

Table of contents

Highlights	9
Executive summary.....	10
1. Recent demand and supply trends.....	13
Demand.....	13
Supply	30
References.....	44
2. Recent international coal trade trends.....	45
Market volumes.....	45
Regional analysis	50
Prices.....	61
Coal supply costs	69
References.....	77
3. Medium-term demand and supply forecast.....	78
Methodology	79
Assumptions.....	80
Global coal demand forecast, 2019-24	81
Global coal supply forecast, 2019-24.....	108
References.....	117
4. Medium-term international coal trade forecast	119
Methodology and assumptions.....	119
Seaborne coal trade forecast, 2019-24.....	122
References.....	131
5. Capacity investment outlook	132
Investment overview	132
Investment in export mining capacity	134
Investment in export infrastructure capacity.....	136
Regional Analysis.....	136
References.....	144
General annex	145
Tables.....	145
Mining projects.....	150
Glossary.....	157

List of figures

Figure 1.1. China's primary energy demand growth by fuel, 2018.....	17
Figure 1.2. India's coal consumption by type and use, 2018.....	19
Figure 1.3. Thermal coal demand, 2008-18 (left), and coal-fired generation capacity, 2018 (right), of the major coal consumers in Southeast Asia.....	21

Figure 1.4.	Total nameplate capacity of retired coal plants (left) and their average capacity (right), 2008-18	22
Figure 1.5.	Generation of selected energy sources in the EU (TWh), 2016-18.....	25
Figure 1.6.	Turkey's electricity mix, 2008-18	27
Figure 1.7.	Total coal supplied by the main producers, 2013-18.....	30
Figure 1.8.	Chinese coal production by mine size, 2012-18	32
Figure 1.9.	Chinese coal production by province, 2017 and 2018.....	32
Figure 1.10.	Coal production change in China's major coal-producing regions, 2011-18.....	33
Figure 1.11.	Coal production in India by company, 2017-18	34
Figure 1.12.	Strip ratios and profits of Coal India's subsidiaries and the Singareni Collieries Company, 2017-18	34
Figure 1.13.	Means of transport for coal dispatch in India, 2017-18.....	35
Figure 1.14.	US regional coal production (left) and average market price (right), 2002-18	37
Figure 2.1.	Seaborne trade development for thermal (left) and met coal (right), 2013-18	46
Figure 2.2.	Main trade flows in the seaborne thermal coal market, 2018 (Mt)	48
Figure 2.3.	Main trade flows in the seaborne met coal market (Mt), 2018	49
Figure 2.4.	Indonesian thermal coal exports, 2008-18	50
Figure 2.5.	Australian exports of thermal coal (left) and met coal (right), 2008-18.....	51
Figure 2.6.	Russian exports of thermal coal (left) and met coal (right), 2008-18	52
Figure 2.7.	US exports of thermal coal (left) and met coal (right), 2008-18.....	53
Figure 2.8.	South African exports of thermal coal, 2008-18.....	54
Figure 2.9.	Colombian exports of thermal coal, 2008-18	54
Figure 2.10.	Chinese imports of thermal coal (left) and met coal (right), 2008-18	56
Figure 2.11.	Monthly year-on-year development of Chinese coal imports, 2018-19	57
Figure 2.12.	Indian imports of thermal coal (left) and met coal (right), 2008-18	57
Figure 2.13.	Japanese imports of thermal coal (left) and met coal (right), 2008-18	58
Figure 2.14.	Korean imports of thermal coal (left) and met coal (right), 2008-18.....	59
Figure 2.15.	European imports of thermal coal (left) and met coal (right), 2008-18.....	60
Figure 2.16.	Marker prices for different types of coal, 2016-19	62
Figure 2.17.	Thermal coal price markers (6 000 kcal/kg) in the Atlantic and Pacific basins, 2018-19	64
Figure 2.18.	European prices for different energy carriers and CO ₂ , 2018-19.....	65
Figure 2.19.	Price markers for different thermal coal qualities in South Africa and Australia.....	66
Figure 2.20.	Coking coal prices, 2016-19.....	67
Figure 2.21.	Forward curves of API 2 (left) and API 4 (right), 2019.....	68
Figure 2.22.	Trade volumes for coal derivatives, 2000-18	68
Figure 2.23.	Indexed nominal prices of selected commodities and input factors used in coal mining	70
Figure 2.24.	Average fuel costs (left axis) and their share in total coal mining costs (right axis), 2016-18 .	70
Figure 2.25.	Average labour costs (left axis) and their share in total coal mining costs (right axis), 2016-18	71
Figure 2.26.	Year-on-year development of selected currencies against the USD, 2016-19	72
Figure 2.27.	FOB steam coal prices in USD and local currencies, 2016-19	73
Figure 2.28.	Bulk carrier fleet, 2012-18.....	74
Figure 2.29.	Selected freight rates and fuel oil price, 2016-19	74
Figure 2.30.	Indicative hard coking coal FOB supply curve and annual average FOB marker price	75
Figure 2.31.	Indicative thermal coal FOB supply curve and annual average FOB marker price	76
Figure 3.1.	Expected LNG export capacity additions, 2014-24	81
Figure 3.2.	Global coal demand development, 2017-24.....	82
Figure 3.3.	Comparison of <i>Coal 2017</i> through <i>Coal 2019</i> global coal demand forecasts	83
Figure 3.4.	Year-on-year steel production growth of the major steel-producing countries, January to August 2019	87
Figure 3.5.	Variation in Chinese power sector coal consumption depending on different electricity elasticities of GDP	88
Figure 3.6.	Coal-fired power plant projects in Japan, 2019-24.....	91
Figure 3.7.	Korean coal-fired power plant capacity and load factor changes under additional air pollution policy, 2018-24	92

Figure 3.8.	Marginal Korean hard coal- and gas-fired power generation costs, 2019-24	93
Figure 3.9.	Additional coal-fired generation capacity in Southeast Asia	94
Figure 3.10.	Capacity changes by technology, 2012-24	97
Figure 3.11.	Coal-fired power plant retirements in Canada, 2018-24	98
Figure 3.12.	Marginal EU hard coal- and gas-fired power generation costs, 2019-24.....	100
Figure 3.13.	Estimated price-sensitivity of EU coal-based power generation, 2024	101
Figure 3.14.	Recommendations of the Commission for Growth, Structural Change, and Employment on Germany’s coal phaseout.....	102
Figure 3.15.	Decommissioning of South African coal-fired power plants, 2019-24.....	105
Figure 3.16.	Global coal production development, 2017-24	108
Figure 3.17.	Distribution of China’s coal production by mine size, 2014-24.....	110
Figure 4.1.	Seaborne exports of thermal coal (left) and met coal (right), 2017-24	122
Figure 4.2.	Seaborne thermal coal imports, 2017-24	123
Figure 4.3.	Seaborne thermal coal exports, 2017-24.....	126
Figure 4.4.	Seaborne met coal imports, 2017-24	128
Figure 4.5.	Projected seaborne met coal exports, 2017-24.....	129
Figure 5.1.	Cumulative capacity of hard coal export mining projects (Mtpa), 2020-24	135
Figure 5.2.	Coal type shares in hard coal export mining projects (Mtpa) and market shares (Mt)	136

List of boxes

Box 1.1.	From Kyoto to Paris.....	14
Box 1.2.	Coal mining in Germany not yet over but end is on the horizon	39
Box 2.1.	Ranking exports by value	46
Box 2.2.	Coal rank, coal type and coal quality.....	62
Box 3.1.	CCUS is key to future coal use in industry.....	83
Box 3.2.	India’s infrastructure programme boosts coal consumption.....	89
Box 4.1.	Impact of the IMO sulphur cap on coal markets.....	120
Box 4.2.	Egypt, the latest major coal-trading spot?.....	124
Box 5.1.	Coal-based hydrogen	133
Box 5.2.	Carmichael, in the spotlight	138

List of tables

Table 1.1.	Total coal consumption (Mt), 2017-18	14
Table 1.2.	Coal consumption in selected Asia Pacific countries by type (Mt), 2017-18	16
Table 1.3.	Steam coal and lignite consumption in selected European countries (Mt), 2017-18.....	24
Table 1.4.	Lignite-fired power plant secure standby reserves	26
Table 1.5.	Electricity generation in Kazakhstan (TWh), 2016-18.....	28
Table 2.1.	Thermal coal exports in 2018 (Mt) and net changes from 2017	48
Table 3.1.	Plants switching to gas in Korea	93