



AmInvestment Bank

Sector report
20 April 2021

OIL & GAS

EVs driving energy transition

OVERWEIGHT

(Maintained)

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Rationale for report: Sector update

- **Rapid EV penetration drives battery demand.** We attended Rystad Energy's recent Energy Transition webinar titled "Batteries - electrifying everything" which was presented by its global energy systems consultants Marius Kluge Foss and Susanne Andresen. They highlighted that the rapid market penetration of electric vehicles is accelerating the current energy transition and will drive up battery demand for both transportation and grid storage.
- **EV sale to exceed 50% by 2033.** Rystad expects the share of electric vehicles (EVs) in global new passenger car sales to quadruple in 2026 from 4.6% last year and exceed 50% from 2033 onwards, then climb gradually towards 100% by 2050 in nearly all regions except Africa (Exhibit 2). This will structurally transform the oil & gas industry given that road transportation accounts for over 40% of crude oil consumption in 2019.

In 2021, Rystad Energy expects electric vehicles (EVs) to take up around 6.2% of global passenger car sales, with the share climbing to 7.7% next year. Europe will continue to lead electric vehicle adoption with the highest EV sale share of 10% in 2021, and double to 20% in 2025. North America and Asia will grow at a slower pace, followed by the Middle East and South America.

- **Battery demand mainly driven by passenger cars.** The combined new battery demand across all transportation segments is expected to grow 15% annually between 2020 and 2050, gradually rising from 0.23 terawatt hours (TWh) in 2020 to over 1TWh in 2024. Subsequently, demand for batteries will accelerate and exceed 4TWh in 2030, topping 10TWh in 2040 and plateauing around 14TWh in 2050 (Exhibit 3).

Passenger cars will account for almost all battery demand until 2025 and taper off to 70% over the long term as battery adoption increase for the heavy transport segment with shipping and aviation only starting from a low-level from 2030 onwards.

The impact of electric aviation would be small due to the relatively limited number of aircrafts compared to global passenger vehicles. However, this could change with major technological breakthroughs in lithium air batteries. For shipping, the main applications for batteries will be for smaller vessels and auxiliary systems for larger vessels.

- **Cheaper batteries can change power grid profile.** Declining battery costs at current rates will penetrate an increasing share of the electricity market and can potentially displace a significant portion of the current fossil fuel base-load generation together with cheap renewables. Besides supporting the rapid electrification of the transportation sector, this provides cheap batteries for other parts of the energy system such as distributed and behind-the-meter batteries in buildings.

Batteries originally entered the power sector as an ancillary back-up service by stabilising the grid with short bursts of electricity. In recent years, grid batteries have begun to disrupt the frequency control markets, supplying to peaking and base load plants together with solar and wind.

While grid demand is admittedly negligible at this stage, this is expected to rise to reach 0.4TWh in 2025, accelerate to 2.7TWh in 2030 and gradually rise to its plateau of 10TWh in the mid-2040s.

- **Depleted car batteries for grid usage.** A large share of the future grid storage demand can be fulfilled from repurposed EV batteries assuming a 15-year lag before they degrade to 80% of capacity. This is because EV batteries are normally designed to have a cycle life equal to the overall 15-year life expectancy of the vehicle at which point they can be repurposed as grid storage.
- **Battery costs can still decrease** despite the increasing share of raw materials to total cost for battery cell manufacturers, which currently contributes 50% to 60% of the cost of goods sold, depending on chemistry and form factor. Energy accounts for the largest cost component at 34% of the average electric vehicle battery costs at US\$146 per kilowatt hour (kWh) in 2020, followed by materials at 33%, plant & machinery investments 24% and labour 9%. The special battery pack manufacturing process required of EV batteries accounts for 25% of the total cost (Exhibit 5).

The energy consumption required for battery production involves electricity used for drying operations in the chemical processing and cell production phases. This could be reduced by new technologies such as cell manufacturing and vertical integration in the industry as producers move upstream to optimise the mining and processing segments of the value chain. Also, as battery cell and pack designs become more specialised for their intended applications, costs can be reduced from non-active materials in combination with automated/enhanced manufacturing processes.

- **Promising recycling prospects.** Recycling of lithium-ion batteries, which are more energy dense and able to compete against fossil-fuel based markets, is negligible given the early-cycle stage of the energy transition. Current consumption of batteries by the transportation and energy storage segments accounts for only 2% of expected future demand, which will not be available for recycling for another 10 to 20 years depending on chemistry and use case.

However, major industrial and automobile players may contribute significant investments into recycling the raw materials of depleted batteries, which have substantive values. Hydro-metallurgical recycling, which can recycle around 90% of the material, appears promising. Rystad assumes that 75% of batteries from transportation will end up in storage for an additional 10-15 years before being recycled.

- **Nevertheless, domestic order flows improving.** From past presentations by Rystad Energy, we note that global oil demand will still be on a rising trajectory and plateau in the late 2020s (Exhibit 11). Hence, global E&P capex cycle will still improve over the next 2-3 years. In Malaysia, 1Q2021 order flows have improved QoQ with listed companies announcing contracts valued at RM3.3bil, a 2.2x increase from RM1.5bil in 4Q2020 (Exhibit 15). YoY, this represents an even more rapid surge of 5.6x from only RM569mil in 1Q2020, which was drastically derailed by the onset of Covid-19 pandemic together with the short-lived Saudi-Russia oil war (Exhibit 13).
- **Raise 2021-2022 crude oil price projection by US\$5/barrel to US\$60-US\$65/barrel.** Given that Brent crude oil price has continued to remain above US\$60/barrel over the past weeks as OPEC+ announced gradual production increments of 350k barrels in May-June 2021 and 441k barrels in July 2021, we have raised our crude oil price forecast from US\$55–US\$60/barrel to US\$60–US\$65/barrel for 2021-2022 vs Brent oil averaging US\$61/barrel since the beginning of this year. For comparison, the EIA is now projecting oil prices at US\$62/barrel for 2021 and US\$60/barrel for 2022.
- **Maintain OVERWEIGHT call with 8 BUY calls vs. only 1 HOLD.** We recommend Yinson for its strong earnings growth momentum from the full-year contributions of FPSO vessels Helang, off Sarawak, Abigail-Joseph in Nigeria and Anna Nery in Brazil together with multiple charter opportunities in Brazil and Africa. We also continue to like Dialog Group and Serba Dinamik Holdings due to their resilient non-cyclical tank terminal and maintenance-based operations. Our other BUY calls are Sapura Energy, which has just completed its RM10bil debt restructuring package and re-positioned the formidable EPCIC group to secure fresh global orders; and Petronas Gas, which offers highly compelling dividend yields from its optimal capital structure strategy and resilient earnings base.

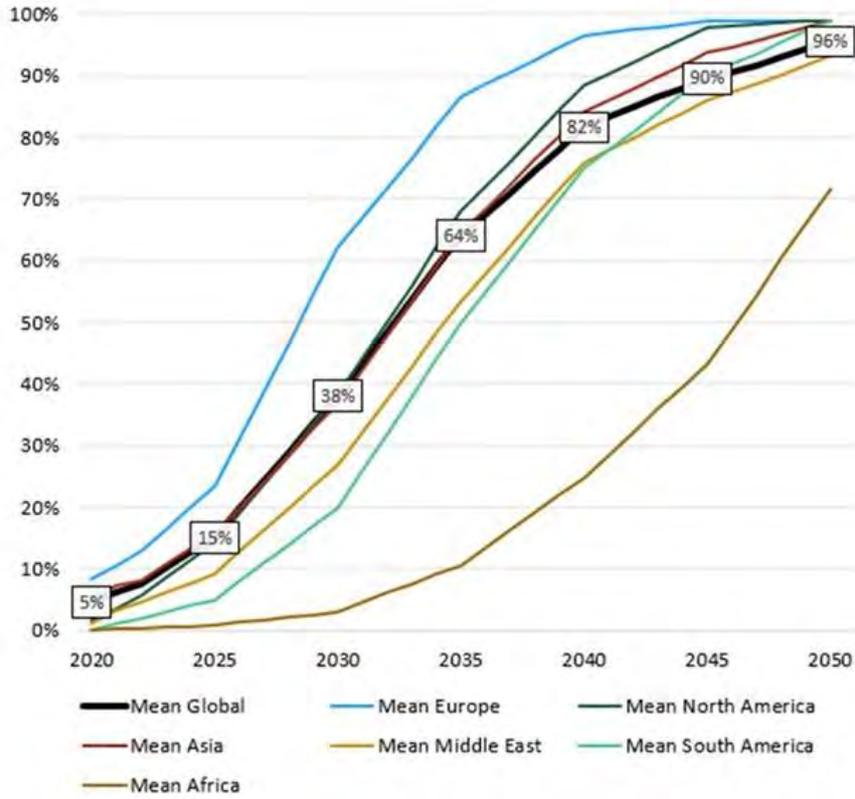
EXHIBIT 1: VALUATION MATRIX

Stocks	CALL	Price (RM)	FV Up/ (RM)	down side (%)	Mkt Cap RMmil	FYE	EPS (sen)		EPS growth (%)		PE		P/BV (x)	Div Yield		Net gearing FY21 CY21F
							CY21F	CY22F	CY21F	CY22F	CY21F	CY22F		CY21F	CY21F	
Bumi Amada	BUY	0.420	0.59	40.5	2,464	Dec	7.7	8.1	257.7	5.9	5.5	5.2	0.7	13.3	-	224.9
Dialog Group	BUY	3.100	4.85	56.5	17,479	Jun	11.8	13.2	8.9	12.2	26.4	23.5	3.7	14.6	1.2	19.1
Hibiscus Petroleum	BUY	0.650	0.79	21.5	1,124	Jun	2.9	3.9	(20.1)	36.0	22.5	16.5	0.0	5.1	0.8	(11.5)
MISC	BUY	6.680	8.50	27.2	29,818	Dec	48.7	51.2	0.8	5.0	13.7	13.1	1.8	6.4	4.9	19.5
Petronas Chemicals Group	HOLD	7.900	8.30	5.1	63,200	Dec	31.7	37.6	36.4	18.4	24.9	21.0	2.3	8.2	1.5	(34.5)
Petronas Gas	BUY	15.800	21.30	34.8	31,264	Dec	103.0	102.7	2.6	(0.3)	15.3	15.4	4.1	16.8	8.0	(5.7)
Sapura Energy *	BUY	0.135	0.29	114.8	2,152	Jan	(0.6)	0.3	(65.1)	(144.5)	(21.3)	47.8	0.2	(1.1)	-	118.9
Serba Dinamik	BUY	1.660	2.40	44.3	6,715	Dec	17.3	19.1	1.6	10.4	9.6	8.7	1.6	18.6	3.3	36.6
Yinson Holdings *	BUY	5.270	7.20	36.6	5,769	Jan	58.2	50.8	163.8	(12.6)	9.1	10.4	1.6	8.8	1.1	8.8

* assume 1 year forward FYE for CY

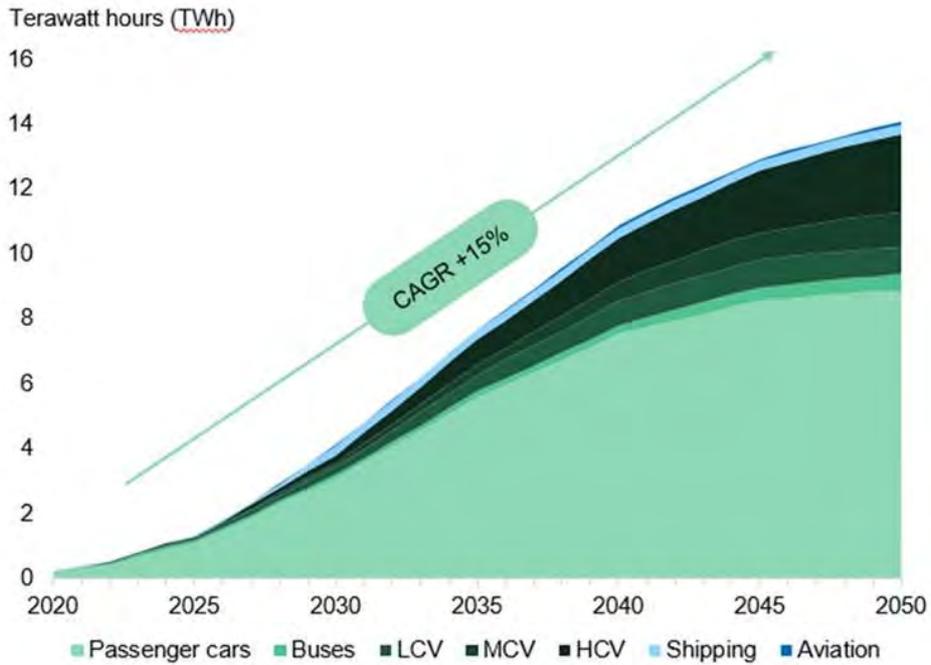
Source: AmInvestment Bank

EXHIBIT 2: MARKET SHARE OF BATTERY ELECTRIC VEHICLE NEW SALES



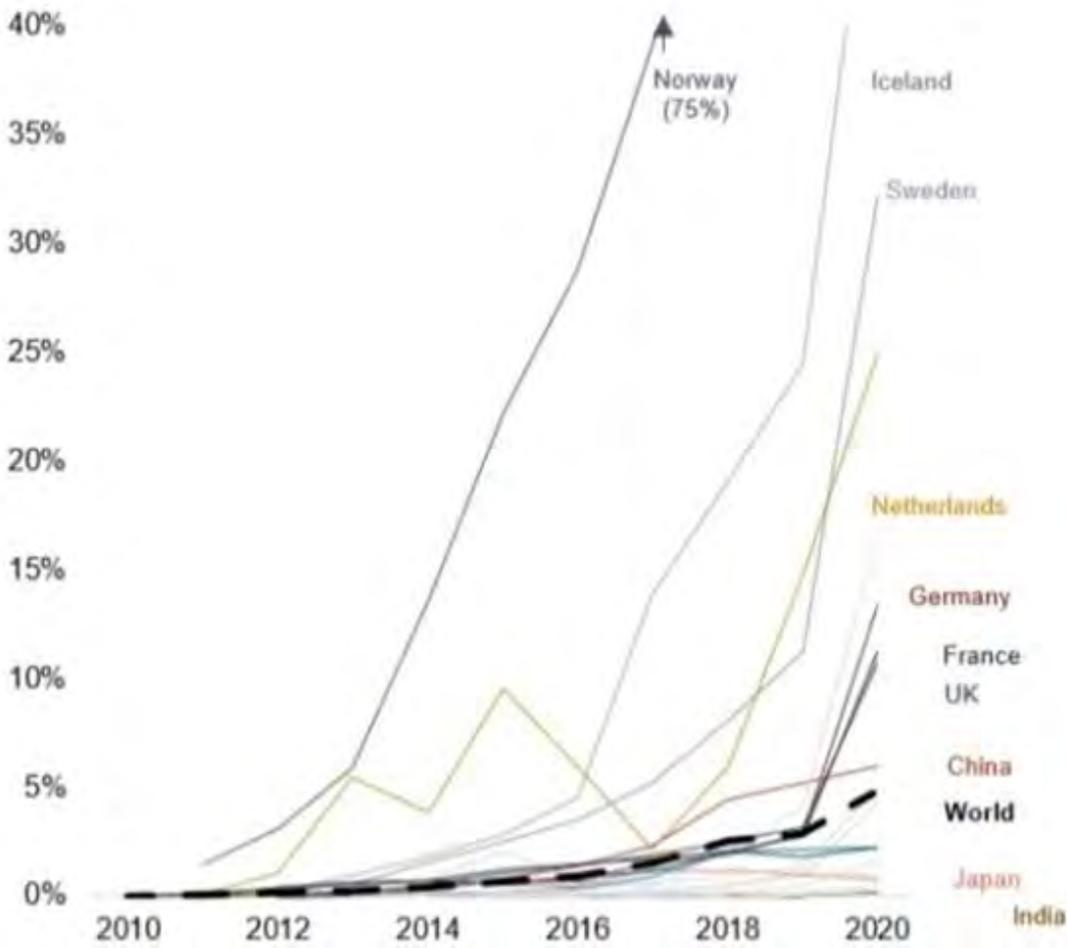
Source: Rystad Energy

EXHIBIT 3: GLOBAL BATTERY DEMAND FROM TRANSPORTATION



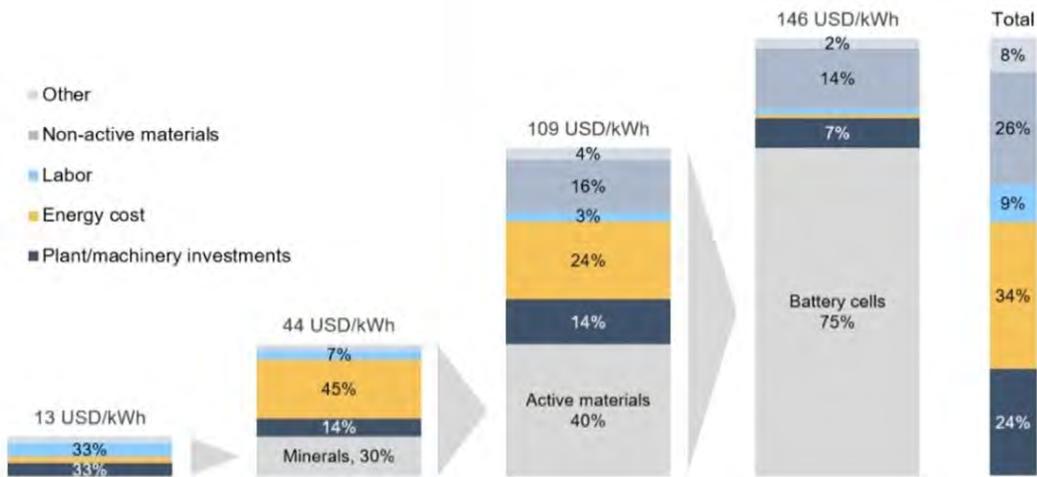
Source: Rystad Energy

EXHIBIT 4: MARKET SHARE OF ELECTRIC VEHICLES



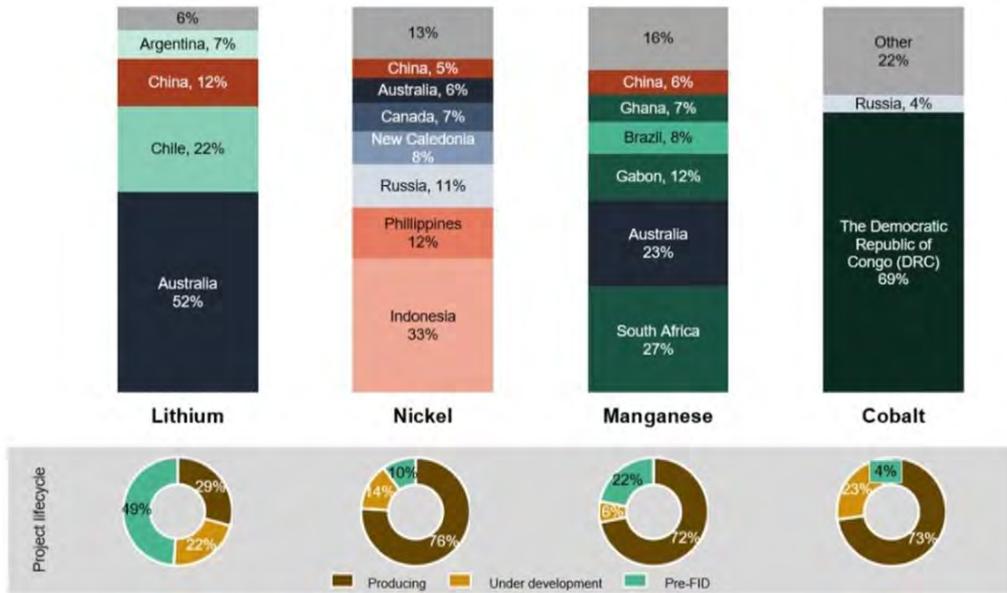
Source: Rystad Energy

EXHIBIT 5: 2020 BATTERY COST BREAKDOWN



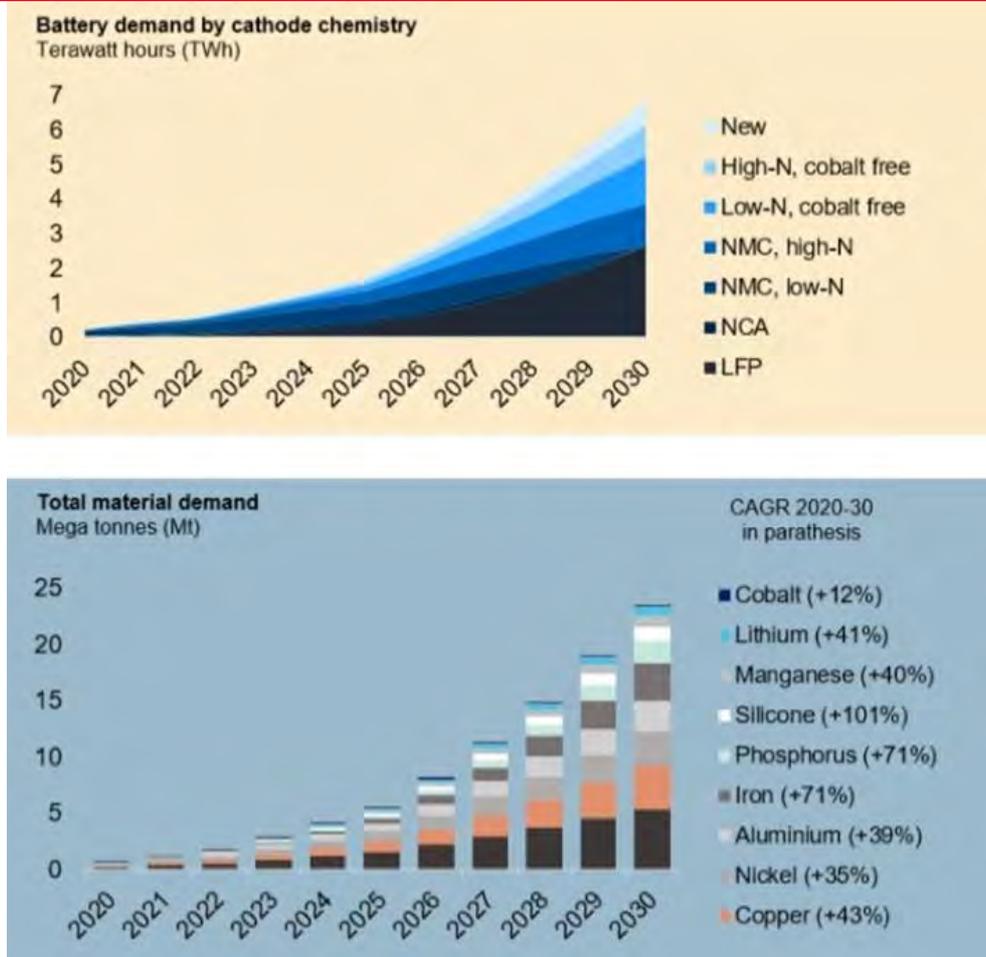
Source: Rystad Energy

EXHIBIT 6: CURRENT PRODUCTION OF KEY RAW MATERIALS BY GEOGRAPHY



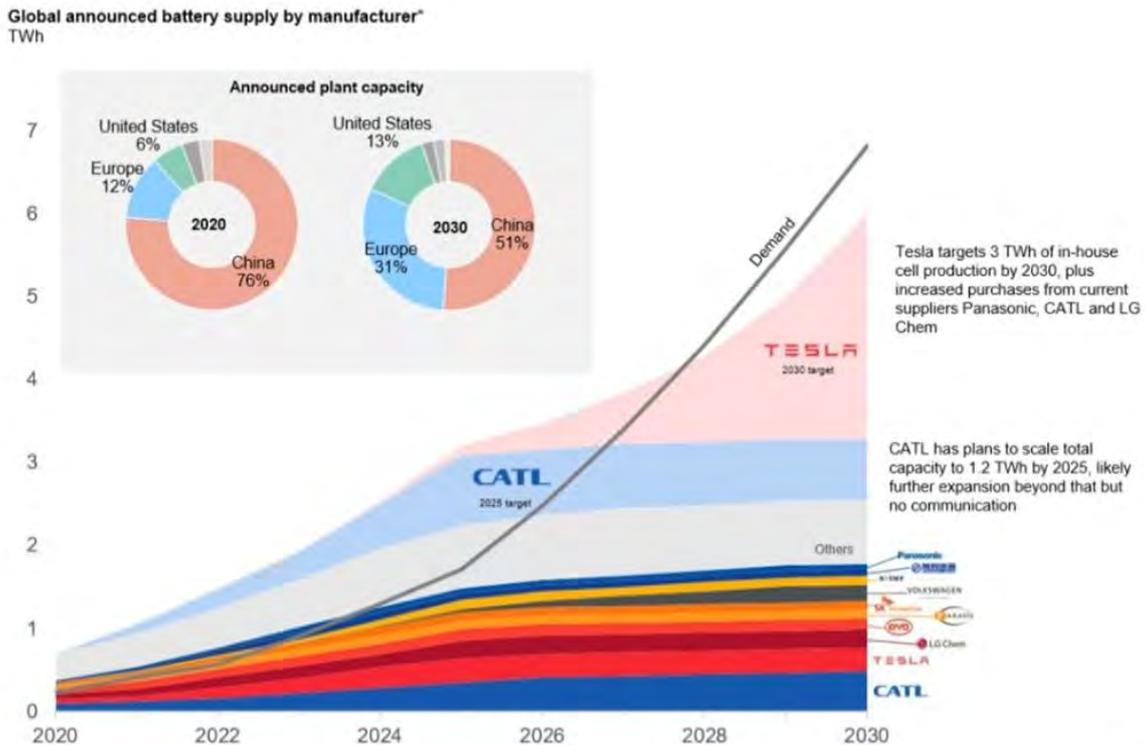
Source: Rystad Energy

EXHIBIT 7: DEMAND FOR KEY BATTERY MATERIALS



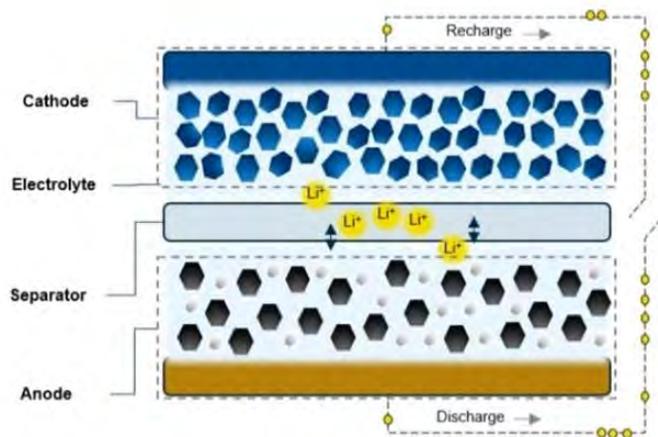
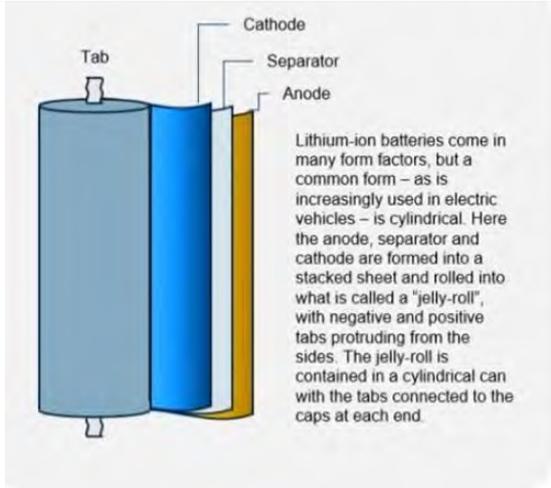
Source: Rystad Energy

EXHIBIT 8: BATTERY CELL PRODUCTION PLANS



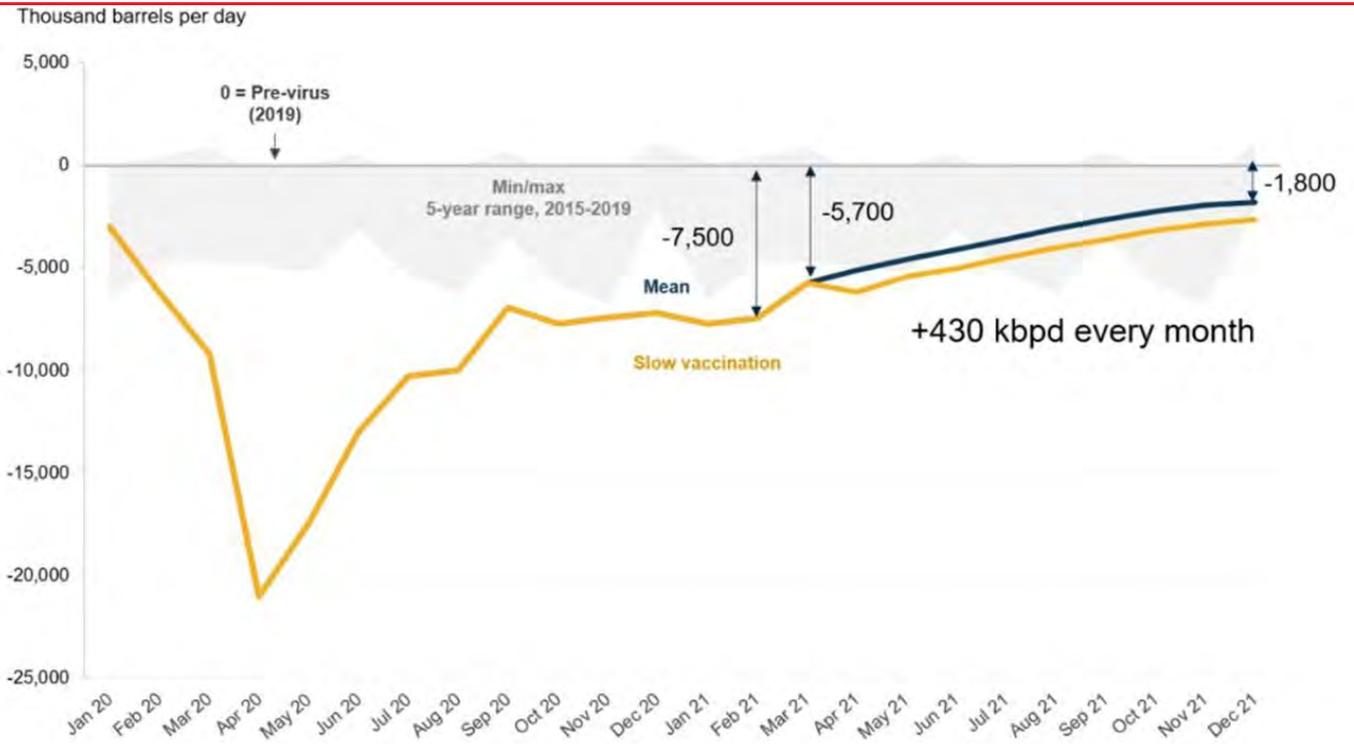
Source: Rystad Energy

EXHIBIT 9: BATTERY CHEMISTRY



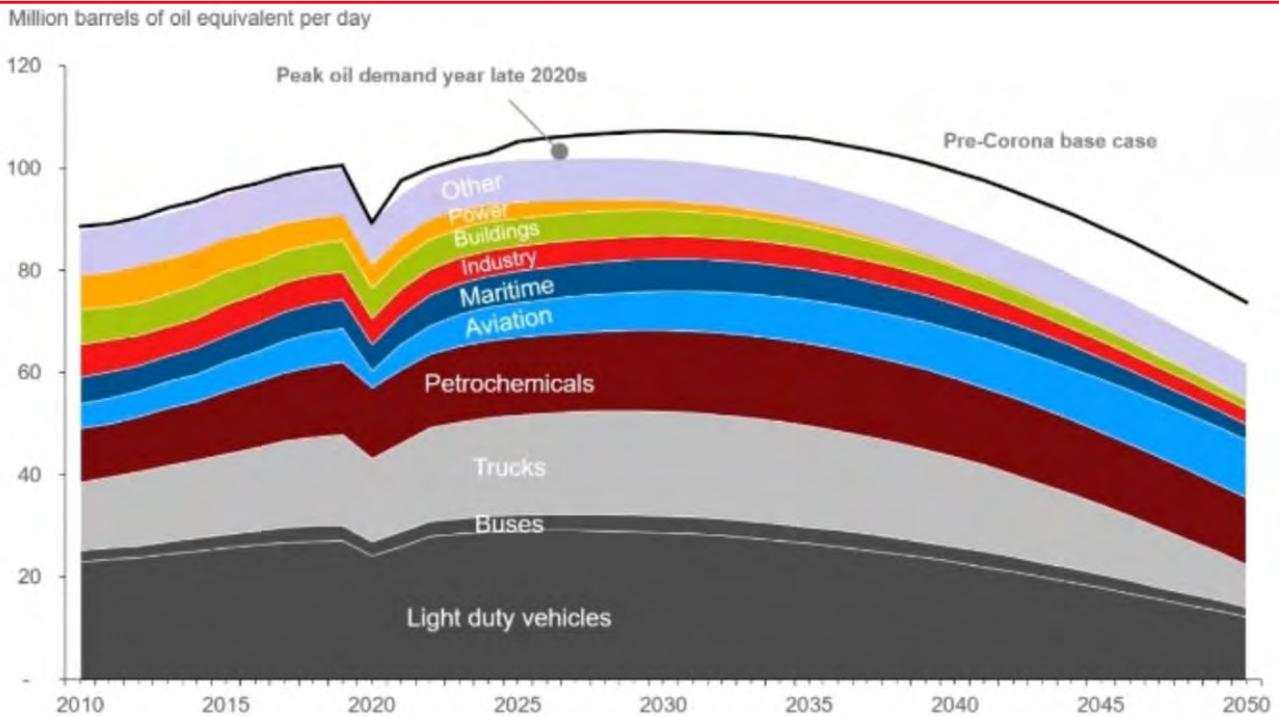
Source: Rystad Energy

EXHIBIT 10: GLOBAL OIL DEMAND VS. PRE-VIRUS 2019 LEVEL



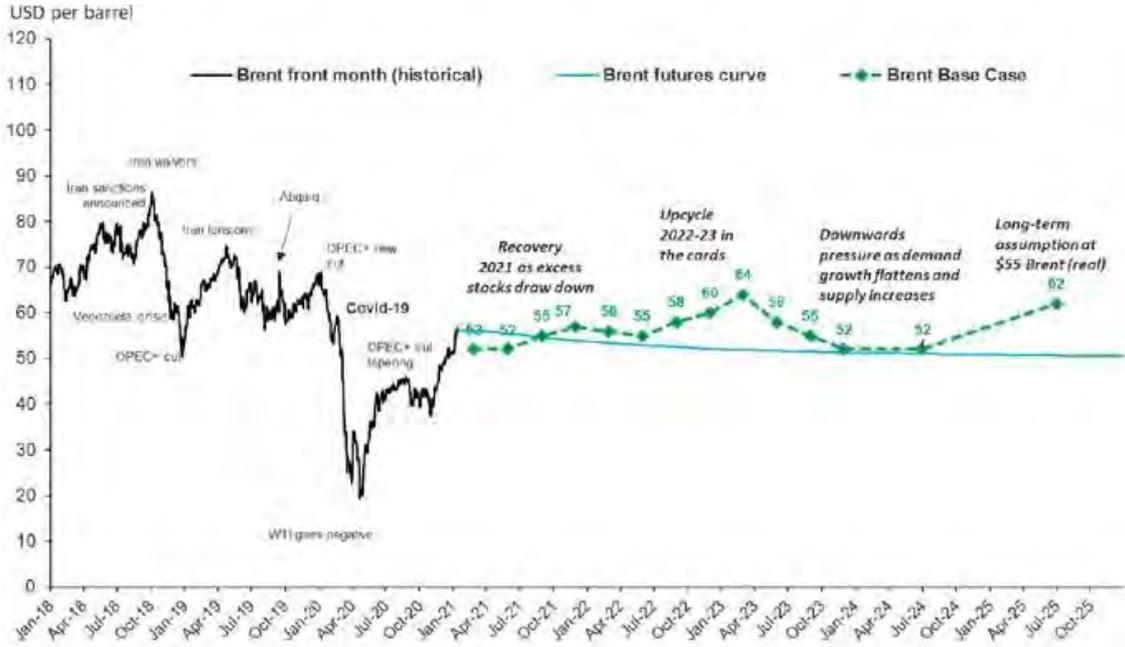
Source: Rystad Energy

EXHIBIT 11: PEAK OIL DEMAND PROJECTIONS



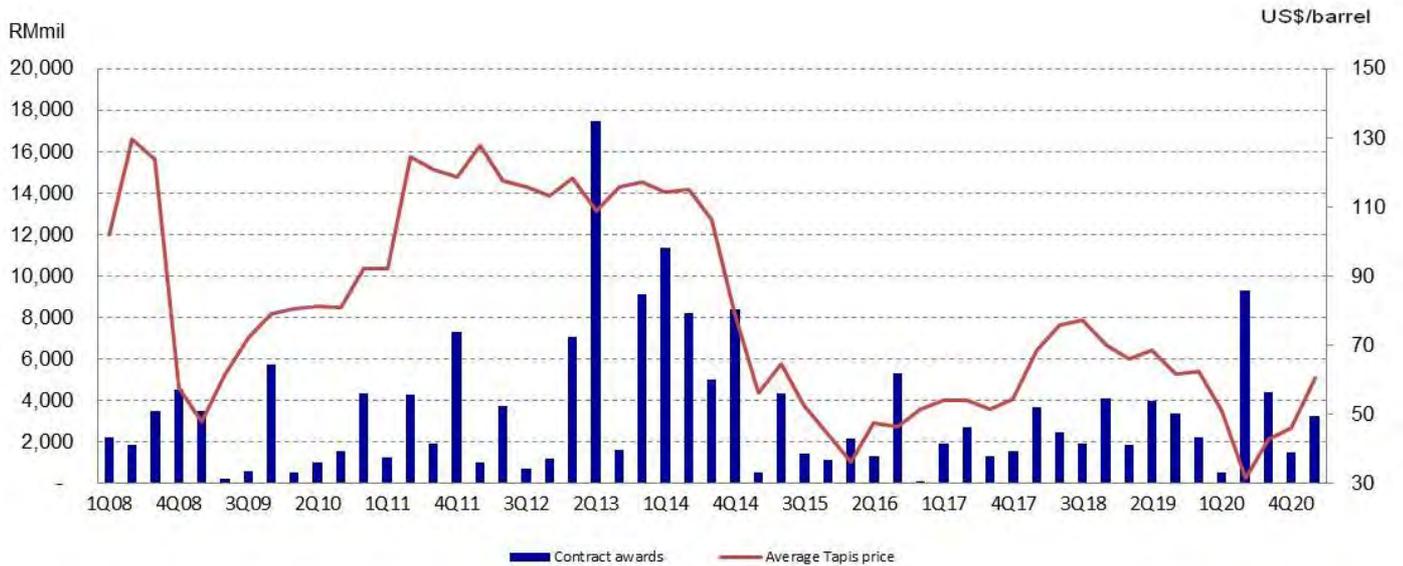
Source: Rystad Energy

EXHIBIT 12: BRENT OIL PRICE FORECAST



Source: Rystad Energy

EXHIBIT 13: MALAYSIAN COMPANIES' CONTRACT AWARDS



Source: Bursa Malaysia and AmBank Research

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