

## MARKETS AND PROFITABILITY

# Market Insights: Butane - 2019

August 2019



This Report was prepared by Nexant, Inc. ("Nexant"). Except where specifically stated otherwise in this Report, the information contained herein is prepared on the basis of information that is publicly available, and contains no confidential third party technical information to the best knowledge of Nexant. Aforesaid information has not been independently verified or otherwise examined to determine its accuracy, completeness or financial feasibility. Neither Nexant, Subscriber nor any person acting on behalf of either assumes any liabilities with respect to the use of or for damages resulting from the use of any information contained in this Report. Nexant does not represent or warrant that any assumed conditions will come to pass.

The Report is submitted on the understanding that the Subscriber will maintain the contents confidential except for the Subscriber's internal use. The Report should not be reproduced, distributed or used without first obtaining prior written consent by Nexant. Each Subscriber agrees to use reasonable effort to protect the confidential nature of the Report.

Copyright © by Nexant Inc. 2019. All rights reserved.



## Contents

<b>1</b>	<b>Executive Summary .....</b>	<b>1</b>
<b>2</b>	<b>Introduction .....</b>	<b>4</b>
2.1	Overview .....	4
2.2	Key End-Use Markets for Butane.....	5
2.2.1	Fuel .....	5
2.2.2	Petrochemical Feedstock.....	5
2.2.3	Others End-Uses.....	6
<b>3</b>	<b>Market Overview.....</b>	<b>7</b>
3.1	Global .....	7
3.1.1	Market Overview .....	7
3.1.2	Market Drivers.....	8
3.1.2.1	Increased Natural Gas Production.....	8
3.1.2.2	Increased Refinery Additions .....	9
3.1.3	Market Constraints .....	9
3.1.4	Supply Landscape.....	10
3.1.5	Supply and Demand.....	11
3.1.6	Pricing Analysis and Trends.....	13
3.2	North America .....	15
3.2.1	Market Overview .....	15
3.2.1.1	The United States .....	15
3.2.1.2	Canada.....	15
3.2.1.3	Mexico.....	15
3.2.2	Market Drivers.....	16
3.2.3	Petrochemical Opportunities.....	17
3.2.4	Market Constraints .....	17
3.2.5	Supply and Demand.....	17
3.3	South America.....	19
3.3.1	Market Overview .....	19
3.3.2	Market Drivers.....	19
3.3.3	Petrochemical Opportunities .....	19
3.3.4	Market Constraints .....	20
3.3.5	Supply and Demand.....	20
3.4	Asia Pacific (excluding China).....	22
3.4.1	Market Overview .....	22
3.4.2	Market Drivers .....	22
3.4.3	Petrochemical Opportunities .....	23
3.4.4	Market Constraints .....	23
3.4.5	Supply and Demand.....	23
3.5	China.....	25
3.5.1	Market Overview .....	25
3.5.2	Market Drivers .....	25



3.5.3	Petrochemical Opportunities .....	26
3.5.4	Market Constraints .....	26
3.5.5	Supply and Demand.....	26
3.6	Western Europe .....	28
3.6.1	Market Overview .....	28
3.6.2	Market Drivers .....	28
3.6.3	Petrochemical Opportunities.....	29
3.6.4	Market Constraints .....	29
3.6.5	Supply and Demand.....	29
3.7	Central Europe .....	31
3.7.1	Market Overview .....	31
3.7.2	Market Drivers .....	31
3.7.3	Market Constraints .....	31
3.7.4	Competitive Landscape.....	31
3.7.5	Supply and Demand.....	31
3.8	Eastern Europe .....	33
3.8.1	Market Overview .....	33
3.8.2	Market Drivers .....	33
3.8.3	Petrochemical Opportunities .....	34
3.8.4	Market Constraints .....	35
3.8.5	Supply and Demand.....	35
3.9	Middle East.....	37
3.9.1	Market Overview .....	37
3.9.2	Market Drivers .....	37
3.9.3	Petrochemical Opportunities .....	38
3.9.4	Market Constraints .....	38
3.9.5	Supply and Demand.....	38
3.10	Africa .....	40
3.10.1	Market Overview .....	40
3.10.2	Market Drivers .....	40
3.10.3	Petrochemical Opportunities.....	40
3.10.4	Market Constraints .....	40
3.10.5	Supply and Demand.....	40
<b>4</b>	<b>Cost Competitiveness.....</b>	<b>42</b>
4.1	Cost Structure and Assumptions.....	42
4.1.1	Variable Costs .....	43
4.1.1.1	Feedstock Costs .....	43
4.1.1.2	Utility Costs .....	44
4.1.2	Direct Fixed Costs .....	44
4.1.3	Allocated Fixed Costs .....	45
4.1.4	Other Considerations .....	46
4.2	Cost of Production Competiveness.....	47
4.2.1	Ethylene Production .....	47



<b>5</b>	<b>Butane Market Summary .....</b>	<b>49</b>
5.1	Porters Five Forces .....	49

## Figures

Figure 1	Butane Sources and Uses .....	4
Figure 2	Global LPG Demand by End-Use Sector, 2018-e.....	5
Figure 3	Global Butane Demand by Region, 2018-e.....	7
Figure 4	Global Natural Gas Production by Region .....	8
Figure 5	Global Net Refinery Capacity Additions .....	9
Figure 6	Global Butane Supply by Region .....	10
Figure 7	Global Butane Supply and Demand by Region.....	11
Figure 8	Global Butane Net Exports (Imports) .....	12
Figure 9	Global Butane Pricing.....	14
Figure 10	North America Butane Demand Split in Fuels and Petrochemical Feedstock .....	16
Figure 11	North America Butane Supply and Demand .....	18
Figure 12	South America Butane Demand Split between Fuels and Petrochemicals .....	19
Figure 13	South America Butane Supply and Demand.....	20
Figure 14	Asia Pacific (excluding China) Butane Demand Split in Fuels and Petrochemical Feedstock .....	22
Figure 15	Asia Pacific (excluding China) Butane Supply and Demand.....	24
Figure 16	China Butane Demand Split in Fuels and Petrochemical Feedstock.....	25
Figure 17	China Butane Supply and Demand .....	26
Figure 18	Western Europe Butane Demand Split in Fuels and Petrochemical Feedstock .....	28
Figure 19	Western Europe Butane Supply and Demand .....	30
Figure 20	Central Europe Butane Supply and Demand .....	32
Figure 21	Eastern Europe Butane Demand Split in Fuels and Petrochemical Feedstock .....	33
Figure 22	Eastern Europe Butane Supply and Demand .....	35
Figure 23	Middle East Butane Demand Split in Fuels and Petrochemical Feedstock .....	37
Figure 24	Middle East Butane Supply and Demand.....	39
Figure 25	Africa Butane Supply and Demand .....	41
Figure 26	Components of Delivered Cost to Market .....	42
Figure 27	Ethylene Cost of Production – Butane Feed and Others .....	47
Figure 28	Ethylene Cost of Production – Butane Feed and Others .....	48

## Tables

Table 1	Global Butane Demand by Region .....	8
Table 2	Global Butane Supply, Demand and Trade.....	11
Table 3	North America Butane Supply, Demand and Trade .....	18
Table 4	South America Butane Supply, Demand and Trade .....	21
Table 5	Asia Pacific (excluding China) Butane Supply, Demand and Trade .....	24



Table 6	China Butane Supply, Demand and Trade.....	27
Table 7	Western Europe Butane Supply, Demand and Trade.....	30
Table 8	Central Europe Butane Supply, Demand and Trade.....	32
Table 9	Eastern Europe Butane Supply, Demand and Trade.....	36
Table 10	Middle East Butane Supply, Demand and Trade.....	39
Table 11	Africa Butane Supply, Demand and Trade.....	41
Table 12	Ethylene Feedstock Price Assumptions.....	43
Table 13	Utility Rates.....	44
Table 14	Wage Assumptions.....	44
Table 15	Capital Cost Location Factors.....	45