

List of Figures

| | | |
|-------------|---|----|
| Figure 1.1 | Final Energy Consumption | 2 |
| Figure 1.2 | Fuel Share in Power Generation Mix | 3 |
| Figure 1.3 | Primary Energy Supply | 4 |
| Figure 1.4 | Import Dependency Ratio | 6 |
| Figure 1.5 | CO2 Emissions by Fuel Type | 7 |
| Figure 2.1 | Natural Gas Demand by Sector | 13 |
| Figure 2.2 | Oil and Natural Gas Basins | 14 |
| Figure 2.3 | Proven Reserves and R/P Ratio | 14 |
| Figure 2.4 | Location of Gas Production Fields | 15 |
| Figure 2.5 | History and Prospect of Natural Gas Production | 15 |
| Figure 2.6 | Committed Gas Exports | 16 |
| Figure 2.7 | Trajectory of Gas Supply Structure | 16 |
| Figure 2.8 | LNG Price in Asian Market | 17 |
| Figure 2.9 | Oil Demand by Sector | 19 |
| Figure 2.10 | Crude Oil Resources and Reserves | 20 |
| Figure 2.11 | Crude Oil Supply Balance | 21 |
| Figure 2.12 | Oil Production from Refinery | 21 |
| Figure 2.13 | Gasoline Supply | 23 |
| Figure 2.14 | Diesel Supply | 23 |
| Figure 2.15 | Coal Demand by Sector | 26 |
| Figure 2.16 | Coal Basins | 27 |
| Figure 2.17 | Coal Resources by Probability and Grade | 27 |
| Figure 2.18 | Major Coal Resources by Grade and Probability | 28 |
| Figure 2.19 | Distribution of Planned Coal-fired Power Plants | 29 |
| Figure 2.20 | Trajectory of Coal Supply Balance | 30 |
| Figure 2.21 | Trajectory of Electricity Output by Type | 32 |
| Figure 2.22 | Examples of Capacity Availability During Wet and Dry Seasons (Yeywa 790 MW) | 33 |
| Figure 2.23 | Trajectory of Installed Capacity of Hydropower Plants | 34 |
| Figure 2.24 | Distribution of Hydropower Plant Projects | 35 |
| Figure 2.25 | Solar PV Potential in Myanmar | 38 |
| Figure 2.26 | Seasonal Variation of Solar Energy vs Hydropower (monthly output as % of that of the highest month) | 39 |
| Figure 2.27 | Daily Variation of Solar Energy vs Hydropower (hourly output as % of that of the highest hour) | 39 |
| Figure 2.28 | Comparison of LCOE in Myanmar | 41 |
| Figure 2.29 | Wind Potential in Myanmar | 42 |
| Figure 2.30 | Structure of Total Primary Energy Supply (2017) | 45 |
| Figure 2.31 | Biomass Demand by Sector (2017) | 45 |

| | | |
|-------------|--|----|
| Figure 2.32 | Final Energy Consumption Projection by Energy Carrier: All Households, Biomass | 46 |
| Figure 3.1 | Outlook of Crude Oil Production (ktoe) | 53 |
| Figure 3.2 | Outlook of Crude Oil Production (Bcm) | 54 |
| Figure 3.3 | Outlook of Coal Production | 55 |
| Figure 4.1 | Final Energy Demand by Sector | 62 |
| Figure 4.2 | Final Energy Demand Comparison | 63 |
| Figure 4.3 | Power Generation Mix ESS | 64 |
| Figure 4.4 | Power Generation Mix Comparison with BAU in 2040 | 65 |
| Figure 4.5 | Primary Energy Supply of ESS and Comparison with BAU | 66 |
| Figure 4.6 | Import Dependency Ratio BAU and ESS | 67 |
| Figure 4.7 | Import Dependency Ratio for Oil | 68 |
| Figure 4.8 | Import Dependency Ratio for Natural Gas | 69 |
| Figure 4.9 | Import Dependency Ratio for Coal | 69 |
| Figure 4.10 | CO2 Emissions Comparison in 2040 of BAU and ESS | 70 |
| Figure 5.1 | Structure of Oil Demand (2017) | 75 |
| Figure 5.2 | Structure of Total Energy Consumption | 76 |
| Figure 5.3 | World's Natural Gas/LNG Spot Price | 79 |
| Figure 5.4 | Final Energy Consumption by EnergyType | 80 |
| Figure 5.5 | Concept of the Last-resort Power Plant | 84 |

List of Tables

| | | |
|------------|---|----|
| Table 2.1 | Energy Supply Risks and its Economic Impact | 8 |
| Table 2.2 | Assumption of International Energy Prices | 9 |
| Table 2.3 | Assumption of Fuel Price | 12 |
| Table 2.4 | Estimated LCOE for Different Power Sources | 12 |
| Table 2.5 | Price of Domestic Natural Gas from Offshore Fields [US\$/MMBtu] | 16 |
| Table 2.6 | Annual Average Additional Cost of LNG Imports | 18 |
| Table 2.7 | Existing and Planned Oil Refineries | 22 |
| Table 2.8 | Oil Import Cost under the Different Scenarios | 25 |
| Table 2.9 | Estimated Lifetime Coal Consumption | 28 |
| Table 2.10 | Price of Domestic Coal (2015 survey) | 31 |
| Table 2.11 | Annual Additional Cost of LNG Imports | 32 |
| Table 2.12 | Status of Hydropower Plant Projects | 35 |
| Table 2.13 | Annual Average Additional Cost of Generating Electricity | 37 |
| Table 2.14 | Annual Average Additional Cost of Generating Electricity | 44 |
| Table 3.1 | Access to Electricity and Clean Cooking, 2018 | 49 |
| Table 3.2 | GDP per Capita (2010 US\$) | 50 |
| Table 3.3 | Power Development Plan up to 2030 | 56 |
| Table 3.4 | Levelised Cost of Electricity Generation (UScent/kWh) | 56 |
| Table 3.5 | Baseline of an Electricity Supply Structure | 58 |
| Table 3.6 | Power Generation Mix Scenario, 2040 | 59 |
| Table 4.1 | Summarised Comparison Table between BAU and ESS | 71 |
| Table 4.2 | Energy Balance Table 2040, Energy Supply Security (ESS) | 72 |
| Table 4.3 | Energy Balance Table 2040, Business as Usual (BAU) | 73 |
| Table 5.1 | Energy Efficiency Measures for Industry and Transport Sectors | 75 |
| Table 5.2 | Energy Efficiency Measures for Power Generation and Building Sectors | 76 |
| Table 5.3 | Comparison of Natural Gas Delivered Price at Power Plant (US\$/MMBtu) | 79 |
| Table 5.4 | Example of Priority to Protect Energy Supply | 81 |
| Table 5.5 | Oil Stockpile in Myanmar | 82 |
| Table 5.6 | Comparison of Oil Stockpiling Method | 83 |
| Table 5.7 | Potential Risk and Availability of Counteraction | 84 |