



Sydney Mineral Exploration Discussion Group

SMEDG Meeting – July 23, 2026 Pat Hanna– Coal – Another Critical Mineral

SPECIAL THANKS TO OUR SPONSORS



Administrative Support





Coal Another Critical Mineral

Pat Hanna *FAusIMM CPI*

SMEDG Meeting

23rd July 2026

Who is Pat Hanna???

Profession:

Corporate Consultant Coal Geologist

Education:

Bachelor of Applied Science (App. Geology) University of NSW (1976)

Affiliations:

Fellow of The Australasian Institute of Mining and Metallurgy (FAusIMM) since 1995

Committee Member AusIMM Sydney Branch (2017 to Present)

Committee Member SMEDG (2026)

Member Minerals Industry Consultants Association (MMICA)

Competent Person Indonesia (CPI)

President, Australia Indonesia Association (AIA) (2022 to Present)

Past Positions

Director, Cokal Limited (2011 to 2020)

Member, AusIMM Applications Committee, 2005 – 2018

Chairman, Branch Committee, SE Qld Branch of the AusIMM, 2004 – 2006

Vice Chairman, Branch Committee, SE Qld Branch of the AusIMM, 2003 – 2004

Chairman, Branch Committee, Illawarra Branch of the AusIMM, 1997 – 1998

Member, Branch Committee, Illawarra Branch of the AusIMM, 1995 – 2004

Councillor AusIMM, 1998 – 2000

Chairman, AusIMM Students & Young Professionals Committees, 1998 – 2000, 2003 - 2006

JORC Committee Member, 1998 – 2000

Member NSW Coalfield Council, 1998 – Present

Member Sub-Committee Australian Guidelines for Black Coal Resource and Reserve Estimation, 1999 – 2000

Member Science Faculty Visiting Committee, University of Wollongong, 1998 – 2005

The World of Coal



COAL

A CRITICAL MINERAL

THE WALL STREET JOURNAL.

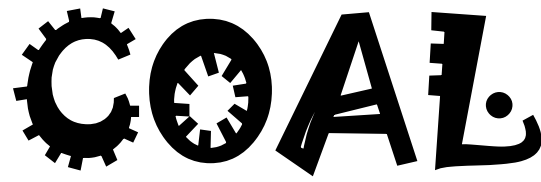
Coal Use Surges as War Crimps Oil



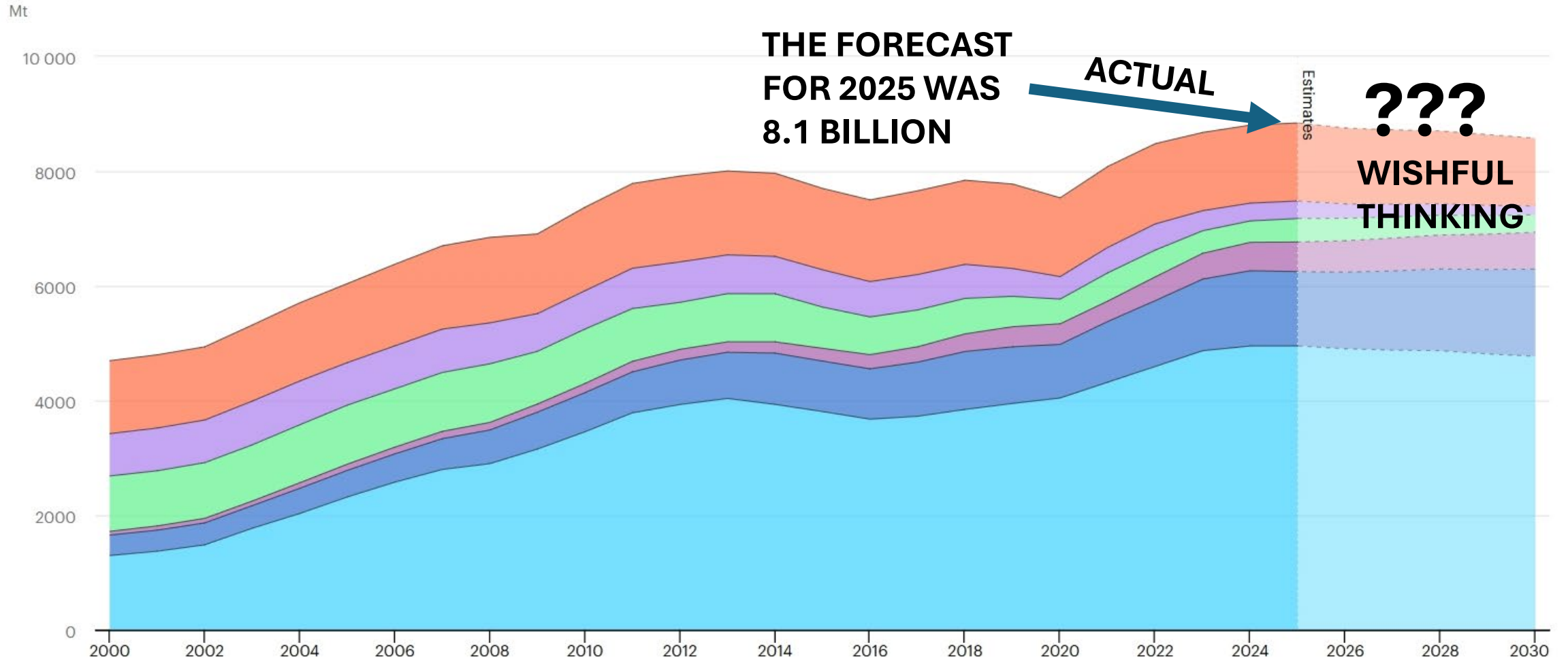
The International Energy Agency confirms in 2025, global coal:

- consumption hit 8.85 Btonnes
- production hit 9.11 Btonnes

“Analysts now expect global demand for seaborne coal to rise this year”



CONSUMPTION INCREASING



FUN FACTS

Global coal-fired capacity up in 2025: GEM

Global coal-fired capacity in 2025 increased by **3.5%**
(an additional **97.4GW**) to take the global total to
2.88TW

China last year added **78.1GW** of new coal power
capacity

Nearly **70%** of coal-fired units scheduled to retire
globally in 2025 failed to do so

COKING COAL

FUTURE SUPPLY???

Recent Discoveries

Indonesia

Mongolia

Mozambique

INDONESIAN COAL INDUSTRY



INDONESIA AT A GLANCE

POPULATION



**World's
4th Largest
Population**

**278.8 Million
— to —
315 Million
by 2045**



Indonesia has a
young, urbanising
population

The median age of
the population is 29
years old

**135 Million
labour force**



**29
years**

But only 11% tertiary
graduates, compared to
44% OECD average

ECONOMIC GROWTH



**5-6 %
Annual
Growth**

Indonesia has enjoyed
steady economic
growth for the last
three decades, regularly
ranging between 5 - 6 %
per annum

In 2022, Indonesia
recorded 5.3%
economic growth

**PREDICTED TO BE THE
4TH LARGEST ECONOMY
IN THE WORLD BEFORE
2040**

INDONESIAN COAL EXPERIENCE

PT Cokal

- PT Bumi Barito Mineral
- PT Borneo Bara Prima
- PT Tambang Benua Alam Raya
- PT Anugerah Alam Katingan
- PT Anugerah Alam Manuhing

PT Bukit Asam Tambang Batubara

PT Kaltim Prima Coal

PT Berau Coal

PT Adaro Indonesia

PT Haru Energy Tbk (formerly Tanito Harum)

- PT Mahakam Sumber Jaya
- PT. Tambang Damai

PT Kapuas Tunggal Persada

PT Baramulti

- PT Baradinamika Mudasukses
- PT Mitrabara Adiperdana
- PT Antang Gunung Meratus
- PT Sumber Kurnia Buana

PT Palma Mandiri Lestari

PT Toba Bara Sejahtera coal mining group

- PT Adimitra Baratama Nusantara (“ABN”)
- PT Indomining (“IM”) - operating; and
- PT Trisensa Mineral Utama (“TMU”)

PT Delma Coal Project

PT Jembayan Muarabara Coal

PT Muara Wahau Coal

PT Rantau Nangka Coal

PT Jambi Coal

PT Senamas Energindo Mineral

PT Tambang Batubara Ombilin

PT Sumber Tambang Rejeki

PT Borneo Sumber Tambang

PT Arutmin Indonesia

- Asum Asum, Mulia Project

PT Borneo Prima

PT. Tawabu Mineral Resources

PT Artha Jaya Sendawar

PT. Bukit Enno Persada Bahari

PT Pakar Coal Project

PT Cahaya Alam Sejahtera

PT Kalimantan Energy Lestari

PT. Laut Paser Bersinar An-Nabih

PT Tuhup Coal Mining

PT Sendawar Coal Project

PT Erasmus

PT Pinang Coal – North Sebuk

PT Sungai Malam

PT Asmin Koalindo Tuhup

PT Laung Coal Project

45 Projects

INDONESIA ANNUAL COAL PRODUCTION

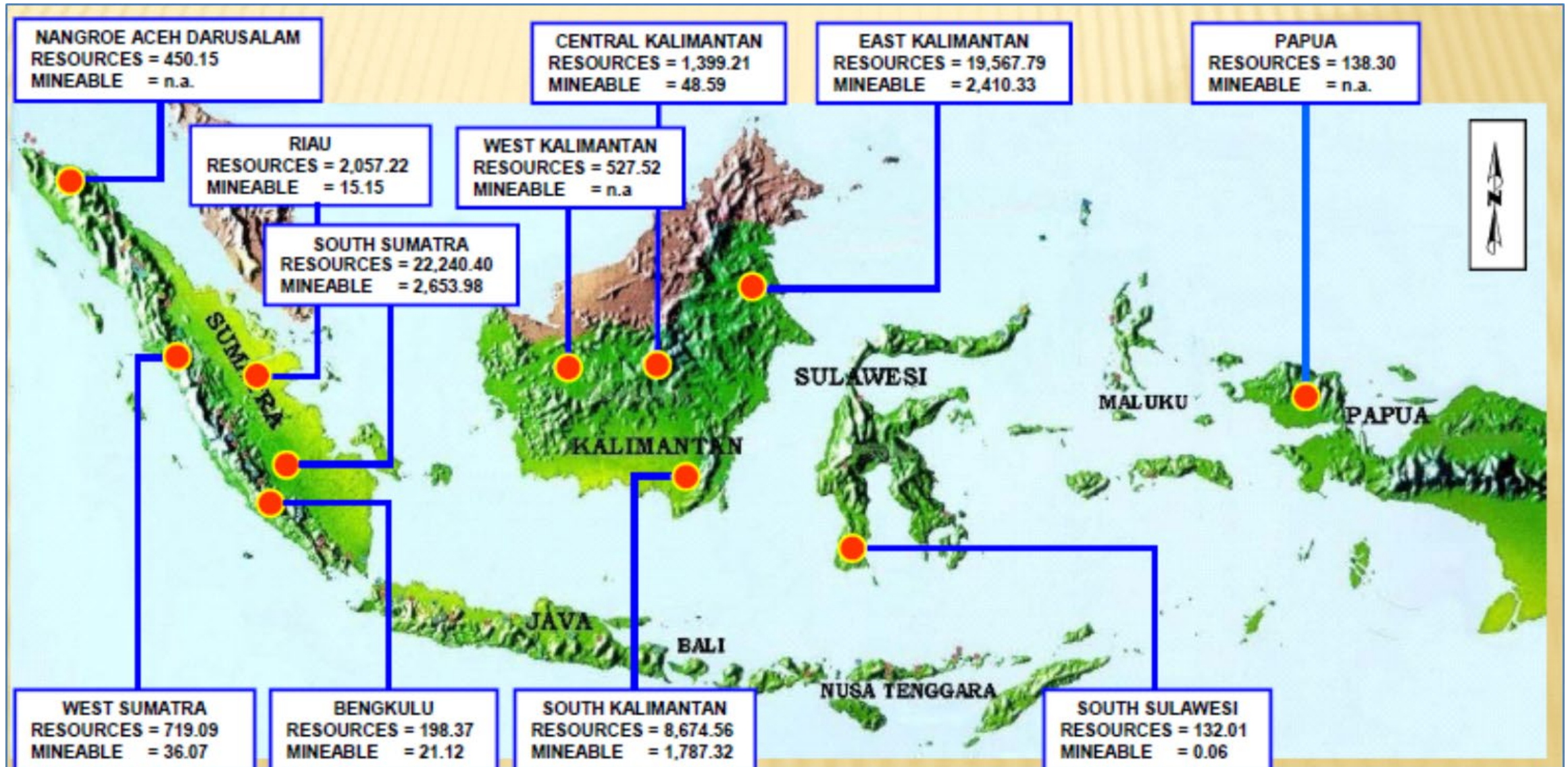
The background image shows a large-scale coal mining operation. In the foreground, a yellow Hyundai excavator is positioned on a dark, rocky surface, likely a coal pile or a cleared area. To the right, a green dump truck is visible, and further back, another truck is partially seen. The middle ground features a steep, exposed earth bank with visible horizontal layers of soil and rock. Two workers in white protective gear are standing on the upper part of this bank. The background is filled with a dense forest of green trees under a clear blue sky.

- **1989 – 3 Mtpa**

- **2005 – 450 Mtpa** – Replaced Australia as world's largest exporter of coal

- **2025 – 800 Mtpa** (over 800 coal mines)

INDONESIAN COAL RESOURCES



Estimates by ESDM circa 2010

INDONESIAN COAL RESOURCES

- East Kalimantan (>75Bt)
- KPC (beyond 200m) (>5Bt)
- South Kalimantan (>40Bt)
- Central Kalimantan (>20Bt including **10Bt Coking Coal**)
- South Sumatra (>75Bt)
- East Sumatra (>10Bt)

Ball Park 200Bt – 250Bt

Eocene and Miocene

INDONESIAN COAL QUALITY

THERMAL

- Raw Ash (2% - 5%)
- Sulphur (0.1% - 0.5%)
- Total Moisture (35% - 50%)
- CV (3500 – 4500 Kcal/Kg)



ECO COAL

COKING

- Raw Ash (2% - 8%)
- Sulphur (0.4% - 0.5%)
- Phosphorus (0.001 – 0.01%)
- Total Moisture (3% - 5%)
- CSN 9
- V.M. (19%- 30%)
- CSR (50% - 62%)
- Vitrinite (80% - 95%)

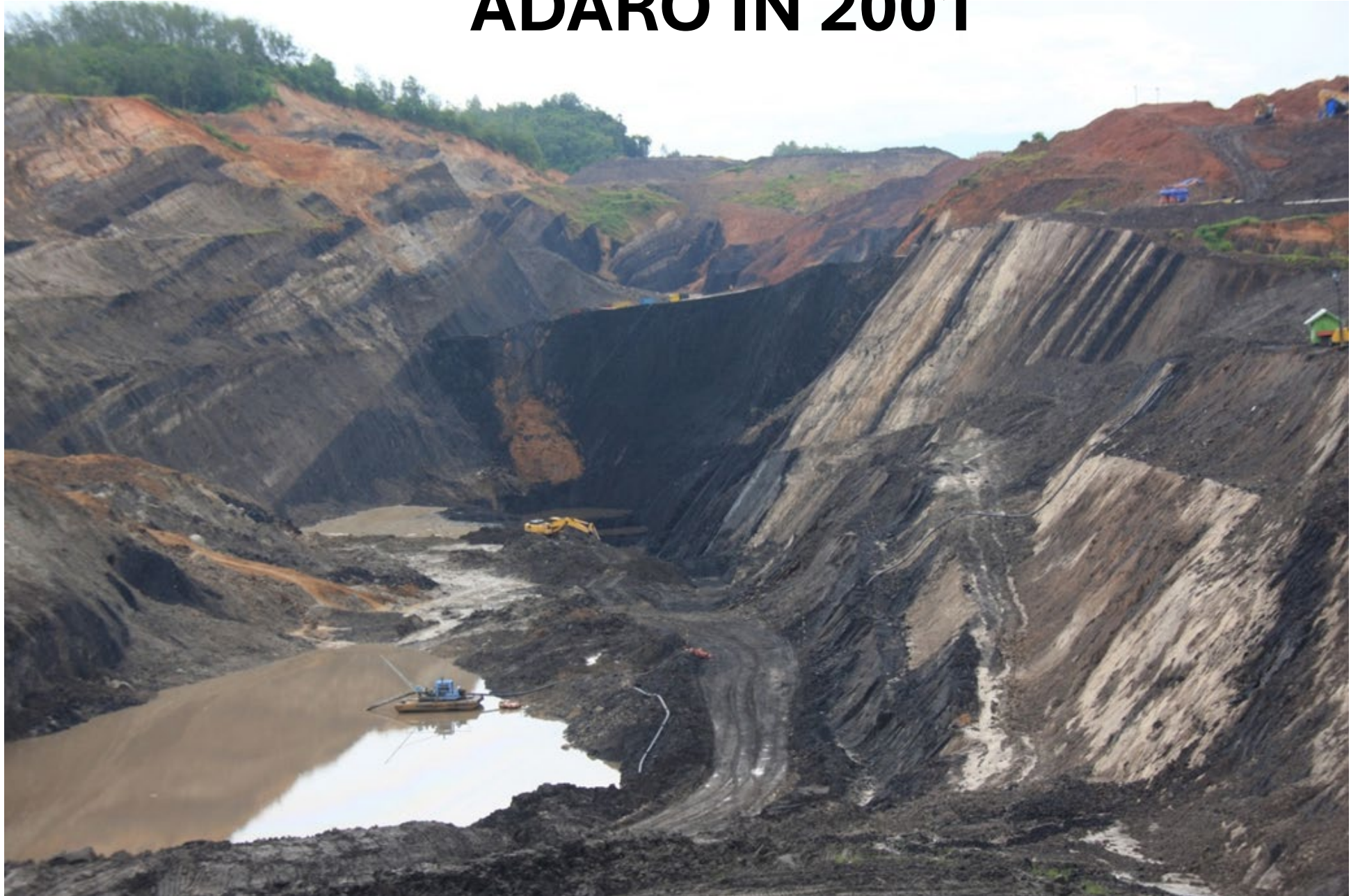


INDONESIA TOP 10 COAL EXPORTERS 2024

Coal Exporters in Indonesia	Export value	Export Quantity
Adaro Energy	\$3.2 billion	75 million tons
Bumi Resources	\$2.9 billion	60 million tons
Kaltim Prima Coal	\$2.6 billion	58 million tons
Berau Coal Energy	\$1.8 billion	35 million tons
Indika Energy	\$1.5 billion	30 million tons
PT Bayan Resources	\$1.3 billion	25 million tonnes
PT Bukit Asam	\$1.2 billion	24 million tons
PT Harum Energy	\$1.1 billion	20 million tons
PT ABM Investama	\$950 million	18 million tons
PT Golden Energy Mines	\$900 million	16 million tons

AVERAGE PRICE
US\$40 – US\$50/tonne

ADARO IN 2001



ADARO IN 2016



Mongolia's Coal Industry

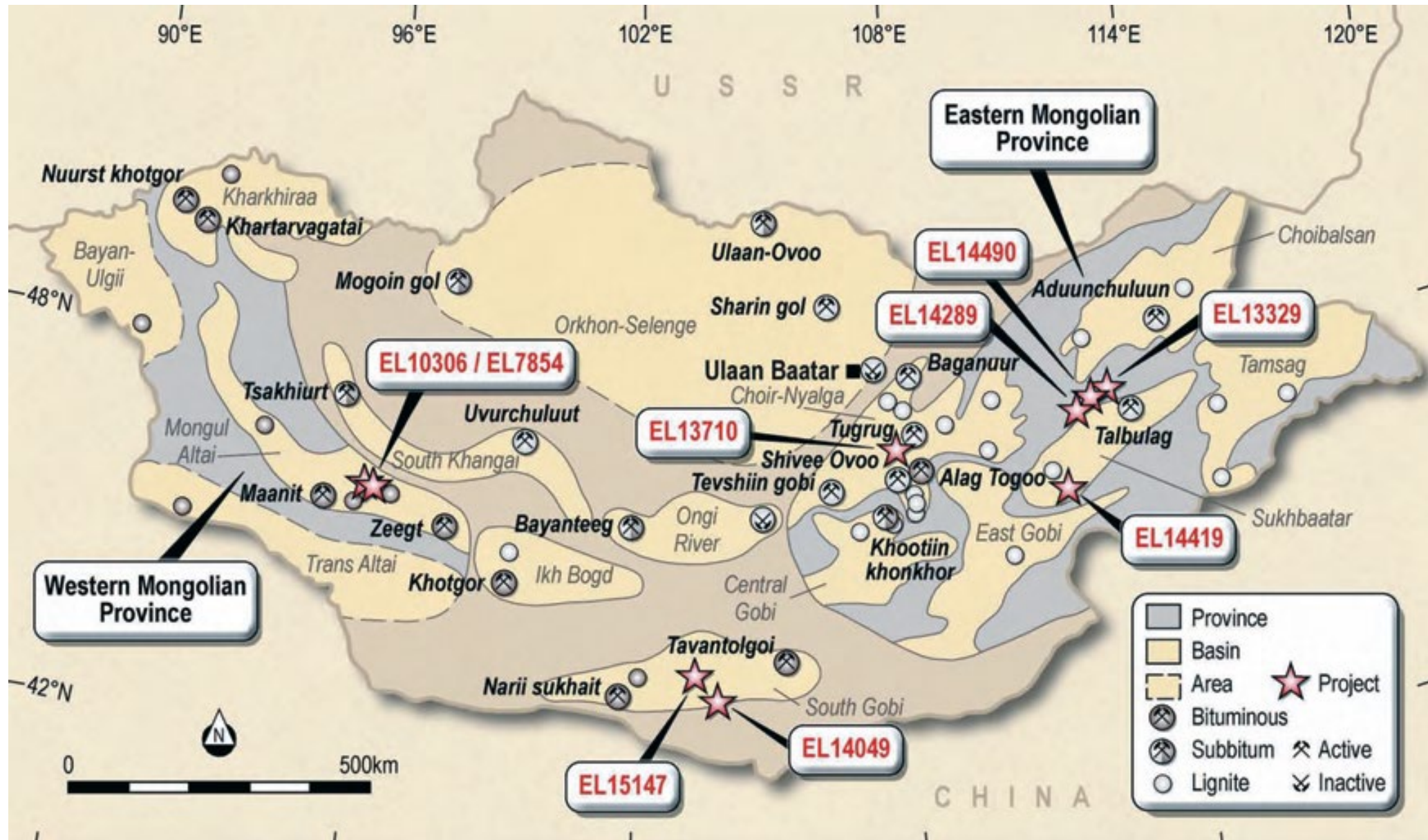
Over 300 Coal Deposits

Resources >150Bt

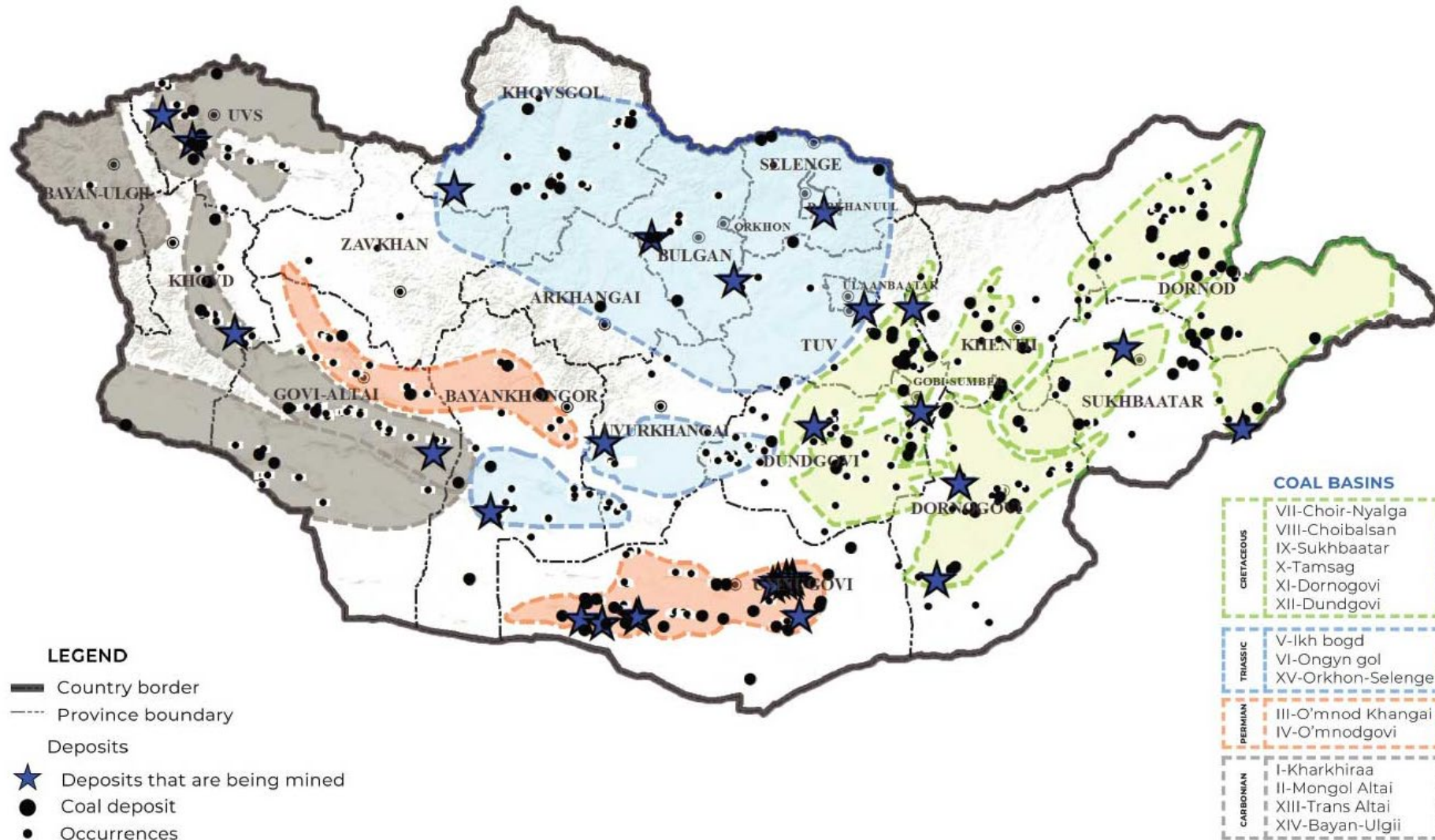
Coking and Thermal Coal

**Carboniferous, Permian, Jurassic,
and Cretaceous**

Mongolia's Coal Industry



Mongolia's Coal Industry



Mongolia's Coal Industry



Mongolia's Coal Industry

Excellent Quality Coking Coal

Biggest Problem:

Land Bound – no access to seaports

Consequently, only one customer

Mozambique's Coal Industry

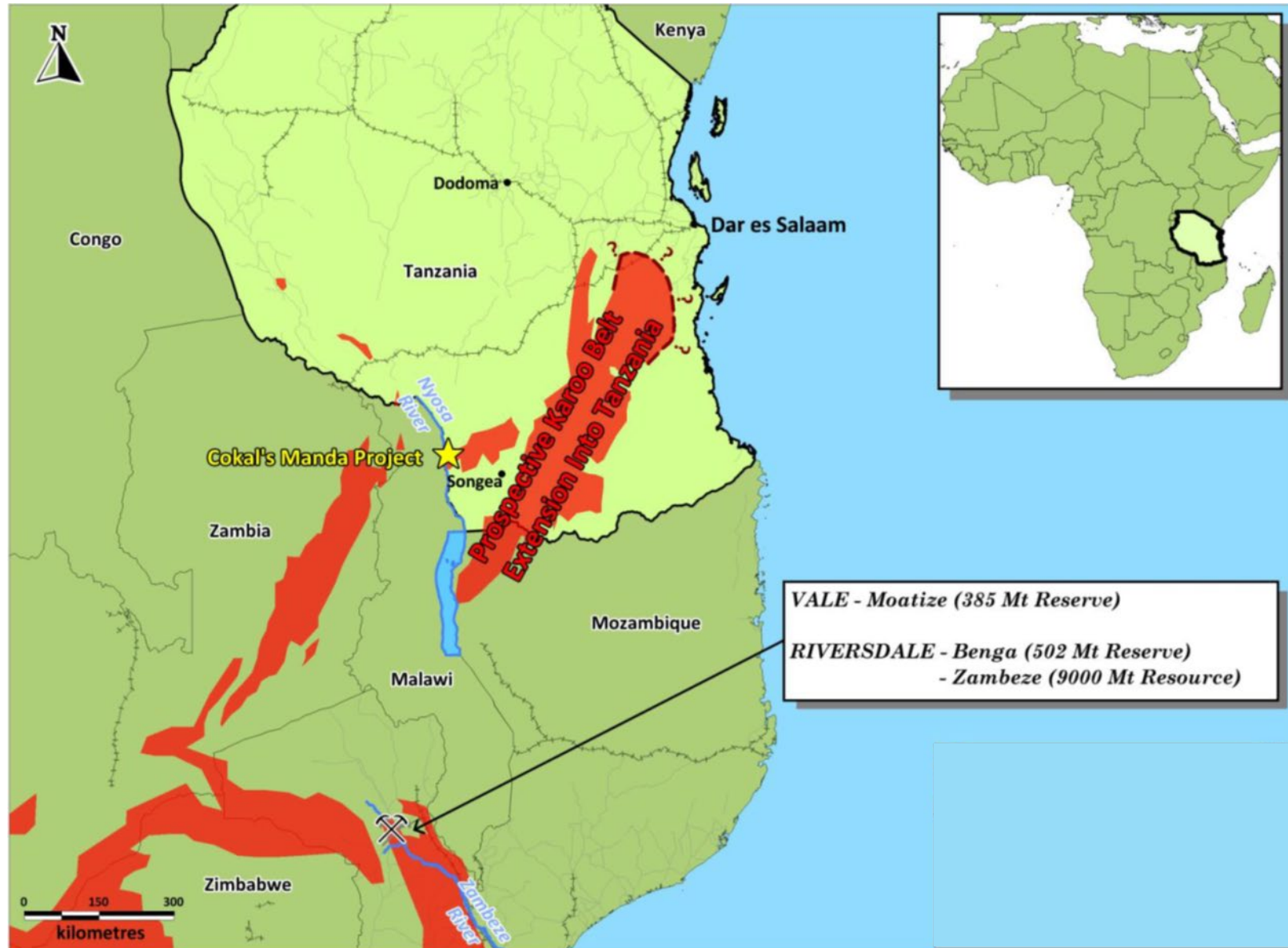
Resources >100Bt

Coking and Thermal Coal

Late Permian

Mozambique's Coal Industry

Karoo Super Group



Mozambique's Coal Industry



Mozambique's Coal Industry



Mozambique's Coal Industry

Poor railways, ports put brake on Mozambique's coal rush - Reuters

Port of Beira



Loading from Barge



Mozambique's Coal Industry

**Logistics
Problem can
be Solved**

Zambese River →

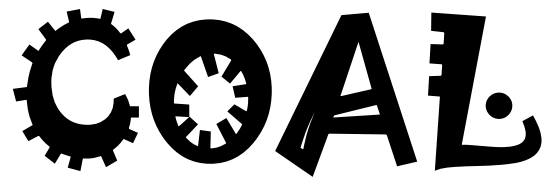


Meanwhile
Back at the Ranch

NSW COAL INDUSTRY TURNED UPSIDE DOWN



NO MORE NEW COAL MINES FOR THE NEXT 25 YRS

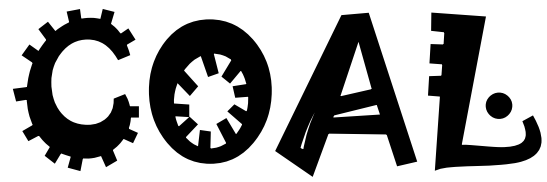


The Mineral to Blame



Report warns **AI data centre** boom threatens Australia's energy transition

Analysis commissioned by **Greenpeace** Australia Pacific said the current and projected energy use from a new wave of large, power-hungry data centres added to the challenge of climate policies aimed at **closing coal-fired power stations** and building enough renewable energy to replace them.



The Mineral to Blame



Climate change (caused by coal-fired power stations) becoming a major driver of child marriage across Asia and the Pacific

The growing intensity of **natural disasters** across Asia is leading to increasing numbers of child marriages of girls, according to aid organisations.

e.g. Shenhua Watermark Coal Project



The project initially commenced in 2008 awarding the tender of an exploration licence, at the cost of A\$300 million



Add an further A\$300million exploration, feasibility study, ESG, legal, etc



In April 2021, the NSW Govt repaid \$100 million for Shenhua to withdraw its mining lease application and surrendered its development consent.

As of 19th March 2026

NSW GOVT POLICY:

The NSW Government will:

- **prohibit future greenfield coal development**, meaning that coal mining cannot occur on a site that is not adjacent to, and not related to, an existing coal mining authorisation
- **no longer allow release of new areas for greenfield coal exploration** and abolish the Strategic Release Framework for coal
- **relinquish Government-held coal exploration titles and retire coal core storage sheds.**

NSW GOVT BOASTED >30 COAL PROJECTS ON THE BOOKS

19th March 2026

**ZERO COAL
PROJECTS
ON THE BOOKS**

=

**ZERO COAL
RESOURCES
IN NSW
ACCORDING TO JORC**

The New Version of the JORC Code

Clause 4.7 states:
‘Modifying Factors’ are
considerations used to assess
and estimate Exploration Targets,
Mineral Resources, and/or Ore
Reserves

The New Version of the JORC Code

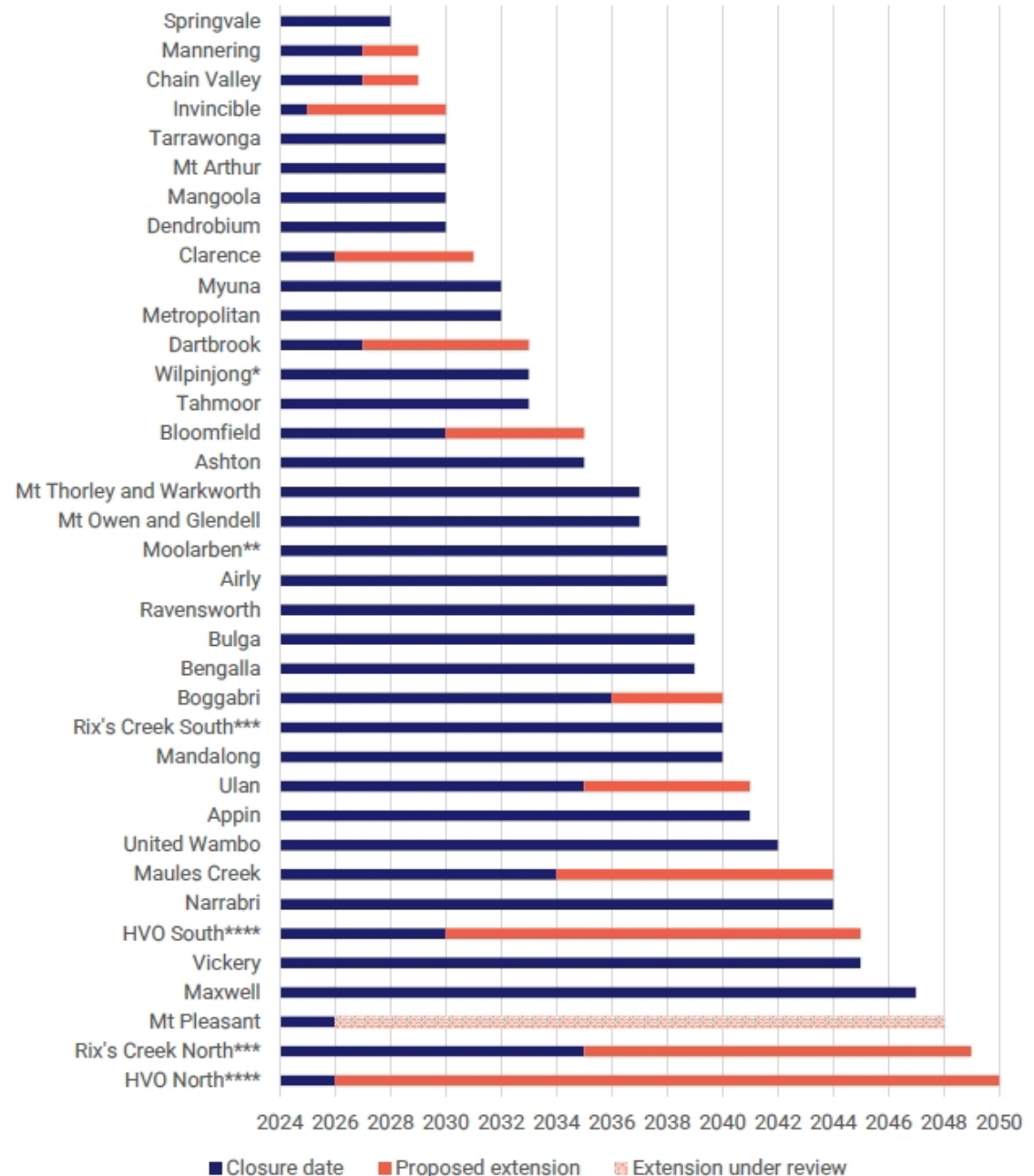
“Modifying Factors include, but are not restricted to mining, processing, metallurgical, infrastructure, economic, marketing, **legal, environmental, social and governance (ESG) and **regulatory factors**.”**

LOST BENEFITS OF >30 COAL PROJECTS

- **10,000 highly paid employees**
- **30,000 other jobs created**
- **\$Billions in Govt Royalties and Taxes**
- **Cheaper energy, lower inflation**

**Over the Next
25 Years
Every single coal
mine in NSW will
reach its End of Life**

Figure 1: Current and proposed closure dates for operational coal mines in NSW
(September 2025)



Fraser Institute Annual Survey of Mining Companies

Investment Attractiveness Index

		Score					Rank				
		2025	2024	2023	2022	2021	2025	2024	2023	2022	2021
	Indonesia*	68.03	62.90	45.17	**	57.84	35/68	36/82	56/86	**	50/84
Australia	New South Wales	70.21	47.68	68.26	71.54	66.48	28/68	62/82	30/86	23/62	33/84
	Northern Territory*	68.10	62.62	81.72	84.64	78.35	33/68	38/82	8/86	6/62	14/84
	Queensland	79.75	61.99	78.17	78.55	77.13	13/68	39/82	13/86	13/62	18/84
	South Australia*	89.19	63.14	75.60	83.37	81.70	4/68	35/82	19/86	9/62	10/84
	Tasmania*	77.00	39.25	65.25	54.74	76.81	17/68	71/82	33/86	50/62	19/84
	Victoria*	59.52	47.38	50.84	55.11	64.13	49/68	63/82	48/86	47/62	39/84
	Western Australia	87.01	76.69	86.58	88.26	90.21	6/68	17/82	4/86	2/62	1/84

A Word on New Zealand

**“What Happens When
Mines Inspectors
Are Eliminated”**

PIKE RIVER

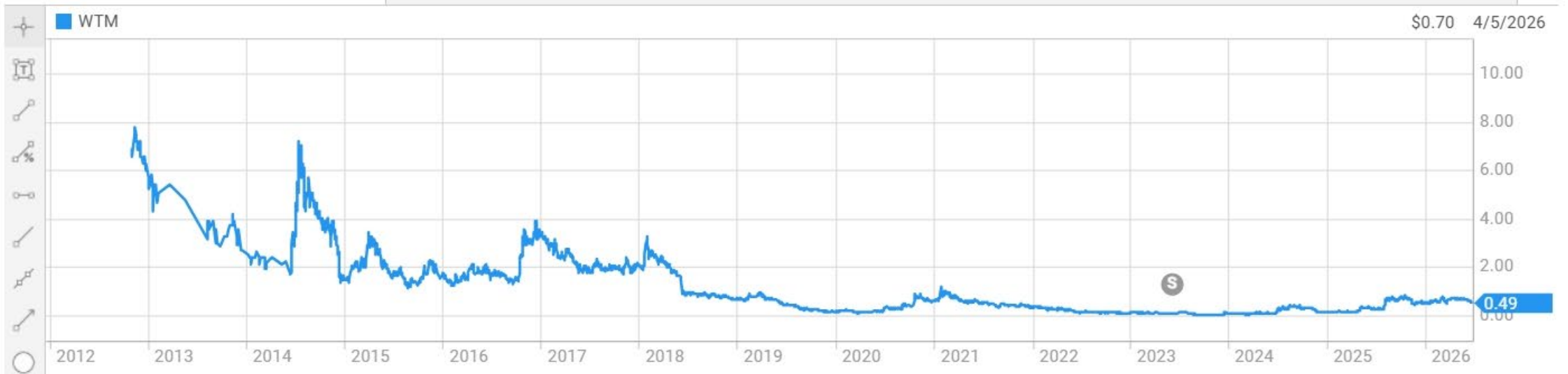


A Final Word on ASX

**“Having a Bad Hair Day”
(Decade)**

Juniors Beware

Waratah Minerals – (metals)



Cokal Limited – (coking coal)

