Flash report on Polish chemical industry – opportunities for Indian investors and exporters

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सत्यमेव जयते

Economic Diplomacy Division

Ministry of External Affairs

EY

Building a better working world

contents

Poland is one of the most economically attractive regions in Europe

- Poland is located in Central Europe, east of Germany and west of Ukraine and Belarus. It is **the largest** country in the region with **312 thousand square kilometers** of land area inhabited by **38 m residents**. The capital, Warsaw, is situated in the central part of the country.
- Polish economy has been growing for the last 28 years and remains **one of the fastest growing economies** in Europe. Polish GDP grew by **42% in 2006-2016 period** and amounted to **USD 0.5 trillion** making Poland the **8th biggest economy** in the EU.
- According to Ernst & Young Attractiveness Survey Europe 2016, Poland is ranked as **the most attractive country** for investments in Central and Eastern Europe and **5th on European level**.

312 679 km² land area

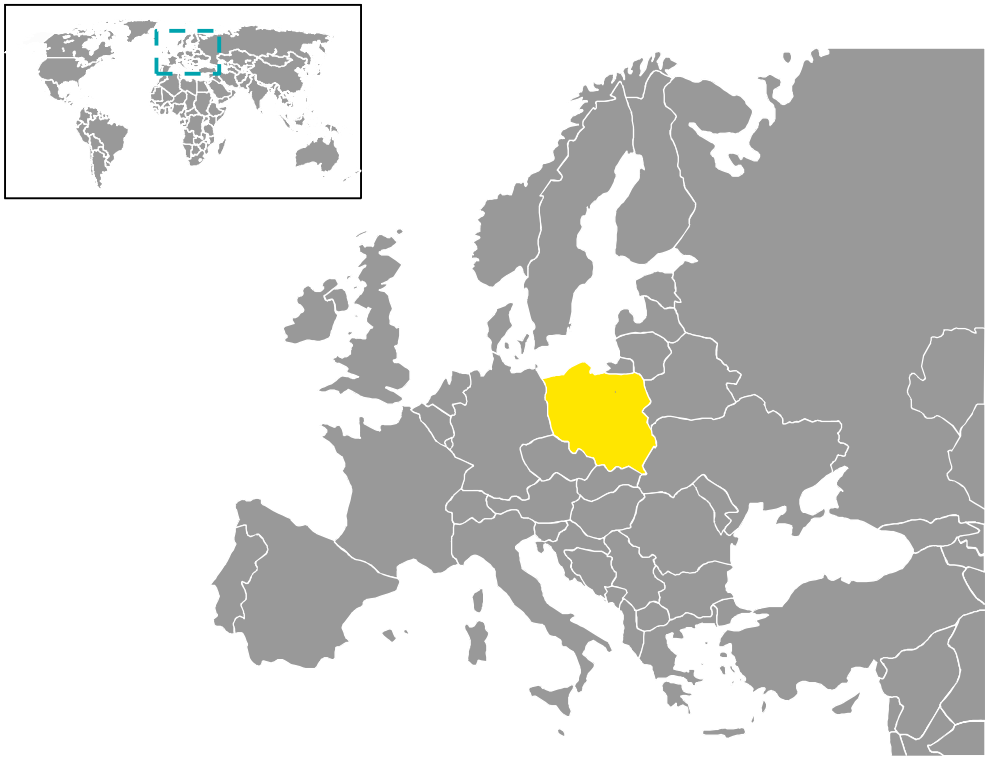
Largest country in Central Europe

38 million inhabitants

6th largest population in the EU

42% GDP growth 2006-2016

One of the fastest growing economies in Europe



Polish chemical sector is growing faster than the EU average

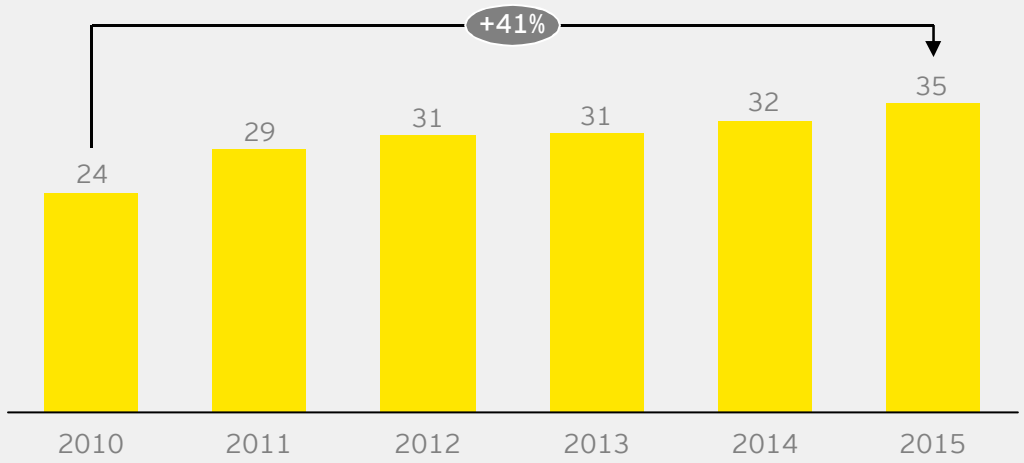
- Industry accounts for 24% of Polish GDP and has a substantial impact on country's economic development.
- Majority of industry production is covered by six main sectors.

Key sectors of Polish industry

- Food
- Automotive
- Chemical
- Metal
- Electronic and electrical engineering
- Machinery

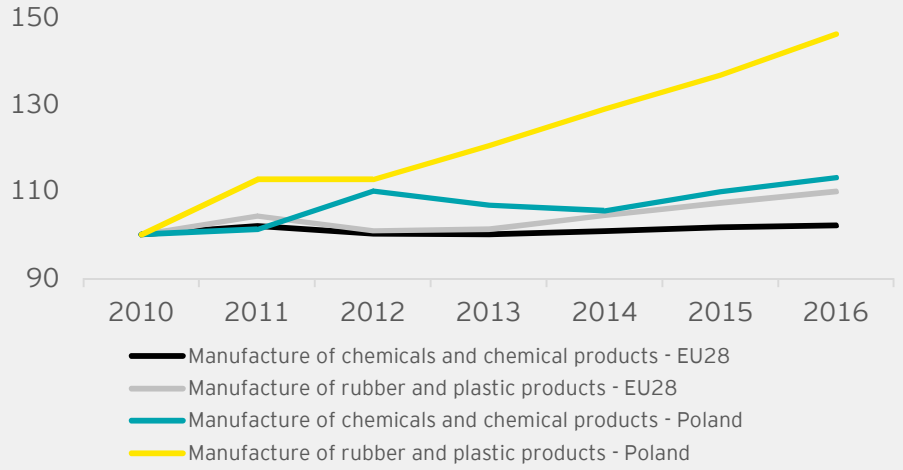
- Polish chemical sector is the second largest sector of Polish industry in terms of the value of production sold. It is a key pillar of Polish industry providing necessary resources and products used in many other branches of the economy.
- In period 2010-2015, chemical sector in Poland increased by 41% and amounted to USD 35 bn in 2015. The growth of the Polish chemical sector outpaced other European markets substantially and helped to increase Polish role on European chemical market.

Value of Polish chemical sector production sold in 2010-2015 [USD billion*]



Source: EY analysis based on Central Statistical Office of Poland

Volume production index for chemical industry in the EU in 2010-2016 [index 2010=100%]



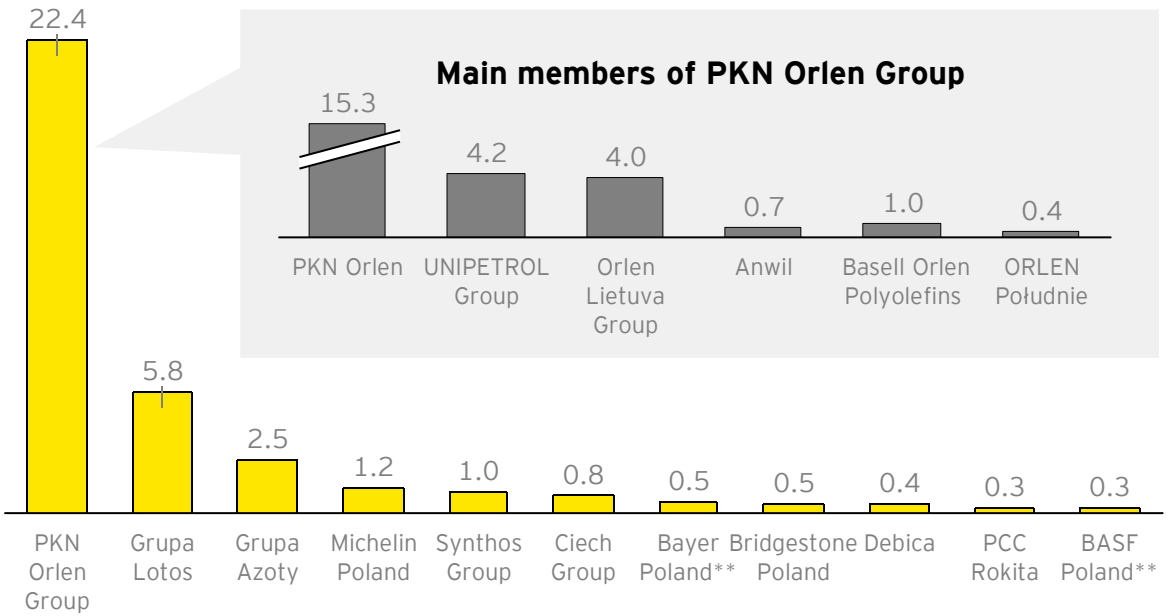
Source: EY analysis based on Eurostat

** All statistical data available in PLN was converted to USD according to the average exchange rate in 2016 published by the National Bank of Poland (1 USD = 3.9431 PLN)*

There are more than 10 000 companies in Poland operating in chemical industry, although market is dominated by smaller number of key players

- Polish chemical market has more than 10 thousand companies specialized in various chemical subsectors, but the chemical market is dominated by big companies. Revenues generated by top 8 chemical producers account for more than 30% of Polish chemical production value.
- With revenues of USD 22 bn in 2015, PKN Orlen is the biggest player on Polish chemical market. Main areas of company's operations are fuel production and sales followed by petrochemical and chemical production.
- In addition to bulk chemicals producers and chemicals processors, chemicals distributors play significant role on Polish chemical market.

Selected producers on Polish chemical market by consolidated revenues generated in 2015* [USD billion]



Selected chemicals distributors operating on Polish market

SAWEX chemicals	Distribution of rubber, polystyrenes, silanes and other products
solvadis polska	Distribution of feedstock and chemical additives
BRENNTAG	Distribution of wide variety of chemical raw materials for all industry branches
HELM	Distribution of chemicals, crop protection and pharmaceutical products
IMCD	Distribution of specialty chemicals
HSH Chemie Distribution Group	Distribution of chemicals for paints, adhesives, food and cosmetics subsectors

** Data includes total consolidated revenues of selected companies from all areas of business activity*

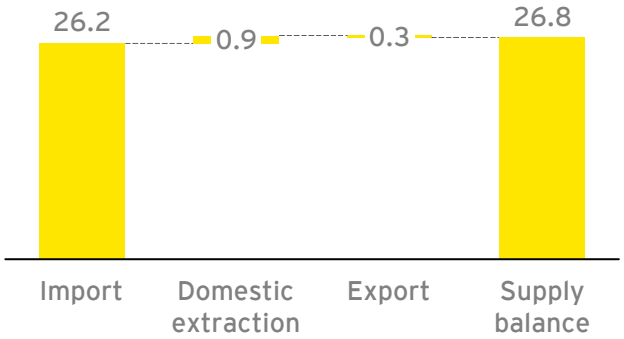
*** Revenues include pharmaceuticals sales, data related to revenues segmentation is not available*

Source: EY analysis based on companies' financial reports

Majority of Polish chemical production is based on imported feedstock

- Poland has relatively small reserves of natural resources used as primary chemical production feedstock, with domestic crude oil and natural gas extraction not being able to cover internal demand.
- Almost 97% of crude oil and 72% of natural gas used in Poland in 2015 was imported.
- In contrary Poland has significant reserves of coal, however currently coal is not being used as chemical feedstock in Poland.

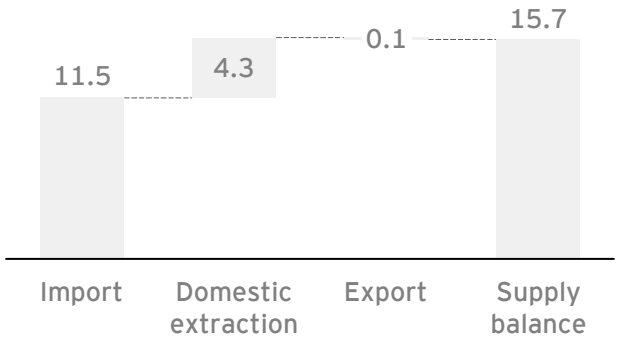
Crude oil supply balance in Poland in 2015 [million tonnes]

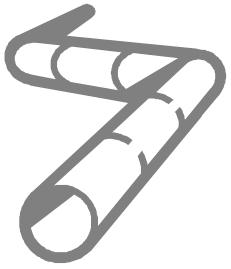


~ 27 m tonnes
total oil procession in 2015

0,9 m tonnes
total oil extraction in 2015

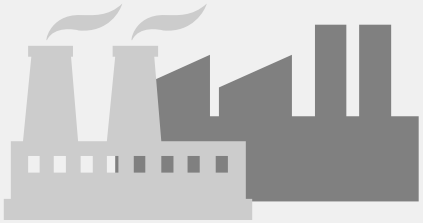
Natural gas supply balance in Poland in 2015 [billion m^3]





~ 16 bn m^3
total gas consumption in 2015

4,3 bn m^3
total gas extraction in 2015



Overall* deposits of natural resources (chemical production feedstock) in Poland as of 31.12.2015

Crude Oil
37.4 m tonnes

Natural Gas
180 bn m^3

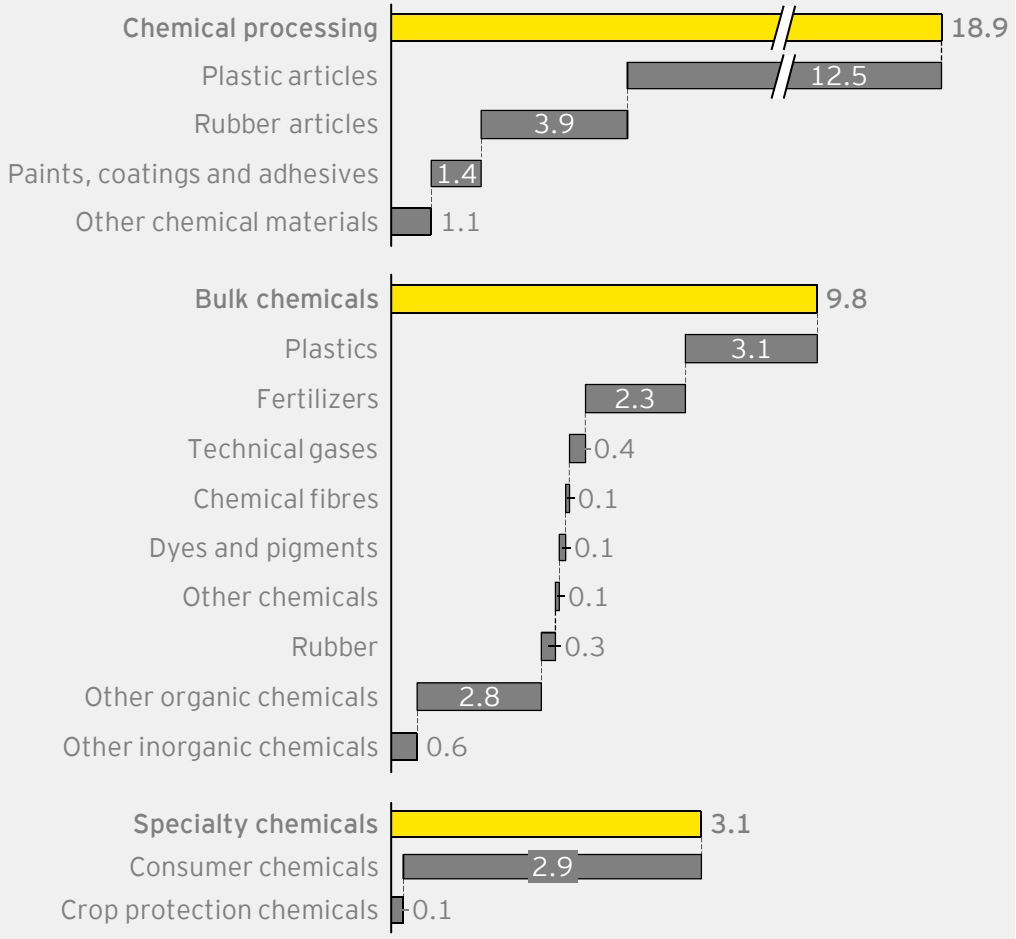
Coal
56.2 bn tonnes

Source: EY analysis based on Polish Geological Institute – National Research Institute and Ministry of Energy

* *Overall resources include recoverable resources and industrial resources from developed and undeveloped deposits as well as abandoned ones*

Chemical processing is the largest sector of the industry in Poland, but production of bulk chemicals is also significant

Value of production sold by selected Polish chemical segments in 2015 [USD billion]



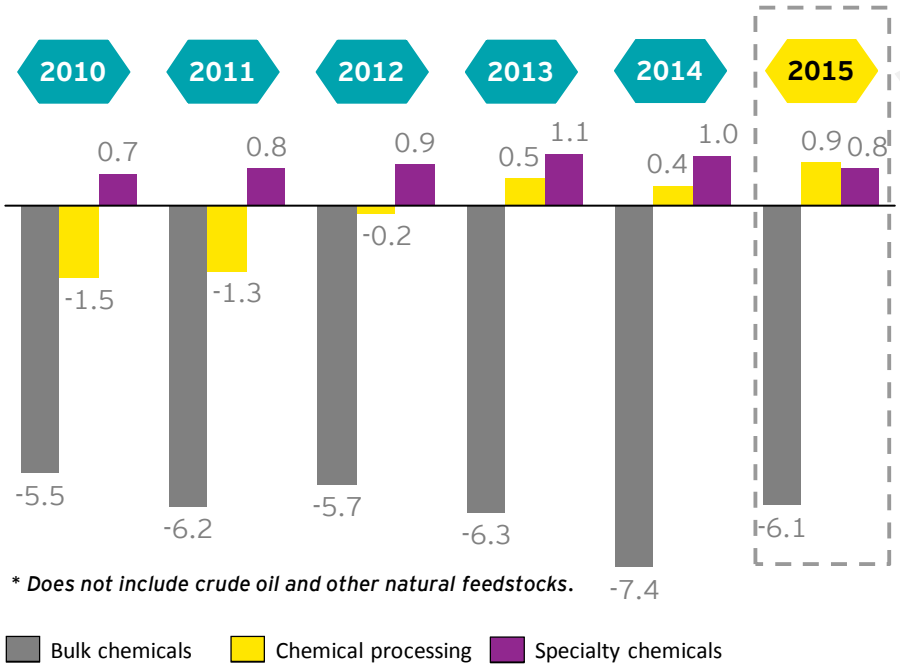
- Production of Polish chemical sector can be divided into three main product segments:
  - Chemical processing,
  - Bulk chemicals,
  - Specialty chemicals.
- Chemical processing is the largest segment of Polish chemical production market with USD 19 bn (59%) of sold production in 2015. Plastic articles and rubber articles are the biggest product groups within the segment accounting for 85% of the chemical processing sold production value.
- Bulk chemicals production is also an important segment of Polish chemical industry – in 2015 it generated production sold amounting to USD 10 bn (31%). Two key bulk chemicals product groups are plastics and fertilizers (55% share of bulk chemicals).
- Specialty chemicals is the smallest segment of Polish chemical sector. Production of this segment focuses on consumer chemicals, which account for 96% of specialty chemicals production sold value.

Source: EY analysis based on Central Statistical Office of Poland

Polish chemical market has a significant deficit on bulk chemicals foreign exchange. Trade balance on chemical processing and specialty chemicals products is positive

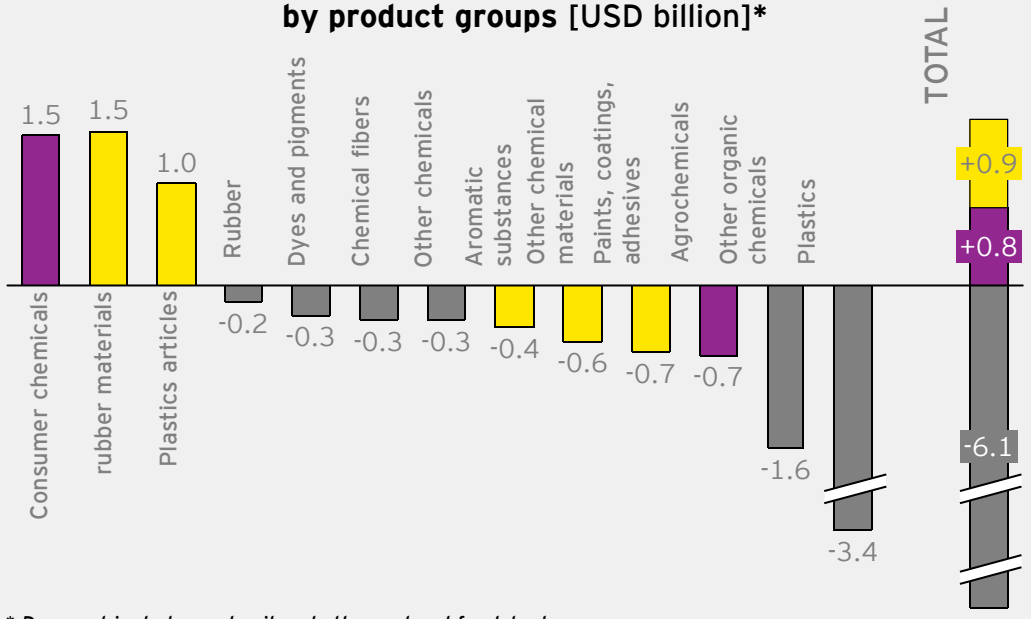
- There is a significant trade exchange on chemical products between Poland and abroad.
- Poland is a net importer of bulk chemicals and the deficit has remained high in the last years.
- Trade balance on specialty chemicals products and on chemical processing products has been positive since 2013.
- Increase of net import of bulk chemicals, as well as increase in net export of more processed chemicals is in line with Polish chemical industry development noted in the last years.
- Chemical products categories with highest positive trade balance in 2015 are: consumer chemicals, rubber materials and plastics materials.
- At the same time, plastics and agrochemicals are among chemical products with the biggest trade deficit.

Polish chemical sector foreign trade balance in 2010-2015 [USD billion]*



** Does not include crude oil and other natural feedstocks.*

Polish chemical sector foreign trade balance in 2015 by product groups [USD billion]*



** Does not include crude oil and other natural feedstocks.*

Bulk chemicals | Chemical processing | Specialty chemicals

Source: EY analysis based on Central Statistical Office of Poland

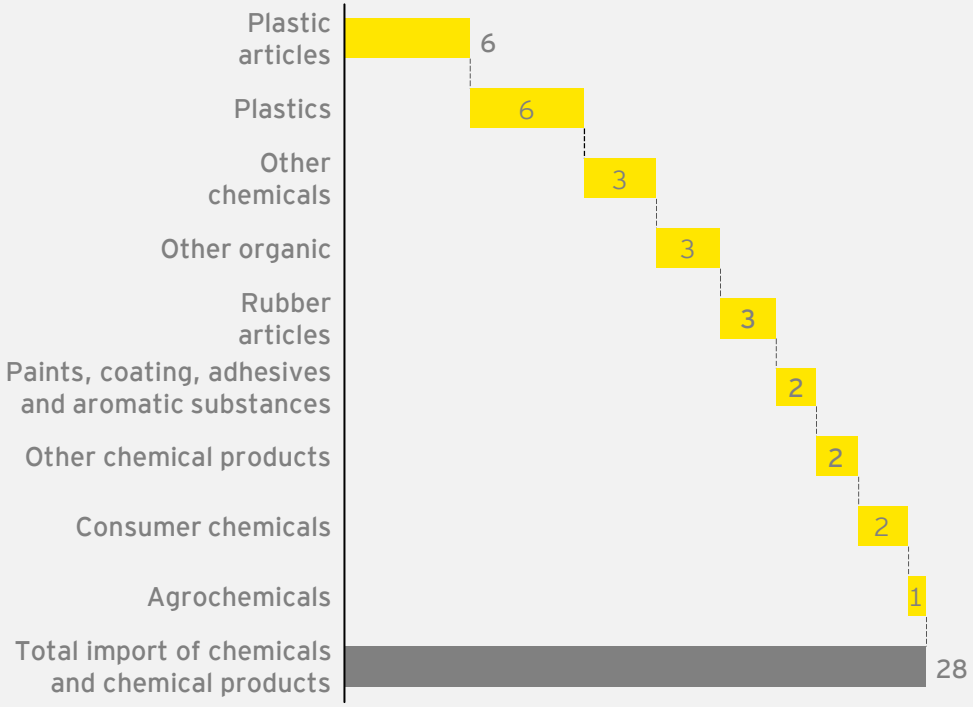
Bulk chemicals | Chemical processing | Specialty chemicals

Source: EY analysis based on Central Statistical Office of Poland

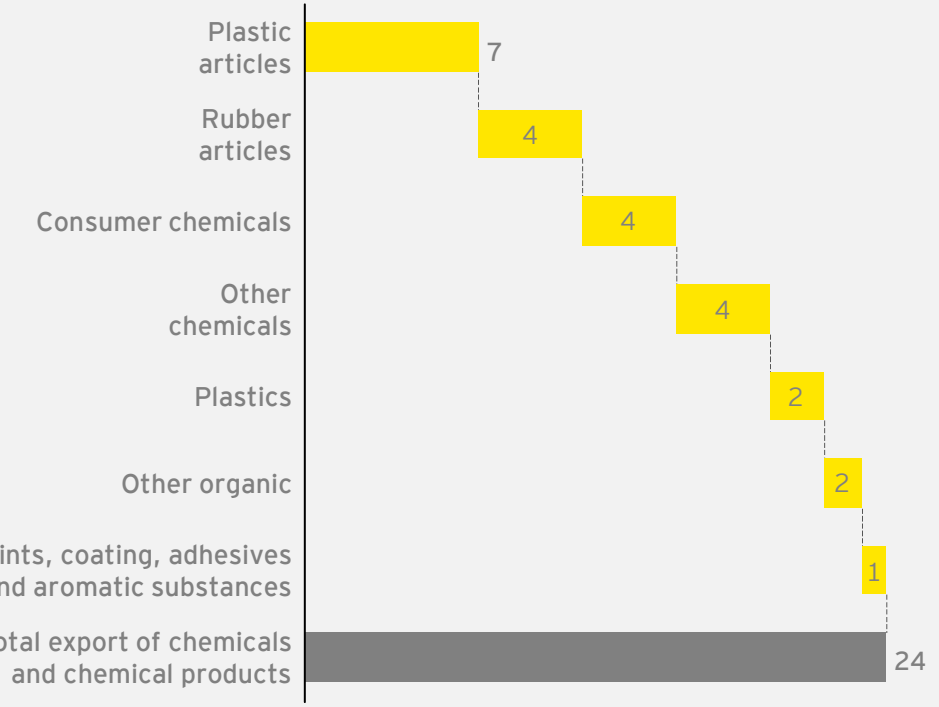
Bulk plastics and plastic articles have the highest value in Polish chemical import (USD 6 bn each in 2015). Tires and plastic articles are the biggest export categories

- In 2015 value of bulk chemicals and chemical products imported to Poland amounted to USD 28 bn, which was USD 4 bn more than value of export in the same year.
- Ethylene polymers were the most important bulk plastics import categories.
- Among imported chemical products the most important were plastic films, plates, sheets and belts with total value of USD 2.4 bn in 2015.
- Rubber industry is also important from export perspective. In 2015 value of tires exported from Poland amounted to USD 1.7 bn and there was also USD 300 m of rubber export.

Polish import of bulk chemicals and chemical products in 2015 in by product groups [USD billion]



Polish export of bulk chemicals and chemical products in 2015 in by product groups [USD billion]

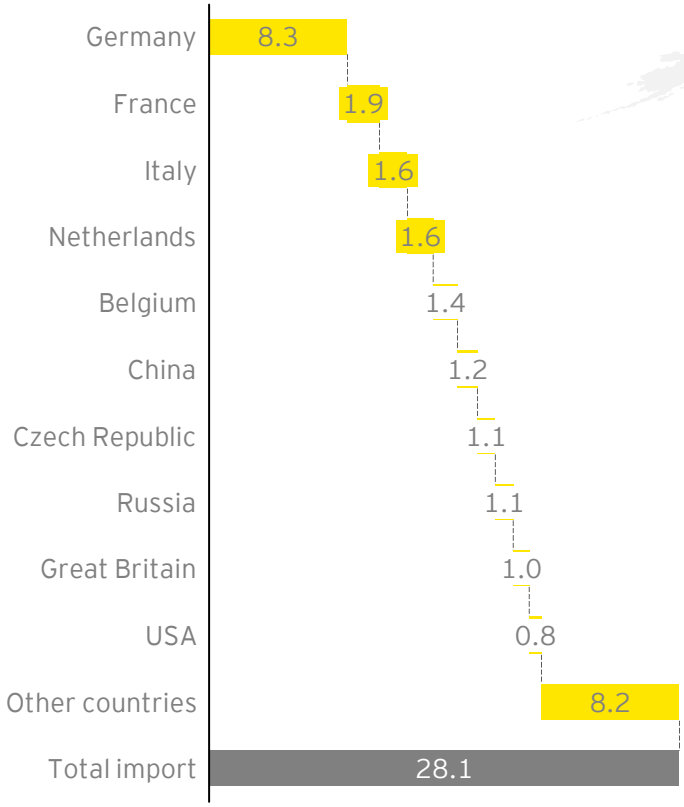


Source: EY analysis based on Central Statistical Office of Poland

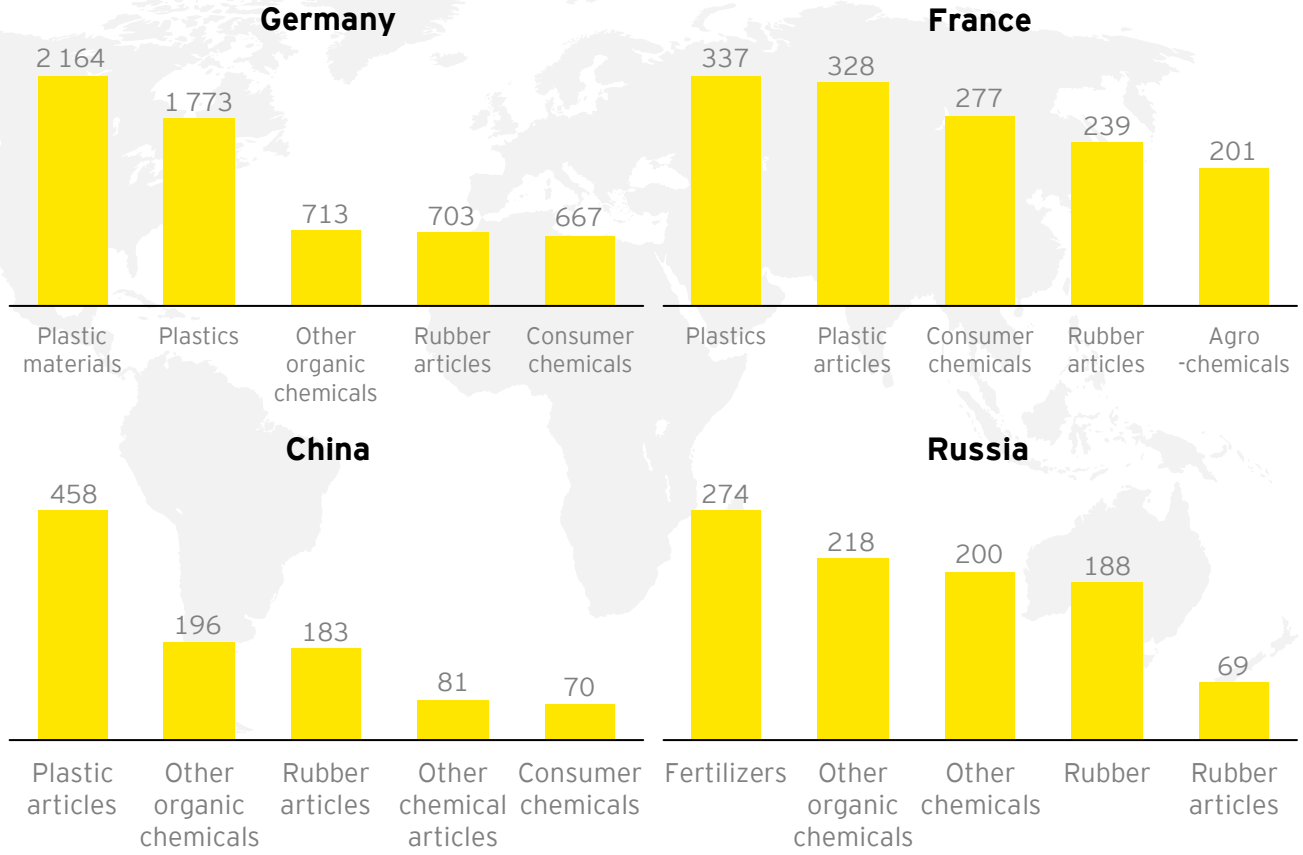
India has a marginal share in Polish chemical imports. Key import partners are Germany and other EU states. Among significant non-EU suppliers are China, Russia and USA

- Polish chemical sector is dominated by imports from the EU, in particular from Germany. German products account for almost 30% of the overall chemical imports to Poland. China, USA and Russia are the main non-European partners of Polish chemical sector in terms of imported goods.
- The value of chemicals imported from India to Poland amounted to USD 589 m and accounted for 2% of the overall import of chemicals to Poland.

Import of bulk chemicals and chemical products in 2015 in Poland by countries [USD billion]



Import of key bulk chemicals and key chemical products in 2015 in Poland from selected countries by product groups [USD million]

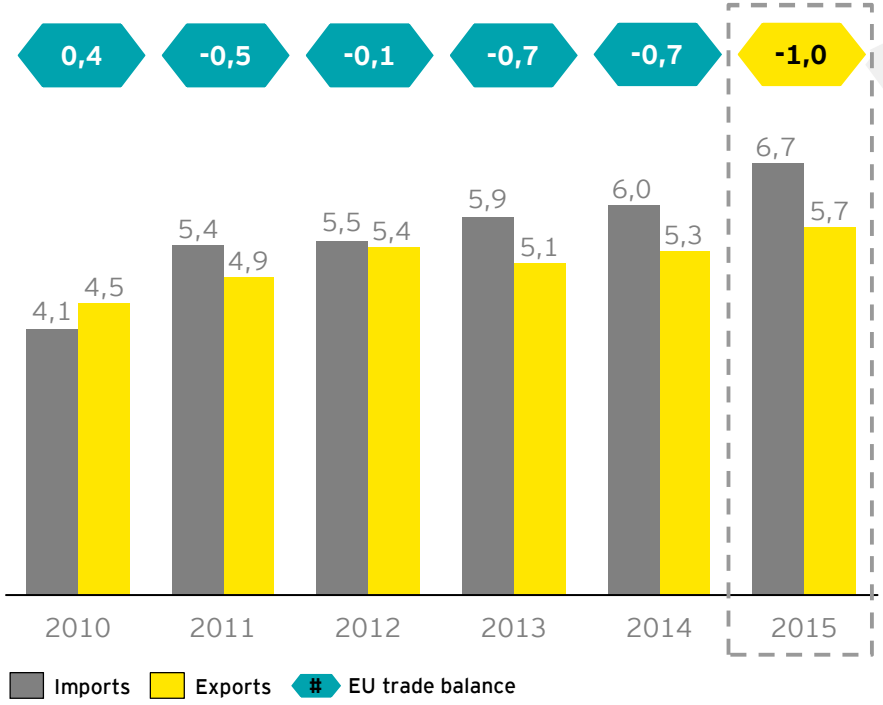


Source: EY analysis based on Central Statistical Office of Poland

Indian trade exchange with the EU is significantly higher than with Poland. Poland accounts for only 5% of EU chemicals trade exchange with India

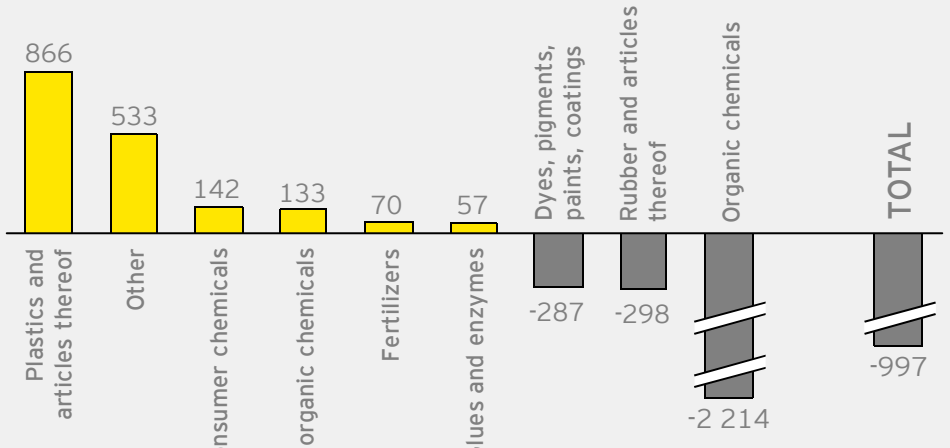
- The EU is the net importer of bulk chemicals and chemical products from India. EU chemical trade balance with India reached approx. minus USD 1.0 bn in 2015.
- In 2015 organic chemicals were the main product group responsible for EU trade deficit with India. In the same year the main EU net export category was plastic and articles thereof.
- Other significant products group affecting trade balance between the EU and India were: rubber and articles thereof, dyes, pigments, paints and coatings and consumer chemicals.

EU trade balance of bulk chemicals and chemical products with India in 2010-2015 [USD billion]



Source: EY analysis based on Eurostat

EU trade balance of bulk chemicals and chemical products with India in 2015 by key product groups [USD billion]

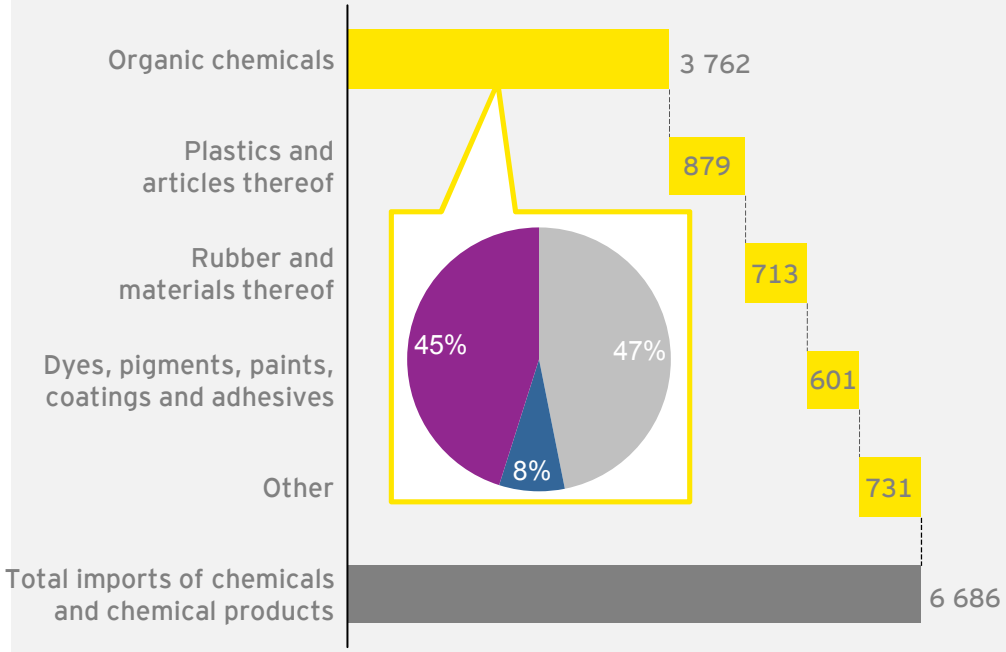


Source: EY analysis based on Eurostat

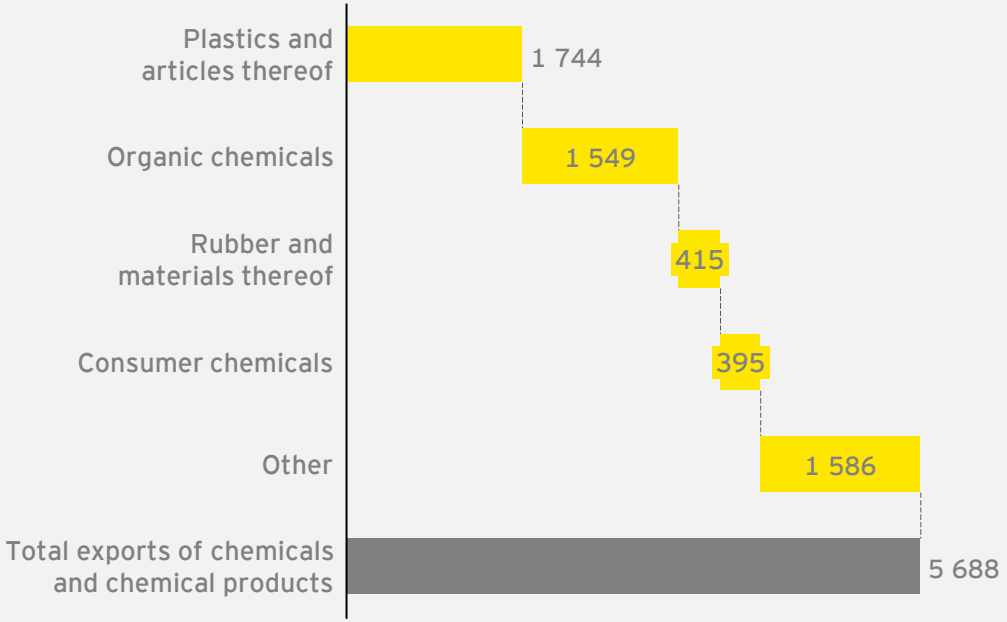
Organic chemicals jointly with plastics and articles thereof are dominant categories of the EU and India chemicals exchange. Rubber and its products also have significant share

- EU imports of Indian bulk chemicals and chemical products amounted to USD 6.7 bn in 2015, whereas EU chemicals exports to India reached USD 5.7 bn in 2015.
- Indian chemicals exports to the EU is focused on organic chemicals (56% share), followed by plastic and articles thereof (13%), as well as rubber and articles thereof (11%).
- Top 3 categories of EU chemicals exports to India are the same as EU import from India, with the dominant shares of plastics and articles thereof (31%) and organic chemicals (27%).

EU imports of bulk chemicals and chemical products from India in 2015 by key product groups [USD million]



EU exports of bulk chemicals and chemical products to India in 2015 by key product groups [USD million]



Heterocyclic compounds, nucleic acids and sulphonamides

Monocarboxylic and carboxylic acids

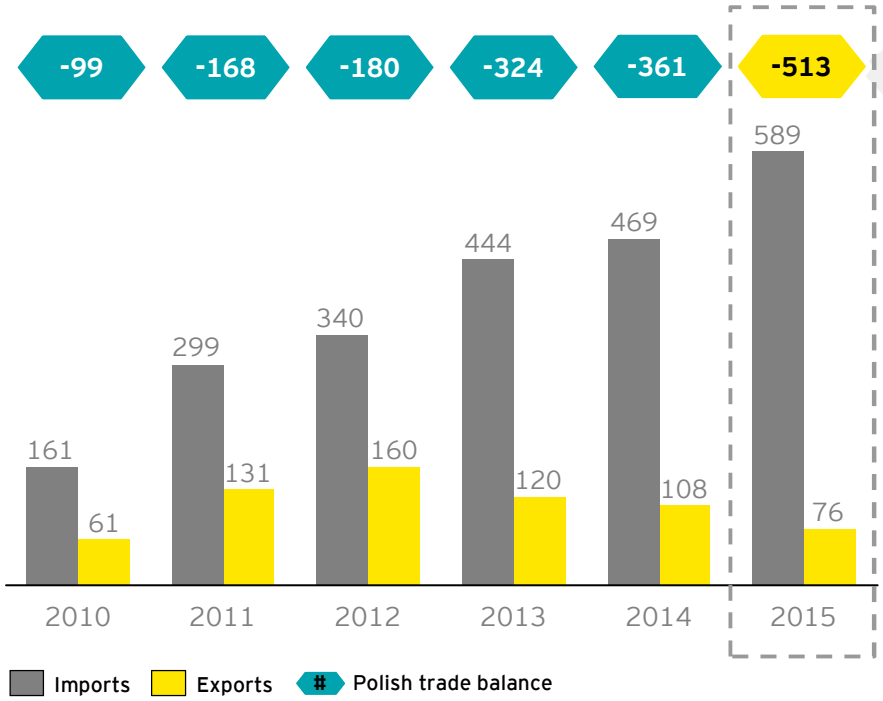
Other organic chemicals

Source: EY analysis based on Eurostat

Trade exchange of chemicals between Poland and India almost tripled in the period 2010-2015, but still remains insignificant comparing to total Polish trade exchange

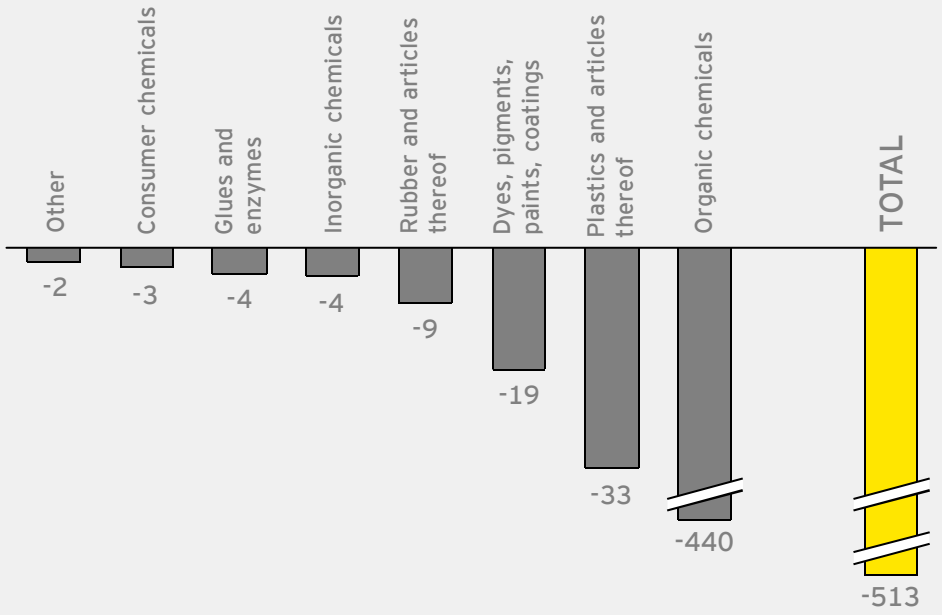
- Poland is a net importer of bulk chemicals and chemical products from India. Polish negative trade balance with India on chemicals has been increasing throughout 2010-2015 period.
- During that time the trade deficit between those countries grew by more than 400%.
- Organic chemicals account for 85% of total net deficit.

Polish trade balance of bulk chemicals and chemical products with India in 2010-2015 [USD million]



Source: EY analysis based on Central Statistical Office of Poland

Polish trade balance of bulk chemicals and chemical products with India in 2015 by product groups [USD million]

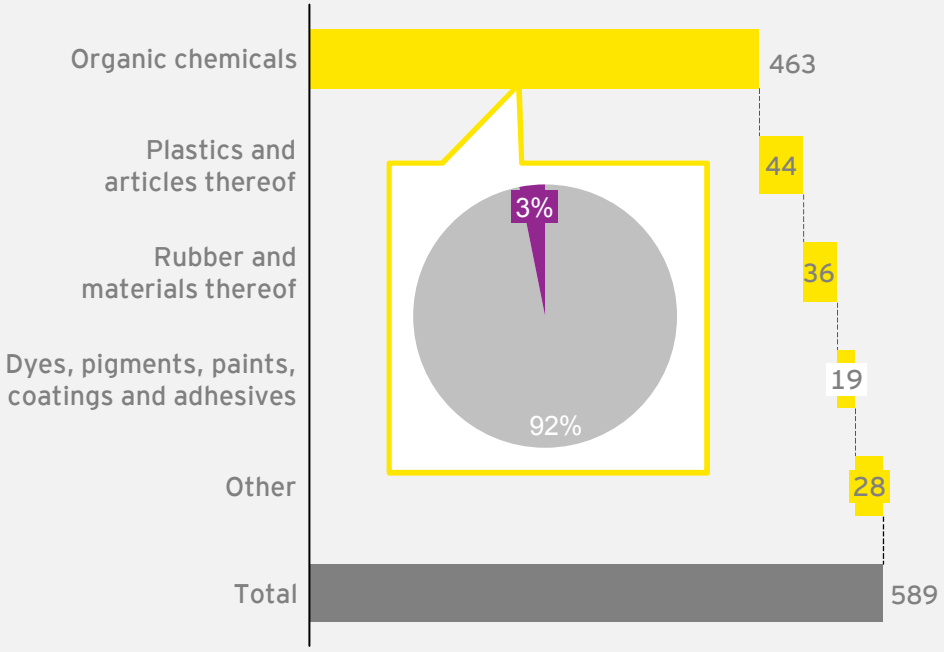


Source: EY analysis based on Central Statistical Office of Poland

Organic chemicals are the main chemicals imported from India (79% of imports' value). The most significant category of Polish exports to India is rubber and its products

- From total of USD 589 m of Polish imports from India (in 2015), the vast majority was covered by organic chemicals.
- Other important categories were plastics and articles thereof, as well as rubber and articles thereof.
- In the same year Polish chemicals exports to India amounted to only USD 76 m and was covered mainly by rubber and articles thereof and organic chemicals. The remaining categories jointly amounted to USD 25 m.

Polish imports of chemicals and chemical products from India in 2015 by key product groups [USD million]



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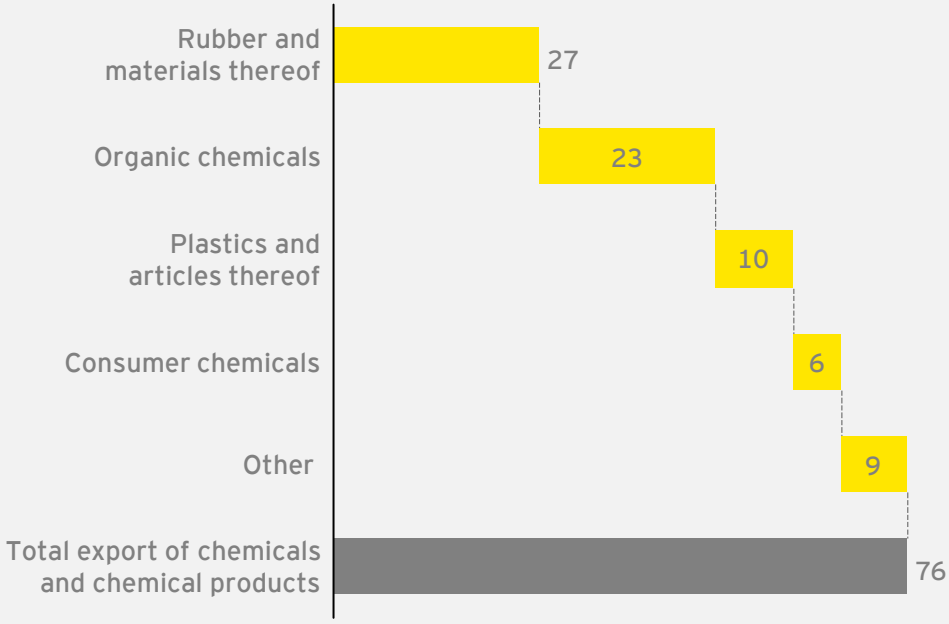

Heterocyclic compounds, nucleic acids and sulphonamides

Other organic chemicals

Source: EY analysis based on Central Statistical Office of Poland

Indian products account for marginal share of chemicals imports to Poland in all main categories

- Despite sustainable growth in value of Indian chemical exports to Poland (over 350% in period 2010-2015) India's share in import of chemicals to Poland is still marginal and accounts for 2% of total import of chemicals and chemical products.
- The only group of chemicals in which Indian imports to Poland have visible share is organic chemicals, for which 12% of Polish imports originates from India.

Selected bulk chemicals and chemical products imported from India to Poland

	Total imports to Poland [USD million]	**Imports from India to Poland** [USD million]	**India's share in imports to Poland** [%]
Plastics and articles thereof	11 610	44	0,4%
Organic chemicals	3 717	463	12,0%
Rubber and articles thereof	3 324	36	1,1%
Dyes, pigments, paints, coatings and adhesives	1 605	19	1,2%

Source: EY analysis based on Central Statistical Office of Poland and Eurostat

Polish chemical industry is not only about chemicals production. There are a number of chemical technologies developed by local entities available for potential investors

- The dynamic development of Polish chemical market is driven by various research and development initiatives.
- Polish chemicals R&D is focused more on specialized technologies, with bulk production being backed up by foreign technologies.
- There is a number of technologies being available, with just a few examples presented below:

Technology	Description
Ammonothermal technology /gallium nitride	Technology used for production of bulk gallium nitride. It is a unique technology on a global scale. It allows to manufacture gallium nitride substrates of the highest quality. Gallium nitride is a semiconductor material used in light-emitting diodes and lasers.
Manufacturing of 9-decene and 1-decene acid	Innovative technology used for the manufacturing of 9-decene and 1-decene acid from biomass with the use of next generation of metathesis catalysts. These acids have a wide variety of application in chemical industry (cosmetics, household chemicals, polymers, lubricants and surfactants).
Bioremediation technology	Technology aimed at bioremediation of contaminated soil and water. It is based on the process of eradicating and transforming pollutants into less destructive forms by leveraging natural abilities of specific microorganism (bacteria, fungi, yeasts). It can be used on areas affected by oil spills, contaminated with heavy metals etc.
Sulfur binder technology	Method of sulfur binder manufacturing by sulfur polymerization (liquid solvent with modifier). Sulfur binders have a wide variety of applications including production of sulfur concrete and asphalts. The technology can be used to accommodate sulfur produced as a waste in refinery processes.

New chemical technologies are often developed as a result of cooperation between companies and research institutes

Technology	Description
Sulfur concrete and asphalt concrete modification	Production methods aimed at converting industrial waste into new products. These technologies are used for the production of sulfur concrete and to enhance asphalt concrete. Sulfur products are more durable than traditional materials.
POM	Technology of manufacturing POM (polyoxymethylene, polyacetal, polytrioxane) from methanol. POM is a high quality engineering thermoplastic resin. Due to excellent chemical, thermal, electrical and mechanical properties POM can be used in automotive, machine building, electrical & electronic, consumer goods & hydraulic fittings industries.
Cyclohexane	Technology of manufacturing cyclohexane from benzene. Cyclohexane is a chemical intermediate used for the industrial production of caprolactam and adipic acid, which are precursors to polyamide (PA6 & PA66).

- **New chemical technologies are often developed in cooperation between companies and research institutes.**
- **There is a number of research institutes specializing in chemicals, with just an example of:**

Industrial Chemistry Research Institute

Largest chemical scientific institute in Poland focusing on the development of chemical technologies with practical industrial applications.

The Institute of Heavy Organic Synthesis

Institute carrying out research in the field of organic chemistry. It develops, implements and enhances chemical processes in cooperation with domestic and foreign partners

Increase in trade exchange, technology transfer and direct investments are the main areas of opportunities for business development between Indian and Polish chemical industries

	Opportunities identified in consultations with Embassy of India in Poland
1 **There is room for increase in Indian chemical products sales in Poland**	▶ Poland is a net importer of chemicals. In 2015 deficit on trade exchange on chemicals amounted to USD 4.4 bn. ▶ Despite sustainable growth in value of India exports to Poland (over 350% in period 2010-2015) India's share in import of chemicals to Poland is still marginal and accounts for 2% of total import. ▶ At the same time, Indian chemicals products are merchandised in the EU, which means they meet the regulatory requirement.
2 **Poland can be a valuable supplier of chemicals to India**	▶ With its wide range of products, high quality and export experience Poland can be a valuable supplier of chemicals to India. ▶ In 2015 value of Polish chemicals export to India amounted to USD 76 m, which accounted for only 1.3% in EU export to India. ▶ Currently Polish chemicals export to India is in declining trend, dropping from USD 160 m in 2012.
3 **Investment potential**	▶ With sound domestic market and access to EU market Poland can be a great investment location for Indian chemical companies.
4 **Poland provides technology transfer opportunities**	▶ In addition to cooperation potential based on chemicals trade, know how exchange can also provide business opportunities for Polish and Indian counterparts. ▶ Polish companies, as well as research institutes have developed a number of technologies which can be commercialized also in other parts of the globe.

Matchmaking initiatives supporting initialization of business contacts between Polish and Indian counterparts could facilitate business development between those countries

Recommendations prepared in consultations with Embassy of India in Poland

1 **There is room for increase in Indian chemical products sales in Poland**	▶ Targeting main buyers of bulk chemicals in Poland could increase Indian exports significantly due to the multi-billion USD bulk chemicals trade deficit in Poland. ▶ Specific needs of key Polish buyers should be confirmed to customize the offer. ▶ Development of exports from India to Poland can be supported by matchmaking platform, which aim would be to facilitate initialization of business contacts between potential counterparts from Poland and India.
2 **Poland can be a valuable supplier of chemicals to India**	▶ Current imports of chemicals to India from Poland provide room for further development. ▶ Development of imports to India from Poland can be supported by matchmaking platform, which aim would be to facilitate initialization of business contacts between potential counterparts from Poland and India.
3 **Investment potential**	▶ Market research on potential acquisition/partnership targets should be conducted to identify counterparts and concrete investment opportunities.
4 **Poland provides technology transfer opportunities**	▶ Joint research and knowledge transfers are possible between Polish and Indian research institutes. ▶ Indian chemicals industry can also take advantage of direct technology transfer. ▶ Identification and description of main technologies available could support matchmaking process.

EY

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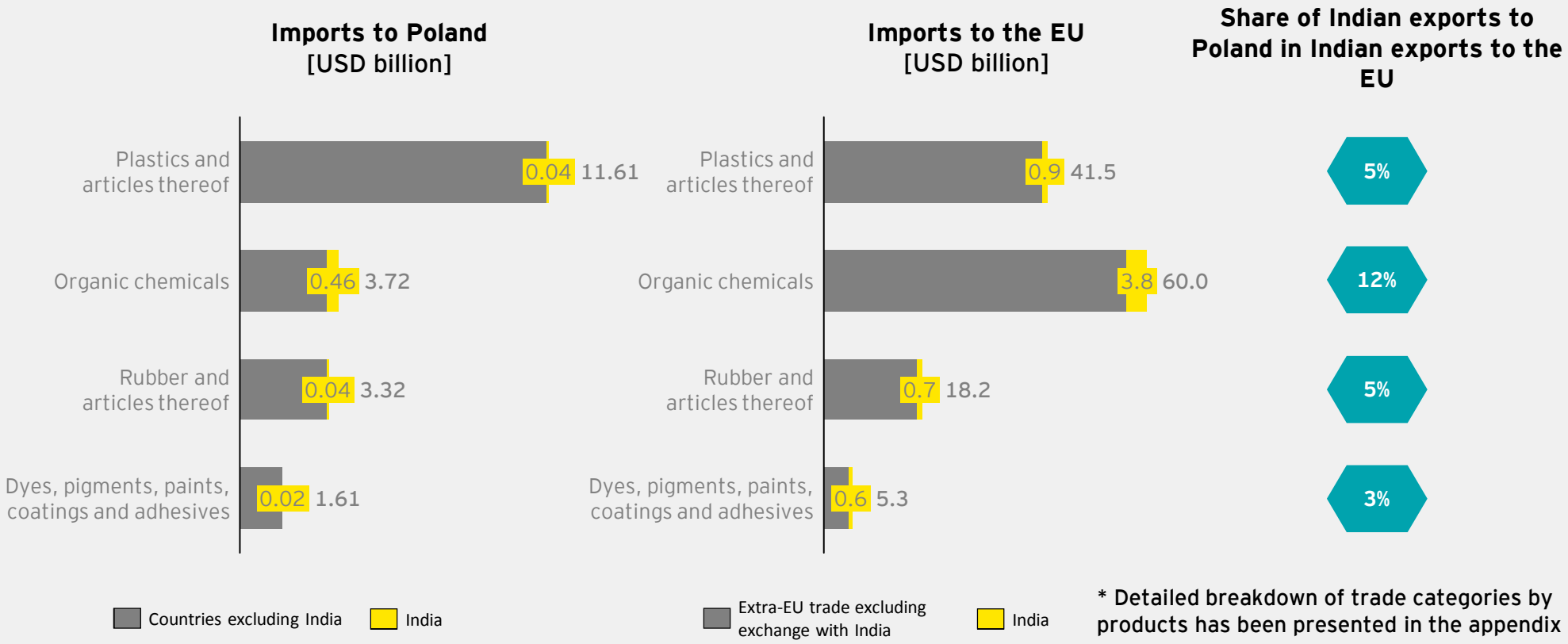
Appendix: Breakdown of Polish and EU chemicals imports

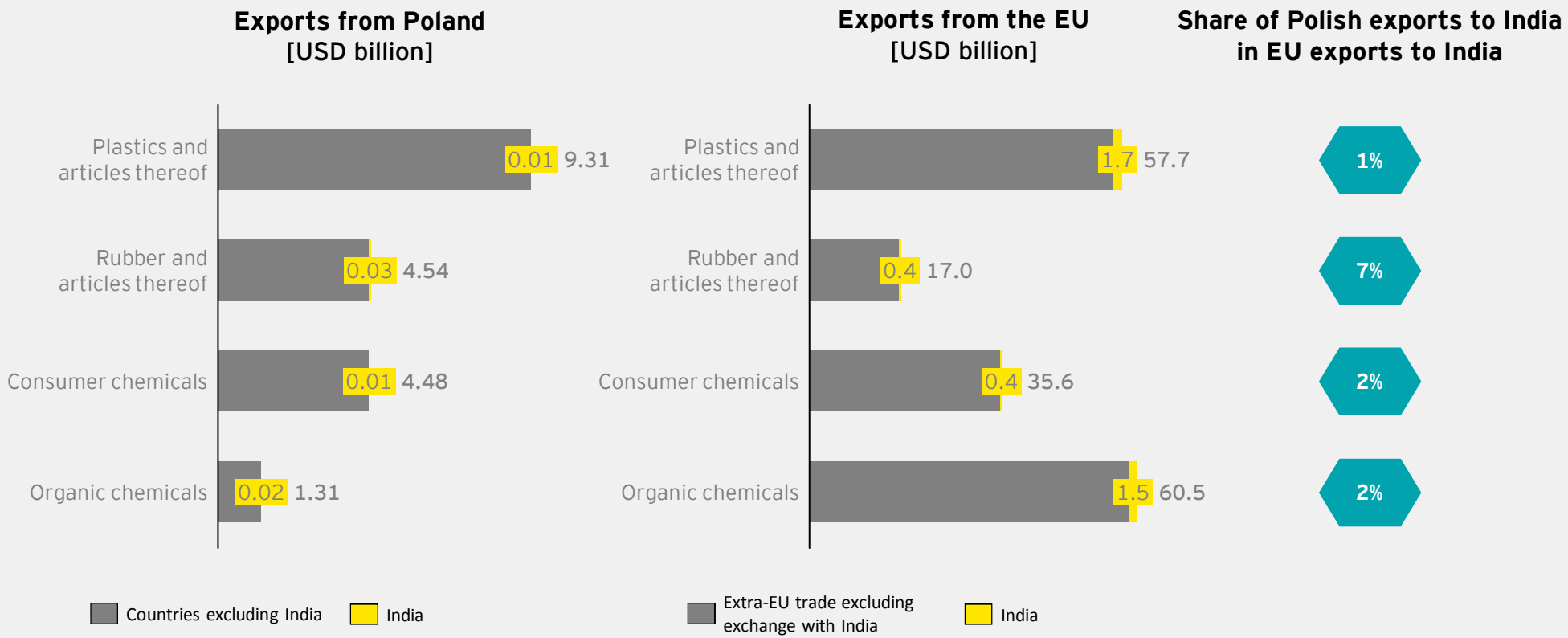
Selected bulk chemicals and chemical products imported from India to Poland and to the EU in 2015*



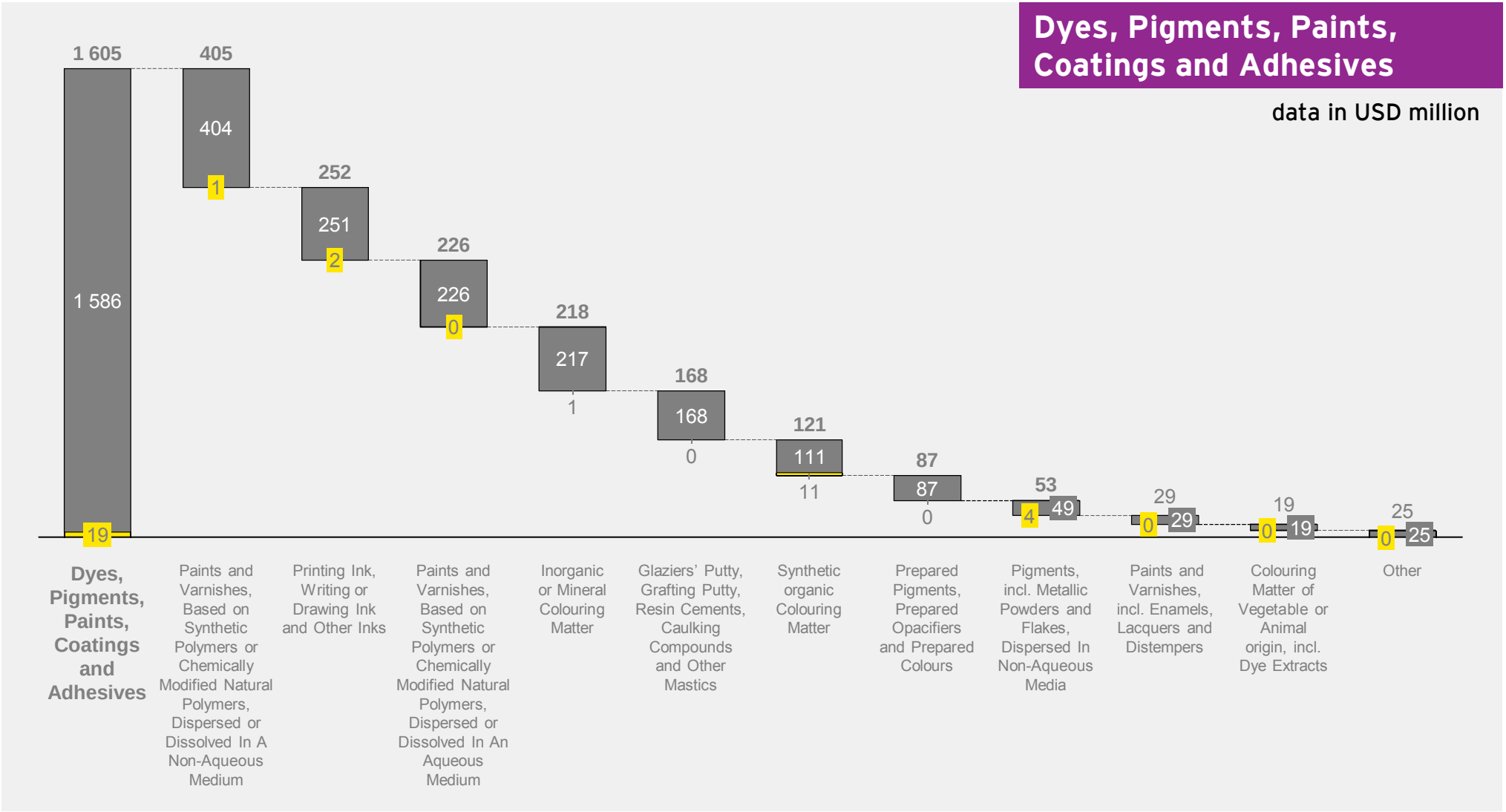
* Detailed breakdown of trade categories by products has been presented in the appendix

Appendix: Breakdown of Polish and EU chemicals exports

Selected bulk chemicals and chemical products exported from Poland and the EU in 2015 to India



Appendix: Detailed breakdown of Polish imports data on selected chemical product groups



Source: EY analysis based on Central Statistical Office of Poland and Eurostat

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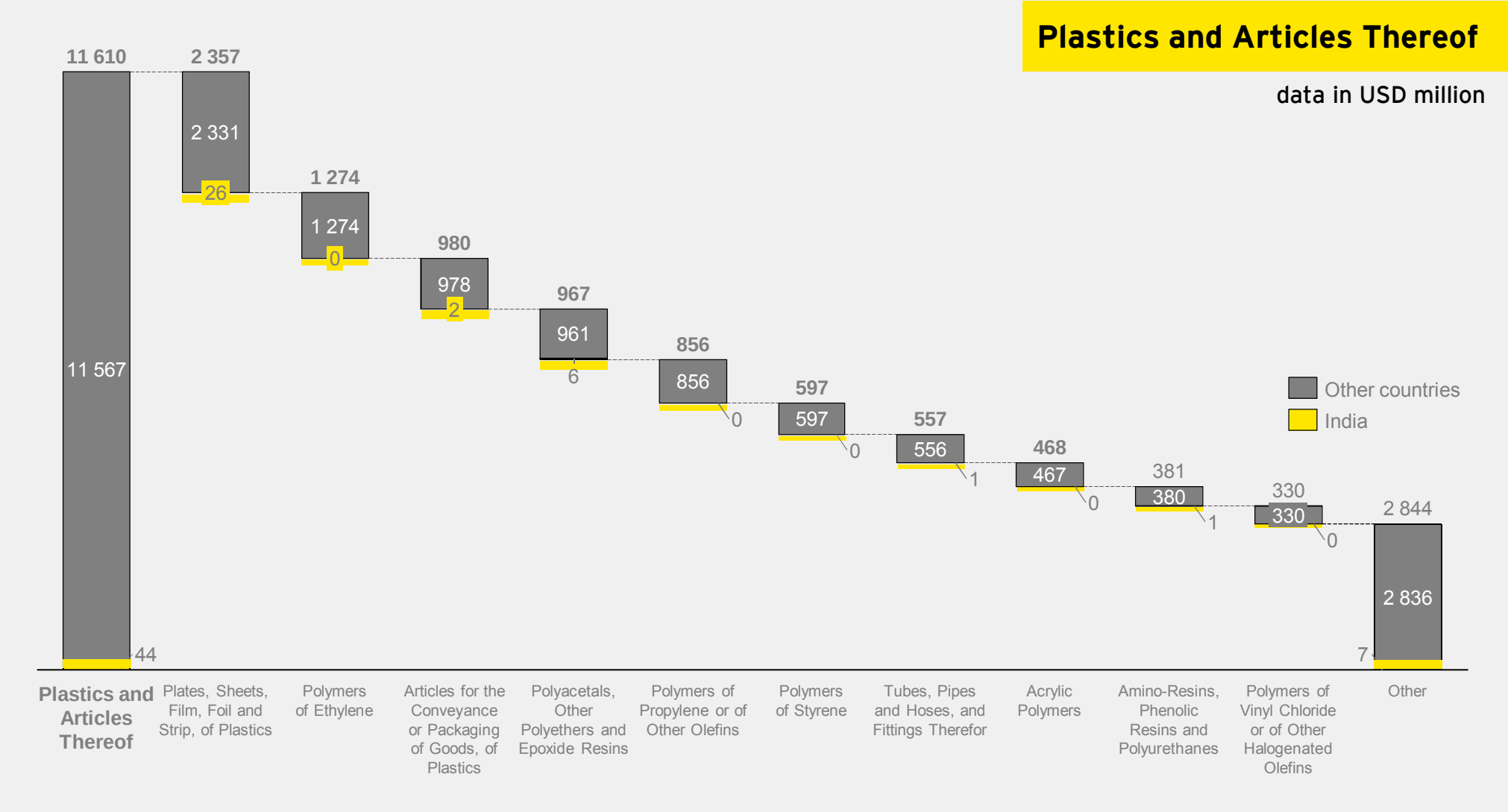

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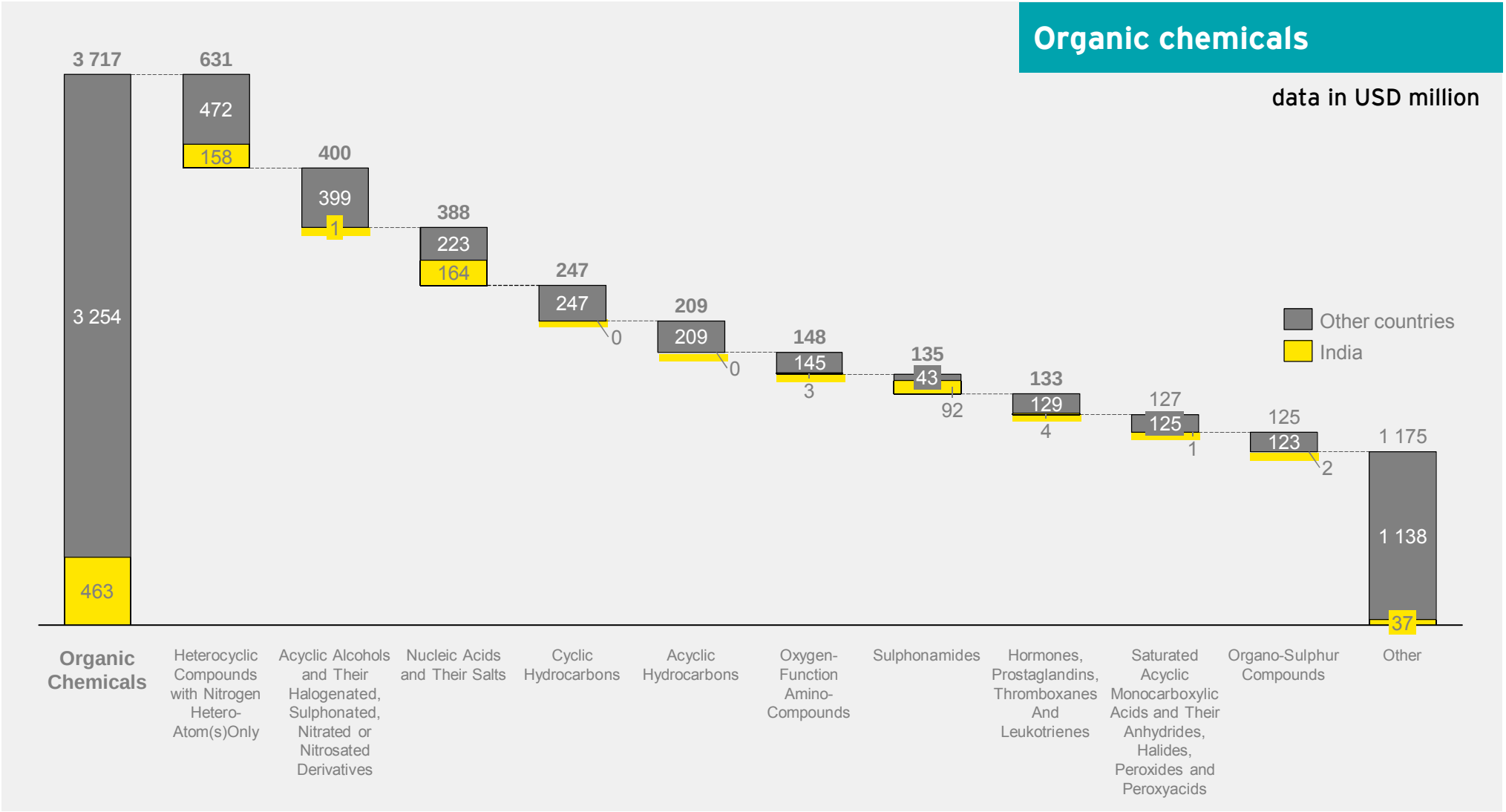
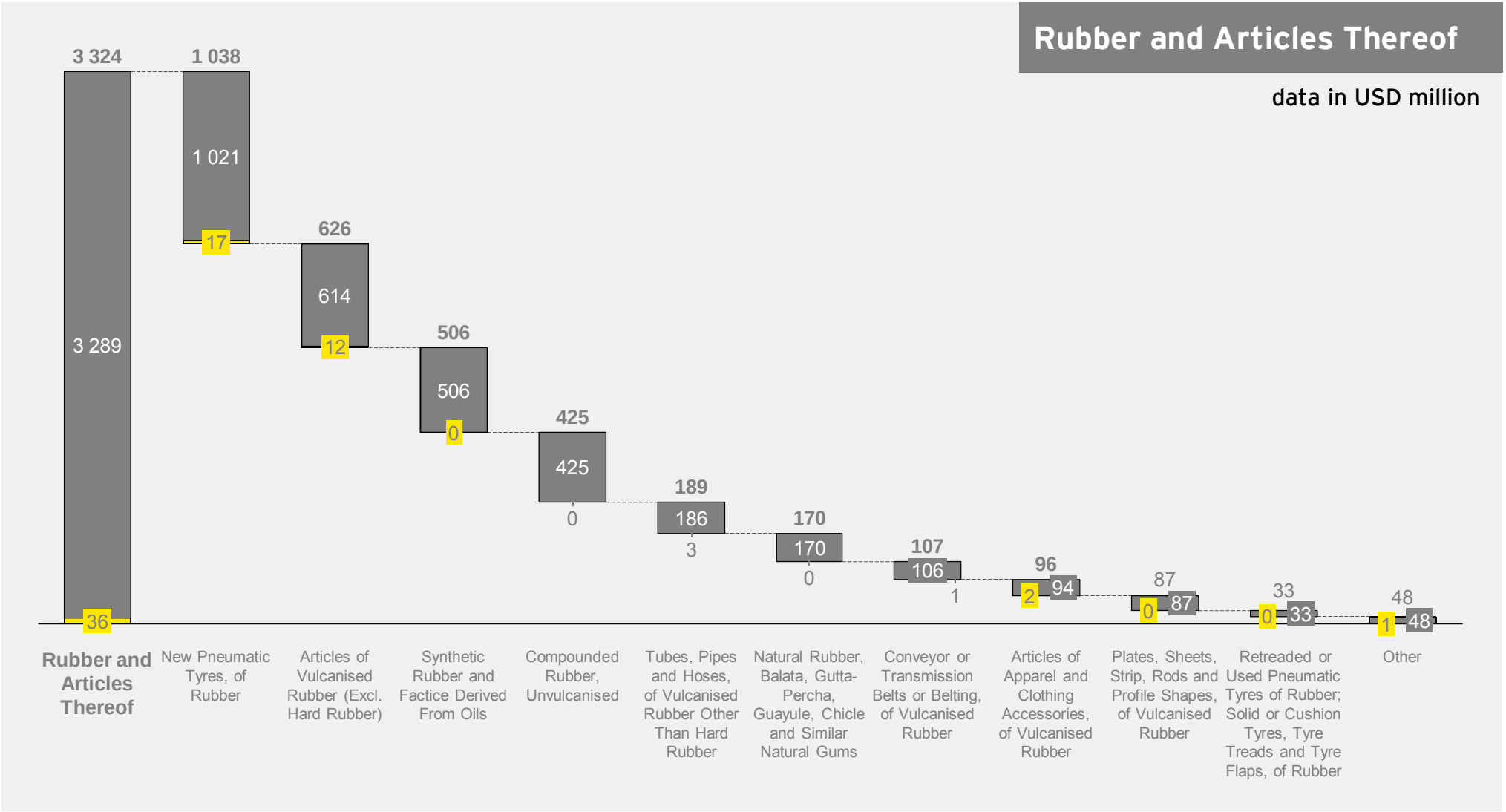


Source: EY analysis based on Central Statistical Office of Poland and Eurostat

Appendix: Detailed breakdown of Polish imports data on selected chemical product groups



Source: EY analysis based on Central Statistical Office of Poland and Eurostat

Appendix: Contact list to entities indicated in the report

Name of the entity	Website	Email address	Phone	Address
Chemical producers				
BASF Poland	https://www.basf.com/en.html	recepcja.basfpolska@basf.com	+48 22 570 99 99	Al. Jerozolimskie 154 02-326 Warszawa
Bayer Poland	https://www.bayer.com/	n/a	+48 22 5723500	Al. Jerozolimskie 158 02-326 Warszawa
Bridgestone Poland	http://www.bridgestone.eu/corporate/	n/a	+48 22 606 18 20	ul. Postępu 18B 02-676 Warszawa
Ciech Group	http://ciechgroup.com/en/	n/a	+48 22 639 11 00	ul. Wspólna 62 00-684 Warszawa
Debica	https://www.debica.com.pl/	n/a	+ 48 14 670 28 31 + 48 22 571 59 00	ul. 1 Maja 1 39-200 Dębica
Grupa Azoty	http://grupaazoty.com/en/main.html	kontakt@grupaazoty.com	+48 14 637 37 37	ul. Kwiatkowskiego 8 33-101 Tarnów
Grupa Lotos	http://www.lotos.pl/en/	lotos@grupalotos.pl	+48 58 326 43 00 +48 801 345 678	ul. Elbląska 135 80-718 Gdańsk
Michelin Poland	http://www.michelin.com/eng	n/a	+48 89 539 40 00	ul. Leonharda 9 10-454 Olsztyn
PCC Rokita	http://www.pcc.rokita.pl/bazy/www.nsf/id/EN_Start	kontakt@pcc.eu	+48 71 794 2000 +48 71 794 3000	ul. Sienkiewicza 4 56-120 Brzeg Dolny
PKN Orlen	http://www.orlen.pl/en/pages/default.aspx	n/a	+ 48 24 256 00 00 + 48 22 778 00 00	ul. Chemików 7 09-411 Płock
Synthos Group	http://synthosgroup.com/en/home/	synthos-pl@synthosgroup.com	+48 33 844 18 21	ul. Chemików 1 32-600 Oświęcim

Appendix: Contact list to entities indicated in the report

Name of the entity	Website	Email address	Phone	Address
Chemical distributors				
Brenntag Polska	http://www.brenntag.com/poland/en/index.jsp	n/a	+48 77 47 21 500	ul. J. Bema 21 47-224 Kędzierzyn-Koźle
Helm	http://www.helmpolska.com/en/services-functions/distribution/	hps@helmpolska.pl	+48 22 65 43 500	ul. Domaniewska 42 02-672 Warszawa
HSH Chemie	http://www.hsh-chemie.com/en/locations/poland/articles/locations-poland-general-info	poland@hsh-chemie.com	+48 22 512 03 00	ul. Płowiecka 1 04-501 Warszawa
IMCD	https://www.imcdgroup.com/worldwide/poland	n/a	+48 22 223 67 00	ul. Domaniewska 32 02-672 Warszawa
Sawex chemicals	http://www.chemicals.sawexpl.com/en/	sawex@sawexpl.com	+48 0 22 651 79 04	ul. Wiertnicza 70 02-952 Warszawa
Solvadis	http://solvadis.pl/?lang=en	kontakt@solvadis.p	+48 71 799 55 00	ul. Piłsudskiego 74 50-020 Wrocław
Research Institutes				
Industrial Chemistry Research Institute	http://en.www.ichp.pl/	ichp@ichp.pl	+48 22 568 20 00	ul. Rydygiera 8 01-793 Warsaw
The Institute of Heavy Organic Synthesis	http://www.icso.com.pl/en/	info@icso.com.pl	+48 77 487 34 70	ul. Energetyków 9 47-225 Kędzierzyn-Koźle

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