

INDONESIAN COAL UPDATES: UPSTREAM TO DOWNSTREAM

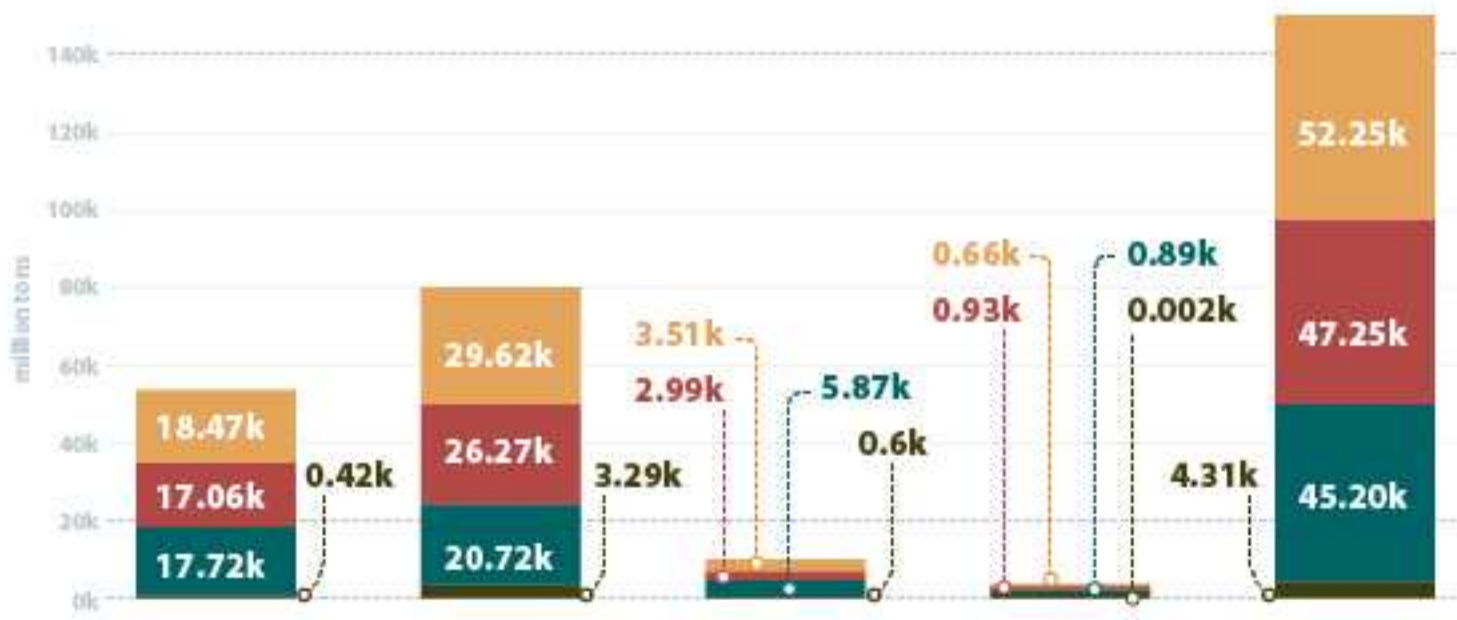
COAL RESOURCES 2019

TOTAL: 149,009.59

*All numbers are in million tons



1. Aceh Hypothetical : - Inferred : 326.68 Indicated : 465.57 Measured : 346.00	5. Bengkulu Hypothetical : - Inferred : 205.51 Indicated : 227.83 Measured : 195.55	9. Banten Hypothetical : 5.47 Inferred : 32.92 Indicated : 17.18 Measured : 5.99	13. Central Kalimantan Hypothetical : 22.54 Inferred : 4,899.42 Indicated : 3,008.73 Measured : 2,899.14	17. South Sulawesi Hypothetical : 10.66 Inferred : 17.66 Indicated : 10.32 Measured : 3.86	21. North Maluku Hypothetical : 8.22 Inferred : - Indicated : - Measured : -
2. North Sumatera Hypothetical : - Inferred : 7.00 Indicated : 1.84 Measured : 5.78	6. Jambi Hypothetical : 140.31 Inferred : 2,444.15 Indicated : 2,044.42 Measured : 2,994.83	10. Central Java Hypothetical : - Inferred : 0.82 Indicated : - Measured : -	14. South Kalimantan Hypothetical : - Inferred : 5,424.83 Indicated : 4,432.12 Measured : 7,551.53	18. South East Sulawesi Hypothetical : 0.64 Inferred : - Indicated : - Measured : -	22. West Papua Hypothetical : 93.66 Inferred : 32.82 Indicated : - Measured : -
3. West Sumatera Hypothetical : 1.19 Inferred : 152.40 Indicated : 85.46 Measured : 270.31	7. Lampung Hypothetical : - Inferred : 122.95 Indicated : 19.95 Measured : 9.00	11. East Java Hypothetical : - Inferred : 0.08 Indicated : - Measured : -	15. North Kalimantan Hypothetical : 25.79 Inferred : 1,215.40 Indicated : 1,041.54 Measured : 1,497.47	19. West Sulawesi Hypothetical : 11.46 Inferred : 16.00 Indicated : 0.78 Measured : 0.17	23. Papua Hypothetical : 7.2 Inferred : 2.16 Indicated : - Measured : -
4. Riau Hypothetical : 3.86 Inferred : 533.83 Indicated : 845.54 Measured : 535.27	8. South Sumatera Hypothetical : 3,009.45 Inferred : 14,409.31 Indicated : 13,961.08 Measured : 12,634.23	12. West Kalimantan Hypothetical : 2.26 Inferred : 375.69 Indicated : 6.85 Measured : 3.70	16. East Kalimantan Hypothetical : 872.99 Inferred : 14,888.60 Indicated : 21,080.48 Measured : 23,299.45	20. Central Sulawesi Hypothetical : 0.52 Inferred : 1.98 Indicated : - Measured : -	



Low Rank Coal

Medium Rank Coal

High Rank Coal

Very High Rank Coal

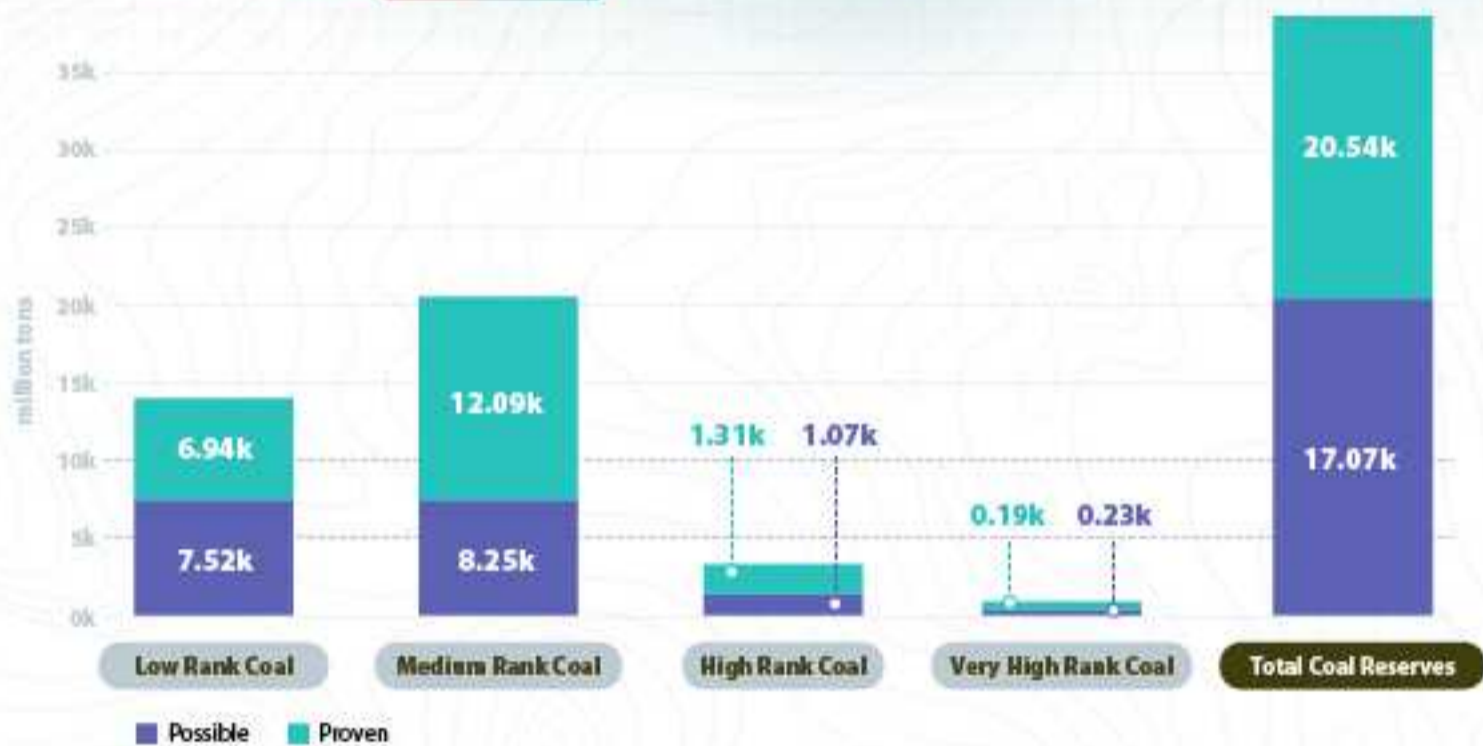
Total Coal Resources

■ Hypothetical ■ Inferred ■ Indicated ■ Measured

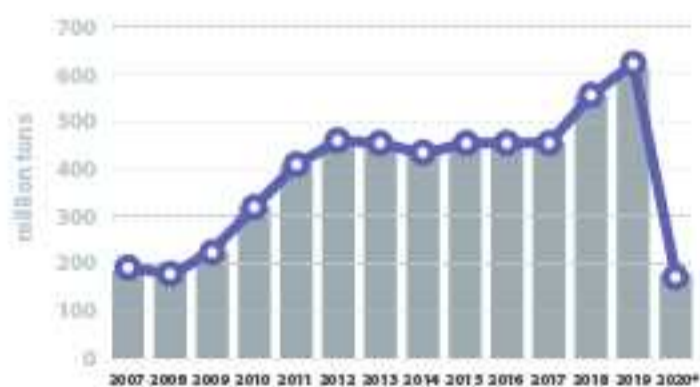
COAL RESERVES 2019

TOTAL: 37,604.66

*All numbers are in million tons

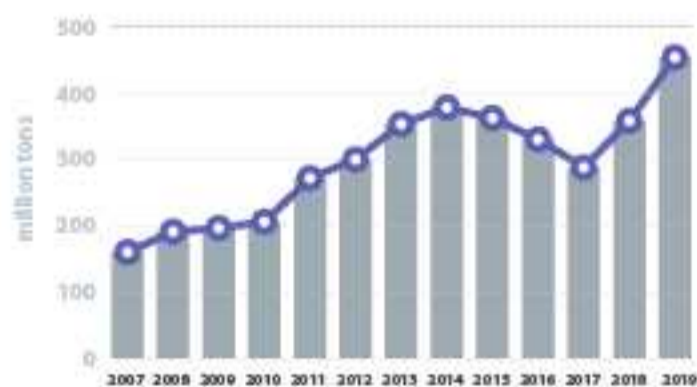


COAL PRODUCTION



* Data as of April 2020

COAL EXPORT



TYPE OF POTENTIAL DOWNSTREAM COAL INDUSTRY



Coal gasification

A process of producing syngas that can be used for electricity generation or chemical feedstocks. It could also produce methanol or gasoline through additional treatment.



Coal liquefaction

A process of converting coal into liquid hydrocarbon, liquid fuels and petrochemicals.



Coal upgrading

A process to remove moisture and certain pollutants from low-rank coals in order to raise their calorific values.



Coal briquetting

A process to compress coal dust (a side product from mining) or other combustible biomass material into a block of briquette used for fuel and kindling to start a fire.



Cokes making

A process of heating coal to remove impurities and leaving almost pure carbon. Coke is used in metallurgical process, such as in the blast furnaces or foundry cupolas in the steel production.



Underground coal gasification

A process of converting hydrocarbon materials into synthesis gas in-situ for exploiting coal that cannot be mined because the seams are too deep, thin or fractured.



Coal slurry/coal water mixture

A combustible mixture of fine coal particles suspended in water. It can be used to power boilers, gas turbines, diesel engines, heaters and power stations.

DOWNSTREAM COAL INDUSTRY



Notes:

Low Rank Coal calories	: <5,100 kcal/kg
Medium Rank Coal calories	: 5,100-6,100 kcal/kg
High Rank Coal calories	: 6,100-7,100 kcal/kg
Very High Rank Coal calories	: >7,100 kcal/kg

Abbreviations

DME	: Dimethyl Ether
KESDM	: Ministry of Energy and Mineral Resources
MEG	: Monoethylene Glycol
TPY	: Tons per Year