

## MARKETS AND PROFITABILITY

# Market Analytics: Butadiene - 2023

Olefins

April 2023



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. 2023. All rights reserved.



## Contents

|          |                                  |           |
|----------|----------------------------------|-----------|
| <b>1</b> | <b>Executive Summary .....</b>   | <b>1</b>  |
| 1.1      | Global Summary .....             | 1         |
| 1.2      | Butadiene Market Outlook.....    | 2         |
| 1.3      | Methodology .....                | 6         |
| <b>2</b> | <b>The Olefins Industry.....</b> | <b>8</b>  |
| 2.1      | Global Overview .....            | 8         |
| 2.2      | Current Performance.....         | 11        |
| 2.3      | Sustainability .....             | 13        |
| 2.4      | Market Coverage.....             | 16        |
| <b>3</b> | <b>Butadiene .....</b>           | <b>17</b> |
| 3.1      | Global .....                     | 17        |
| 3.1.1    | Key Developments .....           | 17        |
| 3.1.2    | Demand .....                     | 17        |
| 3.1.3    | Supply .....                     | 22        |
| 3.1.4    | Supply, Demand and Trade .....   | 24        |
| 3.2      | North America .....              | 26        |
| 3.2.1    | Key Developments .....           | 26        |
| 3.2.2    | Demand .....                     | 26        |
| 3.2.3    | Supply .....                     | 30        |
| 3.2.4    | Supply, Demand and Trade .....   | 32        |
| 3.3      | South America.....               | 35        |
| 3.3.1    | Key Developments .....           | 35        |
| 3.3.2    | Demand .....                     | 35        |
| 3.3.3    | Supply .....                     | 37        |
| 3.3.4    | Supply, Demand and Trade .....   | 37        |
| 3.4      | Western Europe .....             | 39        |
| 3.4.1    | Key Developments .....           | 39        |
| 3.4.2    | Demand .....                     | 39        |
| 3.4.3    | Supply .....                     | 41        |
| 3.4.4    | Supply, Demand and Trade .....   | 42        |
| 3.5      | Central Europe .....             | 44        |
| 3.5.1    | Key Developments .....           | 44        |
| 3.5.2    | Demand .....                     | 44        |
| 3.5.3    | Supply .....                     | 46        |
| 3.5.4    | Supply, Demand and Trade .....   | 47        |
| 3.6      | Eastern Europe .....             | 48        |
| 3.6.1    | Key Developments .....           | 48        |
| 3.6.2    | Demand.....                      | 48        |
| 3.6.2.1  | Russia .....                     | 48        |
| 3.6.2.2  | Other Eastern Europe .....       | 49        |
| 3.6.3    | Supply .....                     | 50        |



|         |                                |    |
|---------|--------------------------------|----|
| 3.6.3.1 | Russia .....                   | 50 |
| 3.6.3.2 | Other Eastern Europe .....     | 51 |
| 3.6.4   | Supply, Demand and Trade ..... | 52 |
| 3.6.4.1 | Russia .....                   | 52 |
| 3.6.4.2 | Other Eastern Europe .....     | 53 |
| 3.7     | Middle East.....               | 55 |
| 3.7.1   | Key Developments .....         | 55 |
| 3.7.2   | Demand .....                   | 55 |
| 3.7.3   | Supply .....                   | 57 |
| 3.7.4   | Supply, Demand and Trade ..... | 58 |
| 3.8     | Africa .....                   | 59 |
| 3.8.1   | Key Developments .....         | 59 |
| 3.8.2   | Demand .....                   | 59 |
| 3.8.3   | Supply .....                   | 60 |
| 3.8.4   | Supply, Demand and Trade ..... | 60 |
| 3.9     | Asia Pacific .....             | 61 |
| 3.9.1   | Key Developments .....         | 61 |
| 3.9.2   | Demand .....                   | 61 |
| 3.9.2.1 | China .....                    | 61 |
| 3.9.2.2 | North-East Asia .....          | 63 |
| 3.9.2.3 | South-East Asia .....          | 64 |
| 3.9.2.4 | South Asia .....               | 66 |
| 3.9.3   | Supply .....                   | 68 |
| 3.9.3.1 | China .....                    | 68 |
| 3.9.3.2 | North-East Asia .....          | 69 |
| 3.9.3.3 | South-East Asia .....          | 70 |
| 3.9.3.4 | South Asia .....               | 71 |
| 3.9.4   | Supply, Demand and Trade ..... | 72 |

## Appendices

|          |                                                |           |
|----------|------------------------------------------------|-----------|
| <b>A</b> | <b>Methodology .....</b>                       | <b>76</b> |
| A.2      | Capacity Availability and Forecasting .....    | 76        |
| A.3      | End-Use Consumption Forecasting .....          | 76        |
| A.4      | End-Use Sector Growth .....                    | 77        |
| A.4.1.1  | Penetration (New Application Growth) .....     | 77        |
| A.4.1.2  | Downgauging and Recycling .....                | 78        |
| A.4.1.3  | Chain Inventory .....                          | 78        |
| A.4.1.4  | Short-term Influences .....                    | 78        |
| A.4.1.5  | Monomer Consumption Forecasting .....          | 78        |
| A.5      | Production and Trade Forecasting .....         | 80        |
| <b>B</b> | <b>The Olefins Industry – Technology .....</b> | <b>81</b> |

## Figures

|          |                                                   |    |
|----------|---------------------------------------------------|----|
| Figure 1 | Global Polyolefin Consumption and Recycling ..... | 14 |
|----------|---------------------------------------------------|----|



|           |                                                               |    |
|-----------|---------------------------------------------------------------|----|
| Figure 2  | Global PET Consumption and Recycling .....                    | 15 |
| Figure 3  | Global Butadiene Demand, 2022-e .....                         | 18 |
| Figure 4  | Global GDP Growth vs. Butadiene Consumption Growth .....      | 18 |
| Figure 5  | Global Butadiene Consumption .....                            | 21 |
| Figure 6  | Global Butadiene Capacity Share by Marketer in 2022-e .....   | 23 |
| Figure 7  | Global Butadiene Capacity Additions .....                     | 23 |
| Figure 8  | Global Butadiene Capacity .....                               | 23 |
| Figure 9  | Global Butadiene Supply and Demand .....                      | 25 |
| Figure 10 | Regional Butadiene Net Exports/Imports .....                  | 25 |
| Figure 11 | North America Butadiene Consumption, 2022-e .....             | 29 |
| Figure 12 | North America Butadiene Supply, Demand and Trade .....        | 33 |
| Figure 13 | United States Butadiene Supply, Demand and Trade .....        | 34 |
| Figure 14 | South America Butadiene Consumption, 2022-e .....             | 36 |
| Figure 15 | South America Butadiene Supply, Demand and Trade .....        | 38 |
| Figure 16 | Western Europe Butadiene Consumption, 2022-e .....            | 41 |
| Figure 17 | Western Europe Butadiene Supply, Demand and Trade .....       | 43 |
| Figure 18 | Central Europe Butadiene Consumption, 2022-e .....            | 45 |
| Figure 19 | Central Europe Butadiene Supply, Demand and Trade .....       | 47 |
| Figure 20 | Russia Butadiene Consumption, 2022-e .....                    | 48 |
| Figure 21 | Russia Butadiene Supply, Demand and Trade .....               | 52 |
| Figure 22 | Other Eastern Europe Butadiene Supply, Demand and Trade ..... | 53 |
| Figure 23 | Total Eastern Europe Butadiene Supply, Demand and Trade ..... | 54 |
| Figure 24 | Middle East Butadiene Consumption, 2022-e .....               | 56 |
| Figure 25 | Middle East Butadiene Supply, Demand and Trade .....          | 58 |
| Figure 26 | Africa Butadiene Supply, Demand and Trade .....               | 60 |
| Figure 27 | Asia Pacific Butadiene Consumption, 2022-e .....              | 67 |
| Figure 28 | Asia Pacific Butadiene Supply, Demand and Trade .....         | 73 |
| Figure 29 | China Butadiene Supply, Demand and Trade .....                | 74 |
| Figure 30 | End-Use Consumption Drivers .....                             | 77 |
| Figure 31 | Monomer Consumption Drivers .....                             | 79 |
| Figure 32 | Trade Considerations .....                                    | 80 |
| Figure 33 | Global Olefins Production by Process .....                    | 82 |

## Tables

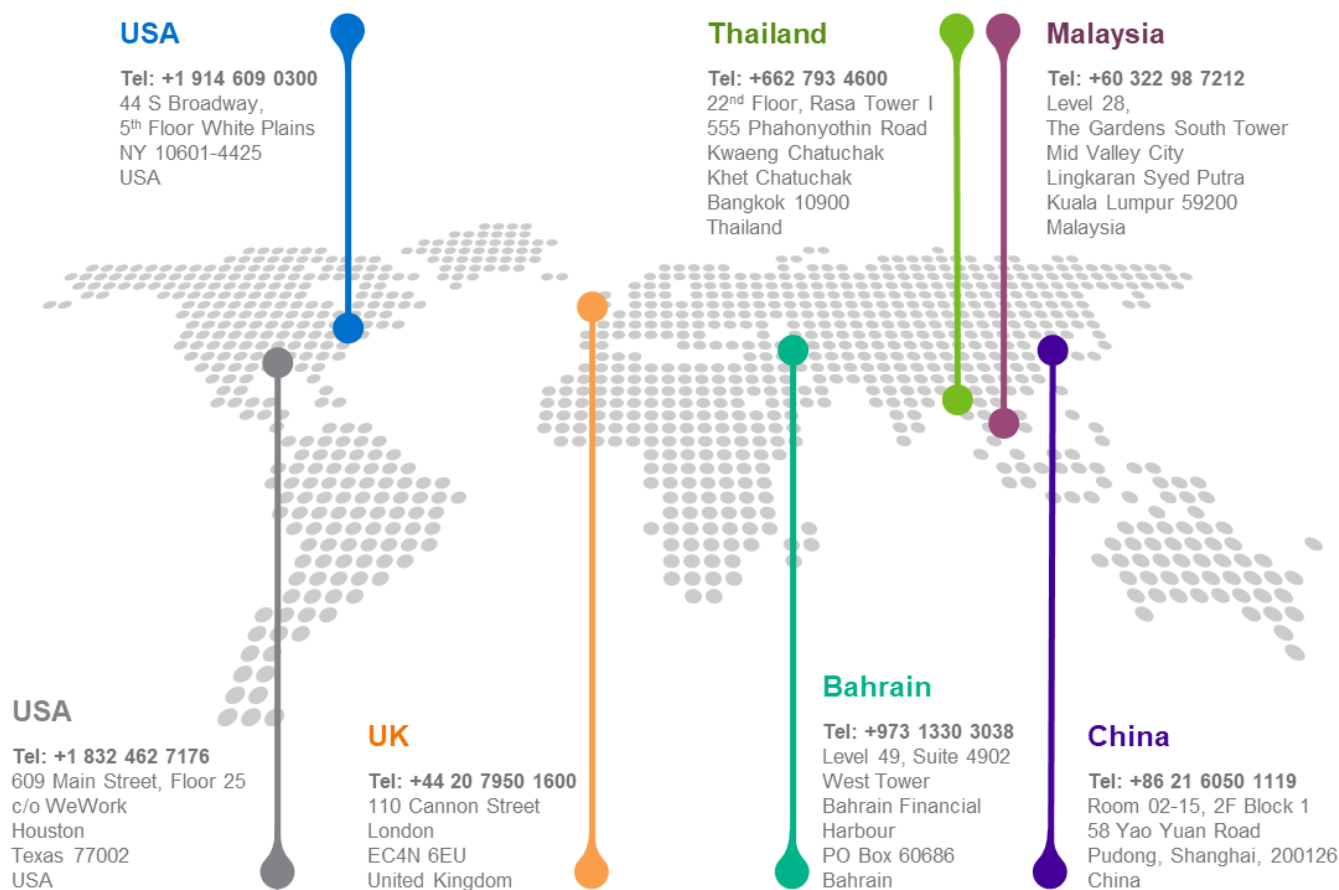
|          |                                                         |    |
|----------|---------------------------------------------------------|----|
| Table 1  | Global Butadiene Consumption by Derivative .....        | 18 |
| Table 2  | Global Butadiene Consumption by Region .....            | 21 |
| Table 3  | Global Butadiene Supply and Demand .....                | 25 |
| Table 4  | North America Butadiene Consumption by Derivative ..... | 29 |
| Table 5  | North America Butadiene Consumption by Country .....    | 29 |
| Table 6  | North America Butadiene Supply, Demand and Trade .....  | 33 |
| Table 7  | United States Butadiene Supply, Demand and Trade .....  | 34 |
| Table 8  | South America Butadiene Consumption by Derivative ..... | 36 |
| Table 9  | South America Butadiene Consumption by Country .....    | 36 |
| Table 10 | South America Butadiene Supply, Demand and Trade .....  | 38 |



|          |                                                                |    |
|----------|----------------------------------------------------------------|----|
| Table 11 | Western Europe Butadiene Consumption by Derivative .....       | 41 |
| Table 12 | Western Europe Butadiene Supply, Demand and Trade .....        | 43 |
| Table 13 | Central Europe Butadiene Consumption by Derivative .....       | 45 |
| Table 14 | Central Europe Butadiene Supply, Demand and Trade .....        | 47 |
| Table 15 | Russia Butadiene Consumption by Derivative .....               | 49 |
| Table 16 | Other Eastern Europe Butadiene Consumption by Derivative ..... | 49 |
| Table 17 | Russia Butadiene Supply, Demand and Trade .....                | 52 |
| Table 18 | Other Eastern Europe Butadiene Supply, Demand and Trade .....  | 53 |
| Table 19 | Total Eastern Europe Butadiene Supply, Demand and Trade .....  | 54 |
| Table 20 | Middle East Butadiene Consumption by Derivative .....          | 56 |
| Table 21 | Middle East Butadiene Consumption by Country .....             | 56 |
| Table 22 | Middle East Butadiene Supply, Demand and Trade .....           | 58 |
| Table 23 | Africa Butadiene Consumption by Derivative .....               | 59 |
| Table 24 | Africa Butadiene Consumption by Country .....                  | 59 |
| Table 25 | Africa Butadiene Supply, Demand and Trade .....                | 60 |
| Table 26 | Asia Pacific Butadiene Consumption by Derivative .....         | 67 |
| Table 27 | Asia Pacific Butadiene Consumption by Country .....            | 67 |
| Table 28 | Asia Pacific Butadiene Supply, Demand and Trade .....          | 73 |
| Table 29 | China Butadiene Supply, Demand and Trade .....                 | 74 |



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.