

MARKETS AND PROFITABILITY

Market Analytics: Refined Products - 2020

December 2020



This Report was prepared by Nexant Energy & Chemicals Advisory ("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 Nexant Inc. 2020. All rights reserved.



Contents

1	Executive Summary	1
2	Introduction	4
2.1	Refining Industry Overview	4
2.2	Refining Market Overview	5
2.2.1	COVID 19: Unprecedented damage to refined products demand in 2020	5
2.2.2	Demand destruction loosens markets and dilutes IMO 2020 effect	5
2.2.3	Refinery closures: A wave that is just beginning.....	6
2.2.4	Market recovery is subject to multiple uncertainties	7
2.2.5	Broad recovery to 2019 levels expected in 2022-2023.....	8
2.3	Report Coverage	11
3	COVID-19 Demand Impact	12
3.1	Overview	12
3.2	Gasoline	14
3.3	Jet Kerosene	16
3.4	Diesel/Gasoil	18
3.5	Fuel Oil	19
4	IMO 2020.....	20
4.1	Overview	20
4.2	Background	20
5	Decarbonisation and the Energy Transition	27
5.1	Overview	27
5.2	Decarbonisation policy and targets	28
5.3	Decarbonisation of individual economic sectors	30
5.3.1	Energy	30
5.3.2	Industry.....	30
5.3.3	Transport.....	30
5.3.4	Outlook	31
6	Electrification/Alternative Fuels	32
6.1	Introduction.....	32
6.2	Total Vehicle Fleet.....	33
6.3	Vehicle Fleet Electrification: History and Outlook	34
6.3.1	Policy Incentives	36
6.3.2	Vehicle Manufacturing.....	39
6.3.3	Outlook	40
7	Biofuels	41
7.1	Introduction.....	41
7.2	Key Biofuels Policy Mechanisms	42
7.3	Biofuels Demand Outlook	43
8	Product Quality – Road Transport Fuels	45
8.1	Introduction.....	45



8.2	Main Quality Parameters.....	45
8.3	Gasoline	46
8.3.1	Sulphur Content	47
8.3.2	Aromatics and Olefins Content	47
8.3.3	Oxygen Content	48
8.4	Jet Fuel/Kerosene	48
8.5	Diesel/Gasoil	48
9	Global Refined Products Outlook.....	50
9.1	Demand.....	50
9.2	Supply	52
9.3	Net Trade	55
10	North America.....	61
10.1	Demand.....	61
10.1.1	Overview	61
10.1.2	LPG	61
10.1.3	Naphtha.....	61
10.1.4	Gasoline	62
10.1.5	Jet kerosene.....	62
10.1.6	Diesel/gasoil.....	62
10.1.7	Residual fuel oil.....	63
10.2	Current and Planned Refining Capacity.....	65
10.3	Supply	68
10.4	Net Trade	70
11	South America	72
11.1	Demand.....	72
11.1.1	LPG	72
11.1.2	Naphtha.....	73
11.1.3	Gasoline	73
11.1.4	Jet kerosene.....	73
11.1.5	Diesel/gasoil.....	74
11.1.6	Residual fuel oil.....	74
11.2	Current and Planned Refining Capacity.....	77
11.3	Supply	80
11.4	Net Trade	82
11.5	Brazil	83
12	Western Europe.....	86
12.1	Demand.....	86
12.1.1	Overview	86
12.1.2	LPG	86
12.1.3	Naphtha.....	86
12.1.4	Gasoline	87
12.1.5	Jet kerosene.....	87
12.1.6	Diesel/gasoil.....	87



12.1.7	Residual fuel oil	88
12.2	Current and Planned Refining Capacity	91
12.3	Supply	94
12.4	Net Trade	96
13	Central and Eastern Europe	97
13.1	Demand	97
13.1.1	Overview	97
13.1.2	LPG	97
13.1.3	Naphtha	97
13.1.4	Gasoline	97
13.1.5	Jet kerosene	98
13.1.6	Diesel/gasoil	98
13.1.7	Residual fuel oil	98
13.2	Current and Planned Refining Capacity	100
13.2.1	Central Europe	100
13.2.2	Eastern Europe	101
13.3	Supply	104
13.4	Net Trade	105
13.5	Russia	105
13.5.1	Demand	105
13.5.2	Supply	107
13.5.3	Net Trade	108
14	Middle East	110
14.1	Demand	110
14.1.1	Overview	110
14.1.2	LPG	110
14.1.3	Naphtha	110
14.1.4	Gasoline	111
14.1.5	Jet kerosene	111
14.1.6	Diesel/gasoil	112
14.1.7	Fuel oil	112
14.2	Current and Planned Refining Capacity	114
14.3	Supply	118
14.4	Net Trade	119
14.5	Saudi Arabia	120
14.5.1	Demand	120
14.5.2	Supply	122
14.5.3	Net Trade	123
15	Africa	125
15.1	Demand	125
15.1.1	LPG	125
15.1.2	Naphtha	125
15.1.3	Gasoline	126



15.1.4	Jet kerosene	126
15.1.5	Diesel/gasoil	126
15.1.6	Fuel oil	126
15.2	Current and Planned Refining Capacity	128
15.3	Supply	132
15.4	Net Trade	133
16	Asia Pacific	134
16.1	Regional Market Overview	134
16.1.1	Demand	134
16.1.1.1	LPG	138
16.1.1.2	Naphtha	138
16.1.1.3	Gasoline	139
16.1.1.4	Diesel/Gasoil	140
16.1.1.5	Jet kerosene	141
16.1.1.6	Fuel oil	142
16.1.2	Current and Planned Refining Capacity	142
16.1.3	Supply	147
16.1.4	Net Trade	149
16.2	China	150
16.2.1	Demand	150
16.2.2	Current and Planned Refining Capacity	155
16.2.3	Supply	157
16.2.4	Net Trade	159
16.3	India	161
16.3.1	Demand	161
16.3.2	Current and Planned Refining Capacity	163
16.3.3	Supply	164
16.3.4	Net Trade	165



Appendices

Figures

Figure 1	Refined product demand: Key drivers	8
Figure 2	COVID-19 demand impact - Gasoline	15
Figure 3	COVID-19 demand impact – Jet kerosene.....	17
Figure 4	COVID-19 demand impact – Diesel/Gasoil	18
Figure 5	COVID-19 demand impact – Fuel oil.....	19
Figure 6	Global Bunker Fuel Demand by Region, 2010-2050	22
Figure 7	Global Bunker Fuel Demand by Fuel Type, 2010-2050.....	25
Figure 8	Global Bunker Fuel Demand by Fuel Type, 2010-2050.....	25
Figure 9	Greenhouse Gas Emissions by Region – 1960-2018	28
Figure 10	Global Vehicle Fleet by Vehicle Type – 2010-2050	33
Figure 11	Passenger Cars by Fuel Type – 2010-2020.....	35
Figure 12	Passenger Cars by Fuel Type – 2010-2050.....	40
Figure 13	Biofuels Consumption by Product – 2010-2050.....	43
Figure 14	Ethanol Consumption by Region – 2010-2050.....	44
Figure 15	Biodiesel Consumption by Region – 2010-2050	44
Figure 16	Maximum Sulphur Limits in Gasoline Worldwide, 2020	47
Figure 17	Maximum Sulphur Limits in On-Road Diesel Worldwide, 2020.....	49
Figure 18	Global Refined Product Demand by Product – 2010-2050	50
Figure 19	Incremental Global Oil Product Demand, 2019-2050	51
Figure 20	Refined Product Demand by Region – 2010-2050	51
Figure 21	Current and Projected Global Refining Capacity	52
Figure 22	Global Refining Capacity, Throughput & Operating Rate	53
Figure 23	Global Net Refinery Capacity Additions	54
Figure 24	Refined Product Supply by Region – 2010-2050	54
Figure 25	Global Net Trade in Refined Products.....	57
Figure 26	Global Net Trade in LPG	57
Figure 27	Global Net Trade in Naphtha.....	58
Figure 28	Global Net Trade in Gasoline	59
Figure 29	Global Net Trade in Kerosene/Jet Fuel	59
Figure 30	Global Net Trade in Diesel/Gasoil	60
Figure 31	Global Net Trade in Residual Fuel Oil.....	60
Figure 32	North America Refined Product Demand by Product.....	63
Figure 33	North America Refined Product Demand Growth Rates	64
Figure 34	North America Refined Product Demand	64
Figure 35	North America Refining Capacity, Throughput & Operating Rate.....	66
Figure 36	North America Net Refinery Capacity Additions.....	67
Figure 37	North American Refined Product Net Trade.....	71
Figure 38	South America Refined Product Demand by Product	75
Figure 39	South America Refined Product Demand Growth Rates	75
Figure 40	South America Refined Product Demand	76



Figure 41	South America Refining Capacity, Throughput & Operating Rate	79
Figure 42	South America Net Refinery Capacity Additions	79
Figure 43	South American Refined Product Net Trade	83
Figure 44	Refined Product Demand – Brazil	84
Figure 45	Refined Product Supply – Brazil.....	85
Figure 46	Refined Product Net Trade – Brazil.....	85
Figure 47	Western Europe Refined Product Demand by Product.....	89
Figure 48	Western Europe Refined Product Demand Growth Rates.....	90
Figure 49	Western Europe Refined Product Demand.....	90
Figure 50	Western Europe Refining Capacity, Throughput & Operating Rate.....	93
Figure 51	Western Europe Net Refinery Capacity Additions	94
Figure 52	Western Europe Refined Product Net Trade.....	96
Figure 53	Central & Eastern Europe Refined Product Demand by Product.....	99
Figure 54	Central & Eastern Europe Refined Product Demand Growth Rates.....	99
Figure 55	Central & Eastern Europe Refined Product Demand.....	99
Figure 56	Central & Eastern Europe Refining Capacity, Throughput & Operating Rate.....	103
Figure 57	Central & Eastern Europe Net Refinery Capacity Additions	103
Figure 58	Central & Eastern Europe Refined Product Net Trade	105
Figure 59	Refined Product Demand - Russia.....	107
Figure 60	Russia Refined Product Supply.....	108
Figure 61	Russia Refined Product Net Trade.....	109
Figure 62	Middle East Refined Product Demand by Product.....	113
Figure 63	Middle East Refined Product Demand Growth Rates	113
Figure 64	Middle East Refined Product Demand	113
Figure 65	Middle East Refining Capacity, Throughput & Operating Rate	117
Figure 66	Middle East Net Refinery Capacity Additions.....	117
Figure 67	Middle East Refined Product Net Trade.....	119
Figure 68	Refined Product Demand – Saudi Arabia	122
Figure 69	Refined Product Supply – Saudi Arabia	123
Figure 70	Refined Product Net Trade – Saudi Arabia.....	124
Figure 71	Africa Refined Product Demand by Product.....	127
Figure 72	Africa Refined Product Demand Growth Rates.....	127
Figure 73	Africa Refined Product Demand.....	127
Figure 74	Africa Refining Capacity, Throughput & Operating Rate.....	130
Figure 75	Africa Net Refinery Capacity Additions	131
Figure 76	Africa Refined Product Net Trade	133
Figure 77	Asia Refined Product Demand by Product.....	136
Figure 78	Asia Refined Product Demand Growth Rates.....	137
Figure 79	Asia Refined Product Demand	137
Figure 80	Asia Refining Capacity, Throughput & Operating Rate.....	143
Figure 81	Major Refining Capacity Additions & Closures, Asia – 2020-2025	143
Figure 82	Asia Refined Product Net Trade.....	149
Figure 83	China Refined Product Demand by Product	151
Figure 84	China Refined Product Demand.....	151



Figure 85	China Refined Product Net Trade	160
Figure 86	India Refined Product Demand by Product - 2019.....	163
Figure 87	India – Supply, Demand & Trade	164

Tables

Table 1	Maximum Sulphur Content of Marine Bunker Fuel	20
Table 2	Global Bunker Fuel Demand by Region, 2010-2050	22
Table 3	Electric Vehicle Deployment Targets by Country	37
Table 4	Electric Vehicle Production Targets – OEMs	39
Table 5	Principal Product Quality Parameters	46
Table 6	Global Refined Product Demand by Product	51
Table 7	Global Refined Product Supply and Demand by Region	55
Table 8	North America – Supply, Demand & Trade	69
Table 9	South America – Supply, Demand & Trade	81
Table 10	Western Europe – Supply, Demand & Trade	95
Table 11	Central & Eastern Europe – Supply, Demand & Trade.....	104
Table 12	Middle East – Supply, Demand & Trade	118
Table 13	Africa – Supply, Demand & Trade	132
Table 14	Asia – Supply, Demand & Trade	148
Table 15	China – Supply, Demand & Trade.....	158