

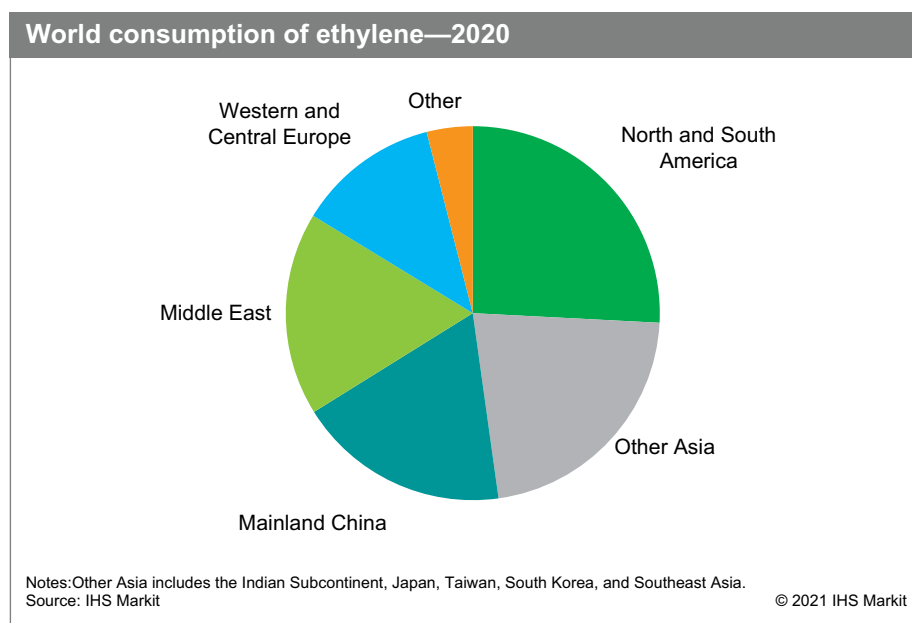
Ethylene

April 2021

Abstract

Ethylene is primarily a petrochemically derived monomer used as a feedstock in the manufacture of plastics, fibers, and other organic chemicals that are ultimately consumed in the packaging, transportation, and construction industries, as well as many other industrial and consumer markets. Nondurable or consumable end uses—in particular, packaging—account for more than half of all ethylene derivative consumption worldwide. One particular plastic resin, polyethylene, accounts for most of the total ethylene consumption. Because ethylene is one of the largest-volume petrochemicals worldwide, with a diverse derivative portfolio (including nondurable and durable end uses), ethylene consumption is sensitive to both economic and energy cycles. Moreover, because of its size and broad usage, ethylene is often used as a benchmark for the performance of the entire petrochemical industry.

The following chart shows world consumption of ethylene:



Most of the increased consumption over the last five years is from Northeast Asia, North America, and the Middle East; within these three regions, ethylene derivative capacity has been developed to capitalize on superior ethylene cost-competitiveness (Middle East and North America) or to serve booming markets (Northeast Asia). Overall demand for ethylene derivatives is now fueled primarily by emerging economies and is projected to further grow in the near future. In 2020, the COVID-19 pandemic affected almost every region of the world leading to a sharp decline of 3.2% in GDP; ethylene markets have reacted differently depending on their nature and location.

Contacts

IHS Markit Customer Care • CustomerCare@ihsmarkit.com

Polyethylene (HDPE, LDPE, and LLDPE) is the major outlet for ethylene. The next-largest market is ethylene oxide (EO), used primarily to produce ethylene glycol (EG), which is used primarily in the production of PET (for polyester fibers, PET bottles, and polyester film). The third-largest outlet is ethylene dichloride (EDC), which is used for the production of PVC. Other major ethylene uses include ethylbenzene, alpha-olefins, and vinyl acetate. Overall, ethylene demand is exposed to the broader economy, underpinning diverse sectors. Some derivatives tend to be more cyclical as they are ultimately used to produce durables (EDC, EB, alpha-olefins, and acetyls), while others (HDPE, LDPE, LLDPE, EO, or linear alcohols) tend to be more resilient as they are used primarily in consumable products.

During 2020–25, global consumption of ethylene is forecast to further expand, driven primarily by growing needs of emerging markets as well as a post-COVID-19 pandemic recovery. Polyethylene production will account for the largest share of new ethylene consumption, followed distantly by ethylene oxide and ethylene dichloride. Ultimately, ethylene demand will be driven primarily by the growth of polyethylene-based consumables; increasing PET fiber, bottle, and packaging demand; and increasing requirements for PVC used in construction and pipe applications. Mainland China is projected to account for a large percentage of new ethylene demand expected through 2025; a growing middle class, improving living standards, and fast-developing infrastructure is driving significant ethylene demand growth.

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

IHS Markit's Chemical Economics Handbook – *Ethylene* 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 – *Ethylene* has been compiled using primary interviews with key suppliers, organizations and leading representatives from the industry in combination with IHS Markit's unparalleled access to upstream and downstream market intelligence, 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	7
List of abbreviations	9
Summary	10
Industry characteristics	14
Sources	16
Hydrocarbon steam cracking	16
Ethylene from coal	18
Ethylene from natural gas	18
Ethanol dehydration	19
Refinery gases	19
Plant economics	20
– Cost of feed flexibility	20
– Construction costs	20
World feedstock considerations	21
Environmental issues	24
Transportation and storage	25
Supply and demand by region	26
World	26
– Capacity	26
– Producing companies	28
– Salient statistics	29
– Consumption	30
– Polyethylene	33
– High-density polyethylene (HDPE)	34
– Linear low-density polyethylene (LLDPE)	35
– Low-density polyethylene (LDPE)	36
– Ethylene oxide	36
– Ethylene dichloride	37
– Ethylbenzene/styrene	38
– alpha-Olefins	40
– Vinyl acetate	40
– Other applications	41
– Ethanol	41
– Acetaldehyde	42
– Copolymer uses	42
– Ethyl chloride	42
– Ethylene-propylene elastomers	43
– Propionaldehyde	43
– Propylene	43
– Miscellaneous	44

– Price	45
– Trade	45
North America	46
– Overview	46
– Capacity	46
– Salient statistics	47
– Consumption	49
– Trade	50
– United States	51
– Producing companies	51
– Salient statistics	55
– Consumption	57
– Polyethylene	58
– Ethylene dichloride	60
– Ethylene oxide	60
– Linear alpha-olefins	61
– Ethylbenzene/styrene	62
– Other applications	62
– Trade	63
– Canada	64
– Producing companies	64
– Salient statistics	66
– Consumption	67
– Trade	69
– Mexico	70
– Producing companies	70
– Salient statistics	71
– Consumption	73
– Trade	75
Central and South America	75
– Producing companies	75
– Salient statistics	77
– Consumption	79
– Trade	82
Western Europe	82
– Producing companies	82
– Salient statistics	86
– Consumption	87
– Trade	90
Central and Eastern Europe	90
– Producing companies	90
– Salient statistics	92
– Consumption	93

– Trade	95
CIS and Baltic States	96
– Producing companies	96
– Salient statistics	99
– Consumption	100
– Trade	103
Middle East	103
– Producing companies	103
– Salient statistics	107
– Consumption	109
– Trade	111
Africa	111
– Producing companies	111
– Salient statistics	113
– Consumption	114
– Trade	115
Indian Subcontinent	116
– Producing companies	116
– Salient statistics	118
– Consumption	119
– Trade	122
Northeast Asia	122
– Overview	122
– Capacity	122
– Salient statistics	123
– Consumption	125
– Trade	127
– Mainland China	128
– Producing companies	128
– Salient statistics	133
– Consumption	135
– Polyethylene	136
– Ethylene oxide	137
– Ethylbenzene	138
– Ethylene dichloride	138
– Vinyl acetate	138
– Trade	138
– Japan	139
– Producing companies	139
– Salient statistics	141
– Consumption	142
– Trade	144
– South Korea	145

– Producing companies	145
– Salient statistics	146
– Consumption	147
– Trade	149
– Taiwan	150
– Producing companies	150
– Salient statistics	151
– Consumption	152
– Trade	154
Southeast Asia	155
– Producing companies	155
– Salient statistics	158
– Consumption	159
– Trade	161
Additional resources	163
Revisions	165
Data Workbook	166

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.

