

## **MARKETS AND PROFITABILITY**

# **Profitability and Price Forecast: Oxo Alcohols - 2022**

October 2022



This Report was prepared by NexantECA, the Energy and Chemicals Advisory company ("NexantECA"). Except where specifically stated 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 and belief of NexantECA. The information has not been independently verified or otherwise examined to determine its accuracy, completeness or financial feasibility. Neither NexantECA, Subscriber nor any person acting on behalf of either shall have any liabilities for any loss or damage arising from or connected to the use of any information contained in this Report. NexantECA does not represent or warrant that any assumed conditions will come to pass.

The Report is for Subscriber's internal use only and shall be kept strictly confidential. The Report should not be otherwise reproduced, distributed or used without first obtaining prior written consent by NexantECA. Each Subscriber agrees to use reasonable effort to protect the confidential nature of the Report.

Copyright © by NexantECA (BVI) Ltd. 2022. All rights reserved.



## Contents

<b>1</b>	<b>Executive Summary .....</b>	<b>1</b>
1.1	Introduction.....	1
<b>2</b>	<b>Economic Assumptions and Forecast Methodology .....</b>	<b>2</b>
2.1	Introduction.....	2
2.2	Scenarios .....	3
2.3	Crude Oil .....	4
2.3.1	Crude Oil Price Basis .....	4
2.3.2	Crude Oil Scenarios .....	5
2.3.3	Low Crude Oil Price .....	7
2.3.4	Medium Crude Oil Price .....	7
2.3.5	High Crude Oil Price .....	7
2.4	Economic Growth.....	8
2.4.1	Forecasting Methodology/Assumptions .....	8
2.4.2	Global Economic Growth .....	8
2.5	Inflation.....	11
2.6	Exchange Rates.....	12
2.6.1	Forecasting Methodology and Assumptions .....	12
2.6.2	Outlook for the Euro .....	12
2.7	Profitability Forecasting Methodology .....	13
2.7.1	Introduction.....	13
2.7.2	Price Influences.....	14
2.7.3	Petrochemical Production Costs .....	16
2.7.4	Driving Forces for Profitability .....	18
2.7.5	Cyclicalities of the Petrochemical Industry .....	22
<b>3</b>	<b>Petrochemical and Polymer Industry Profitability .....</b>	<b>23</b>
3.1	Asia Pacific.....	23
3.2	United States.....	25
3.3	Western Europe .....	27
<b>4</b>	<b>Petrochemical Feedstocks and Refining Products Pricing .....</b>	<b>29</b>
4.1	Naphtha.....	31
4.2	Gasoline .....	32
4.3	Fuel Oil .....	33
4.4	Natural Gas .....	34
4.5	Ethane .....	36
4.6	Propane .....	37
4.7	Coal .....	38
<b>5</b>	<b>2-Ethyhexanol.....</b>	<b>39</b>
5.1	Introduction.....	39
5.1.1	Pricing Basis and Mechanism .....	39
5.1.2	Regional Price Definitions .....	39



---

5.2	Asia Pacific .....	40
5.2.1	Profitability Projections .....	40
5.2.2	Price Projections .....	42
5.3	United States .....	43
5.3.1	Profitability Projections .....	43
5.3.2	Price Projections .....	45
5.4	Western Europe .....	46
5.4.1	Profitability Projections .....	46
5.4.2	Price Projections .....	48
5.5	Regional Price Spreads .....	49
<b>6</b>	<b>n-Butanol and Isobutanol .....</b>	<b>50</b>
6.1	Introduction .....	50
6.1.1	Pricing Basis and Mechanism .....	50
6.1.2	Regional Price Definitions .....	50
6.2	Asia Pacific .....	51
6.2.1	Profitability Projections .....	51
6.2.2	Price Projections .....	53
6.3	United States .....	55
6.3.1	Profitability Projections .....	55
6.3.2	Price Projections .....	57
6.4	Western Europe .....	59
6.4.1	Profitability Projections .....	59
6.4.2	Price Projections .....	61
6.5	Regional Price Spreads .....	63



## Figures

Figure 1	Crude Oil Price Scenarios .....	6
Figure 2	World Economic Performance and Outlook .....	9
Figure 3	United States GDP Price Deflator .....	11
Figure 4	Euro Versus U.S. Dollar .....	12
Figure 5	Petrochemical Simulator Forecast Methodology.....	13
Figure 6	Petrochemical Price Influences .....	15
Figure 7	Production Cost Elements .....	16
Figure 8	Price Influences in the Cost Curve .....	18
Figure 9	Return on Capital and Operating Rate .....	19
Figure 10	Western Europe Average Return on Investment .....	20
Figure 11	United States Average Return on Investment.....	20
Figure 12	Petrochemical Industry Profitability and Operating Rate.....	22
Figure 13	Asian Petrochemical Industry Profitability .....	23
Figure 14	United States Petrochemical Industry Profitability .....	25
Figure 15	Western Europe Petrochemicals Industry Profitability .....	27
Figure 16	United States Petrochemical Feedstock and Refined Product Prices .....	30
Figure 17	United States Petrochemical Feedstock Prices Relative to WTI Crude Oil .....	30
Figure 18	Global Naphtha Prices.....	31
Figure 19	Global Premium Gasoline Prices .....	32
Figure 20	Global High Sulphur Fuel Oil Prices .....	33
Figure 21	Global Natural Gas Prices .....	34
Figure 22	United States Ethane Prices .....	36
Figure 23	Global Propane Prices.....	37
Figure 24	China Coal Prices .....	38
Figure 25	Asia 2-EH Margins.....	41
Figure 26	Asia 2-EH Cost, Margin and Price Projections.....	42
Figure 27	Asia 2-EH Price Scenarios .....	42
Figure 28	United States 2-EH Margins .....	43
Figure 29	United States 2-EH Cost, Margin and Price Projections .....	45
Figure 30	United States 2-EH Price Scenarios .....	45
Figure 31	Western Europe 2-EH Margins .....	46
Figure 32	Western Europe 2-EH Cost, Margin and Price Projections .....	48
Figure 33	Western Europe 2-EH Price Scenarios .....	48
Figure 34	Global 2-EH Prices .....	49
Figure 35	Asia <i>n</i> -Butanol Margins .....	51
Figure 36	Asia <i>n</i> -Butanol Cost Margin and Price Projections .....	53
Figure 37	Asia <i>n</i> -Butanol Price Scenarios .....	53
Figure 38	Asia <i>n</i> -Butanol: Isobutanol Price Ratio.....	54
Figure 39	Asia Isobutanol Price Scenarios.....	54
Figure 40	United States <i>n</i> -Butanol Margins.....	55
Figure 41	United States <i>n</i> -Butanol Cost Margin and Price Projections .....	57
Figure 42	United States <i>n</i> -Butanol Price Scenarios .....	57



---

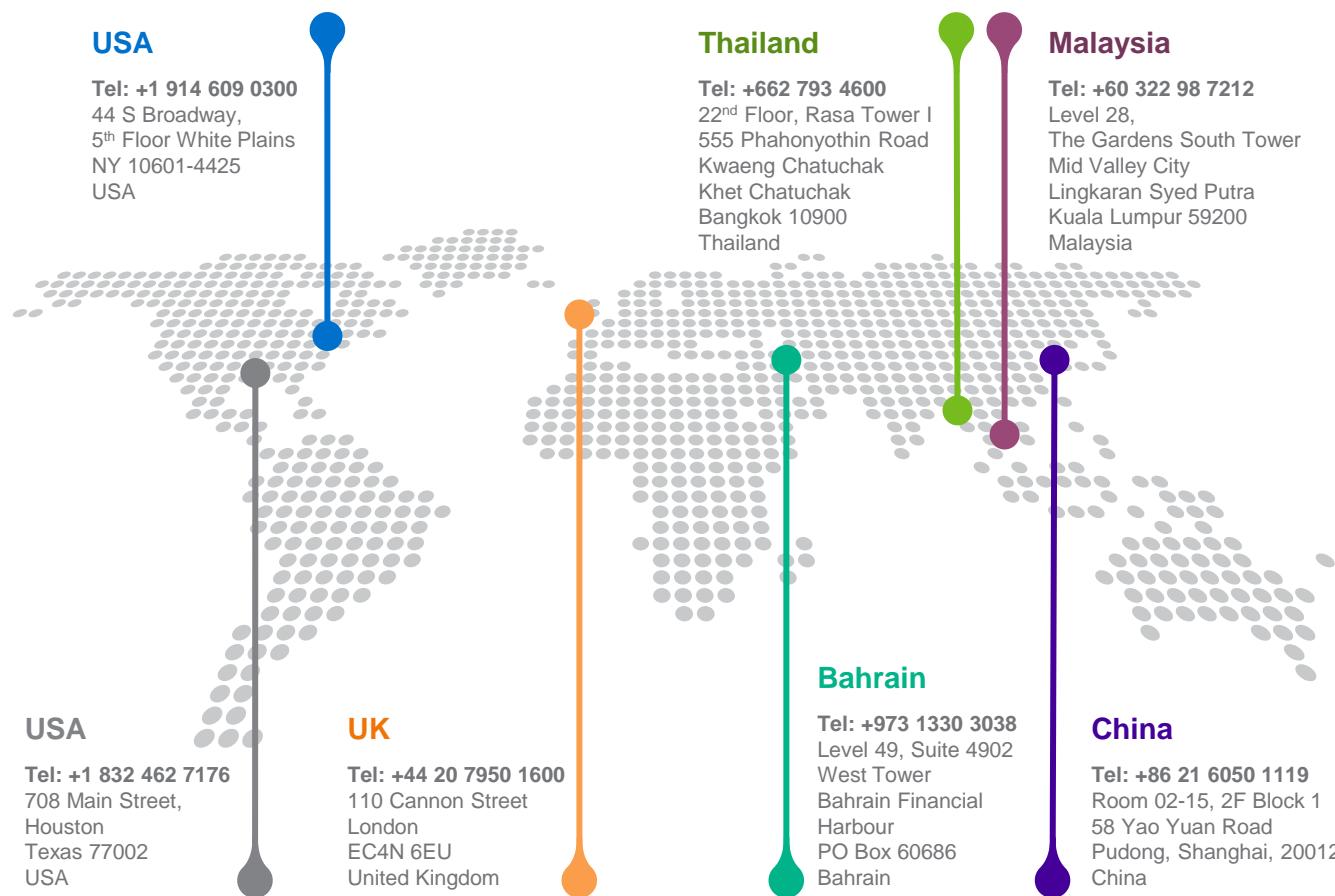
Figure 43	United States <i>n</i> -Butanol Isobutanol Price Ratio .....	58
Figure 44	United States Isobutanol Price Scenarios .....	58
Figure 45	Western Europe <i>n</i> -Butanol Margins .....	59
Figure 46	Western Europe <i>n</i> -Butanol Cost Margin and Price Projections .....	61
Figure 47	Western Europe <i>n</i> -Butanol Price Scenarios .....	61
Figure 48	Western Europe <i>n</i> -Butanol: Isobutanol Price Ratio .....	62
Figure 49	Western Europe Isobutanol Price Scenarios .....	62
Figure 50	Global <i>n</i> -Butanol Prices .....	63
Figure 51	Global Isobutanol Prices .....	64

## Tables

Table 1	World Economic Growth .....	9
Table 2	Asia 2-EH Cost Profitability and Price Projections .....	41
Table 3	United States 2-EH Cost Profitability and Price Projections .....	43
Table 4	Western Europe 2-EH Cost Profitability and Price Projections .....	46
Table 5	Asia <i>n</i> -Butanol cost Profitability and Price Projections .....	51
Table 6	United States <i>n</i> -Butanol Cost Profitability and Price Projections .....	55
Table 7	Western Europe <i>n</i> -Butanol Cost Profitability and Price Projections .....	59



NexantECA partners with clients to help them navigate the big global energy, chemicals and materials issues of tomorrow. We provide independent advice through our consulting, subscriptions and reports, and training businesses using expertise developed in markets, economics and technology through our fifty years of operation. We are entirely dedicated to supporting sustainable development of the industry and provide expert advice with efficiency, speed, and agility.



#### Disclaimer

This Report was prepared by NexantECA, the Energy and Chemicals Advisory company. Except where specifically stated otherwise in this Report, the information contained here is prepared on the basis of information that is publicly available, and contains no confidential third-party technical information to the best knowledge of NexantECA. Aforesaid information has not been independently verified or otherwise examined to determine its accuracy, completeness or financial feasibility. Neither NexantECA, Client 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. NexantECA does not represent or warrant that any assumed conditions will come to pass.