MOTT MACDONALD

FICCI



White Paper -

Impact of Free Trade Agreements on Indian Petrochemical Industry

May 2019

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MESSAGE

The inception and the growth phase of the Petrochemical Industry started in the Western Countries. However, since 1990, there was a gradual shift in the industry towards Asia and the Middle East. The Petrochemical Industry is a major pillar of the Indian economy and it is growing at a healthy rate. The per capita Polymer consumption stands at 10 kg whereas the global average is 30 kg; this shows significant scope for growth in the near future. The sector has true potential to bring all-round socio-economic development to the country.

India is a fairly open economy with overall trade (exports plus imports) hovers around 40% of GDP. India needs robust foreign trade policy reforms to ensure sustainable economic development. Free Trade Agreement has its own pros and cons; therefore, it is important to review the policies from time to time.

It is gratifying that an initiative has been jointly undertaken by FICCI National Petrochemicals Committee and Mott MacDonald for bringing out a White Paper which provides a holistic approach to assess the impact of FTAs on Indian Petrochemical Industry.

I am sure, it will be found useful by all stakeholders.



(Prabh Das)



Foreword



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India's petrochemical industry is one of the major contributors to the country's GDP. It serves as a backbone for development of key manufacturing and non-manufacturing sectors viz. agriculture, healthcare, infrastructure to name a few. With sufficient processing capacities, established linkages, significant domestic consumption and investment sources, the domestic industry has enormous potential to emerge as one of the major global players.

Over the past decade, the Government of India has entered into FTAs with major global economies. However, it has been observed that majority of agreements concluded by India have adversely affected the growth of the domestic petrochemicals industry. Trade deficits between India and its trading partners- ASEAN countries, Japan and South Korea, have more than doubled for the petrochemical sector, increasing from $5.1 bn to $12.5 bn, during FY10 to FY18. Resultantly, India is a net-importer of petrochemical goods, as developed countries through subsidies and tariff reduction render domestic manufacturers uncompetitive. The skewed landscape has cast a dark shadow on the financial viability of both existing and new investments.

This paper highlights the fact that India needs to develop a framework of policies that encourage the development of domestic industry and spur investments. Policymakers should exercise caution and take into account the sectoral sensitivities before entering into new FTAs.

Mott MacDonald thanks FICCI for the opportunity to collaborate on this important initiative. We look forward to your kind insights and feedback at manoj.mehta@ficci.com and ajey.nandurkar@mottmac.com.



Content

Executive summary 1

1 Overview of Market Access Arrangements 5

1.1 Importance of Market Access for Supplier Nations 5

1.2 Types of Market Access Arrangements 5

1.3 Trade Agreements and Arrangements in Petrochemical Sector 6

1.3.1 Trade Agreements under Negotiation 7

2 Petrochemical Industry Overview 8

2.1 Global Petrochemical Industry 8

2.1.1 Petrochemical Industry Value chain 8

2.1.2 Major Petrochemical Exporting Nations 9

2.1.3 Major markets 10

2.1.4 India's Positioning 11

2.1.5 India's Trade in Petrochemicals 12

3 Benchmarking Indian Industry 17

3.1 Market Access 17

3.2 Basic Raw Material Scenario 19

3.2.1 Crude Oil 19

3.2.2 Natural Gas 20

3.2.3 Naphtha Scenario 20

3.3 Factor Costs 20

3.4 Scale and Level of Integration 21

3.5 Infrastructure . . . 22
3.6 Conclusion . . . 24

4 India's Market Access Arrangements . . . 25
4.1 India-South Korea CEPA . . . 27
4.1.1 South Korea's Exports and Imports . . . 27
4.1.2 Tariff Reduction Schedule under the India- Korea FTA . . . 28
4.1.3 Rule of Origin . . . 29
4.1.4 Impact of FTA on India's Trade . . . 30
4.2 India- Japan CEPA . . . 31
4.2.1 Japan's Exports and Imports . . . 31
4.2.2 Tariff Schedule under India- Japan CEPA . . . 32
4.2.3 Rule of Origin . . . 33
4.2.4 Impact of FTA on India's Trade . . . 33
4.3 India- Malaysia CECA . . . 34
4.3.1 Malaysia's Exports and Imports . . . 34
4.3.2 Tariff schedule under India- Malaysia CECA . . . 35
4.3.3 Rule of Origin . . . 36
4.3.4 Impact of FTA on India's Trade . . . 36
4.4 India- Singapore CECA . . . 37
4.4.1 Singapore's exports and Imports . . . 37
4.4.2 Tariff Schedule under India-Singapore CECA . . . 38
4.4.3 Rule of Origin . . . 38
4.4.4 Impact of FTA on India's Exports . . . 39
4.5 India - ASEAN CECA . . . 40
4.5.1 India's Tariff Schedule . . . 40
4.5.2 Rules of Origin . . . 40
4.5.3 Impact on India's Trade . . . 41
4.6 Impact of FTA on India's Petrochemical Industry . . . 42
4.6.1 Imports . . . 42
4.6.2 Exports . . . 46
4.6.3 India's Petrochemical Sector Trade balance . . . 47
4.6.4 India's Petrochemical Trade with FTA nations . . . 49
4.7 Conclusion . . . 50
Most of the Trade Agreements came into force during the period 2009-11 including trade negotiations with ASEAN, Japan, Korea and Malaysia. The key impact of these trade agreements as observed are: . . . 52
4.8 RCEP- Proposed Trade Agreement . . . 53

5 Conclusion and Recommendations . . . 56
5.1 Issues and Concerns of the Domestic Industry . . . 56
5.2 Recommendations . . . 56



Executive Summary

Background

Established in 1927, FICCI is the largest and oldest apex business organisation in India. It comprises of various corporations and trade associations. Over the years, FICCI has undertaken policy initiative to address issues of national and economic importance. From influencing government policies to encouraging debates and engaging with policy makers and civil society, FICCI articulates the views and concerns of Indian industry and hence is known as the voice of India's business and industry.

Mott MacDonald is a $2bn engineering, management, and development consultancy. Delivering excellence in 150 countries, through over 16,000 local experts in 180 principal offices Mott MacDonald works with customers across multiple sectors to plan, design, procure and deliver projects on any scale; provide management consultancy built on technical knowledge, shape and implement development policies and programmes; and advance sustainability.

FICCI has appointed Mott MacDonald for study of the impact of Free Trade Agreements on domestic petrochemical industry. This paper attempts to gauge the impact of FTAs on domestic petrochemical industry for the products where the tariffs are either reduced or eliminated.

Indian Petrochemical Industry

The petrochemical industry is a well-established segment in the Indian market being one of the major contributors to the country's economy. The petrochemical sector serves as the backbone for development of various other manufacturing and non- manufacturing sectors such as agriculture, infrastructure, healthcare, automobile, textiles and consumer durables. With adequate processing capacities, established linkages and investment sources, Indian petrochemical industry has enormous potential to evolve as a global leader.

Benchmarking against global leaders and various trading partners it is observed that India has a comparative advantage owing to lower cost of labour and power. However, due to inadequate infrastructure and tariff regimes that favour petrochemical producers in partner countries, the domestic market has not lived up to its full potential. Therefore, the domestic petrochemical market is import-dependent and investments in petrochemicals in India have become unviable. India has limited access to global petrochemical market.

Apart from this, high cost of capital is keeping India at a disadvantage by obstructing large investments. For sustained growth, we need to overcome our structural and non-structural disadvantages, which require governmental support. Till date, Indian petrochemical industry has been expanding without much external efforts. However, now, development of new projects needs to be supported by framing of policies that subsidise infrastructure and utilities, thereby reducing the investment burden. Several countries such as Singapore's Jurong island and China's industrial park in Shanghai have evolved as major petrochemical clusters by adopting policies that promote development of their domestic industries.

Countries get into trade agreements for trade creation, to gain access to foreign markets, to supplement resources they lack, and enable sectoral expansion and revenue generation. Over the past two decades, India has also entered into trade agreements with various countries and country groups, and some agreements in the negotiation phase. Impacts of some of the prominent trade agreements on the domestic petrochemical industry have been discussed in this paper.

India's FTAs in petrochemical sector

Table 1 showcases India's petrochemical industry trade scenario in relation to different trade partners.

Table 1 : India's Trade with FTA Partners

Trade Agreement Group	FTA in effect from	Major Imports	Time Period	Compounded Annual Rate of change in Trade Deficit/ Surplus	
				Plastics & Rubber	Chemicals
India-ASEAN	Jan-10	Synthetic fibres, synthetic rubber and articles thereof	2010-18	(14.3%)	(18.4%)
India- Korea	Jan-10	Synthetic Rubbers (e.g. NBR, SBR), toluene, Polymer of Vinyl Chloride, ABS, HDPE, styrene, ethylene and propylene	2009-17	(9.99%)	(17.08%)
India- Japan	Aug-11	Lubricants, Synthetic rubbers, polymers (e.g. styrene) and various plastic and synthetic rubber articles such as plastic sheets, tiers, pipes etc.	2010-17	(21.51%)	(6.68%)
India-Singapore	Aug-05	Polymers of Styrene, Propylene and ethylene, LDPE, toluene, p-xylene and synthetic rubbers	2010-17	(29.63%)	(16.85%)
India-Malaysia	Jul-11	Resins, plastics and synthetic rubber apparels, sheets and various other articles	2010-17	(3.54%)	19.52%

Source: *MM Analysis, DGFT*

Impact of Trade Agreements on Indian Industries

Trade agreements encourage trade among the signatories by reducing/eliminating various tariff barriers. However, it is observed that majority of the agreements concluded by India have not benefitted the Indian chemicals and petrochemicals industry. Reduction in tariff has largely attracted imports in petrochemical sector. Large-scale imports have crippled domestic manufacturers in their ability to serve the domestic markets and thus they have gravitated towards exports for their survival. Partner nations continue to dump their products into India taking advantage of reduction in duties.

It is observed the balance of trade over the years has deteriorated as India's exports to FTA countries have not outperformed exports to rest of the world, indicating that India has not gained much in terms of access to foreign markets. India's trade deficit (all sectors) with ASEAN (Association of Southeast Asian Nations), South Korea and Japan has increased to $24 billion in FY2017 from $15 billion in FY2011 and US$5 billion in FY06. Trade deficit has more than doubled for the petrochemical sector increasing from US$5.1 billion to US$12.5 billion during FY10 to FY18, thus substantiating the futility of these trade agreements from the domestic producer's perspective.

Table 2 : Trade Balance of Indian petrochemical industry (in US$ Mn)

Year	FY-10	FY-11	FY-12	FY-13	FY-14	FY-15	FY-16	FY-17	FY-18
Trade Balance (in $ Mn)	-7,662	-11,972	-11,107	-12,881	-13,587	-16,641	-14,684	-13,835	-16,805

Source: *DGFT, MM Analysis*

India is heavily dependent on imports for synthetic rubber and synthetic detergents due to low domestic capacities. India's major petrochemical imports include Polypropylene, Styrene, PVC, MEG, HDPE, P-xylene, toluene and various synthetic rubbers such as SBR, NBR and EVA. Major petrochemical exports from India include synthetic fibres, Benzene, P-xylene and polymers of polypropylene.

Broadly, India is a net exporter of synthetic fibres, aromatics and olefins. In case of polymer and fibre intermediates, India is a net importer, with the quantum imports rising over time.

The Indian petrochemical industry is largely dependent on imports rather than domestic production. Imports have overtaken domestic production in lure of tariff reduction and trade liberalization. These increasing imports pose threat to the financial viability of both existing and new investments.

FTAs have created massive dumping gateways for developed countries with mature petrochemical industries into India. Proposed FTAs, especially mega FTAs like Trans-Pacific Partnership (TPP), Trans-Atlantic Trade and Investment Partnership (TTIP) or Regional Comprehensive Economic Partnership (RCEP), may further provide opportunity to developed countries in the domestic market thereby curbing expansion of domestic petrochemical industry and posing threat to recent investments made in the sector. This scenario, in the long run, will dampen investor sentiment and lead to stagnation of the Indian petrochemical industry.

India is already in agreement with most of the trade partners in RCEP, with domestic manufacturers bearing the brunt of the skewed competitive landscape. Historical trends in the balance of trade with RCEP member countries and their impact on domestic markets, suggest that the proposed agreement is apparently not in favour of the Indian petrochemical industry.

Majority of the agreements concluded by India have not benefitted the Indian chemicals and petrochemicals industry. Hence, policy makers need to exercise caution with regards to possible impacts which may follow, while entering into any new agreement.

Considering the impacts of FTAs on the domestic petrochemicals industry we propose the following:

- Constitution of an FTA regulatory board entrusted to review existing FTAs and formulation of FTAs under negotiation
- Designation of the petrochemical industry as a 'core industry'
- Built-in safeguard duty provision in FTAs, to be notified soon after operationalisation
- Exclusion of key petrochemical products sensitive to domestic industry from any tariff reduction
- Comprehensive standards framework for the petrochemicals sector to arrest unhindered market access of FTA trade partners
- Foreign participation through the FDI route for capacity building, as opposed to the FTA route



1 Overview of Market Access Arrangements

1.1 Importance of Market Access for Supplier Nations

Trade agreements provide preferential market access to the nations that result in economic, social and other dynamic benefits ranging from trade creation, market expansion to capital accumulation and productivity improvement. Such market access arrangements also lead to increase in participation of developing countries in the world markets; thereby, shifting production bases from developed nations to developing and under-developed nations.

Benefits of Trade Agreements:

- Trade Creation
- Market Expansion
- Capital Accumulation
- Productivity Improvement
- Precursor to investment
- Employment enhancement

1.2 Types of Market Access Arrangements

- **Preferential Trade Agreement (PTA):** In a PTA, two or more partners agree to reduce tariffs on agreed number of tariff lines. The list of products on which the partners agree to reduce duty is called positive list.

- **Free Trade Agreement (FTA):** FTAs are arrangements between two or more countries or trading blocs that primarily agree to reduce or eliminate customs tariff and non-tariff barriers on substantial trade between them.

  FTAs normally cover trade in goods (such as agricultural or industrial products) or trade in services (such as banking, construction, trading etc.). FTAs can also cover other areas such as intellectual property rights (IPRs), investment, government procurement and competition policy, etc. Each member of FTA retains its own tariff, trade restrictions and commercial policies with non-member countries. As compared to a PTA, FTAs are generally more ambitious in coverage of tariff lines (products) on which duty is to be reduced.

- **Comprehensive Economic Cooperation Agreement (CECA) and Comprehensive Economic Partnership Agreement (CEPA):** Both CECA and CEPA are almost similar in nature but CEPA has a wider scope than CECA. CECA is concerned with tariff reduction/elimination in a phased manner on all / listed tariff rate quota (TRQ) items. On the other hand, CEPA in addition to the components of CECA also covers trade in services and investment, and other area of economic partnership.

CECA is considered as the first step or a stepping stone to accomplish CEPA. If negotiations can still be conducted between countries, and both parties are open to discussion and have a good economic relationship with each other, CECA can evolve into CEPA.

- **Customs Union:** In a Customs Union, partner countries may decide to trade at zero duty among themselves while maintaining common tariffs for the rest of the world. This means that members may negotiate as a single block with third parties.

  Customs Union are like FTA as there is tariff-free movement of goods among the members. However, while FTA permits each member to retain its own tariff against non-members, the Customs Union adopts a common external tariff against them.

- **Common Market:** Common Market is an agreement between two or more countries that permits the free movement of capital and labour as well as goods and services. The primary objective of a common market is economic convergence and creation of an integrated single market.

- **Economic Union:** Economic Union is a Common Market extended through further harmonization of fiscal/ monetary policies and shared executive, judicial & legislative institutions. European Union (EU) is an example of Economic Union.

1.3 Trade Agreements and Arrangements in Petrochemical Sector

India has trade agreements and arrangement with ASEAN, Japan, Sri Lanka, South Korea, Malaysia and Singapore.

India-ASEAN	India-ASEAN signed the Trade in Goods Agreement under the broader framework of Comprehensive Economic Cooperation Agreement (CECA) 13th August 2009. Members include Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam. The agreement came into force on January 1, 2010 with Malaysia, Singapore and Thailand; 1st June 2010 with Vietnam; 1st September, 2010 with Myanmar; 1st October 2010 with Indonesia; 1st November, 2010 with Brunei; 24th January, 2011 with Laos; 1st June 2011 with Philippines; and 29th July 2011 with Cambodia.
India-Japan	India- Japan signed a Comprehensive Economic Partnership Agreement (CEPA) on 13 February 2011 which came into force from 1st August 2011.
India-Sri Lanka	The India-Sri Lanka FTA was signed on December 28, 1999 and became operational from December 15, 2001. Recognising the need for progressive reduction and elimination of tariffs in goods, the countries agreed for a mutually acceptable tariff reduction schedule besides other area of co-operate to expand the bilateral trade.
India-Korea	India-Korea signed a FTA to liberalise and facilitate trade in goods and services and expand investment between the nations. The FTA came into effect from 1 January 2010.
India-Malaysia	India and Malaysia signed a Comprehensive Economic Cooperation Agreement (CECA) on 18th February 2011 which came into force on 1st July 2011. The CECA cover Trade in Goods, Services, Investment and Economic Cooperation.
India-Singapore	India-Singapore FTA came into effect from August 1, 2005 and is reviewed from time to time. Singapore has zero customs tariff on all tariff lines i.e. Singapore has agreed to bind all their tariff lines at zero custom duty for India.

1.3.1 Trade Agreements under Negotiation

India is in the process of negotiating Free Trade Agreements to gain access to markets of the following nations.

- India-EU
- India- Gulf Cooperation Council
- India- Thailand
- India- Indonesia
- India- Australia
- RCEP

2 Petrochemical Industry Overview

2.1 Global Petrochemical Industry

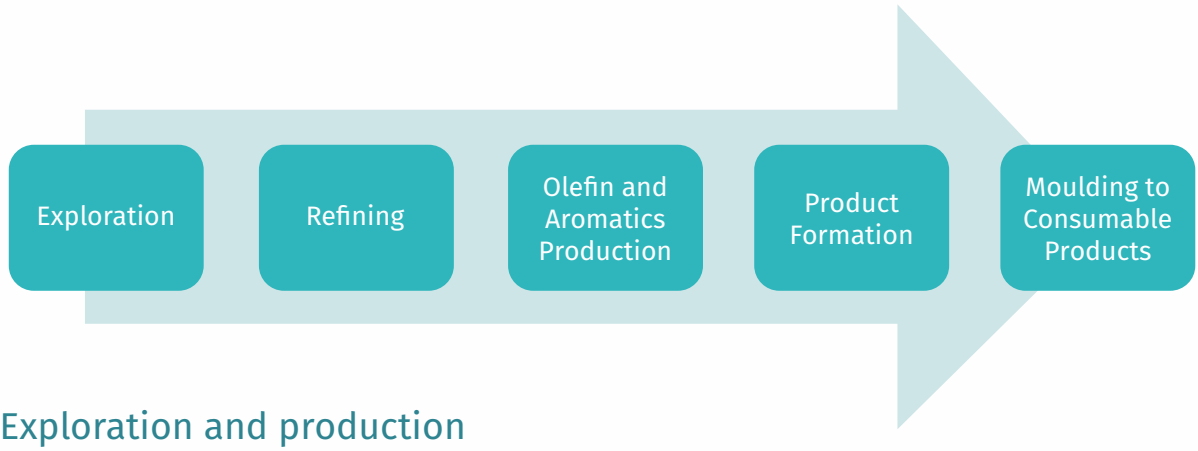
The petrochemical industry, also called downstream petroleum industry, includes production and trade of petrochemicals. It directly interfaces with the petroleum industry and a major part of it is constituted by the plastics (polymer) and synthetic rubber industry.

Petrochemicals are derived from various chemical compounds, mainly hydrocarbons. These hydrocarbons are derived from processing of crude oil and natural gas. Petroleum gases, naphtha, kerosene and gas oil produced by distillation of crude oil are the main feed-stocks for the petrochemical industry.

The global trade of petrochemical products was worth US$ 635 billion in 2016, which is approximately 4.3% of the trade of all commodities across the globe.

2.1.1 Petrochemical Industry Value chain

Stages of Petrochemical Industry value chain:



Exploration and production

Petroleum resources and reserves are the starting point of the petrochemical value chain with Oil and Natural gas as the basic raw material. Exploration is process of searching and extracting hydrocarbon deposits from beneath the Earth's surface.

The crude petroleum obtained by exploration is sent to oil refining and gas processing units to turn it into usable form.

Refining

Oil refining is the process of separating the hydrocarbon molecules present in crude oil and converting them into more valuable finished petroleum products. Refineries can consist of several different process units that undertake separation, conversion and treatment of oil.

Fuel oil, gas oil, jet/kerosene, gasoline, naphtha and liquefied petroleum gases (LPG) are the major products obtained from refining of crude oil of which naphtha, natural gas and natural gas liquids constitute the principal feedstock for the petrochemicals industry.

Olefin and Aromatics production

Olefins and aromatics are the basic building blocks of petrochemical industry. These are produced by steam cracking of petroleum feedstock (ethane, propane, butane and naphtha).

Cracking is the process whereby complex organic molecules or long-chain hydrocarbons are broken down into smaller, often unsaturated, hydrocarbons. In this process, steam cracker units are fed with feedstock such as naphtha, LPG, ethane, propane or butane, which is thermally cracked through the use of steam in a bank of pyrolysis furnaces to produce lighter hydrocarbons.

Cracking of light hydrocarbon feeds produces streams rich in olefins (ethylene, propylene, and butadiene), while heavier hydrocarbon feeds give products rich in aromatic hydrocarbons (benzene toluene and xylenes).

Product formation

Olefins and aromatics undergo the process of polymerization to produce various polymers (such as polystyrene, LDPE, HDPE, LLDPE, PVC), elastomers (e.g. butadiene rubber, SBR, NBR), synthetic fibre (e.g. polyester filament yarn, nylon yarn), resins and plastics (such as ABS resin, PET etc.)

Moulding to Consumable products

Petrochemical products and intermediates are moulded to form a wide variety of everyday products such as pipes, tubing, plastic bags and bottles, dyes, paints, synthetic fabrics, car tyres and various automotive and electronic components.

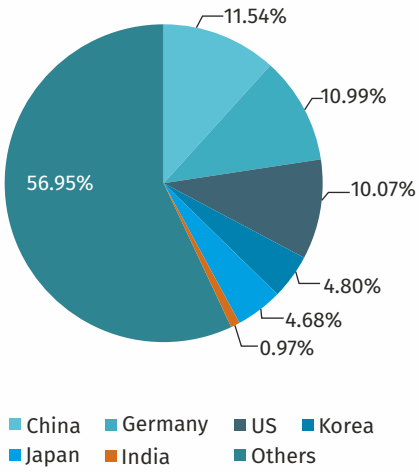
2.1.2 Major Petrochemical Exporting Nations

United States (US) is the leading petrochemical exporter with share of 10.89% in global exports followed by China and Germany with 9.02% and 7.74% share respectively.

The share of petrochemical exports categorized as plastics and rubber and chemicals is shown in Figure 2 and Figure 3.

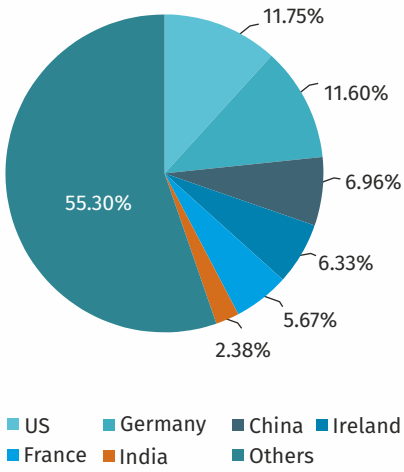
Plastics and rubber articles include petrochemical materials (e.g. polymers, elastomers, resins etc) and products made from these materials. Chemicals constitute various organic (including petrochemical intermediates, building blocks and their derivatives) and inorganic chemicals, fertilizers, dyes, detergents, cosmetics, glues.

Figure 2: Plastic and rubber exports (2017)



Source: *World Integrated Trade Solutions*

Figure 3: Chemical exports (2017)



Source: *World Integrated Trade Solutions*

With high processing capacities, China is the largest exporter of plastics and rubbers with share of 11.54% in the global trade followed, by Germany, US, Korea and Japan. While India contributes only 0.97% to the global plastic and rubber exports.

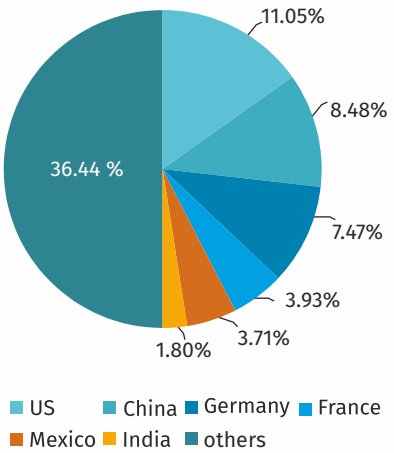
With total chemical exports over US$ 1,518.5 Bn across the world, US is the largest exporter with a share of about 11.75% followed by Germany, China, Ireland and France. While India contributes only 2.38% to the global chemical exports.

2.1.3 Major Markets

United States is the world's leading importer of Plastic and Rubber articles with a share of 11.05% followed by China, Germany, France and Mexico. India's plastic and rubber imports accounts to about 1.8% of the global imports.

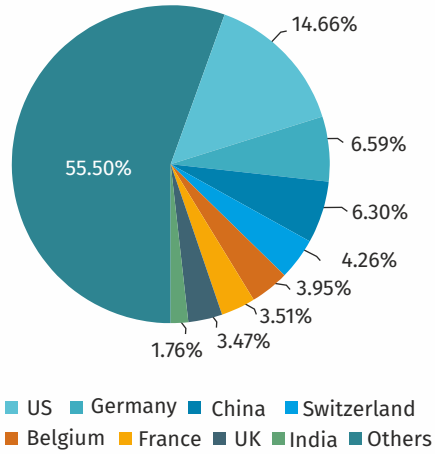
Figure 4 and Figure 5 depict share of major petrochemical importers by their share in global trade.

Figure 4: Plastic and rubber Imports (2017)



Source: *World Integrated Trade Solutions*

Figure 5: Chemical Imports (2017)



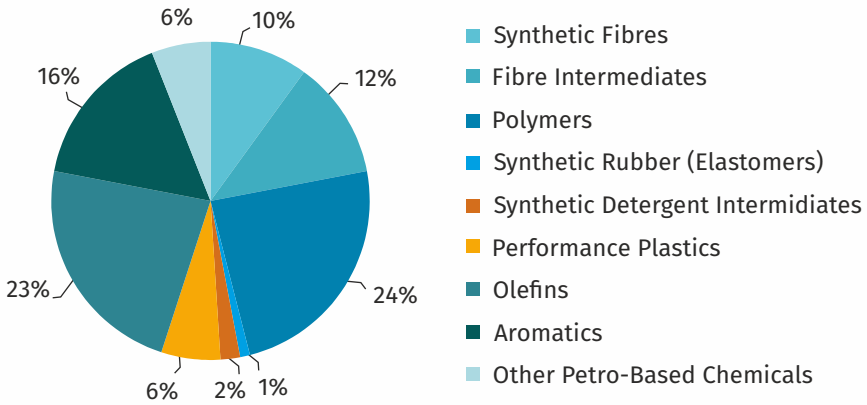
Source: *World Integrated Trade Solutions*

US with chemical imports worth US$ 263 Bn, is the leading importer of Chemicals with share of about 11.05% followed by Germany, China, Switzerland, Belgium and France. India constitutes to about 1.76% of global chemical imports.

2.1.4 India's Positioning

India's petrochemical industry has been one of the fastest growing industries in the Indian economy. It provides the foundation for manufacturing industries such as pharmaceuticals, construction, agriculture, packaging, textiles, automotive, etc. The major accelerator for the growth of the petrochemical industry in India is its on-going economic development.

Figure 6 : Share of Installed Capacity of Major Petrochemical Groups 2016-17



Source: *Chemicals and Petrochemicals Statistics – 2017, DCPC, Ministry of Chemicals and Fertilizers, Govt. of India*

Figure 6 provides a snapshot of installed capacity mix of major petrochemical groups in India for the year 2016-17. The Consultants observe that polymers have the highest installed capacity at 24%, followed by olefins at 23% and aromatics at 16%. synthetic rubber and synthetic detergent intermediates have the least installed capacity at 2% and 1% respectively.

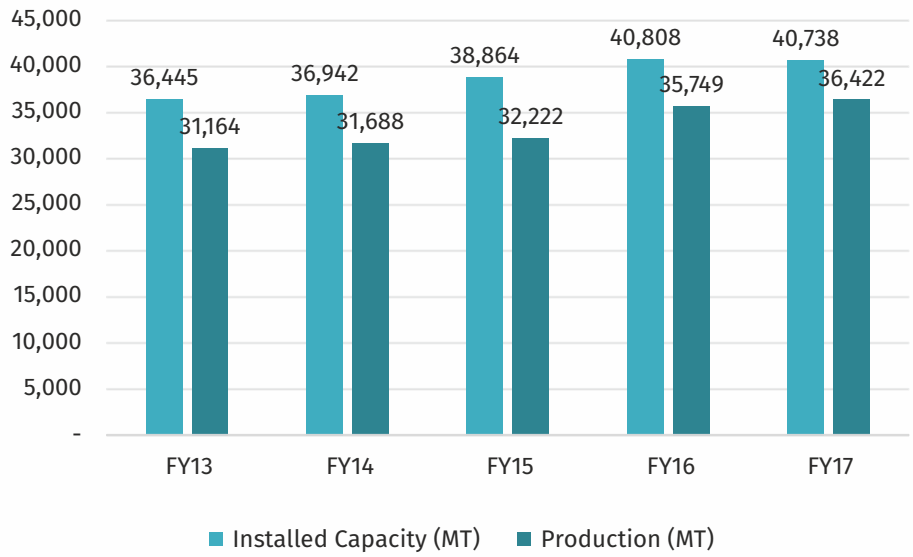
MM notes that regions such as Northeast Asia, Southeast Asia, the Middle East, and the Indian Subcontinent are investing in increasing their ethylene capacity. Ethylene demand is expected to grow substantially over the next few years.

Major players dominating the Indian petrochemical market are Reliance Industries Ltd. (RIL), Indian Petrochemical Ltd. (IPCL), Gas Authority of India Ltd (GAIL), and Haldia Petrochemicals Ltd. (HPL).

The Indian petrochemical industry has made substantial investments over the years to augment domestic production capacities, notwithstanding the structural disadvantages. Several new projects are in various stages of commissioning involving several thousand crores of investments. Inclusion of petrochemical products in FTAs for tariff concessions poses a threat to the financial viability of both existing and new investments.

Historical capacity and production for major petrochemicals in India are given in Figure 7. Capacity and production have grown at modest CAGRs of 2.8% and 4.0% respectively.

Figure 7: Historical Capacity and Production (000' MT)



Source: *Chemicals and Petrochemicals Statistics – 2017, DCPC, Ministry of Chemicals and Fertilizers, Govt. of India*

The domestic capacity constitutes processing and production of a variety of petrochemicals products and intermediates such as polymers, synthetic fibres, elastomers, olefins, aromatics, and synthetic detergents.

India has overflowing capacities for certain petrochemicals such as for most synthetic fibres and building blocks while they seem unable to fulfil domestic demand for various synthetic rubbers and intermediates.

The Consultants note that domestic petrochemical industry has been at a disadvantage during the last few years. However, efforts are being made for its development, with proposal of huge investments towards capacity addition of various key petrochemicals to bridge the demand supply gap.

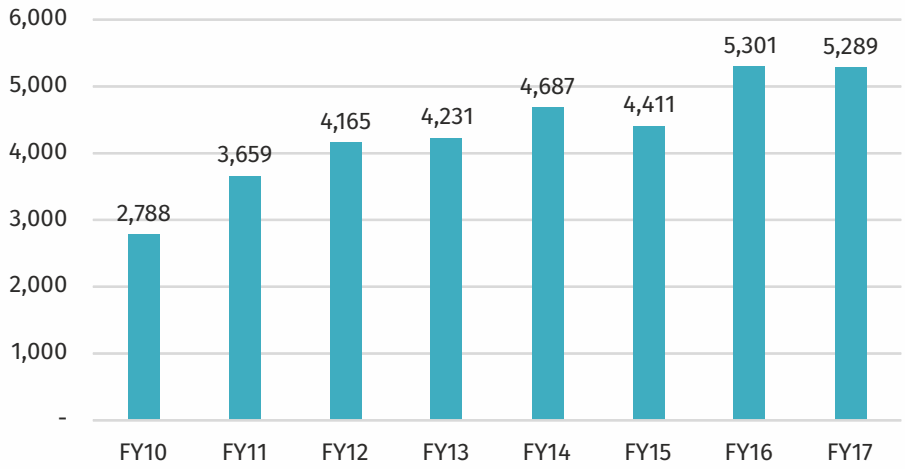
2.1.5 India's Trade in Petrochemicals

Over the last two decades, India's trade policy has undergone a tectonic shift. India, as an economy, has taken pro-active steps in the direction of integrating with the global economy and with global value chains. Increased engagement in FTAs is a key component of India's approach to an open trade regime. The pace of India's engagement in FTAs has accelerated in recent times with operationalization of several FTAs like those with ASEAN, Japan, Korea, Malaysia, etc. with several more under negotiation.

2.1.5.1 Exports

Figure 8 below depicts the petrochemical exports by India for FY10- FY 17

Figure 8: Petrochemical Exports (Qty in `000 MT)

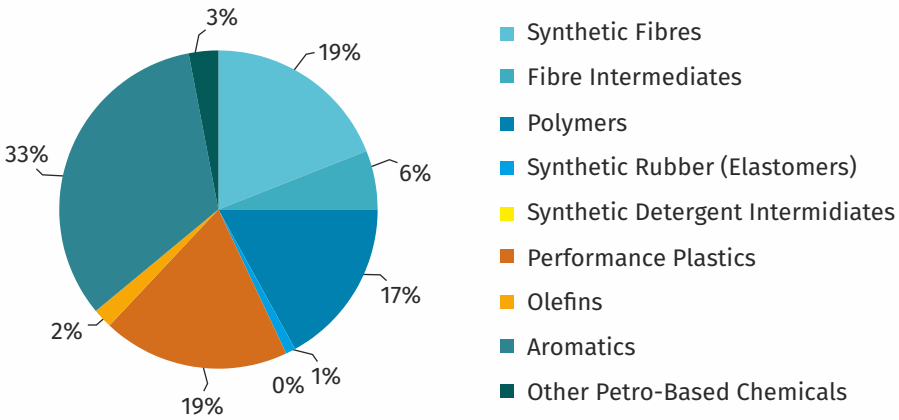


Source: *Ministry of Commerce and Industry, Govt. of India*

The Consultants note that:

- India's petrochemical exports have grown at CAGR of 9.5% from FY10 to FY17
- India is the leading producer and exporter of synthetic fibre and aromatics constituting more than 19% and 30%, respectively, of the total petrochemical exports from India

Figure 9 : Share of Groups Under Total Export (Qty.) of Major Petrochemicals 2016-17

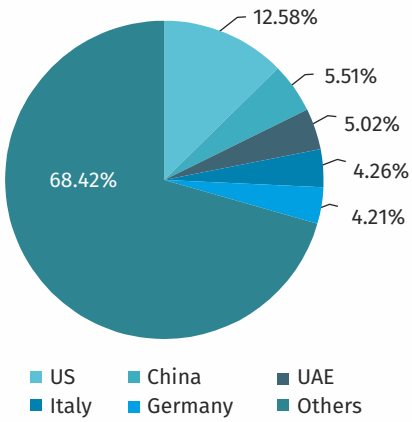


Source: *Chemicals and Petrochemicals Statistics – 2017, DCPC, Ministry of Chemicals and Fertilizers, Govt. of India*

Figure 9 reflects the share of exports (quantity) for major petrochemical groups in India. The Consultants note that aromatics have the highest export quantity comprising 33% of the total petrochemical export, followed by synthetic fibres and performance plastics at 19% of the total export quantity. Synthetic rubber and synthetic detergent intermediaries are the least exported petrochemical group comprising about 1% of the total export quantity. reflects the share of exports (quantity) for major petrochemical groups in India.

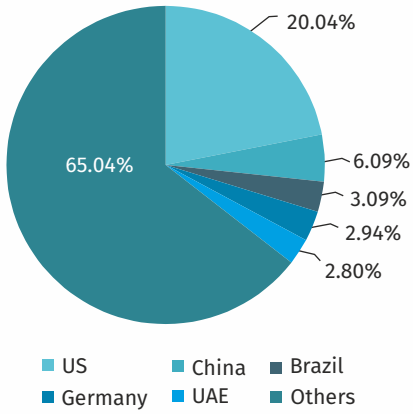
Figure 10 and Figure 11 depict the share of major petrochemicals importing nations

Figure 10: Top Plastic and Rubber Export Destinations (2017)



Source: *World Integrated Trade Solutions*

Figure 11 : Top Chemical Export Destinations (2017)



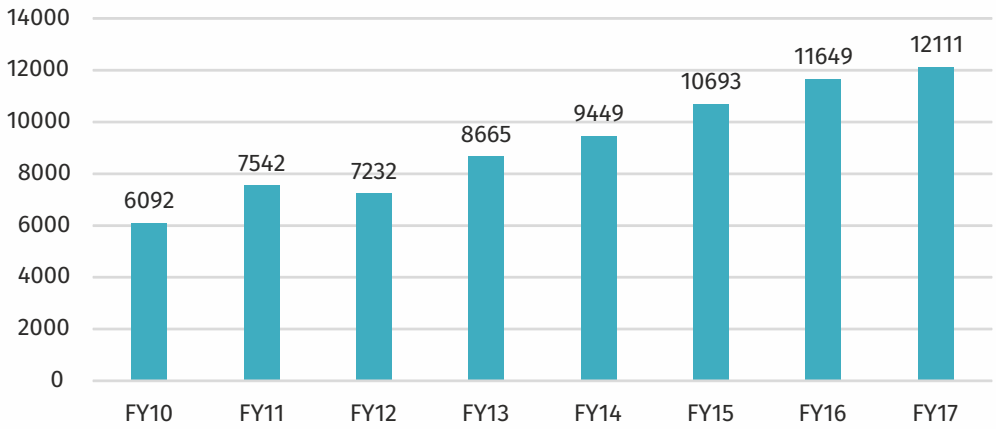
Source: *World Integrated Trade Solutions*

US is the leading importer of Indian petrochemical products with a share of 12.58% in plastic and rubber and 20.04% share of total chemicals, followed by China, Germany and the UAE.

2.1.5.2 Imports

India's petrochemical imports have risen at a CAGR of 5.8% from FY10 to FY17. India majorly imports polymers, constituting to about 36% of total petrochemical imports to India followed by synthetic fibres and fibre intermediates. India's petrochemical imports from FY11 to FY17 is depicted in Figure 12.

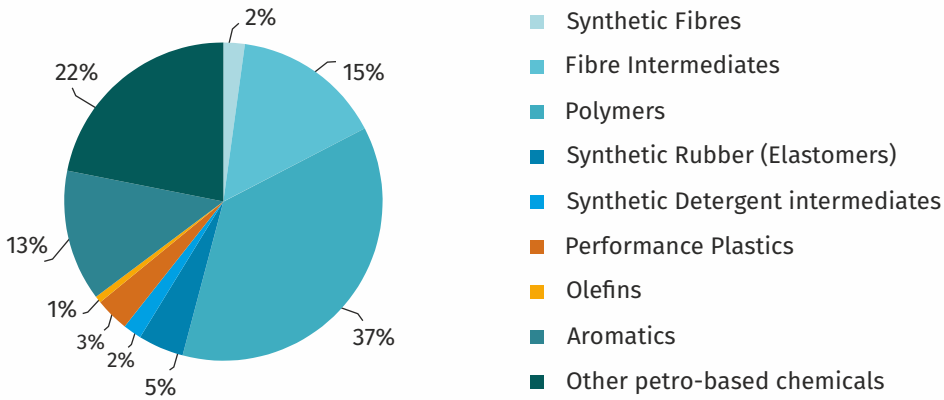
Figure 12: Petrochemical Imports (in 000' MT)



Source: *Ministry of Commerce, Govt. of India*

The Consultant's note that there was a sudden increase in petrochemical imports during FY11 as an outcome of signing of newer FTAs with Japan and Malaysia and increased tariff liberalization under existing FTAs.

Figure 13: Petrochemical Imports (Qty in 000' MT)- 2016-17

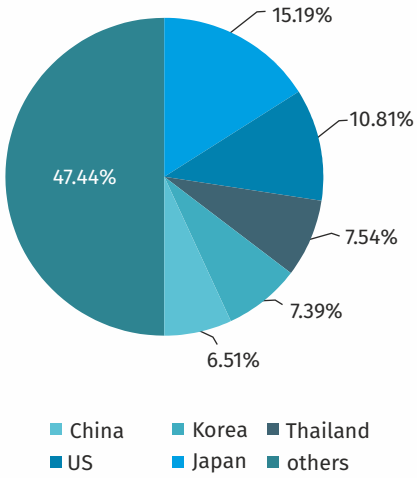


Source: *Ministry of Commerce*

Major suppliers

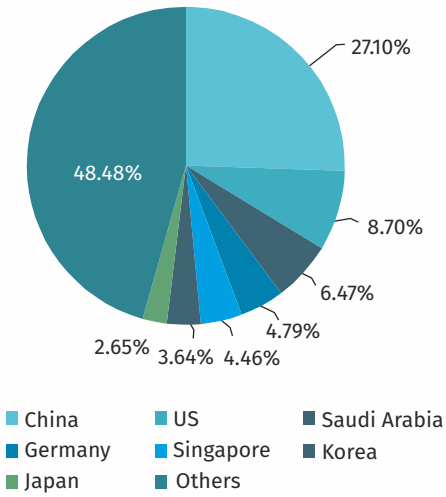
China, Middle East, Korea, United States, Thailand and Japan are the major petrochemical product suppliers to India while China, United States, Saudi Arabia, Germany and Singapore are the major chemical suppliers. This is illustrated in Figure 14 and Figure 15.

Figure 14: Share of Plastic and rubber supplier nations- 2017



Source: *World Integrated Trade Solutions*

Figure 15: Share of chemical supplier nations- 2017



Source: *World Integrated Trade Solutions*

The Consultants note that:

- India imported chemicals worth US$ 38.4 Bn and worth US$ 16.2 Bn plastic and rubber articles as of 2017
- China, US, Germany being are the major suppliers to Indian petrochemical sector due to high processing capacities and surplus of petrochemicals in these countries

MM observes that India's major portion of trade is with non-FTA nations like US, China and Germany. FTA nations do not contribute significantly to India's petrochemical exports. However, they account for a sizeable chunk of India's petrochemical imports

3 Benchmarking Indian Industry

In this chapter benchmarking of Indian petrochemical industry has been done with FTA nations and leading petrochemical players across the globe, based on various aspects important to the industry such as market access, raw material, factor cost, scales and level of integration in industry and infrastructure.

3.1 Market Access

United States

United States has emerged as one of the leading exporters of Petrochemicals in the world. It enjoys preferential access in Canada and Mexico under NAFTA. It also enjoys a significant share in markets of UAE, Korea and Singapore under various FTAs.

Table 3: Market access to US

Market	Market Access arrangement	Exports (in US$ billion)
Canada	NAFTA	21.28
UAE	MENA	0.89
Mexico	NAFTA	23.32
South Korea	FTA	4.06
Singapore	FTA	2.76

Source: *Statista*

China

In recent years, China has emerged as a leading exporter of petrochemicals. It is also the world's leading producer of Synthetic Fibres. It contributes a major portion to global petrochemical and chemical exports.

Table 4 : Market access to China

Market	Market Access arrangement	Exports (in US$ billion)
ASEAN	FTA	7.44
Switzerland	FTA	0.97
South Korea	FTA	5.22

Source: *Statista*

Japan

Japan is one of the major exporters of petrochemicals with significant share in markets of major petrochemical trading nations and groups such as US, ASEAN and South Korea under various FTAs

Table 5 : Market access to Japan

Market	Market Access arrangement	Exports (in US$ billion)
South Korea	FTA	6.60
US	FTA	7.56
ASEAN	FTA	1.40

Source: *Statista*

Germany

Germany has a significant market access to the EU petrochemical industry.

Table 6 : Market access to Germany

Market	Market Access arrangement	Exports (in US$ billion)
EU	FTA	55.7

Source: *Statista*

India

Despite having FTAs with ASEAN, Korea, Japan, Malaysia and Singapore India's petrochemical exports to partners have been relatively low.

Table 7 : Market access to India

Market	Market Access arrangement	Exports (in US$ billion)
South Korea	CEPA	301.90
Japan	CEPA	447.60
Singapore	CEPA	273.20
Malaysia	CEPA	247.10

Source: *Statista*

South Korea

South Korea has trade agreements with established markets such as China and US. It has significant access to major markets like China.

Table 8 : Market access to Korea

Market	Market Access arrangement	Exports (in US$ billion)
US	FTA	4.83
China	FTA	16.27
EU	FTA	7.3
India	CEPA	1.8

Source: *Statista*

Singapore

Singapore being a petrochemical hub has trade agreements with major markets like US and China. It has significant market access to Chinese petrochemical industry.

Table 9 : Market access to Singapore

Market	Market Access arrangement	Exports (in US$ billion)
China	FTA	6.34
India	CECA	1.5
Japan	CEPA	1.35
US	FTA	1.49

Source: *Statista*

3.2 Basic Raw Material Scenario

3.2.1 Crude Oil

US with large number of refineries and large processing capacity, has higher production of crude oil as compared to other competing nations. However, countries like India, Japan, China, South Korea and Singapore are mostly dependent on imports.

Table 10: Crude oil scenario- 2017

Year 2017	Unit	China	US	Germany	Japan	India	South Korea	Singapore
Production	tbpd	3823.5	9355	46.3	3918.0	719.9	-	-
Import	tbpd	8425.7	7912	1843.0	3235.2	4341.5	2,938.0	906.7
Export	tbpd	1,146.8	1118	450.2	-	-	1,312.9	17.1

Source: *OPEC Annual Statistics Bulletin- 2017*

3.2.2 Natural Gas

Natural gas serves as a raw material for petrochemical industry and forms base for feedstock processing. US and China have sufficient Natural gas production capacity, while India, Germany, Japan, South Korea and Singapore depend mostly on imports to meet their demands.

Table 11 : Natural gas scenario- 2017

Year 2017	Unit	China	US	Germany	Japan	India	South Korea	Singapore
Production	m cub m	1,43,979	7,62,276	7,606.0	4,175	31,621	339.8	-
Import	m cub m	90,847	86,087	109,222.4	120,501	27,570	48,650	13,480
Export	m cub m	-	89,718	26,887.2	-	-	-	622.9

Source: *OPEC Annual Statistics Bulletin- 2017*

3.2.3 Naphtha Scenario

India, China and Japan have higher naphtha production capacities compared to US and Germany, despite US having sufficient capacity. However, Singapore, South Korea and Japan seem to be highly dependent on imports to meet their demand.

Table 12 : Naphtha scenario- 2017

Year 2016	Unit	China	US	Germany	Japan	India	South Korea	Singapore
Production	TMT	45,850	8,256	9,412	15,247	20,378	32,527	1,856
Import	TMT	6,647	1,130	7,277	18,864	2,984	23,017	9,112
Export	TMT	-	-	440	73	7116	5,855	742

Source: *United Nations*

3.3 Factor Costs

Labour Cost

Table 13 : Labour cost

Country	China	US	Germany	Japan	India	South Korea	Singapore
Unit	USD/ hr.	USD/ hr.	USD/ hr.	USD/ hr.	USD/ hr.	USD/ hr.	USD/ hr.
Labour Cost	2.6	35.6	46.7	35.3	2	20.7	24.16

Source: *U.S. Bureau of Labour Statistics, 2013*

The wage cost in India is quite low when compared to key competing nations. Japan and Germany have the highest wages amongst the competing nations. While labour cost in South Korea and Singapore are high compared to India, they have developed sufficient training and infrastructure to meet their industry requirements. India having the benefit of cheap labour is focusing on development of a pool of skilled workforce.

Cost of Capital

Table 14 : Interest Rates

Country	China	US	Germany	Japan	India	South Korea	Singapore
Unit	%	%	%	%	%	%	%
Commercial Prime Lending Rate (%)	4.3	4.30	1.80	1.50	9.45	3.48	5.28

Source: *The World Fact Book, CIA*

Interest costs are the lowest in Japan, followed by Germany, China, US and South Korea. India has the highest interest cost. High cost of capital in India is a hindrance to major capital investments.

3.4 Scale and Level of Integration

US and China are the largest manufacturers and exporters of petrochemical products. Both the countries feature in complete value chain i.e. from raw material exploration to finished products. Germany is a leading exporter and importer of global Petrochemicals with significant production of petrochemical building blocks. India is leading exporter of Synthetic Fibre after China.

Table 15 : Scales and Level of Integration

	Exploration and Production	Naphtha (Feedstock)	Olefins and Aromatics (Building Blocks)	Basic petrochemicals
US	US is second largest importer of crude oil after China US is the wold's top refined oil and natural gas exporter with 516 processing plants of Total capacity: 64,659 million cubic feet per day	US is leading producer of Naphtha constituting 20% of the global naphtha production	US is leading producer and exporter of ethylene	US is the top exporter of synthetic Rubber accounting for 14% of global export
China	With low domestic production of Oil and natural gas, China relies heavily on the international market for its oil supply China is world's top importer of crude oil	China relies more on naphtha imports than domestic production, due to low cost of imported naphtha	China is a major producer of Benzene and major importer of ethylene	China is the largest manufacturer of synthetic fibres. It accounted for 36% of the global exports
Germany	Germany mostly relies on international trade for most petroleum products.	Germany is a net importer of Naphtha	Germany is leading producer and exporter of olefins	Germany is world's third largest trading nation in petrochemicals. Germany is also a major importer of most polymers.

	Exploration and Production	Naphtha (Feedstock)	Olefins and Aromatics (Building Blocks)	Basic petrochemicals
India	India has 5,749.0 mb of crude oil and 1,458.2 bn cm of natural gas reserves. India majorly relies on Middle East countries for petroleum products	India has low naphtha import and it relies on its domestic production to meet its demand.	India is a leading importer of toluene	India is second largest exporter of polyester filament yarn after China having 26% share in global export
Japan	Japan relies on imports for its oil supply	Japan depends on imports for more than 50% of the total naphtha consumption	Japan is leading exporter of toluene accounting to 16% of global export and second largest exporter of Para-xylene	Japan is a leading importer of plastics and rubbers
South Korea	Korea is a net importer of crude oil and Natural gas	Korea depends on domestic production and imports to meet its demand	Korea is net exporter of Benzene, P- Xylene, M-Xylene and major olefins	Korea is net exporter of synthetic fibre and synthetic rubber
Singapore	Singapore is net importer of crude oil and natural gas	Singapore majorly depends on imports to meet its naphtha demand	Singapore is leading exporter of toluene	Singapore is net exporter of synthetic rubber

Source: *OEC*

3.5 Infrastructure

Infrastructure plays a very important role in today's price and time sensitive market. Lack of proper infrastructure can make economies unable to take advantage of the resources that they are endowed with.

Infrastructure is an important factor for faster economic growth and alleviation of poverty in the country. The adequate infrastructure in the form of road and railway transport system, ports, power, airports and their efficient working is also required for integration and development of a country's economy.

Table 16 gives a brief infrastructure comparison of India with established markets and FTA nations

Table 16 : Infrastructure comparision

Country	Internet Penetration	Airports	Railway Density	Road Density	Major Ports	Petrochemical Industrial Regions
		No.	Km/100sq.Km	Km/ sq. Km		
US	88.50%	5,054	3.21	0.47	Baton Rouge, Corpus Christi, Hampton Roads, Houston, Long Beach, Los Angeles, New Orleans, New York, Plaquemine (LA), Tampa, Texas City	Mid-Atlantic States, Lake Michigan Region, Southern Appalachian Region, Eastern Texas, Pacific Coastal Region

Country	Internet Penetration	Airports	Railway Density	Road Density	Major Ports	Petrochemical Industrial Regions
		No.	Km/100sq.Km	Km/ sq. Km		
China	52.50%	463	1.33	0.43	Dalian, Ningbo, Qingdao, Qinhuangdao, Shanghai, Shenzhen, Tianjin	TEDA/TEDA West (Tianjin) Nanjing (two sites) (Jiangsu), Shanghai (Caojing)
Germany	96.00%	318	9.64	1.85	Baltic sea-Rostock, North Sea-Wilhelmshaven	Ruhr district in North Rhine-Westphalia
India	34.80%	253	2.31	1.58	Chennai, Kandla, Kolkata, Mumbai, Sikka, Vishakhapatnam	Gujarat (Dahej) is a cluster of petrochemical industries and is undergoing development of PCPIR to boost investments in the sector
Japan	91.10%	142	7.49	2.72	Chiba, Kawasaki, Kobe, Mizushima, Moji, Nagoya, Osaka, Tokyo, Tomakomai, Yokohama	Keihin Industrial Zone, Tohoku Region, Kinki Region, Kyushu Region
South Korea	85.70%	71	4.1	1.03	Busan, Incheon, Gunsan, Kwangyang, Mokpo, Pohang, Ulsan, Yeosu	Banwol-Siwha, Cheongju industrial complex, Ulsan-Mipo and Onsan, Yeosu national industrial complex
Singapore	82.40%	9	-	4.93	Jurong Port, Port of Singapore, Keppel Harbour, Serangoon Harbor	Jurong Island

Source: *World Factbook, CIA*

Power Cost

Table 17 : Power cost

Country	China	US	Germany	Japan	India	South Korea	Singapore
Unit	Cents/kwh	Cents/kwh	Cents/kwh	Cents/kwh	Cents/kwh	Cents/kwh	Cents/kwh
Power Cost	8-10	12-14	30-33	19-22	8-10	11-12	16-18

Source: *Statista*

Cost of power in India is competitive compared to China, US and South Korea. However, there is erratic and limited power supply in some parts of India. China enjoys a low power cost along with proper infrastructure. Germany, US, Japan and Singapore have higher power cost than India. Japan and Germany have high cost of power, however their supplies are consistent and reliable.

3.6 Conclusion

Mott MacDonald has benchmarked India's determinants of competitiveness in the petrochemical industry vis-a-vis global market leaders and FTA partners viz. the US, China, Germany, South Korea, Japan and Singapore. In terms of market access, the leading petrochemical nations have leveraged their FTAs with their trade partners thus increasing their exports and balance of trade in their favour. India is heavily dependent on imports for key raw materials such as crude and natural gas. While labour costs in India are low, high cost of capital, teething issues in land acquisition hamper new investments. Issues with industrial infrastructure, virtual absence of petrochemical hubs, low fiscal incentives drive up the cost of production, rendering Indian petrochemical exports uncompetitive in the global market.

4 India's Market Access Arrangements

For long term growth and development of the Indian petrochemical industry, it is important to critically look at the sector's experience of FTAs and gains accrued therefrom.

The following chapter is based on the analysis of market access arrangements of India with nations it has entered in FTA with. The scope of this chapter includes the study of trade agreements of India with ASEAN, South Korea, Japan, Malaysia, Singapore and analysis of their impacts on Indian petrochemical Industry.

Table 18 lists the products sensitive to Indian petrochemical industry.

Table 18 : List of Products Sensitive to Indian Petrochemical Industry

HS Code	Description	Rationale for Exclusion
Chapter 29		
29022000	Benzene	Surplus capacity
29023000	Toluene	Large domestic presence
29053100	Ethylene glycol "ethynediol"	Large capacity addition underway
29152100	Acetic Acid	Large capacity addition planned
29161100	Acrylic Acid & its salts	Large capacity addition planned
29161210	Butyl Acrylate	Large capacity addition planned
29173600	Terephthalic acid and its salts	Surplus capacity. Large investment being made.
Chapter 38		
38170011	Linear alkylbenzene	Local manufacturing would be impacted
Chapter 39		
39011010	LLDPE	Tariff is already low and there is significant surplus capacity in RCEP member countries like China which would disrupt the domestic market. In addition, significant new investments have been commissioned and are being commissioned which would be adversely affected. India is already surplus in few of these polymers.
39011090	Other Polyethylene having a Specific Gravity Below 0.94	
39012000	Polyethylene with a specific gravity of >= 0,94, in primary forms	
39013000	Ethylene-vinyl acetate copolymers, in primary forms	
39021000	Polypropylene, in primary forms	
39023000	Propylene copolymers, in primary forms	
39029000	Polymers of propylene or of other olefins, in primary forms (excl. polypropylene, polyisobutylene and propylene copolymers)	

HS Code	Description	Rationale for Exclusion
Chapter 39		
39031100	Expandable polystyrene, in primary forms	
39031910	Other Polystyrene, in primary forms (excl. expansible)	
39032000	Styrene-acrylonitrile copolymers "SAN", in primary forms	
39033000	Acrylonitrile-butadiene-styrene copolymers "ABS", in primary forms	
39041010	Binders for pigments	
39041090	other PVC	
39042110	Non-plasticised PVC resins	
39042190	Other non-plasticised PVC	
39042210	Plasticised PVC resins (emulsion grade)	
39042290	Other plasticised PVC resins	
39076100	Polyethylene terephthalate", in primary forms	
Chapter 40		
40022000	PBR	Existing domestic capacities. Significant new capacities have been commissioned and additional capacities are being commissioned which would be adversely affected. Also, adversely affects natural rubber prices
40021910	Oil extended Styrene-butadiene rubber "SBR";	
40021920	Styrene-butadiene rubber with styrene content exceeding 50%	
40021930	Styrene-butadiene styrene oil bound copolymer	
40021990	Other	
40023100	Isobutylene isoprene rubber “IIR”, in primary forms or in plates, sheets or strips.	

4.1 India-South Korea CEPA

India and South Korea signed CEPA on 7th August 2009 and the agreement came into force on 1st January 2010.

4.1.1 South Korea's Exports and Imports

Table 19 : Exports by Korea

Year	2009	2017				
Commodity (US$ Million)	World	India	India's Share	World	India	India's Share
Chemicals	20,918.2	591.1	2.83%	43,604.1	1,122.5	2.54%
Plastics and Rubber	23,125.5	821.2	3.55%	39,264.8	1,712.9	4.36%

Source: *WITS, World Bank*

The total petrochemical exports by South Korea to India have increased since signing of FTA between the countries. The Korean plastic and rubber exports to India have increased at a CAGR of 8.3% from US$ 821 million in 2009 to US$ 1,712.9 million in 2017. Overall petrochemical exports from Korea to India have almost doubled since 2009.

Table 20 : Imports by Korea

Year	2009	2017				
Commodity (US$ Million)	World	India	India's Share	World	India	India's Share
Chemicals	26,112.2	360.5	1.38%	47,440.28	768.5	1.6%
Plastics and Rubber	8,910	23.89	0.27%	13,900.5	62.79	0.40%

Source: *WITS, World Bank*

South Korea is one of the leading petrochemical trading nations in the world. South Korea's petrochemical industry has evolved over the years showing significant increase in Imports of South Korea's petrochemicals to India and world.

Imports of South Korea's chemicals and plastic and rubber imports from India have increased at a CAGR of 9.9% and 12.8% as an impact of liberalization of tariffs under the trade agreement.

4.1.2 Tariff Reduction Schedule under the India- Korea FTA

Tariff reduction / elimination on trade of goods and services are done as per the rates agreed upon in the tariff schedule of the respective countries.

Table 21 : Tariff Schedule of Korea

Chapter	Category	HS Code
29	E-0	2901210000, 290122000, 2901230000, 2902200000, 2902300000, 2902410000, 2902420000, 2902430000, 2902500000, 2902600000, 2902700000, 2903410000, 2905310000
39	E-0	3901100000, 3902100000, 3902200000, 3902300000, 3903200000, 3903300000, 3903901000, 3904100000, 3904400000, 3904500000, 3905300000, 3905910000, 3916100000, 3915300000, 3915200000, 3915100000, 3916200000, 3916901000, 3916902000, 3917220000, 3917230000, 3920100000, 3920200000
39	E-8	3901300000, 3904100000
40	E- 5	400220, 400219

Source: *FTA Paper*

Korea has eliminated all tariffs and duties on most the petrochemicals under chapter 29 and 39 including organic chemicals and plastic articles from the date of implementation of the trade agreement, enabling access to indian petrochemical industry at reduced cost.

While tariffs on most of the rubber articles under chapter 40 are under E- 5 category, wherein tariff and duties are gradually reduced and eliminated within 4 years of implementation of the agreement. Hence, opening a large market for India to trade.

Table 22 : Tariff Schedule of India

Chapter	Category	HS Code
29	E-8	29012100, 29012200, 29012300, 29023000, 29024100, 29024200, 29025000, 29026000, 29027000, 29031910, 29032200
29	RED	29024300
29	EXC	29022000, 290531
39	E-8	390450, 39045090, 39052900, 39073010
39	RED	39019010, 39043010
39	EXC	39011010, 39012000, 39021000, 39022000, 39023000, 39031100, 39032000, 39033000, 390410, 39042210, 39043010, 39046910, 39046910, 39073010, 39151000, 39152000, 39153010, 39159030, 39159042, 391610, 391620, 392020, 392030
40	E- 5	400220, 400219

Source: *FTA Paper, Ministry of Commerce, Govt. of India*

India has not given Korea, an immidiate duty free access of its petrochemical market by keeping most of the organic chemicals and rubbers in chapter 29 and 40 under E-8 and E-5 catatgories, Duties on commodities under these catagories are gradually reduced and finally eliminated within 4 and 7 years of implementation of the agreement.

India has excluded most of the plastic articles in chapter 39 from tariff liberalization scheme, limiting Korea's access to Indian market in short term.

4.1.3 Rule of Origin[1]

Rules of Origin are key instruments in FTAs for ensuring that preferential benefits are not misused, and the benefits accrue to the parties it is meant for. These also act as safeguards for domestic industry against unfair imports and hence need to be robust for the FTA to be fair and meaningful to all the partners.

Reduction or elimination of customs duties under various staging categories shall be done as:

- Duties on originating goods provided for in the items in staging category E-0 in a party's schedule shall be eliminated entirely and such goods shall be duty-free on the date the Agreement enters into force
- Duties on originating goods provided for in the items in staging category E-5 in a party's schedule shall be removed in five equal annual stages beginning on the date this Agreement enters into force, and such goods shall be duty-free, effective January 1 of year four
- Duties on originating goods provided for in the items in staging category E-8 in a party's schedule shall be removed in eight equal annual stages beginning on the date the Agreement enters into force, and such goods shall be duty-free, effective January 1 of year seven
- Duties on originating goods provided for in the items in staging category RED. in a party's schedule shall be reduced to one to five percent from the base rate in eight equal annual stages beginning on the date this Agreement enters into force, and such goods shall remain at one to five percent, effective January 1 of year seven
- Duties on originating goods provided for in the items in staging category SEN (sensitive track). in a party's schedule shall be reduced as:
  - for India, by fifty percent of the base rate in ten equal annual stages beginning on the date this agreement enters into force, and such goods shall remain at fifty percent of the base rate, effective January 1 of year nine
  - for Korea, by fifty percent of the base rate in eight equal annual stages beginning on the date this agreement enters into force, and such goods shall remain at fifty percent of the base rate, effective January 1 of year seven
- Duties on originating goods provided for in the items in staging category EXC. in a party's schedule are exempt from the obligation of tariff reduction or elimination

Table 23 : Tariff Reduction schedule of India

Tariff Reduction schedule for India										
Category	Jan-10	Jan-11	Jan-12	Jan-13	Jan-14	Jan-15	Jan-16	Jan-17	Jan-18	Jan-19
E-0	100%									
E-5	20.0%	40.0%	60.0%	80.0%	100.0%					
E-8	12.5%	25.0%	37.5%	50.0%	62.5%	75.0%	87.5%	100.0%		
SEN	5.0%	10.0%	15.0%	20.0%	25.0%	30.0%	35.0%	40.0%	45.0%	50.0%
EXC	Not subjected to tariff reduction/elimination									

Source: *FTA Paper, Ministry of Commerce, Govt. of India*

Table 24 : Tariff Reduction schedule of Korea

Tariff Reduction schedule for Korea								
Category	Jan-10	Jan-11	Jan-12	Jan-13	Jan-14	Jan-15	Jan-16	Jan-17
E-0	100%							
E-5	20.0%	40.0%	60.0%	80.0%	100.0%			
E-8	12.5%	25.0%	37.5%	50.0%	62.5%	75.0%	87.5%	100.0%
SEN	6.3%	12.5%	18.8%	25.0%	31.3%	37.5%	43.8%	50.0%
EXC	Not subjected to tariff reduction/elimination							

Source: *FTA Paper, Ministry of Commerce, Govt. of India*

Table 23 and Table 24 depict the percentage reduction in tariffs under a specific reduction schemes, over the years.

4.1.4 Impact of FTA on India's Trade

Table 25 and Table 26 depict the Indian petrochemical export and import trends before and after implementation of trade agreement with South Korea.

Table 25 : Exports to Korea

HS Code	Commodity (Qty in MT)	2009-2010	2016-2017	2017-2018
29	ORGANIC CHEMICALS	90,804.82	89,642.39	113,271.54
39	PLASTIC AND ARTICLES THEREOF.	5,334.80	13,711.28	14,327.58
40	RUBBER AND ARTICLES THEREOF.	6,880.34	4,462.01	2,827.62

Source: *DGFT*

- India's export of petrochemicals under chapters 29 and 39 have increased at a CAGR of 2.84%, 13.1% respectively
- India's exports rubbers under chapter 40 have reduced over the years

Table 26 : Imports from Korea

HS Code	Commodity (Qty in MT)	2009-2010	2016-2017	2017-2018
29	ORGANIC CHEMICALS	378,796.73	651,881.12	820,460.54
39	PLASTIC AND ARTICLES THEREOF.	384,490.80	787,670.64	882,340.22
40	RUBBER AND ARTICLES THEREOF.	109,288.10	138,010.77	151,382.02

Source: *DGFT*

The Consultants note that:

- India's imports of petrochemicals from South Korea have increased to more than double since 2010. Tariff reduction by India under the agreement on most petrochemicals could be one of the reasons for increased imports to India
- Indian petrochemical industry is currently in trade deficit with Korea

4.2 India- Japan CEPA

The Comprehensive Economic Partnership Agreement (CEPA) between India and Japan was signed in February 2011, it came into force from 1st August 2011.

4.2.1 Japan's Exports and Imports

Table 27 : Exports by Japan

Year	2010	2017				
Commodity (US$ Million)	World	India	India's Share	World	India	India's Share
Chemicals	56,894.9	714.2	1.25%	53,974.4	932.66	1.72%
Plastics and Rubber	42,139.4	545.3	1.29%	35,506.5	962.5	2.71%

Source: *WITS, World bank*

The total petrochemical exports by Japan to India have increased since signing of FTA between the countries. The Japanese plastic and rubber exports to India have increased at a rate of 8.4% from US$ 545 million in 2010 to US$ 962.5 million in 2017. Chemical exports to India from Korea have increased at a CAGR of 3.8%.

Table 28 : Imports by Japan

Year	2010	2017				
Commodity (US$ Million)	World	India	India's Share	World	India	India's Share
Chemicals	53,461.3	469.6	0.87%	57,995.6	847.5	1.46%
Plastics and Rubber	18,179.7	19.5	0.10%	19,822.1	71.92	0.36%

Source: *WITS, World bank*

Petrochemical Imports by Japan from India have improved since 2010, however India's share in total imports by Japan remains below 1% despite liberalization of tariff lines under trade agreement.

4.2.2 Tariff Schedule under India- Japan CEPA

Table 29 : Tariff Schedule of Japan

Chapter	Category	HS Code
29	A	2901, 2902, 2903, 2904, 290511, 290531
39	B10	39011, 39012, 39021, 39023, 3903, 39032, 39033
39	B7	39041, 39043, 39045
40	A	400219, 4002

Source: *FTA Paper, Ministry of Commerce, Govt. of India*

Japan has liberalized tariffs on petrochemicals for trade with India under different catagories as mentioned in rule of origin.

- Japan has eliminated duties over trade of organic chemicals and rubber articles constituting chapter 29 and 40 under category A. Category A allows immediate elimination of duties from the date of implementation of trade agreement
- Plastic articles (chapter 39) are kept under category B7 and B10 of tariff reduction scheme, under which tariffs will be eliminated in 8 and 11 equal installments respectively

Table 30 : Tariff Schedule of India

Chapter	Category	HS Code
29	B10	29012100, 29012200, 29022000, 29023000, 29024100, 29024200, 29024300, 29025000, 29061100
29	X	29025000, 29027000, 29053100
39	B10	39011010, 39012000, 39019010, 39021000, 39023000, 390410, 39042110, 39043010, 39044000, 39051910, 39059100
39	X	39033000, 39042210, 39076010, 39076020
40	B10	400219, 40021910, 40021920, 40021930, 40021930, 40022000

Source: *FTA Paper*

- Under India's tariff schedule most of the organic chemicals and plastic articles are either excluded from any liberalization in duties or eligible to duty elimination in 11 equal installments
- Rubber article under chapter 40 are also eligible for tariff elimination in 11 equal installments under the B10 category of tariff scheme
- No immidiate reduction or elimination in duties on petrochemicals has been imposed to limit foreign access to Indian petrochemical Industry

4.2.3 Rule of Origin[2]

The concession/ elimination on custom duties shall be applied as:

- Customs duties on originating goods classified under the tariff lines indicated with "A" shall be eliminated, as from the date of entry into force of this agreement
- Customs duties on originating goods classified under the tariff lines indicated with "B5" shall be eliminated in six equal annual instalments from the base rate to free
- Customs duties on originating goods classified under the tariff lines indicated with "B7" shall be eliminated in eight equal annual instalments from the base rate to free
- Customs duties on originating goods classified under the tariff lines indicated with "B10" shall be eliminated in 11 equal annual instalments from the base rate to free
- Customs duties on originating goods classified under the tariff lines indicated with "B15" shall be eliminated in 16 equal annual instalments from the base rate to free
- Customs duties on originating goods classified under the tariff lines indicated with "Pa" and "Pb" shall be reduced in accordance with the terms and conditions set out in the respective Notes
- The originating goods classified under the tariff lines indicated with "X" shall be excluded from any commitment of reduction or elimination of customs duties

4.2.4 Impact of FTA on India's Trade

Table 31 : Exports to Japan

HS Code	Commodity Qty in Thousand Kgs	2009-2010	2016-2017	2017-2018
29	ORGANIC CHEMICALS	30,424.11	52,909.73	56,715.51
39	PLASTIC AND ARTICLES THEREOF.	1,793.46	11,183.22	38,857.58
40	RUBBER AND ARTICLES THEREOF.	2,257.92	2,980.99	4,091.15

Source: *DGFT*

Table 32 : Imports from Japan

HS Code	Commodity (Qty in Thousand Kgs)	2009-2010	2016-2017	2017-2018
29	ORGANIC CHEMICALS	125,327.58	38,794.66	248,145.82
39	PLASTIC AND ARTICLES THEREOF.	69,355.30	395,657.10	478,462.95
40	RUBBER AND ARTICLES THEREOF.	39,726.52	47,298.30	53,637.07

Source: *DGFT*

The Consultants note that:

- India's imports of petrochemicals from Japan have increased to more than twice its value during FY10-18. Sudden tariff reduction under trade agreement could be one of the reasons for increased imports to India
- Indian petrochemical industry is currently in trade deficit with Japan

4.3 India- Malaysia CECA

India and Malaysia signed a Comprehensive Economic Cooperation Agreement (CECA) on 18 February 2011, which came into force from 1 July 2011.

4.3.1 Malaysia's Exports and Imports

Table 33 : Exports by Malaysia

Year	2010	2017				
Commodity (US$ Million)	World	India	India's Share	World	India	India's Share
Chemicals	7,965.6	583.9	7.33%	9,377.4	483.2	5.1%
Plastics and Rubber	14,044.8	225.3	1.60%	14,659	290.5	1.9%

Source: *World Interated Trade Solutions*

The total petrochemical exports by Malaysia to India have increased since signing of FTA between the two countries.

- Malaysia's Chemical exports to India have reduced from US$ 583.9 million in 2010 to US$ 483.2 million in 2017
- Plastic and rubber exports to India have increased at a CAGR of 3.6% during the period 2010-17

Table 34 : Imports by Malaysia

Year	2010	2017				
Commodity (US$ Million)	World	India	India's Share	World	India	India's Share
Chemicals	10,196.1	279.7	2.74%	13,441.9	558.5	4.1%
Plastics and Rubber	8,360.4	52.2	0.63%	11,563.2	97.2	0.84%

Source: *World Interated Trade Solutions*

- Malaysia's Imports of plastic and rubber to India and world have not gained much in recent years despite tariff consessions
- India has not been able to gain significant access to petrochemical markets in Malaysia in last 7 years despite signing of tade agreement
- Limited Tariff liberalization by Malaysia under the agreement is a major cause of lower imports from Indian

4.3.2 Tariff schedule under India- Malaysia CECA

Table 35 : Tariff schedule of Malaysia

Chapter	Category	HS Code
29	MNF	290121000, 290122000, 290220000, 290230000, 290241000, 290242000, 290243000, 290244000, 290250000, 290260000, 290270000, 290341000, 290543000
39	MNF	390130000
39	NT-1	390330100, 39045000
39	NT-2	390210300
39	ST	390110000, 390120000, 390410000
40	ST	400220, 400219

Source: *FTA Paper, Ministry of Commerce, Govt. of India*

Malaysia has liberalized tariffs on petrochemicals for trade with India under different catagories as mentioned in rule of origin.

- Malaysia has eliminated duties over trade of organic chemicals under category MFN. Category MFN allows immidiate elimination of duties from the date of implementaion of trade agreement.
- Most of the Plastic articles (chapter 39) are kept under categories NT-1and NT-2 allowing tariff elimination by september 2013 and September 2016.
- For Plastic articles under ST tariff will be reduced to 5% by June 2016 and will be maintained at 5% thereafter.
- Most of the Rubber article under chapter 40 are also subjected gradual tariff reduction to 5% till June 2016.

Table 36 : Tariff schedule of India

Chapter	Category	HS Code
29	NT-1	29012100, 29012200, 29022000, 29023000, 29024300, 29025000, 29026000, 29027000,
29	ST	29024100, 29024200, 29053100
39	NT-1	39022000, 390591
39	NT-2	390130, 39042110, 39043010, 39051910, 3916,
39	ST	39011010, 39012000, 39019010, 39021000, 39023000, 39033000, 39039010, 390410, 39042210, 391690
40	NT-1	400220, 400219

Source: *FTA Paper, Ministry of Commerce, Govt. of India*

- Most of the organic chemicals (chapter 29) are kept under NT-1, eliminating duties by September 2013 and ST, gradually reducing tariff to 5% by June 2016
- Most plastic articles are kept under NT-2, eliminating all duties by September 2016 and ST, gradually reducing tariff to 5% by June 2016
- Rubber articles are kept under NT-1 and are subjected to complete duty elimination by September 2016
- No petrochemical products are subjected immidiate duty elimination by India in order to limit foreign access to domestic markets. However, the agreement does not seem to benefit Indian industry

4.3.3 Rule of Origin[3]

The tariff lines are subjected to tariff reduction and/or elimination in accordance to the below schedule

- Normal Track
  - Applied MFN tariff rates for tariff lines placed in the normal track will be reduced and subsequently eliminated in accordance with the following tariff reduction and elimination schedule

    Normal Track 1: 1 July 2011 to 30 September 2013

    Normal Track 2: 1 July 2011 to 30 June 2016
  - Where the applied MFN tariff rates are at 0 per cent, they shall remain at 0 per cent. Where they have been reduced to 0 per cent, they shall remain at 0 per cent. No party shall be permitted to increase the tariff rates for any tariff line, except as otherwise provided in this Agreement
- Sensitive Track
  - Applied MN tariff rates above five per cent for tariff lines in the sensitive track will be reduced to five per cent by 30 June 2016.
- Exclusion List
  - Exclusion Lists shall be subject to an annual tariff review with a view to improving market access.

4.3.4 Impact of FTA on India's Trade

Table 37 : Exports to Malaysia

HS Code	Commodity (Qty in Thousand)	2009-2010	2016-2017	2017-2018
29	ORGANIC CHEMICALS	174,651.88	280,623.13	322,118.75
39	PLASTIC AND ARTICLES THEREOF.	15,113.07	12,219.68	16,916.44
40	RUBBER AND ARTICLES THEREOF	8,502.05	31,340.35	31,223.24

Source: *DGFT*

[3] *Sourced from official FTA Paper*

- India's export of petrochemicals under chapters 29, 39 and 40 have increased at a CAGR of 7.9%, 1.4% and 17.6% respectively during the period FY10 to FY18

Table 38 : Imports to Malaysia

HS Code	Commodity (Qty in Thousand)	2009-2010	2016-2017	2017-2018
29	ORGANIC CHEMICALS	286,135.24	466,160.09	427,048.92
39	PLASTIC AND ARTICLES THEREOF.	77,997.66	124,803.75	128,000.41
40	RUBBER AND ARTICLES THEREOF.	66,406.14	1,005,487.49	1,092,353.42

Source: *DGFT*

- India's imports of petrochemicals from Malaysia have significantly increased during FY10 - FY18. Tariff liberalization under the agreement could be one of the reasons for increased imports to India.
- Indian petrochemical industry is currently in trade deficit with Malaysia

4.4 India- Singapore CECA

The India-Singapore CECA entered into force on August 1, 2005.

4.4.1 Singapore's exports and Imports

Table 39 : Exports by Singapore

Year	2004	2017				
Commodity (US$ Million)	World	India	India's Share	World	India	India's Share
Chemicals	19,404.1	562.6	2.90%	36,921.9	1,781.6	4.8%
Plastics and Rubber	6,542.6	174.1	2.66%	16,757.8	1,153.9	6.8%

Source: *World Interated Trade Solutions*

The Consultants note that:

- The total petrochemical exports by Singapore to India have increased since FTA has come into force
- Plastic and rubber exports to India have increased at a rate of 15.6% from US$ 174 million in 2004 to US$ 1,153.9 million in 2017
- Chemical exports to India have increased at a CAGR of 9.2% for the period 2004-17
- Indian petrochemical industry seems to have suffered in trade with Singapore post trade liberalization under FTA, losing large domestic market to Singapore

Table 40 : Imports by Singapore

Year	2004	2017				
Commodity (US$ Million)	World	India	India's Share	World	India	India's Share
Chemicals	9,311.1	199	2.14%	20,511.42	544.69	2.6%
Plastics and Rubber	3,889.4	33.8	0.87%	9,084.16	64.14	0.7%

Source: *World Interated Trade Solutions*

India's share in petrochemical imports by Singapore remained approximately same since 2004, despite tariff liblralization under trade agreement. India has not gained much in terms of access to petrohemical market of Singapore in last 12 years.

4.4.2 Tariff Schedule under India-Singapore CECA

Singapore has eliminated custom duties on all originating goods of India as from the date of entry into force of the Trade Agreement.

Table 41 : Tariff schedule of India

Chapter	Category	HS Code
29	EHP	29011000, 29012100, 29025000
29	Phase Elimination	29022000, 29024300, 29094200
29	Phase Reduction	29012200, 29023000, 29024100, 29024200, 29024400, 29027000, 29031910, 29053100
29	EXC	29012300, 29029050
39	Phase Reduction	39069010, 39069030
39	EXC	39011090, 39012000, 39013000, 39019010, 39019090, 39021000, 39022000, 39023000, 39032000, 39039010, 39041090, 39042110, 39043010, 39044000, 39051220, 39073010, 39076010, 39076020, 39079920
40	EXC	400220, 400219

Source: *FTA Paper, Ministry of Commerce, Govt. of India*

- Under India's tariff schedule most of the organic chemicals are kept under phase reduction, gradually reducing tariff to 50% in 5 stages and Phase elimination, eliminating all duties in 5 installments.
- Most of the plastic articles are excluded from any libralization in tariffs with few under phase reduction, eligible for 50% tariff reduction
- Most of the rubber articles are excluded from any libralization in tariffs by India

4.4.3 Rule of Origin[4]

The following modality shall apply for the elimination / reduction of basic customs duties by India:

[4] *Sourced from official FTA Paper*

- Early Harvest Programme
  - On the originating goods of Singapore provided in this list, the duties shall be eliminated entirely, and such goods will receive duty free entry into India from Singapore from 1st August 2005
- Phased Elimination in Duty
  - On the originating goods of Singapore provided in this List, the duties shall be removed in five stages beginning from 1st August 2005 and such goods shall receive duty free entry into India from Singapore, effective 1st April 2009. The margin of preference offered by India has been indicated in the List.
- Phased Reduction in Duty
  - On the originating goods of Singapore provided in this List, the duties shall be reduced in five stages beginning 1st August 2005 and such goods shall receive entry into India at concessional duties. The margin of preference offered by India has been indicated in the List.
- Exclusion list
  - No concessions in duties shall be offered on goods provided in this List. Such goods whether originating or otherwise, shall enter into India from Singapore on the applied MFN duties

Table 42 : Tariff Reduction Schedule of India

Category	2005	2006	2007	2009	2010	2011-2018
Early Harvest Program	100%	100%	100%	100%	100%	100%
Phase Elimination	10.0%	25.0%	50.0%	75.0%	100.0%	100.0%
Phase Reduction	5.0%	10.0%	20.0%	35.0%	50.0%	50.0%
EXC	Not subjected to tariff reduction/elimination					

Source: *FTA Paper*

4.4.4 Impact of FTA on India's Exports

Table 43 : Exports to Singapore

Chapter	Commodity (Qty in Thousand)	2005-2006	2016-2017	2017-2018
29	ORGANIC CHEMICALS	182,857.49	123,908.75	55,184.62
39	PLASTIC AND ARTICLES THEREOF.	11,414.87	10,765.55	11,527.66
40	RUBBER AND ARTICLES THEREOF.	1,008.44	1,753.34	3,764.61

Source: *DGFT*

The Consultants note that:

- India's export of organic chemicals to Singapore have reduced in recent years
- Exports of plastic and rubber articles under chapter 39 and 40 have increased at a CAGR of 11.5% and 17.6% respectively during the period FY09-10 to FY17-18

Table 44 : Imports to Singapore

Chapter	Commodity (Qty in Thousand)	2005-2006	2016-2017	2017-2018
29	ORGANIC CHEMICALS	394,449.02	1,319,072.14	1,456,616.20
39	PLASTIC AND ARTICLES THEREOF.	76,245.68	465,352.36	579,083.53
40	RUBBER AND ARTICLES THEREOF.	4,106.86	39,346.13	54,287.20

Source: *DGFT*

MM notes that:

- India's imports of organic chemicals from Singapore have increased to more than thrice its value from 2004.
- Imports of plastics and rubber articles have increased at CAGR of 18.4% and 24% respectively.
- Tariff elimination by Singapore is one of the major reasons for increased petrochemical imports into India.
- Indian petrochemical industry is currently in trade deficit with Singapore
- Total tariff elimination on all petrochemical by Singapore has heavily attracted imports into India

4.5 India – ASEAN CECA

India-ASEAN signed the Trade in Goods Agreement under the broader framework of Comprehensive Economic Cooperation Agreement (CECA) 13th August 2009, which came in effect from January 2010.

4.5.1 India's Tariff Schedule

Table 45 : Tariff schedule for ASEAN

Chapter	Category	HS Code
29	NT-1	2901, 290220, 290230, 290270
29	ST	290241, 290242, 290243, 290531, 29152100, 291611, 291612, 291736
39	ST	39011010, 39011090, 390120, 390210, 390230, 390311, 390319, 390320, 390330, 39041010, 39041090, 39042110, 39042190, 39042210, 39042290
39	NT-2	390130, 390290, 39042110, 39042190
40	NT-1	400219, 400220

Source: *FTA Paper*

- Most of the organic chemicals are kept in sensitive track, where tariff is gradually reduced to 5%
- Some organic chemicals, plastics and rubbers are kept in Normal Tracks, eliminating tariffs within time, specified in rules of origin

4.5.2 Rules of Origin[5]

- Normal Track 1:

[5] *Sourced from official FTA paper*

- 1 January 2010 to 31 December 2013 for Brunei Darussalam, Indonesia, Malaysia, Singapore and Thailand, and India
- 1 January 2010 to 31 December 2018 for the Philippines and India
- 1 January 2010 to 31 December 2013 for India and 1 January 2010 to 31 December 2018 for Cambodia, Lao PDR, Myanmar and Viet Nam

- Normal Track 2:
  - 1 January 2010 to 31 December 2016 for Brunei Darussalam, Indonesia, Malaysia, Singapore and Thailand, and India.
  - 1 January 2010 to 31 December 2019 for the Philippines and India
  - 1 January 2010 to 31 December 2016 for India and 1 January 2010 to 31 December 2021 for Cambodia, Lao PDR, Myanmar and Viet Nam
- Sensitive Track

  Applied MFN tariff rates above five (5) per cent for tariff lines in the sensitive track will be reduced to five (5) per cent in accordance with the following tariff reduction schedules:
  - 1 January 2010 to 31 December 2016 for Brunei Darussalam, Indonesia, Malaysia, Singapore and Thailand, and India
  - 1 January 2010 to 31 December 2019 for the Philippines and India
  - 1 January 2010 to 31 December 2016 for India and 1 January 2010 to 31 December 2021 for Cambodia, Lao PDR Myanmar and Viet Nam

  Applied MFN tariff rates of five (5) per cent can be maintained for up to 50 tariff lines.
  - For the remaining tariff lines, applied MFN tariff rates are reduced to 4.5 per cent upon entry into force of the Agreement for ASEAN 62 and five (5) years from entry into force of the Agreement for Cambodia, Lao PDR, Myanmar and Viet Nam. The AIFTA preferential tariff rate for these tariff lines are further reduced to four (4) per cent.

  Applied MFN tariff rates on four (4) per cent of the tariff lines placed in the sensitive track, as will be identified by each Party on its own accord and exchanged with other Parties, will be eliminated by:
  - 31 December 2019 for Brunei Darussalam, Indonesia, Malaysia, Singapore and Thailand, and India
  - 31 December 2022 for the Philippines and India
  - 31 December 2024 for Cambodia, Lao PDR, Myanmar and Vietnam

4.5.3 Impact on India's Trade

Table 46 : Exports to ASEAN

Year	2009-2010	2016-2017	2017-2018
Exports (in US$ Mn)	1300	1,885.96	2,180..24

Source: *DGFT*

Table 47 : Imports to ASEAN

Year	2009-2010	2016-2017	2017-2018
Imports (in US$ Mn)	2446.26	4,697.34	6,218.24

Source: *DGFT*

The Consultants note that:

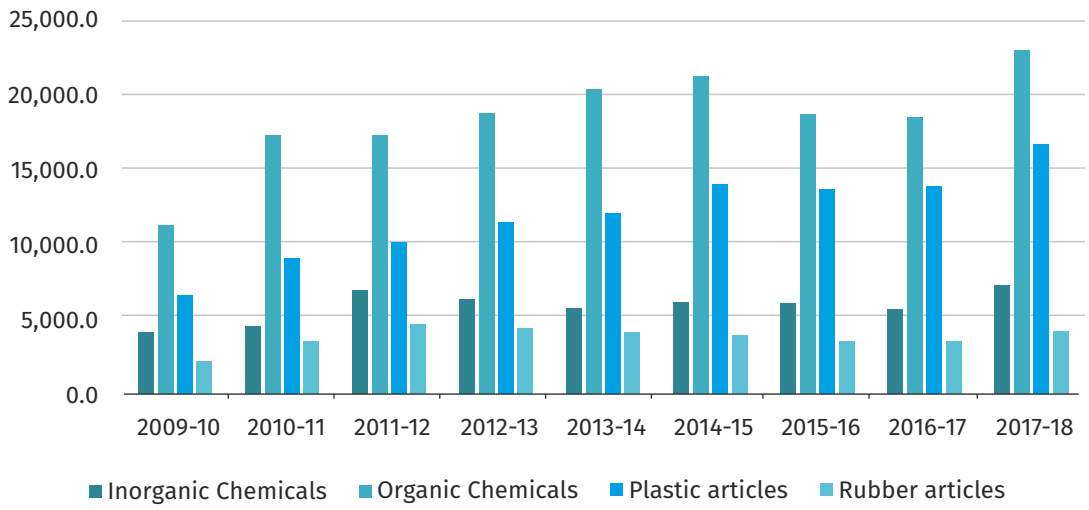
- India's exports to ASEAN have increased at a CAGR of 6.7% as a result of trade agreement
- India's imports from ASEAN have increased at a CAGR of 17%.
- Higher growth of Indian imports over exports has kept India at disadvantage in trade with ASEAN.

4.6 Impact of FTA on India's Petrochemical Industry

4.6.1 Imports

Imports in India's petrochemical industry have been continuously increasing since trade agreements came into force. Volumes traded may depend on the factors like production, consumption, cost of production and importing.

Figure 16 : Imports (US$ Mn)



Source: *DGFT*

Inorganic Chemicals (Chapter 28)

Inorganic chemicals constitute various chemicals and chemical compounds of non- carbon origin such as ammonia, caustic soda, sulphuric acid, chlorine, sulphur, soda ash, bromine, fluorine and phosphorus. These serve as base chemicals in various processes in petrochemical plants. caustic soda and soda ash are the major inorganic chemicals imported by India.

Organic Chemicals (Chapter 29)

Organic chemicals constitute petrochemical building blocks (olefins, aromatics) and various other hydrocarbons and feedstock, which are essential parts of petrochemical value chain. Toluene, p-xylene and propylene are few of the major organic chemicals imported by India.

Plastic Articles (Chapter 39)

Plastic articles constitute various basic petrochemicals, intermediates and polymers, these form essential parts of petrochemical value chain. PVC, HPD, LDP and LLDP are few of the major items under plastic articles imported by India.

Rubber Articles (Chapter 40)

Rubber articles constitute various synthetic rubbers elastomers and products derived from them. Butyl rubber, Styrene Butadiene and ABS resin are few of the major items imported by India under this category.

Major Petrochemicals of India's interest of import and volumes traded (as of 2016-17) are:

Table 48 : Major Imports and Volumes Traded

Description	India's Imports (in MT)
Poly vinyl chloride	1,702,852
Mono Ethylene Glycol	1,235,385
High Density Polyethylene	1,000,457
Polypropylene	781,188
Styrene	729,627
Linear Low-Density Polyethylene	469,075
Toluene	392,749
Low Density Polyethylene	391,501
Styrene Butadiene	149,559
Ethyl vinyl acetate	144,604
Butyl Rubber	100,984
ABS Resin	102,685

Source: *Chemicals and Petrochemicals Statistics – 2017, DCPC, Ministry of Chemicals and Fertilizers, Govt. of India*

Currently, Indian trade data suggests that certain key petrochemical items are being imported in large volumes. While for a few items like methanol and PVC, lack of adequate domestic availability is the reason for imports, there are several products like Polypropylene and Toluene (from Singapore), SBR, NBR and Polystyrene (from South Korea), where large scale imports are taking place despite India having a significant surplus.

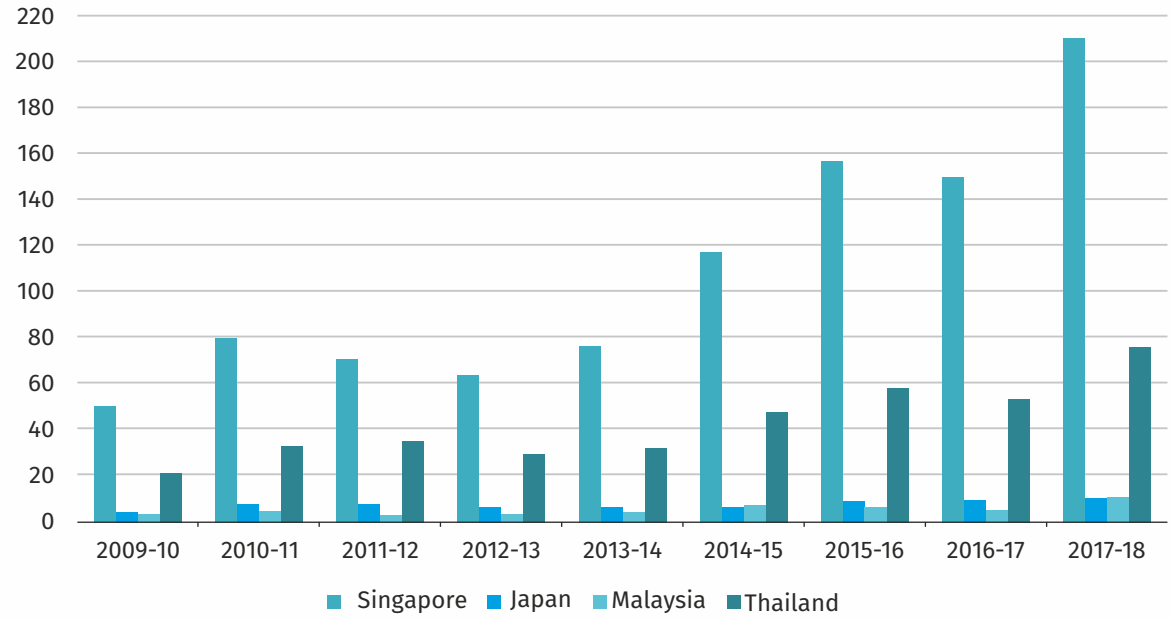
Products majorly suffering from FTAs

It is observed that FTAs have resulted in surge of imports which has adversely affected the Indian industry and manufacturers. Some major petrochemicals that have suffered due to concessions provided under FTAs are illustrated, hereon.

Polypropylene

Polypropylene industry is adversely affected by trade, experiencing heavy imports into the country, after signing of trade agreements.

Figure 17: Polypropylene Imports from FTA Nations (in kT)



Source: *DGFT*

The polypropylene imports into India as depicted in Figure 17, appear to surge drastically to more than thrice in less than a decade. The Consultants note that:

- Polypropylene is majorly imported from Singapore, Thailand, Malaysia and Japan
- Import duty appear to play a major role in attracting exports from a country
- Under the India-Singapore CECA the concessional duty on PP, imported from Singapore in to India, is 0% and on account of the duty concessions provided under these agreements on imports of PP from Singapore, the same quadrupled between 2009-10 and 2017-18 from 47.9 kT to 198.7 kT. This gain is observed despite an anti-dumping duty on imports of PP from Singapore.
- A significant amount of import of polypropylene is also observed from Thailand. PP imports from Thailand increased from 20.4 kT to 71.8 kT during FY-10- FY-18.
- PP Import from Japan has currently gained due to a preferential duty of 2%, which was more than doubled for 2009-10 than from 2017-18.
- This massive increase in imports of PP from FTA partner countries happened also during those years when India had a surplus of PP and was exporting substantial quantities of it. Heavy imports have adversely impacted the India industry, causing immense hardship to domestic manufacturers

Polystyrene

Polystyrene in the form of polymers, co-polymers of styrene monomers and polybutadiene rubber is imported from Singapore, Japan, Malaysia, Korea & Thailand.

Table 49 shows the PS imports into India from FTA nations.

Table 49 : PS Imports into India (in kT)

Year	Korea	Japan	Malaysia	Singapore	Thailand	Total
2009-10	6.33	1.36	1.23	3.65	0.11	12.69
2010-11	6.01	1.44	1.63	8.41	0.74	18.24
2013-14	9.58	0.84	2.54	10.98	0.26	24.20
2015-16	11.73	1.84	2.31	7.52	2.51	25.91
2016-17	9.69	3.67	3.15	7.83	1.06	25.39

Source: *DGFT*

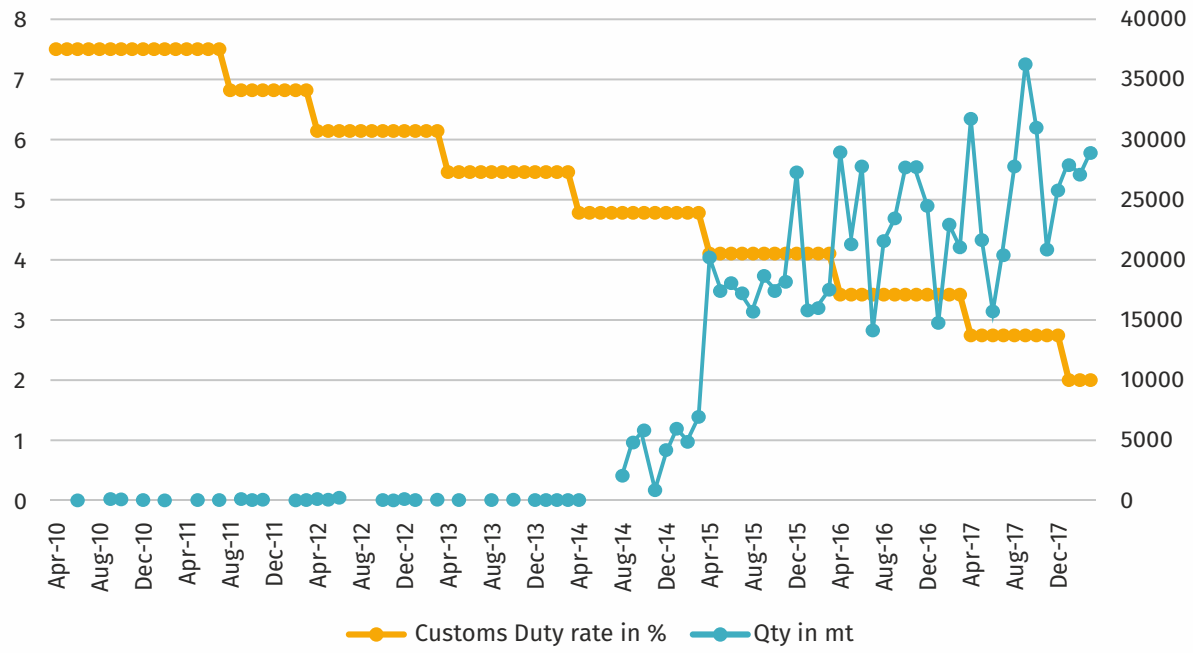
However, the Imports from Singapore tend to decrease, after exclusion from duty concessions in FY 14, under FTAs while, imports from Japan and Korea have increased with reduction in duty under the respective FTAs.

PVC

PVC is a synthetic plastic polymer used for a variety of applications such as building construction, health care, electronics, automobile. Due to reduction in duty under trade agreements especially with Japan, PVC imports into India increased over the years, affecting the domestic industry. Currently, there is 2% duty under India-Japan CEPA which is fast approaching nil, leading to an inverted duty situation. Duty reduction over the years have resulted in a spike in imports from Japan.

Figure 18 shows the PVC imports into India against duty under the India- Japan trade agreement.

Figure 18: Imports from Japan against custom duty



Source: *DGFT*

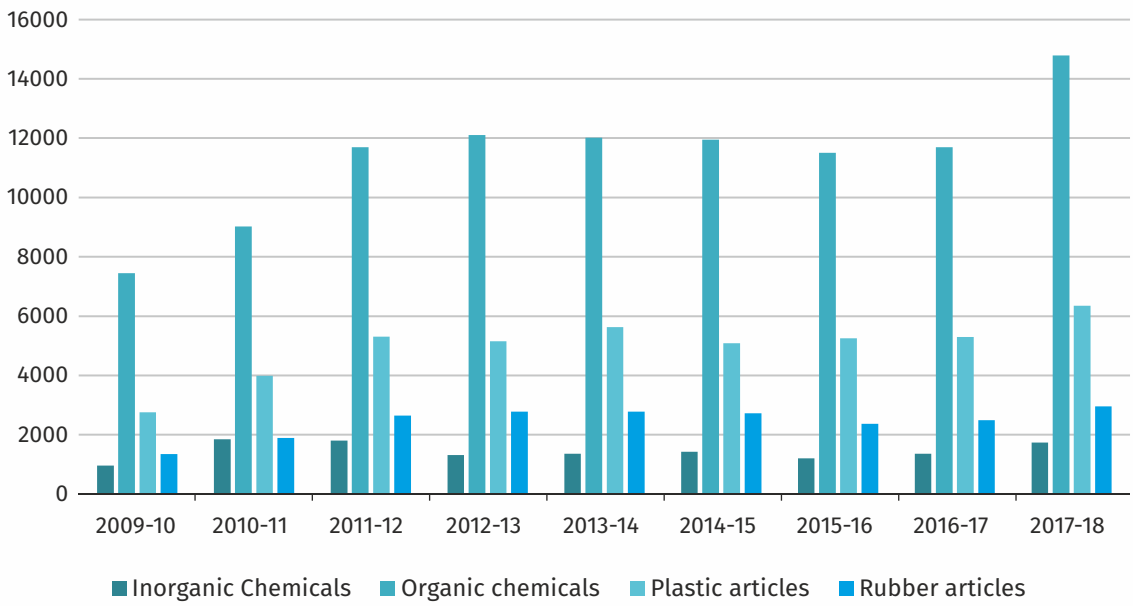
The Consultant's note that:

- There is a sudden surge in the imports of PVC from Japan as the duties on the product got reduced.
- Current duty from Japan on PVC is 2% and will progressively become 0% by 2021.
- In Apr'14 when the duties were just around 5%, the quantity imported from Japan was less than 100 MT per month.
- As the duty got reduced to 4% in Apr'15, quantities spiked to around 20,000MT per month.
- Average quantity imported from Japan in FY'17-18 is almost 27,000 MT per month

4.6.2 Exports

India's petrochemical exports have increased since trade agreements came into force. Volumes traded may depend on the factors like production capacity, demand in global market, and import duties.

Figure 19 : India's petrochemical exports (in US$ Mn)



Source: *DGFT*

India's petrochemical exports have increased at a CAGR of 7.6%, 8.9%, 11% and 7.9% under chapters 28, 29, 39 and 40 respectively.

Major petrochemical exports of India along with volumes traded are listed below:

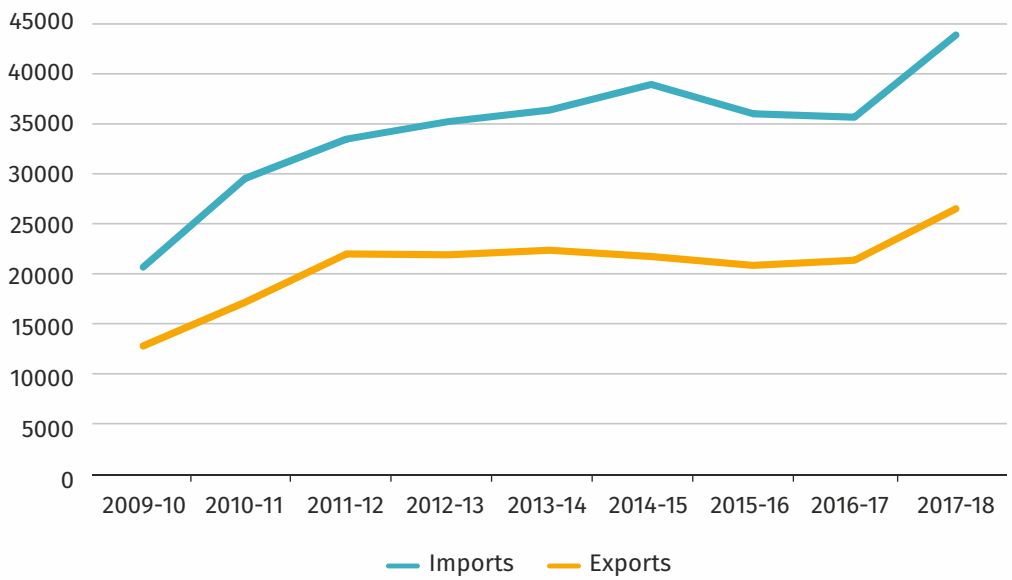
Table 50 : Petrochemical exports and Volumes Traded

Description	India's Exports (in MT)
Polyester chips/pet chips	937,251
Paraxylene	799,492
Benzene	789,425
Polyester filament yarn	748,037
Polypropylene (inc. co-polymer)	574,234
Ortho-xylene	154,347
High density polyethylene	148,142

Source: *DGFT*

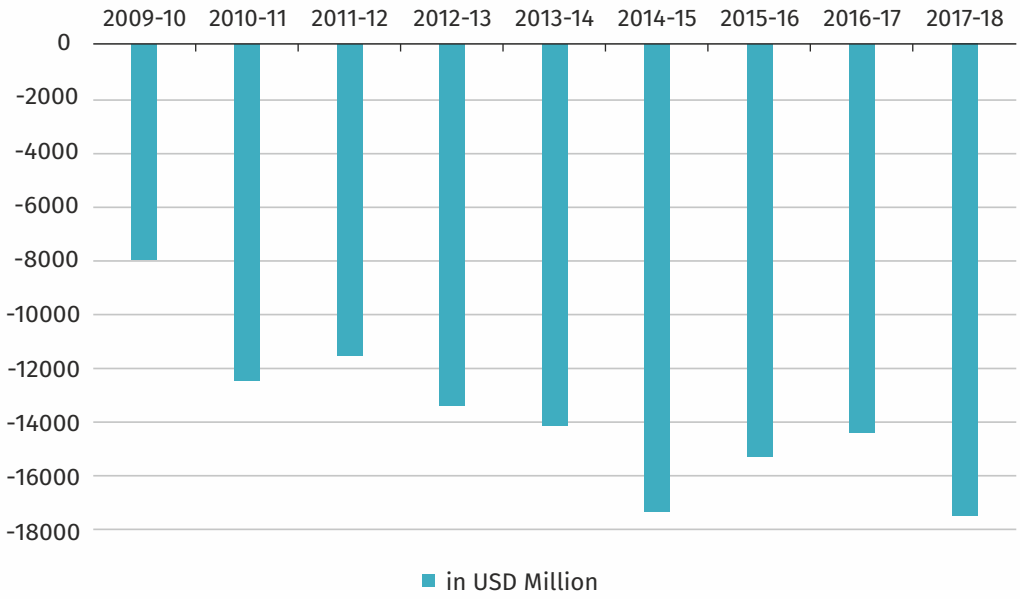
4.6.3 India's Petrochemical Sector Trade balance

Figure 20: Import-Export Trend (US$ million)



Source: *DGFT*

Figure 21: Trade Balance (in USD Milion)



Source: *DGFT*

Figure 20 and Figure 21 show the import-export trend and trade balance for Indian petrochemical Industry, taking chapter 28, 29,39 and 40 into consideration. The consultant observed that:

- Indian Petrochemical industry has been in trade deficit from more than a decade
- The trade gap is observed to widen during FY10 to FY15 and FY18, despite Increase in Indian exports. Signing of newer trade agreements could be a reason for increased deficit during this period as these agreements might have increased accessibility of domestic market to various foreign market
- Large volume imports and dumping of certain petrochemicals could be a reason for increased deficit

Table 51 compares the growth in Imports and Exports of Indian Petrochemicals

Table 51 : Trade Growth

Items Under	Growth in Exports (5 years)	Growth in Imports (5 years)	Trade deficit for 2017-18 (in USD Mn)
Chapter 28	6.18%	5.92%	-4,304.11
Chapter 29	4.23%	2.41%	-4,416.04
Chapter 39	2.42%	6.63%	-7,578.10
Chapter 40	1.32%	0.22%	-506.60

Source: *DGFT*

India remains to be a net importer of petrochemicals despite showing higher growth in exports than imports over last 5 years.

4.6.4 India's Petrochemical Trade with FTA nations

Majority of the agreements concluded by India have not benefitted the Indian chemicals and petrochemicals industry. An examination of the trade in India's key FTAs shows a deteriorating trade balance as shown in Table 52.

Table 52 : Trade with FTA nations

	HS Code	Unit		Korea	Japan	Malaysia	Singapore
Synthetic fibre	5402, 5403	USD Mn	Import	34.74	57.86	21.77	19.47
			Export	45.19	11.88	3.17	0.23
			Trade Balance	10.45	-45.98	-18.6	-19.24
Fibre intermediates	2917	USD Mn	Import	219.65	4.36	21.68	0.11
			Export	11.75	6.33	3.3	0.79
			Trade Balance	-207.9	1.97	-18.38	0.68
Polymers	3901, 3902, 3903, 3904	USD Mn	Import	678.11	379.99	89.46	443.49
			Export	3.78	1.55	2.8	0.94
			Trade Balance	-674.33	-378.44	-86.66	-442.55
Synthetic Rubber	4002	USD Mn	Import	208.39	109.34	7.23	57.45
			Export	1.3	0.16	1.6	0.13
			Trade Balance	-207.09	-109.18	-5.63	-57.32
Olefins and Aromatics	2901, 2902	USD Mn	Import	54.03	7.91	8.37	617.13
			Export	13.57	55.6	202.85	16.9
			Trade Balance	-40.46	47.69	194.48	-600.23

Source: *DGCIS, Kolkata*

The Consultants note that:

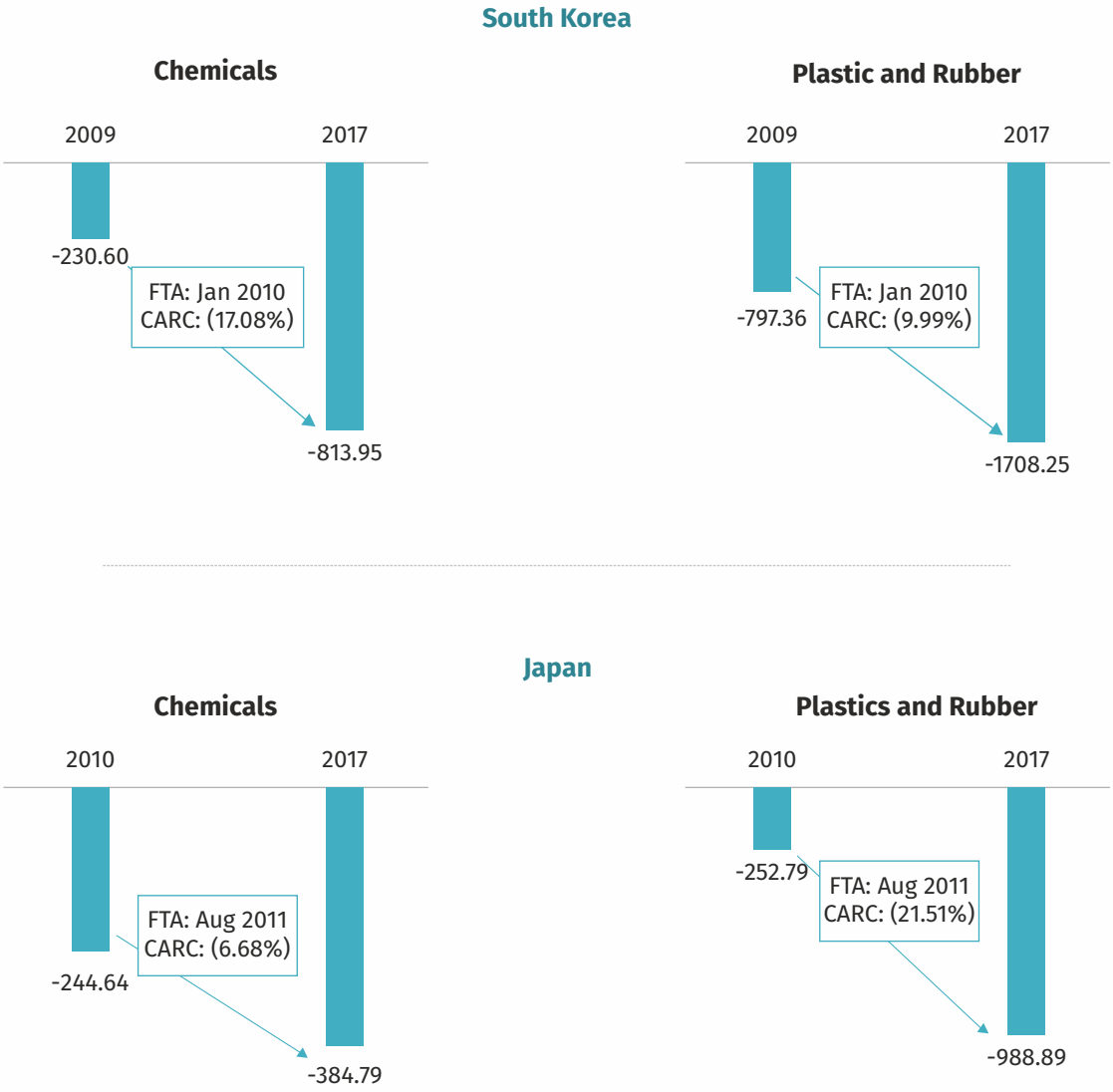
- India has net positive trade in Synthetic fibres with Korea with India being net importer of fibre intermediates, polymers, rubbers and petrochemical building blocks
- India has net positive trade in Fibres intermediates and petrochemical building blocks with Japan with India being net importer of Synthetic fibres, polymers and rubbers
- India has net positive trade in petrochemical building blocks with Malaysia with India being net importer of Synthetic fibre, Fibre intermediates, polymers and rubbers
- India has net positive trade in Fibres intermediates with Singapore with India being net importer of Synthetic fibres, polymers and rubbers
- India is net Importer Synthetic fibres with Japan, Malaysia, Singapore and petrochemical building blocks with Korea and Singapore, despite being one of the major producers of both classes of products.

- Lower cost of importing due to duty elimination is a major cause of heavy imports of certain products, adversely affecting the domestic industry.

4.7 Conclusion

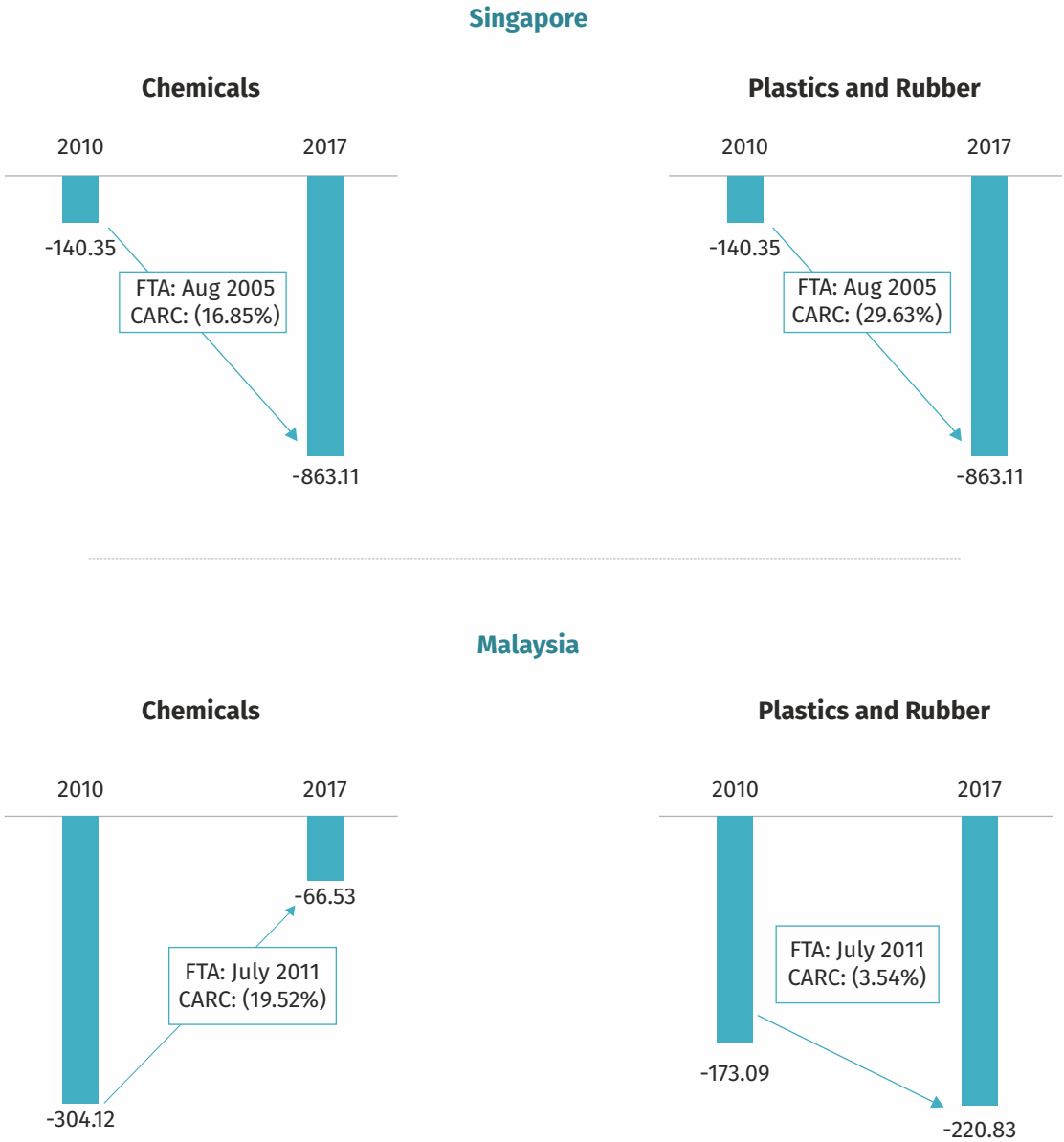
Figure 22, Figure 23 and Figure 24 reflect the balance of trade in petrochemicals pertaining to India's free trade partners. It is noted that, by and large, India's balance of trade has heavily suffered from entering into free trade agreements. While exports have also increased they have not been able to keep pace with imports. This has the potential to jeopardise the domestic capacities that have been installed and those that are there in the pipeline.

Figure 22: Balance of Trade- Snapshot, South Korea and Japan (Trade Deficit/ Surplus in USD Mn)



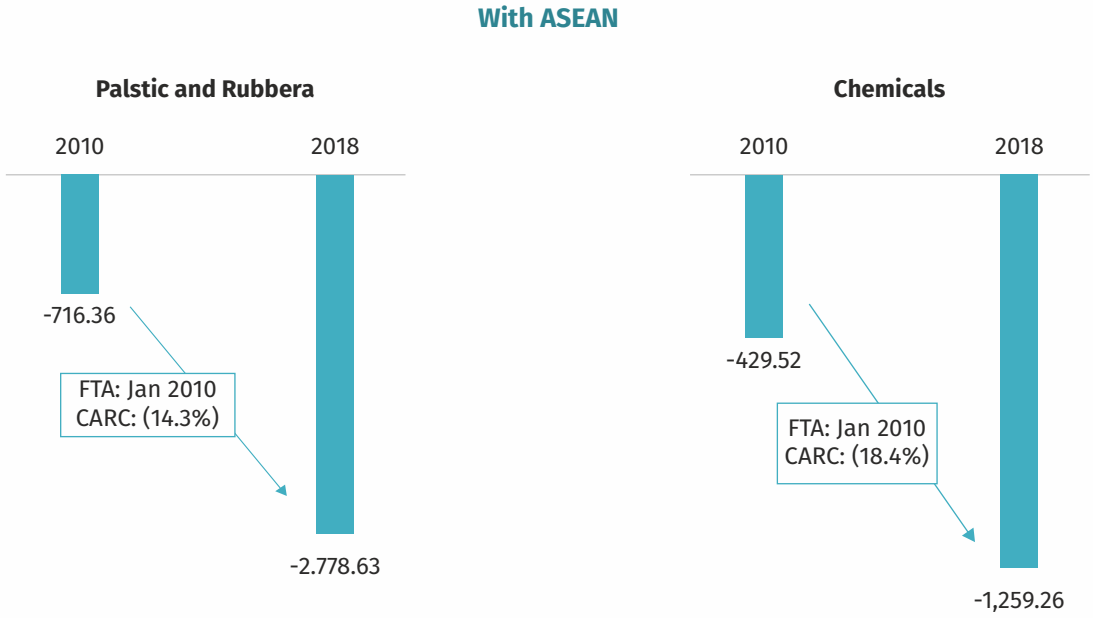
Source: *World Interated Trade Solutions*

Figure 23: Balance of Trade- Snapshot, Malaysia and Singapore (Trade Deficit/ Surplus in USD Mn)



Source: *World Interated Trade Solutions*

Figure 24 : Balance of Trade- Snapshot, ASEAN (Trade Deficit/ Surplus in USD Mn)



Source: *World Interated Trade Solutions*

Most of the Trade Agreements came into force during the period 2009-11 including trade negotiations with ASEAN, Japan, Korea and Malaysia. The key impact of these trade agreements as observed are:

- Bilateral trade increased post signing of FTAs. However, Imports from FTA partners into India increased at a higher rate than India's exports to partner countries agreements
- India's international trade routed through the preferential route/FTAs is small with not much growth in exports to FTA nations indicating low utilization rate of trade agreements by India. Complex rules of origin criteria, lack of information on FTAs, higher compliance costs and administrative delays dissuade exporters from using preferential routes. The compliance cost of availing benefits under these FTAs is so high that exporters prefer using the normal route. India has actively pursued FTAs with several major trading partners in the past without benefitting much
- Overall trade deficit with ASEAN, Korea and Japan doubled to US$ 24 Bn in FY17 from US$ 15 Bn in FY11(signing of the respective FTAs) and US$ 5 Bn in FY'06. Trade deficit with Korea grew from USD 5bn in FY10 to US$ 8 Bn in FY17. With Japan, deficit grew from USD 3bn in FY10 to USD 6bn in FY17 and with ASEAN deficit doubled to US$ 10 Bn from US$ 75 Bn in FY11
- Trade deficit in chemical and petrochemical sector with FTA countries also seems to worsen post signing of trade agreements
- Liberalizing trade against major exporters and established markets may pose threat to development and investments in domestic industry
- Given higher margin of preference (MFN-preferential duty) offered by India under the FTAs the surge in imports is much higher compared to surge in exports for India

- Also, India over the years has not been able to gain much in area of services and investments following trade negotiations
- India has separate trade agreements with Malaysia and Singapore besides them being member of ASEAN trade bloc, such multiplicity of trade agreement have led to inconsistencies in trade with these countries over time

It is observed that growth of India's exports to FTA countries is not much different from that with rest of the world. Thus, export to FTA countries has not outperformed overall export growth, in fact, export to RTA countries parallels the trend growth as with other exports. Hence, India's export surge could be attributed more to diversification of India's export basket both in terms of destination and commodities and favourable global conditions and less to trade liberalisation

4.8 RCEP- Proposed Trade Agreement

RCEP is a proposed regional trade agreement between ten-member states of the Association of Southeast Asian Nations (ASEAN) and its existing 6 free trade agreement partner nations namely India, China, Japan, Korea, Australia and New Zealand.

RCEP negotiations were formally launched in November 2012 at the ASEAN Summit in Cambodia. RCEP is viewed as an alternative to the Trans-Pacific Partnership (TPP), a proposed trade agreement which includes several Asian and American nations but excluded China and India, it was later repudiated by the USA.

In 2017, prospective RCEP member states accounted for a population of 3.4 billion people with a total Gross Domestic Product (GDP, PPP) of $49.5 trillion, approximately 39 percent of the world's GDP, with the combined GDPs of China and India making up more than half that amount.

Initially, India opted for a three-tier approach to tariff liberalization. Under India's three-tier approach to tariff reduction, the Asean countries were being offered tariff liberalization on 80 per cent tariff lines. Of this, for 65 per cent tariff lines, elimination of tariff was scheduled immediately after the agreement is implemented. For the remaining 15 per cent tariff lines tariff elimination was scheduled to happen over a period of 10 years. In the second tier, India offered tariff elimination on 65 per cent tariff lines to South Korea and Japan, with whom it has free trade agreements (FTAs). In the third tier, India had proposed tariff elimination on 42.5 per cent tariff lines to China, Australia and New Zealand. However, this approach was opposed / (rejected?) by a majority of the participants – seeking a single approach with >80% tariff lines to be offered for duty elimination.

It is observed that most of India's FTAs in operation till date have brought disproportionate gains to India's partner countries without India gaining significantly. India's agreements with Singapore, Korea and ASEAN have resulted in India providing preferential access to its huge market without commensurate gains accruing to it, not even in the areas of services and investment. As India is already in trade agreement with most of the trade partners under RCEP including ASEAN, Korea and Japan it is seen that these agreements have not been favourable to Indian petrochemical sector so far. In 2009-10, when these FTA negotiations just ended or were in their final stages, India's trade deficit vis-à-vis its three FTA partners was US$ 16 billion, while in FY-18, the deficit rolled over to US$ 31 billion[6].

[6] *Sourced from article on RCEP deal published in 'The Hindu' dated 12th Sept 2018*

India has total trade deficit of about US$ 104 Billion with RCEP nations in FY-18, maximum of which of about 63 billion US$ is with China alone[7]. Hence, China poses a great threat to domestic manufacturing industry and to country's various small and medium entrepreneurs.

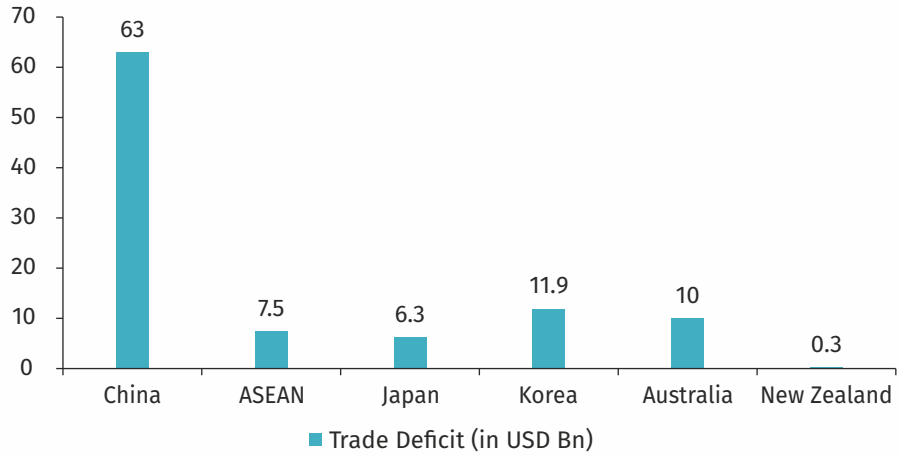
After being at disadvantage in trade and experiencing a large trade deficit from China, it is worth pondering for India before getting into any agreement or lowering tariffs and liberalizing trade against major export markets with substantial surplus of petrochemicals such as China, Korea and Singapore, as this may adversely affect the domestic industry, putting it at a greater risk by further exacerbating its trade deficit. Also, getting into trade agreements with bigger exporting markets will enable them to dump more products into the country. Therefore, review of proposed free trade agreements (FTAs) before negotiation is necessary.

Though, at present Indian companies are operating world class facilities efficiently, but competition with RCEP nations is unfair on account of factors like high cost issues, government support to industry in other RCEP countries etc. Indian industry is plagued with several disadvantages vis-à-vis producers in RCEP countries as it has to grapple with high cost factors like high interest rates, higher duties on plant and machinery, etc while petrochemical industry in several RCEP countries were developed on the back of benefits/ concessions by respective Governments.

In addition to above disadvantages, import duty spread on petrochemical feed-stocks and products in India is one of the lowest in the world and lower than most of the ASEAN countries, China and even the developed countries like Japan. The existing duty levels on petrochemical products are at reasonably low levels. The low level of duty on products in India makes it extremely easy for producers elsewhere to offload surpluses in the Indian market even at the MFN duty rates and more so considering the large size of the Indian market.

Figure 25 depicts the trade balance of India with various RCEP nations

Figure 25 : India's Trade deficit from RCEP nations (FY-18)



Source: *Ministry of commerce*

[7] *Reference to Live mint article- What India stands to gain from RCEP dated 18th Sept 2018, primarily sourced from ministry of commerce*

The negative trade balance figures with RCEP partner nations imply that the proposed trade agreement does not seem to improve the current situation as India is already in pact with most of the trading nations under RCEP, with Indian industry not being at advantage so far. Further, the proposed agreement does not appear to hold big trade opportunities, with China's petrochemical industry moving towards self-sufficiency and New Zealand being a small market for trade.

Partner nations so far are benefitting by obtaining Indian goods and services at liberalized tariff rates. Presently, a large number of manufacturing industries as well as agricultural commodity producers are not measuring-up well to import competition, and that their interests needs to be protected by enhancing import tariffs.

Further trade agreements with more trading partners may lead to reduced tariff lines, attracting more imports into the country and supressing the interest and development of domestic industry. Hence, it is imperative that the Government takes cognizance of the ground realities while offering tariff concessions to RCEP member countries and appropriately safeguard the interests of the domestic industry. Tariff concession commitments under FTAs are usually permanent and once granted are virtually impossible to remove as the petrochemical industry has experienced with the India-Singapore CECA.

From experiences of countries like US, it can be clearly made out that trade liberalisation via FTAs has not necessarily benefited for all countries and now they seem to move more towards trade protectionism rather than trade agreements. Hence, India should rather focus on attracting investments into the country, skilling manpower and work towards utilizing its human resource effectively rather than engaging into more trade agreements.

Despite many disadvantages, Indian petrochemical manufacturers have invested and created significant manufacturing capacities in the country, which has played a vital role in developing the downstream sector. This security of supply has facilitated the development of the value chain and going forward would continue to be critical for its future growth.

Offering tariff concessions on key petrochemicals under RCEP will be to the extreme detriment of the domestic petrochemical industry in India as it would compel the domestic industry to compete on a non-level playing field. Eliminating tariff on key petrochemical tariff lines under RCEP for exports from countries like China and ASEAN will have tremendous adverse impact on domestic manufacturers of these products and make the substantial investments made for augmenting the large domestic capacities, financially unviable.

For a country like India, aiming for development of domestic industries and adopting schemes like “Make in India”, with intense focus on domestic production of goods and services, shall not embrace such a deal.

5 Conclusion and Recommendations

5.1 Issues and Concerns of the Domestic Industry

- Despite being an enabling industry, the petrochemical industry in India is subjected to certain structural disadvantages which inhibit its competitiveness. Factors like high cost of capital, lack of adequate infrastructure, place domestic petrochemical manufacturers at a significant disadvantage compared to their counterparts elsewhere.
- In the past few years, India has concluded and operationalized FTAs with various countries. However, majority of the agreements concluded by India have not benefitted the Indian chemicals and petrochemicals industry. The focus of these agreements had been reduction / elimination of tariff without adequate attention paid on other factors impacting trade. As a result, in most of the cases, Indian export to these countries had gained relatively less as compared to import thus widening the trade gap.
- The threats from FTAs have a multi-dimensional adverse impact on the domestic petrochemical sector for items which are currently being imported.
- While demand-supply gaps exist for key petrochemicals in the country, domestic investors are skeptical of investing in India as these gaps are being fulfilled by trade partner nations. Tariff concessions on FTAs may jeopardize the financial viability of the new investments made in petrochemical industry.

5.2 Recommendations

Considering the ground realities in the Indian petrochemical industry, the following recommendations are proposed for an effective FTA strategy for the sector.

- Constitution of a permanent FTA Regulatory Board headed by a senior government official, can be a positive step. The board will be entrusted with the responsibility of reviewing existing FTAs taking into account the sectoral sensitivities and formulating the approach for FTAs under negotiation. The board necessarily needs to have representation from the industry to provide a holistic view.
- Petrochemical industry is an "enabler" industry which is used in virtually all sectors of the economy including agriculture, infrastructure, healthcare, automobile, packaging with present capacities of more than 40 million MT, which is comparable to any major sector in the country. It contributed to nearly 2% to India's GDP in 2017. Considering the vital role played by the petrochemical industry in economic growth and development, it is proposed that petrochemical industry be designated as a "core industry" and accorded the importance it deserves.
- It is proposed that all India's FTAs (both existing and future ones) have built-in safeguard duty provision, to be notified as soon as the FTA is operationalized

- Key petrochemical products sensitive to domestic industry could be excluded from any tariff reduction under operational and proposed FTAs to limit the damage caused to domestic industry by preferential imports

- A comprehensive standards framework for the petrochemicals sector be developed and put in place. Such standards shall check unhindered free market access of FTA trade partners to the Indian market

- India should carefully evaluate tariff rationalization of free trade agreement before getting into any proposed negotiation, as liberalizing trade against major exporters and established industries will enable partner nations to gain preferential access to the Indian market. Hence, FTAs should be signed keeping in mind, the preferential access of domestic industry to foreign markets and various products and services of high export potential

- For the petrochemicals sector, Government needs to actively encourage FDI rather than FTAs to utilize India's growing demand to create value within the country rather than outside. As India's demand is expected to steadily grow in the foreseeable future, it can be an engine for creating new employment opportunities in the country if foreign participation in India is through the FDI route rather than the trade route. However, a policy framework might be required to define guidelines for investors to enable smooth functioning of the industry

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6 Abbreviations

Abbreviations	Description
ABS	Acrylonitrile Butadiene Styrene
ASEAN	Association of Southeast Asian Nations
CAGR	Compound Annual Growth Rate
CECA	Comprehensive Economic Cooperation Agreement
CEPA	Comprehensive Economic Partnership Agreement
DGCIS	Directorate General of Commercial Intelligence and Statistics
DGFT	Directorate General of Foreign Trade
EU	European Union
EXC	Exclusion
FDI	Foreign Direct Investment
FICCI	Federation of Indian Chambers of Commerce & Industry
FTA	Free Trade Agreement
FY	Financial Year
GDP	Gross Domestic Product
HDPE	High-density polyethylene
HS code	Harmonized System Code
LDPE	Low-density polyethylene
LPG	Liquified Petroleum Gas
MFN	Most Favoured Nations
MT	Metric Ton
NAFTA	North American Free Trade Agreement
NBR	Nitrile Btadiene Rubber
NT	Normal Track
PP	Polypropylene
PS	Poly-Styrene
PTA	Preferencial Trade Agreement
PVC	Poly Vinyl Chloride
RCEP	Regional Comprehensive Economic Partnership

Abbreviations	Description
RIL	Reliance Industries Limited
RTA	Regional Trade Agreement
SBR	Styrene Butadiene Rubber
SEN	Sensitive
ST	Sensitive Track
TPP	Trans-Pacific Partnership
TMT	Thousand Metric Ton
UAE	United Arab Emirates
UK	United Kingdom
USD	United States Dollar
WITS	World Integrated Trade Solution

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The Chamber with its presence in 14 states and 10 countries provides a platform for networking and consensus-building within and across sectors and is the first port of call for Indian industry, policy makers and the international business community.

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