

Petrochemical Feedstocks

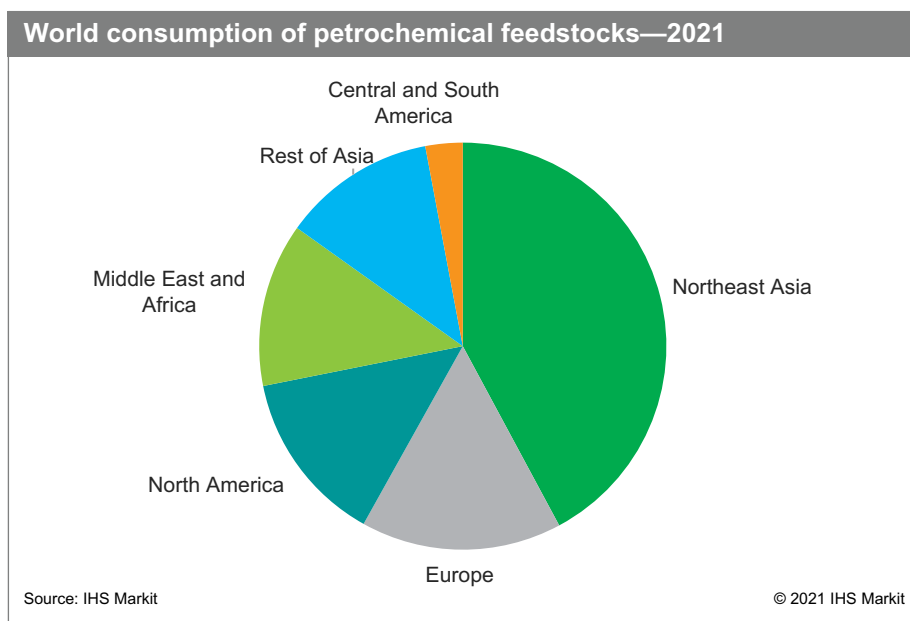
October 2021

Abstract

Fossil fuels (coal, crude oil or petroleum, natural gas liquids, and natural gas) are the primary sources of basic petrochemicals but only about 9–10% of the global fossil fuel production is ultimately used as a petrochemical feedstock; their primary usage remains the production of energy. As such, petrochemical feedstock supply and pricing are heavily influenced by fluctuations in world energy markets. The petrochemical industry typically produces a range of small-sized molecules by subjecting a selected feedstock to a set of chemical reactions. The produced molecules are part of the organic chemistry spectrum as they contain carbon atoms; the sole exception is ammonia, which is produced from natural gas but does not contain any carbon.

This report presents an overview of the world petrochemical feedstock demand situation for natural gas, natural gas liquids (NGLs), petroleum liquid feedstocks (naphtha and gas oil), and coal. NGLs include ethane, propane, butanes, and pentanes plus (C_{5+}), also known as natural gasoline. The choice of feedstock(s) used by a petrochemical unit is a key determinant for the overall economics of production and is therefore, critical; raw material cost is a major component in the overall cost of production of petrochemical producers.

The following pie chart presents world consumption of petrochemical feedstocks:



Contacts

IHS Markit Customer Care • CustomerCare@ihsmarkit.com

Each region has developed its own feedstock specificities depending on the resource and technology available and the characteristics of the domestic markets and environmental standards of the region. In 2021, naphtha remains the largest-volume petrochemical feedstock used globally, followed by natural gas, coal, and ethane. The largest consumers of petrochemical feedstocks are Northeast Asia (largely mainland China), North America (mostly the United States), the Middle East, the CIS and Baltic States, and Western Europe.

Over the past decade, the use of ethane has gained momentum because of the development of new light-fed steam cracking capacity in the Middle East and North America (shale boom). The use of coal for the production of chemicals has also increased over the last decade, driven by the rapid development of the coal chemical industry in mainland China, which has capitalized on its abundant coal reserves to reduce its external dependency on both energy and chemical feedstocks. While the world's new requirements for fuels is slowing down gradually, new technologies are being developed to redesign the overall refinery product slate. New pollution control measures are also modifying mainland China's coal-to-chemicals strategy. The report analyzes regional trends and changes currently affecting the wider petrochemical industry, including the impact of the COVID-19 pandemic.

For more detailed information, see the table of contents, shown below.

IHS Markit's Chemical Economics Handbook – Petrochemical Feedstocks is the comprehensive and trusted guide for anyone seeking information on this industry. This latest report details global and regional information, including



Global summary;
regional coverage



Producers with
annual capacities
and plant sites



Production figures
and trends



Consumption and
forecasts by end use
application



Manufacturing
processes and
environmental issues



Trade – imports
and exports

Key benefits

IHS Markit's Chemical Economics Handbook – Petrochemical Feedstocks has been compiled using primary interviews with key suppliers and organizations, and leading representatives from the industry in combination with IHS Markit's unparalleled access to upstream and downstream market intelligence and expert insights into industry dynamics, trade, and economics.

This report can help you

- Identify trends and driving forces influencing chemical markets
- Forecast and plan for future demand
- Understand the impact of competing materials
- Identify and evaluate potential customers and competitors
- Evaluate producers

- Track changing prices and trade movements
- Analyze the impact of feedstocks, regulations, and other factors on chemical profitability

Contents

Executive summary	6
Introduction	8
Summary	9
Sources of petrochemicals	14
Production process	16
– Natural gas processing	16
– Crude oil refining	17
– Coal processing	22
Feedstock overview	23
– Dry natural gas	23
– Natural gas liquids	23
– Ethane	24
– Propane	24
– Butanes	24
– Natural gasoline	25
– Naphtha	25
– Gas oil	26
– Coal	26
– Biomass	27
Price	28
Consumption by region	30
World	30
– Natural gas	33
– Natural gas liquids	36
– Ethane	36
– Propane	37
– Butane	39
– Natural gasoline	41
– Naphtha	41
– Gas oil	43
– Coal	45
North America	47
– Natural gas	49
– Natural gas liquids	50
– Naphtha and gas oil	51
– Coal	51
Central and South America	51
– Natural gas	53
– Natural gas liquids	54
– Naphtha and gas oil	54

– Coal	55
Western Europe	55
– Natural gas	56
– Natural gas liquids	57
– Naphtha and gas oil	57
– Coal	58
Central and Eastern Europe	58
– Natural gas	60
– Natural gas liquids	60
– Naphtha and gas oil	61
– Coal	61
CIS and Baltic States	61
– Natural gas	63
– Natural gas liquids	64
– Naphtha and gas oil	64
– Coal	64
Middle East	65
– Natural gas	66
– Natural gas liquids	67
– Naphtha and gas oil	67
– Coal	68
Africa	68
– Natural gas	70
– Natural gas liquids	71
– Naphtha and gas oil	71
– Coal	71
Indian Subcontinent	71
– Natural gas	73
– Natural gas liquids	74
– Naphtha and gas oil	74
– Coal	74
Northeast Asia	75
– Natural gas	76
– Natural gas liquids	77
– Naphtha and gas oil	77
– Coal	78
Southeast Asia	78
– Natural gas	80
– Natural gas liquids	80
– Naphtha and gas oil	81
– Coal	81
Additional resources	82
Revisions	83
Data Workbook	84
Notice	85

IHS Markit Customer Care

CustomerCare@ihsmarkit.com

Asia and the Pacific Rim

Japan: +81 3 6262 1887

Asia Pacific: +604 291 3600

Europe, Middle East, and Africa: +44 (0) 1344 328 300

Americas: +1 800 447 2273

Disclaimer

The information contained in this report is confidential. Any unauthorized use, disclosure, reproduction, or dissemination, in full or in part, in any media or by any means, without the prior written permission of IHS Markit or any of its affiliates ("IHS Markit") is strictly prohibited. IHS Markit owns all IHS Markit logos and trade names contained in this report that are subject to license. Opinions, statements, estimates, and projections in this report (including other media) are solely those of the individual author(s) at the time of writing and do not necessarily reflect the opinions of IHS Markit. Neither IHS Markit nor the author(s) has any obligation to update this report in the event that any content, opinion, statement, estimate, or projection (collectively, "information") changes or subsequently becomes inaccurate. IHS Markit makes no warranty, expressed or implied, as to the accuracy, completeness, or timeliness of any information in this report, and shall not in any way be liable to any recipient for any inaccuracies or omissions. Without limiting the foregoing, IHS Markit shall have no liability whatsoever to any recipient, whether in contract, in tort (including negligence), under warranty, under statute or otherwise, in respect of any loss or damage suffered by any recipient as a result of or in connection with any information provided, or any course of action determined, by it or any third party, whether or not based on any information provided. The inclusion of a link to an external website by IHS Markit should not be understood to be an endorsement of that website or the site's owners (or their products/services). IHS Markit is not responsible for either the content or output of external websites. Copyright © 2021, IHS Markit®. All rights reserved and all intellectual property rights are retained by IHS Markit.

