in Pakistan. Karachi has a garbage backlog of around 1,600,000 tons and adding 14,000 to 16,000 tons daily.

Source: MD Sindh Solid Waste Management Board



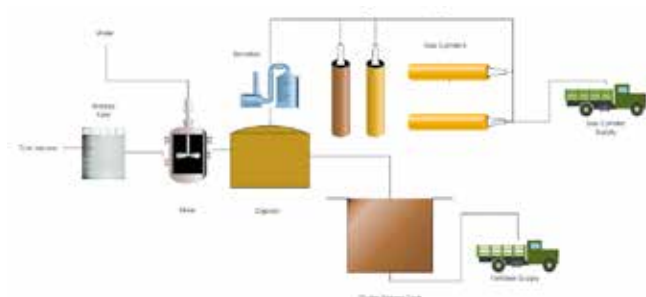
Abundance of raw material is precursor to any project feasibility and Pakistan produces huge piles of this waste on daily basis. Currently, this waste has no proper dispose and some large metropolitans have engaged foreign firms to dump waste on designated landfills. Proper education of masses in sorting this waste can prove extremely helpful.

“Pakistan is facing problems like waste handling and gas availability which makes it a most suitable country for Biogas production”

Modern plants, like one in Singapore are climate friendly and converts a problem into a clean solution,

A Biogas Plant is a digester to process animal manure, farm wastes, sewage sludge or energy crops into biogas. The plant generates methane and can also include a complete CHP facility.

Process Flow Diagram of Biogas Plant



At minimum Biogas gas facility requires readily available raw material, mixing tanks, digester and storage tank for gas formation. The simple set-up provides permanent solution for disposable of refuse and possible benefits in the shape of natural gas.

	Household Plant	Industrial Plant
Volume (m3/day)	3	3,000
Total Cost (Rs)	60,000	20,000,000
Saving per month	8,000	2,000,000
ROI (month)	9	10

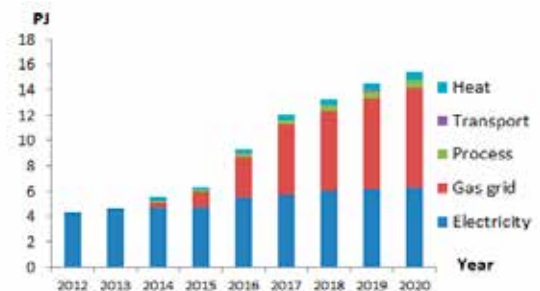
Sources: Revgreen (a Biogas company)

The Capital cost of biogas production plant is significant while its operating cost is low. As the raw material contributes the major portion of the operating cost. Therefore, location plays a significant role in overall feasibility of the project. Below is the comparison on ROI of household and industrial scale Biogas plant.

Furthermore, the solid residue from the Biogas plant is not included in the above comparison which is itself a profitable product used as a fertilizer in farms.

Denmark

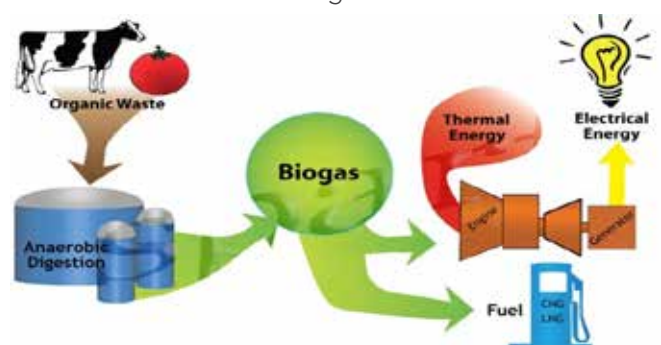
According to a report by the Ministry of Climate, Energy and Utilities Denmark, the production of biogas in the country is rapidly increasing. The total production is expected to more than triple from 2012 to 2020, reaching a total annual production of 15 PJ (1 petajoule = 1015 joules). The Figure shows the historical and expected future biogas production and its use in Denmark from 2012 to 2020.



USA

According to data published by the American Biogas Council there are currently 2000 biogas plants operating in the United States, with a potential for up to 14,000 new installations over the next few years.

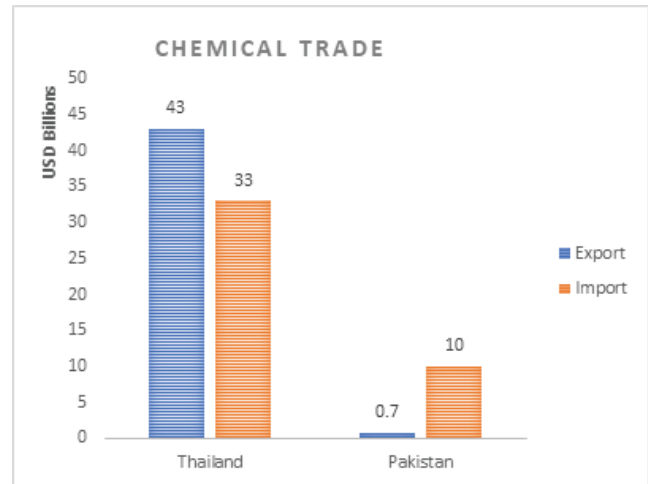
Turn Garbage into Profit



Thailand as a Chemical Partner

year of Data; 2018

Indicator	Thailand	Pakistan
GDP (nominal)	USD 504 Billion	USD 312 Billion
Population	69.4 Million	212 Million
GDP per capita	USD 7,448	USD 1,565
Income Group	Upper Middle Income	Lower Middle income
GDP growth rate	4.1%	5.1%
Exports	USD 249.8 Billion	USD 23.6 Billion
Imports	USD 250.9 Billion	USD 60.2 Billion
FDI net inflow	USD 13.3 Billion	USD 2.4 Billion
Exchange rate (1 st Nov, 2019)	1 USD = 30.2 Thai Baht	1 USD = 156 PKR



Sources: World Bank Uncomtrade

Thai Petrochemical Industry

After the oil shocks of 1973 & 1979, Thai Government took steps to develop domestic natural gas and petrochemical industries. Thus, discovered associated gas (wet gas) containing ethane, propane and butane in the gulf of Thailand.

- Thailand adopted top to bottom approach in

petrochemical industry.

- In 1980-89, Gas based cracker were installed to provide ethylene and propylene with prime aim of import substitution.
- In 1989, Aromatics were added to increase the quantity of olefins and begun Exports.
- From 2004 to present, Thailand starts to use Naphtha and biological products as Feedstock.

In 2004, Thailand developed a 15-years Master plan for Petrochemical Industry:

Identify Opportunities in 25 petrochemical products

Projected investment \$10 Billion Spread over 15 years

Combined capacity 10 Million tons p.a.

Estimated Return \$7 Billion p.a.

The country also has one of the largest bioethanol industries in Asia, producing 322 million gallons in 2016, along with a strong palm-based biodiesel industry.

Thai petrochemical industry can be broadly categorized into 4 stages;

1 Feedstock preparation:

These involve manufacturing of feedstock, obtained primarily from the petroleum industry such as ethane, propane, LPG, NGL and naphtha. Moreover, recently abundant biological products are also being used as feedstock; sugar-cane, cassava and palm for the bio plastic industry.

2 Upstream:

At this stage, feedstocks are further processed, and the output obtained is categorized into olefins and aromatics.

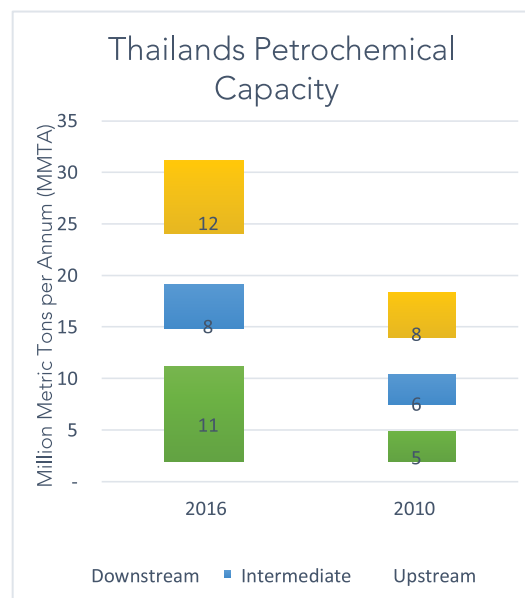
3 Intermediate:

At this stage, the output from the upstream plants are further processed. The output of the intermediate industry is not meant for the end-user but act as raw materials to be processed further.

4 Downstream:

Output from the intermediate industries and upstream industries are processed into plastic resins, synthetic fiber,

synthetic coating/adhesives and synthetic rubber to name a few. Downstream output is then used by several other industries such as packaging, electrical appliances and auto-parts.



Source: Pakistan Business Council

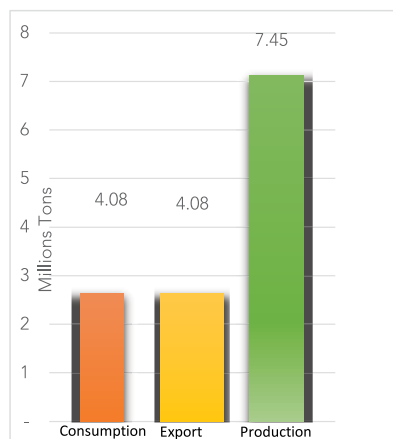
Capacities of Crackers

- Ethylene 4.4 MMT/year
- Propylene 2.8 MMT/year
- Butadiene 0.26 MMT/year
- Aromatic 4.4 MMT/year (including P-xylene 2.3 MMT/year)

Impact on Economy

- Share of Chemicals in Export was 17% in 2018
- Petrochemicals contributes 5% in GDP
- Exports (including plastic and rubber) was \$43.2B
- Thailand export 50-60% of their petrochemical products mostly in finished forms.
- Thailand is currently working on its 20-year economic development plant called "Thailand 4.0"

Thailand's Downstream Petrochemical Market



Source: Pakistan Business Council

Pakistan's potential export to Thailand in chemical Sector (at HS-6 level)

HS-Code	Product label	Thailand's Imports		Pakistan's Export		Thailand's Import from Pakistan
		In USD Million	Avg Price in USD/KG	In USD Million	Avg Price in USD/KG	In USD Million
300490	Medicaments for therapeutic or prophylactic purposes, in measured doses, for retail sale	1,391.00	34.8	73.5	18.4	0.23
300439	Medicaments used as hormones but not antibiotics, in measured doses, for retail sale	86.8	326.3	60.5	18.8	0
390319	Polystyrene, in primary forms (excluding expansible)	50.1	1.8	23.4	1.5	0
392490	Household articles and toilet articles, of plastics	51.3	3.6	17.6	2.6	0
300420	Medicaments containing antibiotics, in measured doses, for retail sale	107.6	23.4	15	18.7	-
283620	Disodium carbonate	200.8	0.245	11.9	0.254	0
392062	Plates, sheets, film, foil and strip, of non-cellular PET	92.5	2.8	11.2	1.9	0
391590	Waste, parings and scrap of plastics	56.5	0.15	8	0.68	-
392690	Articles of plastics and articles of other materials	1,753.00	13.6	5.5	2.9	0
330499	Preparations for skin care & make-up, incl. sunscreen or suntan preparations	755.5	25.7	5.2	6.9	0.001

Based on: ITC Trade-map, 2018

Note: Product Selection criteria:

Thailand's chemical import value is greater than \$50 Million & Pakistan's chemical Export value is greater than \$5 Million @ HS-6 levels. Further Research is needed to realize quality & product differences along with Trade barriers.



Pakistan Chemical

Trade with Thailand



Pakistan's top chemical imports from Thailand

Total Value: \$331.4 Million

HS code	product	2014	2015	2016	2017	2018	CAGR
'29173610	Pure terephthalic acid (pta)	19.2	16.7	41.3	67.4	136.4	63%
'39021000	Polypropylene, in primary forms	10.8	13.3	9.0	9.5	20.0	17%
'39023000	Propylene copolymers, in primary forms	6.8	4.5	4.2	9.0	9.1	7%
'39201000	Plates, sheets, film, foil and strip, of non-cellular polymers of ethylene, not reinforced, unworked, merely cut into squares or rectangles	6.4	5.0	5.8	6.0	5.9	-2%
'39012000	HDPE, in primary forms	4.8	12.1	6.1	4.8	5.7	4%
'39041010	PVC, in primary forms: emulsion grade	4.7	5.0	5.1	6.1	4.9	1%
'34021190	Anionic organic surface-active agents (excluding soap): other	2.9	1.2	3.8	4.2	4.2	10%
'39269099	Articles of plastics and articles of other materials: other	1.5	1.9	1.8	2.1	3.4	23%
'29053200	Propylene glycol "propane-1,2-diol"	0.9	2.7	2.7	2.6	3.2	37%
'39100000	Silicones in primary forms	1.8	2.8	1.5	2.0	2.9	14%



Pakistan's top chemical Exports to Thailand

Total Value: \$4.1 Million

HS code	Product label	2014	2015	2016	2017	2018	CAGR
32041510	Synthetic organic vat dyes of a kind used to dye fabrics or produce colorant preparations: indigo blue	-	-	1,043	1,473	1,334	-
'30042000	Medicaments containing antibiotics, put up in measured doses, packings for retail sale (excluding medicaments containing penicillins or streptomycines and their derivatives)	1,579	2,236	1,581	1,372	986	-11%
'33079090	Depilatories and other perfumery, toilet or cosmetic preparations, n.e.s: other	224	406	325	517	356	12%
'30049099	Medicaments for therapeutic or prophylactic purposes, put up in measured doses, for retail sale: other	719	553	547	262	230	-25%
'35030010	Gelatin: gelatin	504	348	189	130	142	-27%
'39159000	Waste, parings and scrap of plastics (excluding that of polymers of ethylene, styrene and vinyl chloride)	83	35	-	-	141	14%
'39069090	Acrylic polymers, in primary forms: other	-	23	45	170	121	-
'39264090	Statuettes and other ornamental articles, of plastics: other	1	-	82	170	104	219%
'34029000	Surface-active preparations, washing preparations, incl. auxiliary washing preparations and cleaning preparations	113	50	83	80	93	-5%
'30051090	Adhesive dressings and other articles having an adhesive layer, impregnated or covered with pharmaceutical substances or put up for retail sale for medical, surgical, dental or veterinary purposes: other	-	31	120	80	81	-

Data Source: ITC Trade Map, 2018

Thailand Chemical Trade with World

Thailand's top- 10 Chemical Imports									
HS Code	Product label	2014	2015	2016	2017	2018	CAGR	Major Suppliers	
'3926909900	Articles of plastics : other	1,470.5	1,547.1	1,523.0	1,596.7	1,671.0	3%	China 32%	Japan 30%
'3004909900	Medicaments for therapeutic or prophylactic purposes, put up in measured doses, packings for retail sale : other	992.7	1,029.2	1,034.5	1,033.2	1,082.5	2%	Germany 20%	USA 14%
'3102100000	Urea (in packages with a gross weight of > 10 kg)	786.8	613.6	504.5	642.3	706.5	-3%	Qatar 39%	Saudi Arabia 38%
'3304993000	Other face or skin creams and lotions	228.2	292.9	355.6	403.3	503.3	22%	Japan 20%	France 17%
'3815900000	Reaction initiators, reaction accelerators and catalytic preparations, n.e.s. (excluding rubber accelerators and supported catalysts)	445.9	351.4	307.5	374.1	448.6	0%	Japan 76%	USA 10%
'3818000000	Chemical elements and compounds doped for use in electronics, in the form of discs, wafers, cylinders, rods	0.3	9.1	276.7	534.0	447.1	544%	China 94%	Taiwan 4%
'3919909900	Plastics, Self-adhesive plates, sheets, film, foil, tape, strip and other flat shapes, (excluding floor, wall and ceiling coverings): other	-	-	-	379.4	414.4	-	China 27%	Japan 24%
'3824999900	Chemical products and preparations of the chemical or allied industries, incl. those consisting of mixtures of natural products, n.e.s: other	-	-	-	346.7	361.9	-	China 22%	Japan 18%
'3105590000	Fertilisers containing nitrogen (excluding nitrate) and phosphorus (pack in greater than 10 kg bags)	360.0	353.1	348.2	351.8	352.9	0%	China 55%	South Korea 17%
'3302900000	Mixtures of odoriferous substances and mixtures, incl. alcoholic solutions, of a kind used as raw materials in industry (excluding food or drink industries)	264.1	260.2	274.4	296.9	329.0	6%	Singapore 59%	USA 12%

Thailand's top-10 Chemical Exports									
HS Code	Product label	2014	2015	2016	2017	2018	CAGR	Major Market	
'3901200000	HDPE, in primary forms: other	1,887.2	1,518.1	1,317.5	1,405.1	1,640.6	-3%	China 20%	Viet Nam 14%
'3907400000	Polycarbonates, in primary forms	923.5	881.4	864.8	938.7	1,099.1	4%	China 40%	India 19%
'2902430000	P-xylene	709.0	383.7	396.0	397.7	1,089.9	11%	China 89%	Indonesia 9%
'3926909900	Articles of plastics and articles of other materials: other	654.1	712.0	779.4	974.3	931.0	9%	Japan 25%	USA 10%
'3901400000	Ethylene-alpha-olefins copolymers, low density, in primary forms	-	-	-	681.2	866.8	-	China 54%	Japan 15%
'2917360010	Terephthalic acid	816.6	540.9	564.7	627.2	820.7	0.13%	India 24%	Viet Nam 18% Pakistan 17%
'3901109200	linear low-density polyethylene (lldpe)	561.9	416.5	369.3	417.0	642.9	3%	China 47%	Indonesia 10%
'3902309000	Propylene copolymers, in primary forms: other	499.4	453.7	441.4	489.0	634.8	6%	Japan 23%	China 17%
'3923219900	Sacks and bags, incl. cones, of polymers of ethylene: other	566.0	529.5	536.4	550.6	594.1	1%	USA 30%	Japan 27%
'3902109000	Polypropylene, in primary forms: other	826.3	578.1	493.8	408.4	539.3	-10%	Indonesia 32%	Viet Nam 25%

Data Source: ITC Trade Map, 2018



ORGANIZATIONAL TRANSFORMATION

PAVING WAYS TOWARDS EXCELLENCE

In the era of fast paced advancements, the most perilous phrase is “We have always done it this way”. While the excellence requires you to create a culture of continuous improvement, challenge old mindsets, find new ways of doing things and make yourself and organization better than yesterday, everyday.

A work approach based on continuous improvement, slowly and seamlessly transforms any organization and make it more sustainable and futuristic. Organizational transformation involves everything from design to execution followed by a feedback, follow-up and accountability. This process includes designing and implementing of an effective strategy framework including but not limited to culture of willingness-to-change, competence and the functional structures. It involves a paradigm shift where organization is on the pathway of creating a mindset of diversity, empowerment and cultivating a purpose with a continuous reflection and a keen eye on future.

Organizational Transformation in totality is connecting significant dots and elements of change towards excellence proactively. Transformation, in any organization, as an outcome, comes down to two basic roles that are pivot for successful

transition from the current state to the desired state:

Leadership Commitment

Commitment of the leadership in entirety is the core of accomplishing smooth transformation one after another. Being the torch-bearer, the senior leadership plays the role of an axle in bringing together all the elements and initiatives into equilibrium, integrated collectively in harmony. Commitment of leadership towards change is directly proportional to driving the commitment of their Human Resource. Leadership commitment with a drive towards execution and accountability can accelerate the acceptability of change. Transformation from inception to execution followed by a well-built system of follow-up on change at individual, team and organizational level can open new avenues towards excellence. The most critical areas to which leadership should exhibit its commitment are the company's vision, mission and values.

“Visionary companies pursue a cluster of objectives, of which making money is only one – and not necessarily, the primary one. Yes, they seek profits but they are equally guided by a core ideology – core values and sense of purpose beyond just making money.”

(Jim Collins)

Commitment of leadership through organizational values is vital for reiterating the pathways towards transformation and a proactive approach is the only viable way towards achieving this objective. The transition from resistance to readiness comes with a price and effective leaders have to think beyond monetary gains for the organizations to sustain the change. Leaders do not build business! They build people who in turn build the business.

Role of HR

While designing the strategy for transformation, the HR of an organization has to play a vital role and ensure at every step of the evolution that transformation is for all the core elements and stake holders of the organization. Aim to transform for growth – growth of people and organization, failing any of which, the change will be a half story and it will not sustain in the long-run.

While change is crucial, however, the way it is executed can make a difference. In any organization where transformation is being executed, it is essential to take the people along since the beginning. Keeping people onboard at all steps helps to eliminate unknown blind-spots in individual thinking patterns and enhance their inclusion & engagement levels. Transition can be smoothed with a rule of

thumb to create a change baseline followed by communicating the details to the minute levels, measuring the progress at every step and ensuring that the change lasts.

The transformation process has to be driven through People and their mindsets could lead to success or failure of all change initiatives. Therefore, keeping every employee along is critical to influence their mindsets and create a positive impact on:

- **The way people regard problems;**
- **The way people assess strengths and weaknesses;**
- **The way people define opportunities and threats;**
- **The way people identify areas of priority;**
- **The way people go about changing and affecting change;**
- **The solutions people come up with; and**
- **The need people see for change or to remain status quo.**

HR should map-out the challenges along with proposed solutions while designing the transformation initiatives to reduce and overcome challenges. HR should focus on cultivating a sound feedback culture that will set a tone for expectations, growth and gives a real-time depiction of the aura; the transformation is bringing to the organization.

Another significant challenge for HR in implementing change is creating and managing diverse teams which can be viewed as drivers of change at the floor. To cultivate change and expanding its roots in culture, besides itself, HR has to train the line-management as a Coach. The approach of a line manager as Coach will be helpful to challenge people's comfort zones, drive their thinking and steer their performance towards defined change outcomes. This can be a great opportunity for line managers, individuals and teams to align their approach with the excellence philosophy of the organization and the overall atmosphere of continuous transformation.

Closing words:

Bringing, maintaining and sustaining the transformation in an organization depends upon the commitment level and how well the initiatives have been designed, executed and followed-up with accountability. To be successful in long-run, an organization must decide that what is non-negotiable e.g. their values, rest all can be changed and should be evolved for betterment regularly.

HR should thrive to have a culture to inculcate a "seeking change" mindset among its people, a culture where people continuously challenge assumptions, reduce complacency, break unproductive habits and

inculcate positive attitude.

Organizational Transformation can thus be well explained as an effectively organized effort. An average transformation initiative/tool properly executed will lead to certain beneficial results while a world class tool, managed inefficiently, may not produce the same results. Don't wait for the perfect time or any perfect tool, start with the future in view and your initiatives possible at present. Keep improving yourself, your tools, your people and your organization everyday. The results you will achieve will truly amaze you and you would be positively surprised to compare your organization with your starting point.

In a nutshell, we need to stay out in front of the change and continuously transform our people and organizations to the next level in order to be successful. Aiming for excellence is compulsory, but waiting for the right time may be the worst idea and can cost a fortune. Follow the excellence the success will follow you.

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Transformation of **SOAP**

From **SAPONIFICATION** To **OLEO-CHEMICALS**

Soap is an integral part of every one's daily life. In Pakistan, toilet soap has traditionally been produced through interaction of caustic alkali with neutral oils (saponification). Originally, saponification was carried out in kettles/pans (KARHA in local vernacular). Over the years, there has been an advancement in this technology and these kettles have gradually been converted into a continuous process. The soap market, hence, remained in control of few major companies who had their own saponification plants. Imported tallow and coconut oil were the most widely used raw materials for making toilet soaps.

In the 1980s, Southeast Asian countries' rapid production growth of palm oil and palm kernel oil spurred the oleo chemical industry in Malaysia, Indonesia, and Thailand. Though a nascent and small industry when pitted against big MNC giants in the US and Europe, oleo chemical companies in Southeast Asia had a competitive edge in cheap feedstock. By the late 1990s, the industry grew to a level where it started to replace tallow with palm oil for many uses, including toilet soap.

This trend was also witnessed in Pakistan when Crystal Chemicals was setup as the country's first oleo-chemical plant in late 1980s to follow the world's changing trend of making soap through neutralization of fatty acids with alkali. The project

unfortunately did not meet much success and the company closed down in the mid 1990s.

into desired shapes after adding perfume, colour and a few additives. When Nimir introduced

SAPONIFICATION



acid
(oil)

+



base
(lye)

=



salt
(soap)

In early 2000s, few new players entered into the oleo-chemical arena. New investments were made in this industry with a serious effort to transform the soap making from direct saponification to fatty acids. Due to complexity in handling fatty acids in kettles, there was no noticeable success to this idea until mid 2000s. In 2007, Nimir Industrial Chemicals Limited, a dynamic player in oleo-chemicals, launched the concept of soap noodles; converting fatty acids into soap. Soap noodles in unfinished form of toilet soap which does not require any further processing and can be used directly at soap finishing plants, to convert

soap noodles in 2007, all the major players in the soap industry were making soap by using tallow through saponification process. Oleo-chemicals based soap noodles has proven to be a game-changer for the toilet soap industry. The highest achievement was replacement of animal fats (tallow) with vegetable oils (palm oil). Tallow was being imported from all over the world, mainly from countries consuming large quantities of pig meat. As such, there was no surety that the tallow coming in to Pakistan was HALAL. Furthermore, tallow with its long lead-time had remained an enormous challenge to source, whereas palm oil being a sustainable

renewable feedstock was available at prices considerably lower than tallow. As such oleo-chemical industry, which was primarily setup to target replacing imported soap noodles, has been successful in extending towards converting self saponification in to ready-to-use oleo-chemical based noodles.

In oleo-chemicals, oils are passed through a complex process of physical splitting at high temperature. In this process, glycerol is separated and oils are converted into fatty acids, which are distilled to produce water like clear product. The neutralization of fatty acids with alkali results in a rapid reaction to produce milky white soap noodles, without addition of any de-coloring or brightening agents.

Palm oil is the most cost effective feedstock for producing toilet soap. Palm oil played a vital role in converting the toilet soap



industry from saponification to oleo-chemicals. This transformation helped Pakistan's soap industry to



grow significantly as well as diversify through innovation into a variety of products.

Today Pakistan's toilet soap market stands at around 150,000 tons per annum; led by FMCG multinational and national companies. There are many small local players in the soap market as well. The soap industry has witnessed growth in both the beauty as well as anti-bacterial segments, with large number of brands available in market. Some of the leading brands in these categories are LUX, Palmolive, Capri, Lifebuoy, Safeguard, Dettol, Tibet, Care, Savannah, and Vital. Some players like Unilever, Skincare and Golden Pearl have launched novelty products like skin whitening soaps.

The Government has supported the domestic soap industry by imposing regulatory duty on imported soap; thus discouraging imports and giving

opportunity to local producers to boost their sales. The volume of imported soap has thus reduced significantly, and has been replaced with local soaps.

The oleo-chemical industry also helped in offering value added services like finished packed soap to its customers. This has further helped the soap industry in reducing it's operating costs. Nimir has tremendously contributed to this industry as a whole through it's state of the art infrastructure, approved by all MNCs operating in the soap segment. It is also a credit to the company to source, process and sell RSPO (Mass Balance and Segregated) oils/products to help the global community achieve sustainable production of palm oil.

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INNOVATION WITH EXCELLENCE

SRC is a member of Siddiq Shafi Group. With over 60 years of industrial experience, we are focused on delivering innovative and technology based solutions while maintaining its commitment to honesty & consistency. Our leading portfolio of specialty chemicals delivers a broad range of technology based products and solutions to clients for Leather, Shoe, Textile, Adhesive and Construction. We have extensive portfolio of over 350 products.



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EXECUTIVE COMMITTEE MEETING

(1/2019), 16 OCTOBER 2019 AT RUDOLF OFFICE LAHORE

PCMA first Executive Committee meeting held at Rudolf Office Lahore on 16th October 2019. Meeting Started with the recitation from the Holy Quran by Secretary General. Abrar Ahmad, Chairman welcomed

the participants and said that it was first meeting after the PCMA annual elections of the new EC members & the Officer Bearers. He thanked Mansoor Javed, CEO Rudolf for hosting the meeting.



Meeting at Bol Islamabad to discuss SEZs proposals & meeting with Imriaz Rastgar

Abrar Ahmad, Chairman & Iqbal Kidwai, Secretary General PCMA attended a high level meeting at Bol Islamabad held on....., wherein Seven proposals received from all over Pakistan were discussed for assigning these the status of Special Economic Zones. Several senior level officials from different federal & provincial ministries attended the meeting.

Abrar Ahmad, Chairman & Iqbal Kidwai, Secretary General PCMA met Mr. Imtiaz Rastgar at Islamabad and discussed growth potential of chemical industry with special focus on the best practices in engineering & construction. Mr. Imtiaz very generously consented to extend his technical expertise to PCMA members/ chemical industry



INTERESTING FACTS About Chemical Industry



1 Market size **\$5.7 Trillion** equivalent to **7%** of global GDP

Contributors:
Asia \$2.6 Trillion (45%)
Europe \$1.3 Trillion (23%)
North America \$866 Billion (15%)

2 **120** Million jobs are supported by Chemical Industry

Contributors:
Asia 83 Million (69%)
Europe 19 Million (16%)
North America 6 Million (5%)

3 Direct Employment **15 Million**

7 additional jobs are created in economy by each job in chemical industry

4 For every **\$1** generated by the chemical industry, a further **\$4.20** is generated elsewhere in the global economy

5 The global chemistry invested **\$51 Billion** in R&D in 2017, supporting **1.7 million jobs** and **\$92 billion** in economic activity

6 Spent **\$3 trillion** with their suppliers in 2017, buying goods and services used in the manufacture of their products. This supply chain spending contributed an estimated **\$2.6 trillion USD** to global GDP and supported **60 million jobs**

7 **5th Largest Manufacturing sector**

8 Out of the **\$300 Billion** paid by the industry in wages & salaries, nearly **\$200 Billion** of consumer spending is injected into local economies each year

9 Chemical Manufacturing is highly productive with **\$75,000 GVA** produced by each employee

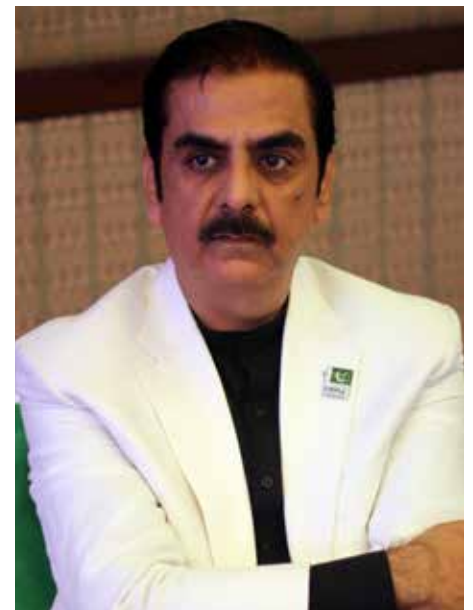


Hydrogen Peroxide is one of the cleanest and most versatile chemicals in the world, with uses ranging from industrial bleaching to a host of disinfectant applications.

Descon Oxychem Limited is Pakistan's leading producer of Hydrogen Peroxide with a state-of-the-art production facility from the leading Swedish firm, Chematur. With almost 40 years of experience in the chemical industry, Descon is able to offer high quality products backed up by technical, engineering and sales support.

AGM at a Glance





Serving the Nation with Credibility and Commitment



The Largest Chlor-Alkali Plant Offers



Basic Chemicals:

1. Caustic Soda Liquid (50%min) / Bulk Supply in tankers
2. Caustic Soda Flakes (99% min on dry basis) / 25kg PP bag
3. Hydrochloric Acid (34±1%) / Bulk Supply in tankers
4. Sodium Hypochlorite (Free Cl₂:19~20%) / Bulk Supply in tankers
5. Liquid Chlorine (99.9%) / Supply in Cylinders (900kg)
6. Bleaching Powder (30±1%) (Commercial Grade) / 25kg PP bag & 30 kg drum

Specialty Chemicals:

1. Calcium Chloride (77% min) 25kg PP bag
2. Magnesium Chloride-White (98% min) 25kg PP bag
3. Magnesium Chloride-Brown (98% min) 25kg PP bag
4. Ferric Chloride (Liquid 42±2%) / Bulk Supply in tankers / Customer own drums
5. Nickel Sulphate (22% min as Nickel) / 5 PE bag
6. Aluminum Sulphate (13-15% as Al₂O₃)
7. Magnesium Sulphate (48% min as MgSO₄) 25kg polypropylene bags

Gases:

Carbon Dioxide (99.9% min)





Ittehad Chemicals: The Pioneer of Chlor Alkali Industry in Pakistan

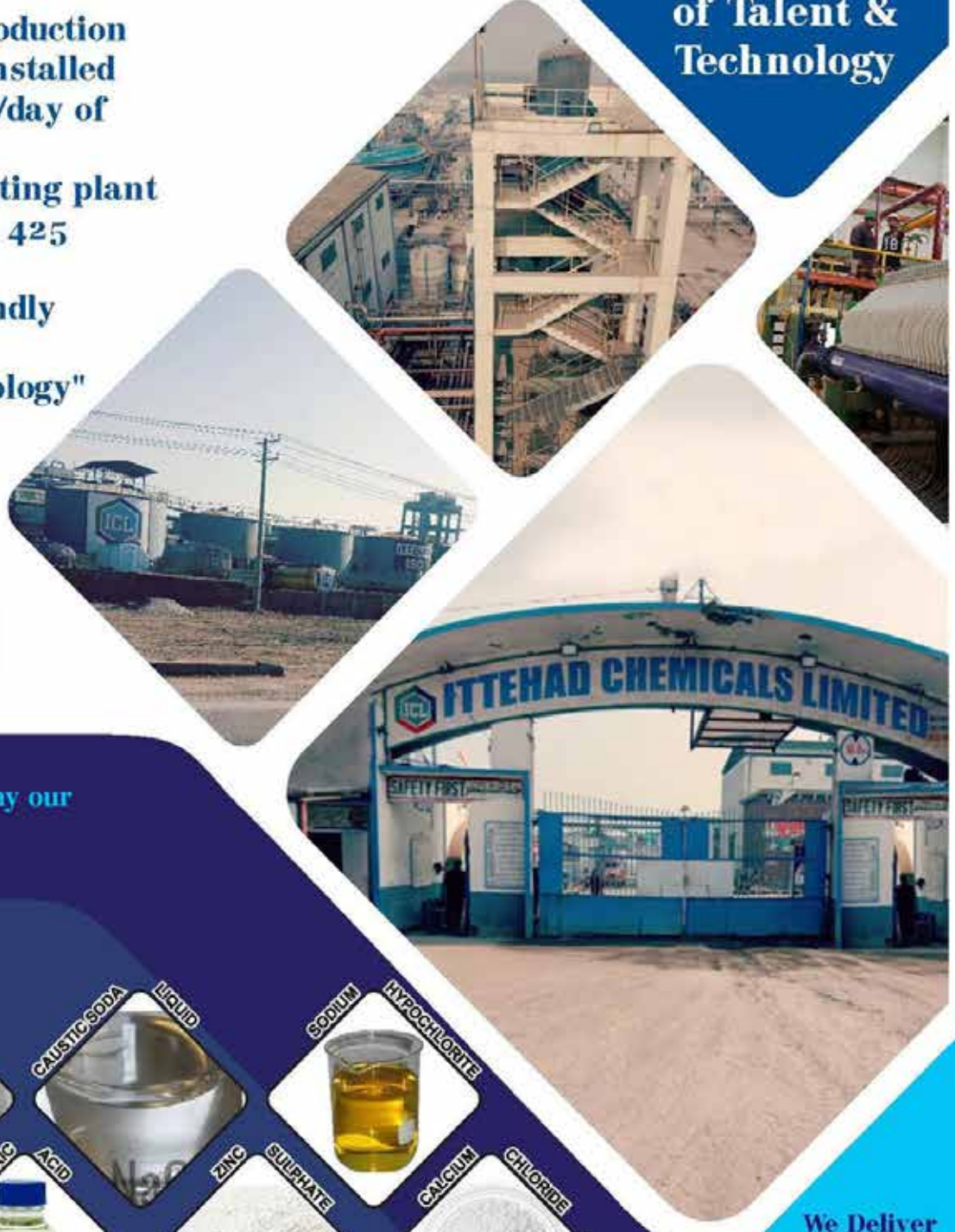
An Ittehad of Talent & Technology

We started our production in 1964 with an installed capacity of 40 MT/day of Caustic Soda.

Currently the existing plant capacity stands at 425 MT/day, using the environment friendly "ION Exchange Membrane Technology"

Mega project spread over 106 Acres

We are running smoothly our LABSA/SLES plant since may 2019



We Deliver more than expected



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- Acetex Plus
- Sodium Sulphate Anhydrous 99%
- Sulphuric Acid 98%
- Aluminium Sulphate 14%



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