Australian Government

Geoscience Australia

Review of Australia's Uranium Exploration, Resources and Production

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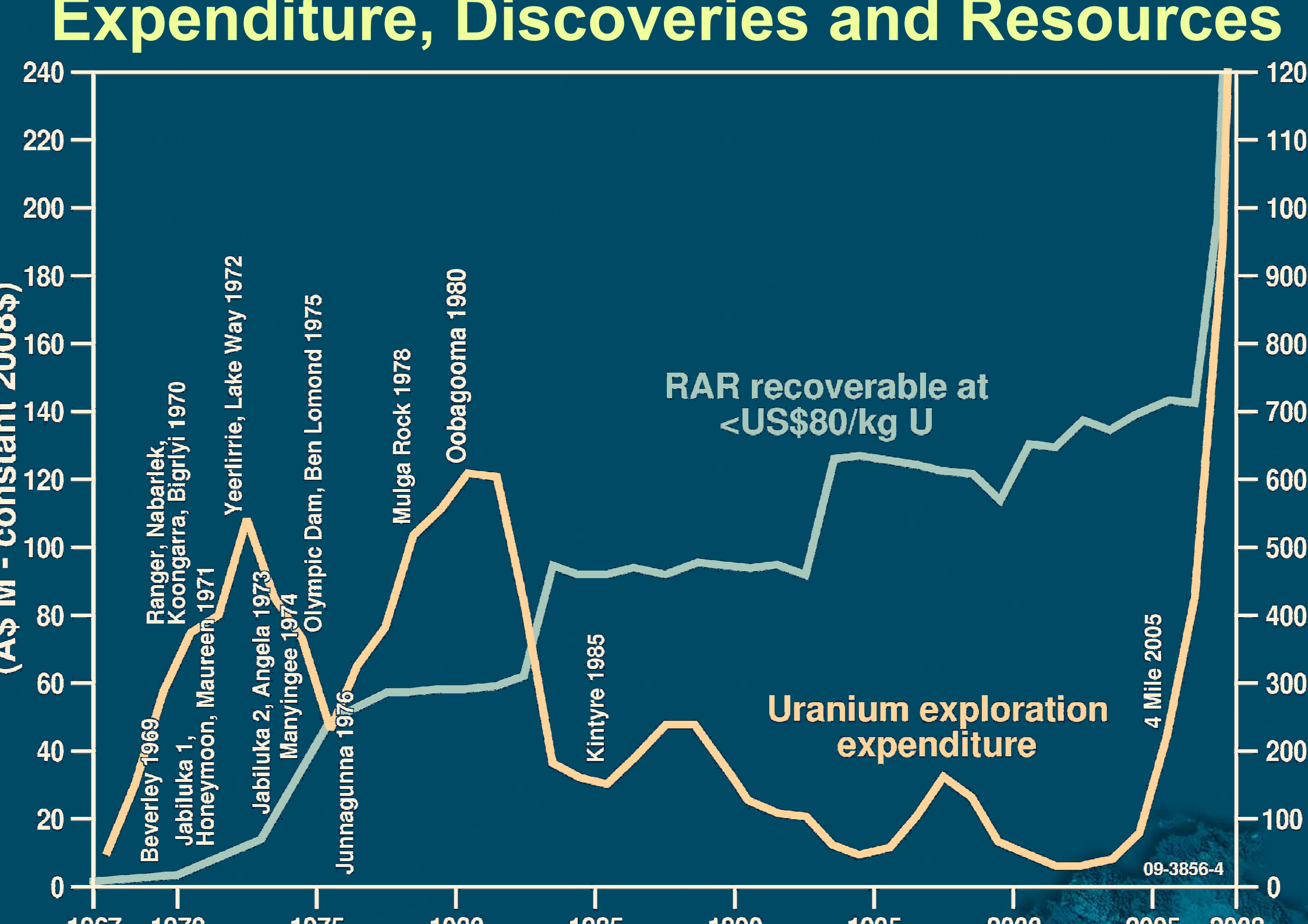
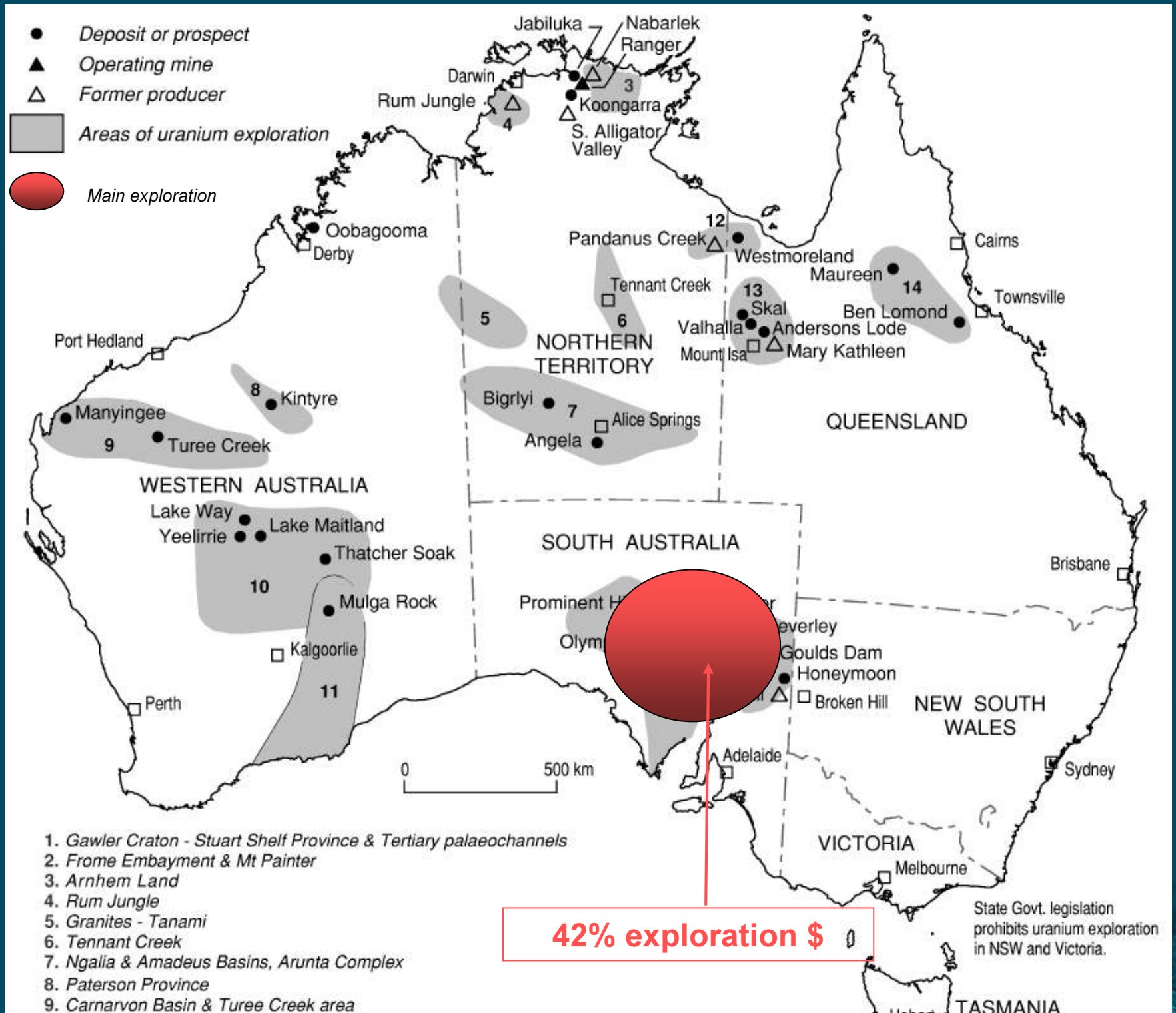
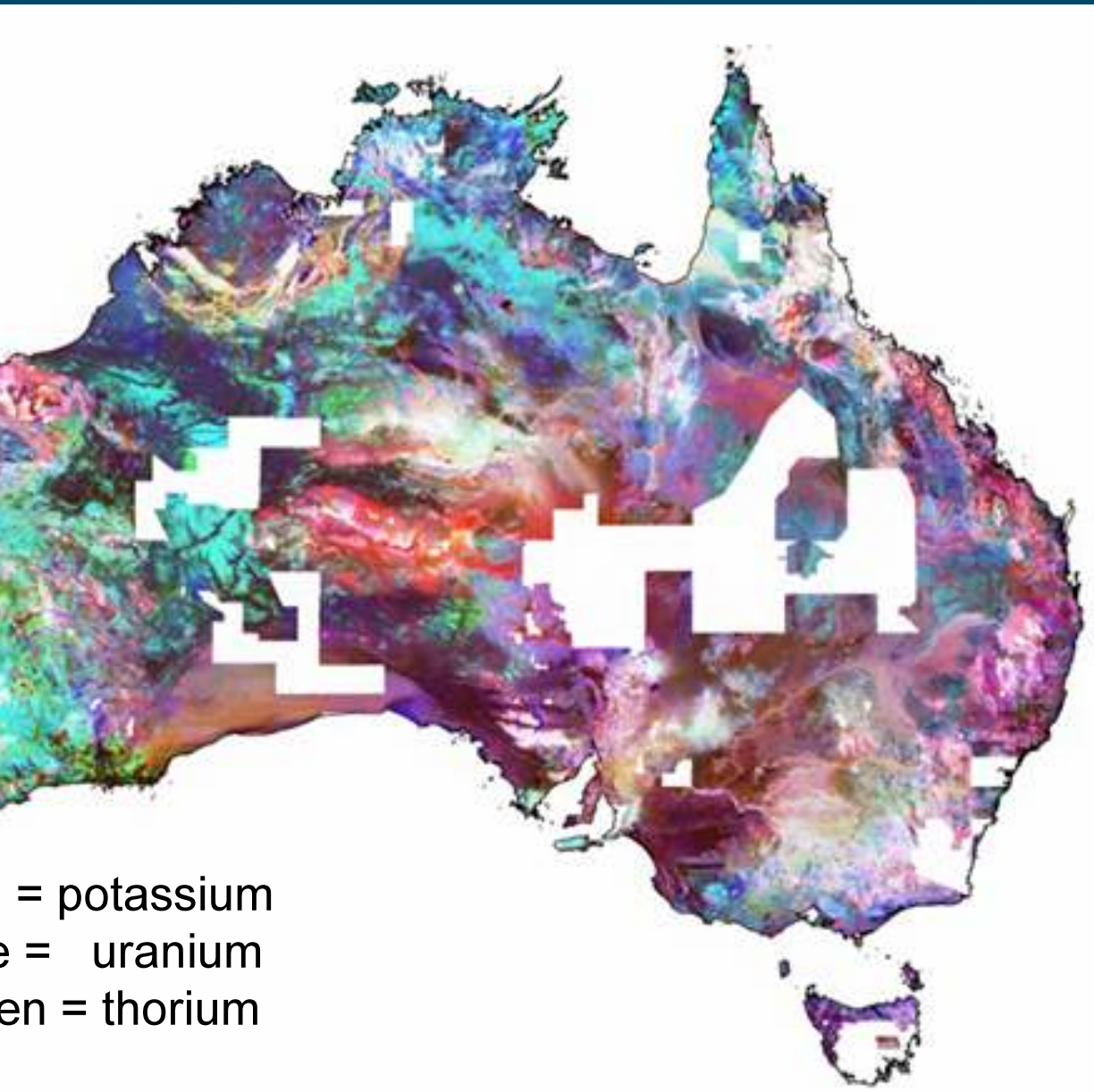
Expenditure, Discoveries and Resources




Deposit or prospect
Operating mine
Former producer
Areas of uranium exploration
Main exploration
Jabiluka
Nabarlek
Ranger
Darwin
Rum Jungle
Koongarra
S. Alligator Valley
Oobagooma
Derby
Pandanus Creek
Westmoreland
Cairns
Maureen
Tennant Creek
Townsville
Skal
Ben Lomond
Valhalla
Andersons Lode
Mount Isa
Mary Kathleen
Port Hedland
NORTHERN TERRITORY
Kintyre
Bigrlyi
Alice Springs
Angela
QUEENSLAND
Manyingee
Turee Creek
WESTERN AUSTRALIA
Lake Way
Lake Maitland
Yeelirrie
Thatcher Soak
SOUTH AUSTRALIA
Brisbane
Mulga Rock
Kalgoorlie
Goulds Dam
Honeymoon
Broken Hill
NEW SOUTH WALES
Perth
Adelaide
Sydney
0
500 km
VICTORIA
Melbourne
State Govt. legislation prohibits uranium exploration in NSW and Victoria.
TASMANIA
1. Gawler Craton - Stuart Shelf Province & Tertiary palaeochannels
2. Frome Embayment & Mt Painter
3. Arnhem Land
4. Rum Jungle
5. Granites - Tanami
6. Tennant Creek
7. Ngalia & Amadeus Basins, Arunta Complex
8. Paterson Province
9. Carnarvon Basin & Turee Creek area
42% exploration $

New Radiometric Map of Australia



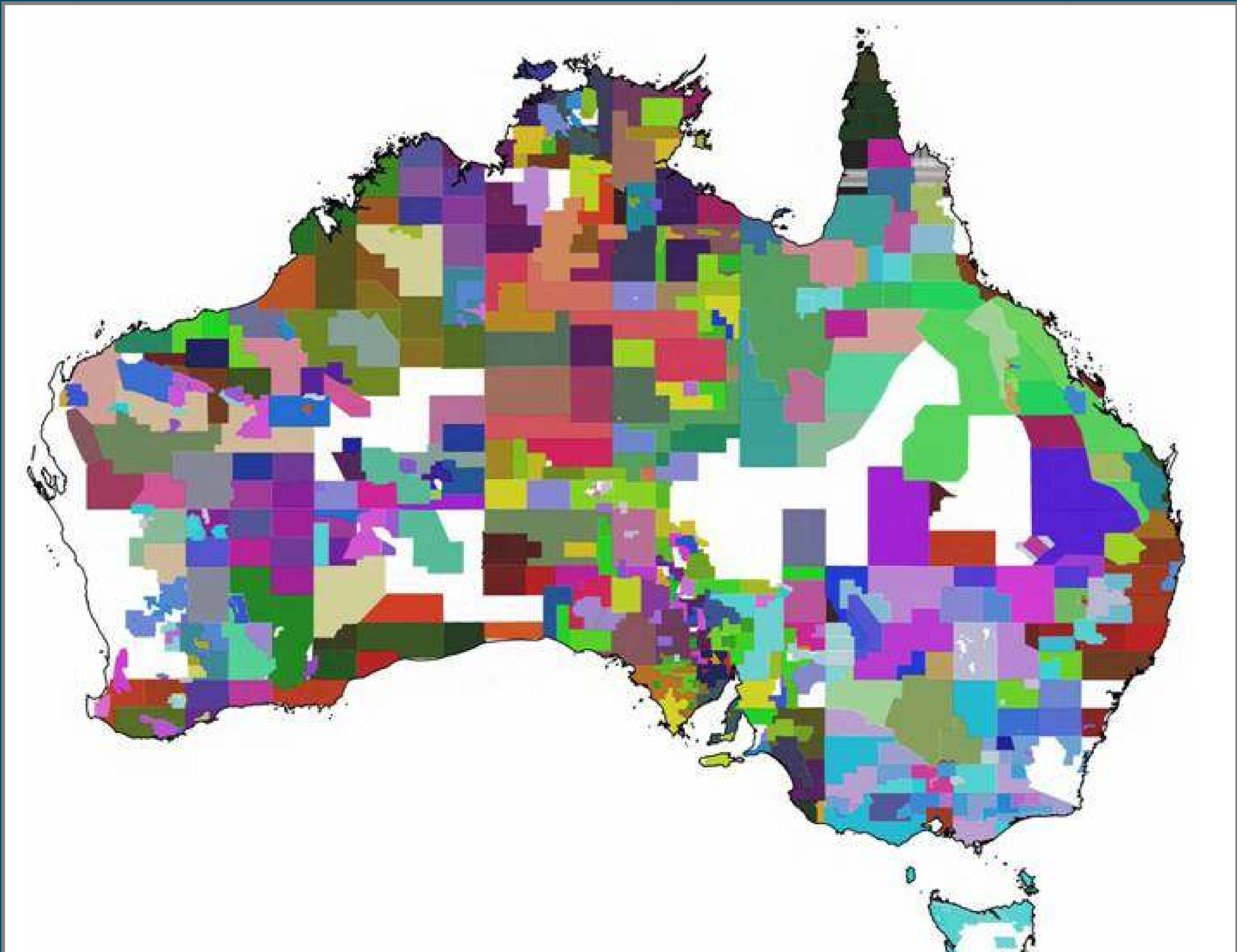
= potassium
e = uranium
en = thorium

- Uranium explorati
- Geothermal exploration
- Regolith and bedr geology mapping

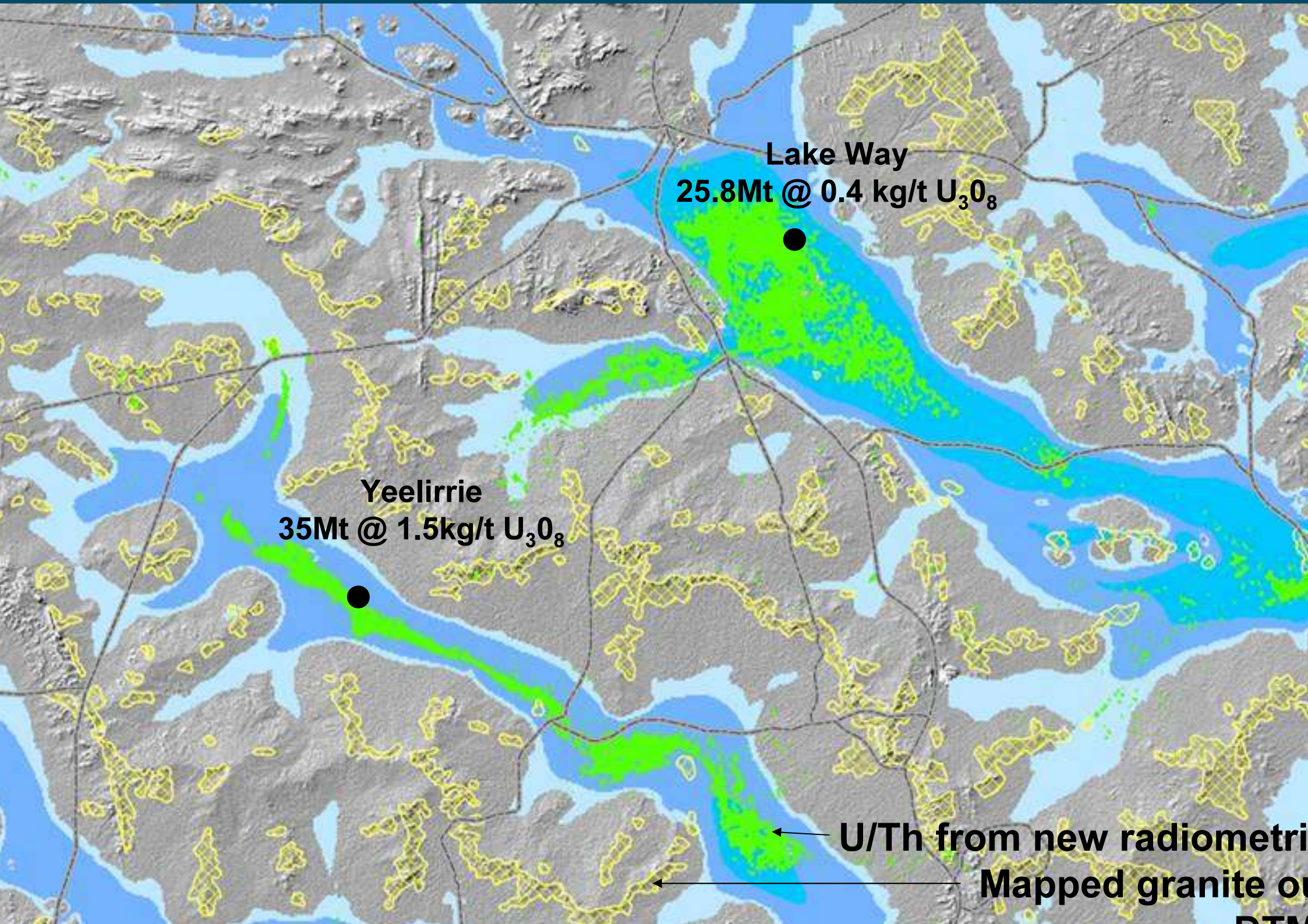
- Complements the National Magnetic Map and National Gravity Map

Download at www.geoscience.gov.au/gadds

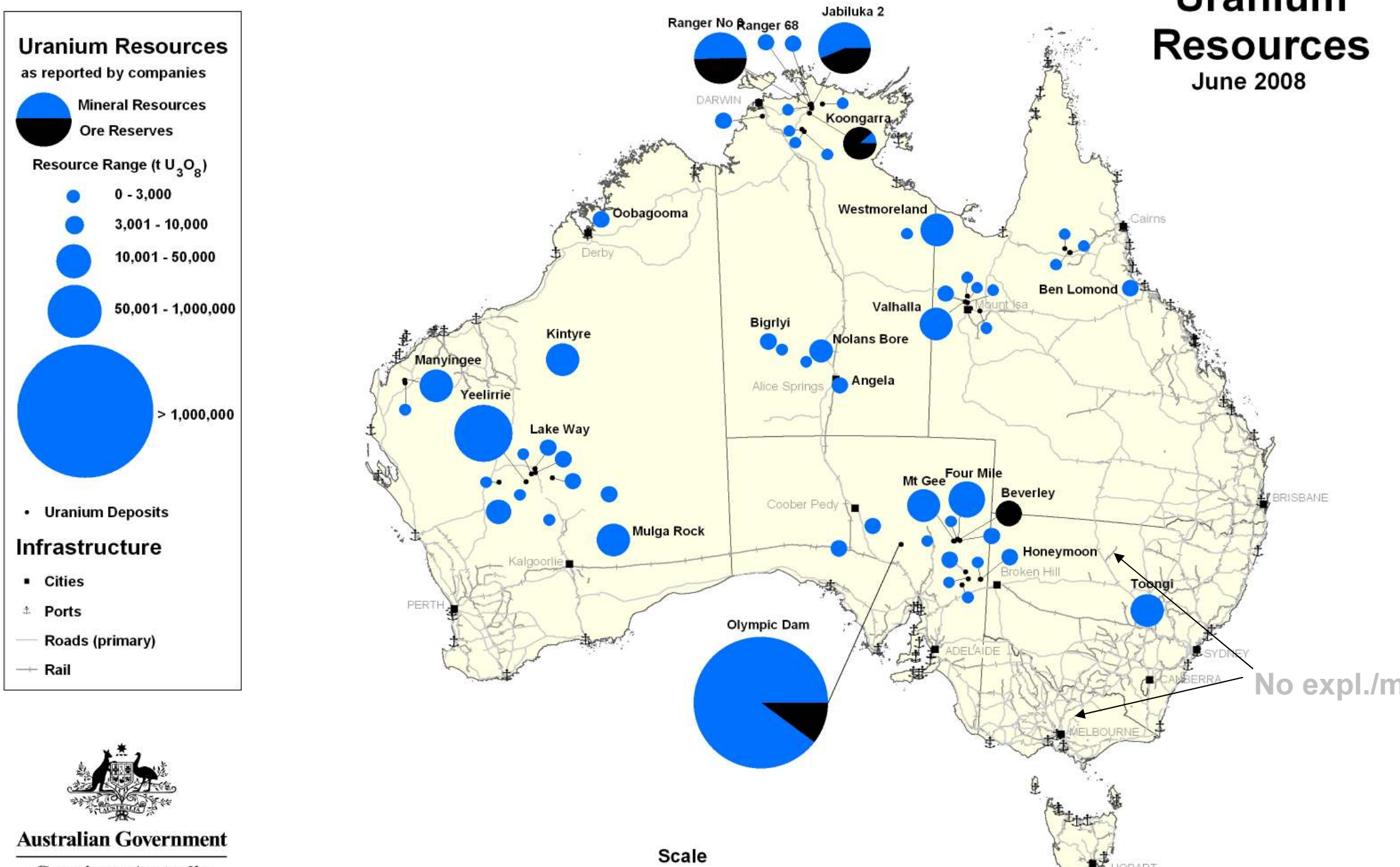
...Problem in



Common base for stitching and levelling previous radiometric surveys


Lake Way
25.8Mt @ 0.4 kg/t U_3O_8
Yeelirrie
35Mt @ 1.5kg/t U_3O_8
U/Th from new radiometri
Mapped granite ou

Uranium Resources
June 2008



ustralia's uranium resources (December 200

	<US$80/kg U Tonnes U	US$80-130/kg U Tonnes U	<US$130/kg Tonnes U
RAR	1,163,000	13,000	1,176,000
Inferred esources	449,000	48,000	497,000

ustralia's uranium resources (December 200

sing the terminology of the Uranium Group:

➔ Reasonably Assured Resources (RAR) recoverable costs up to US$80 / kg U*

= 1,163,000 tonnes U

= 38% of world resources in this category

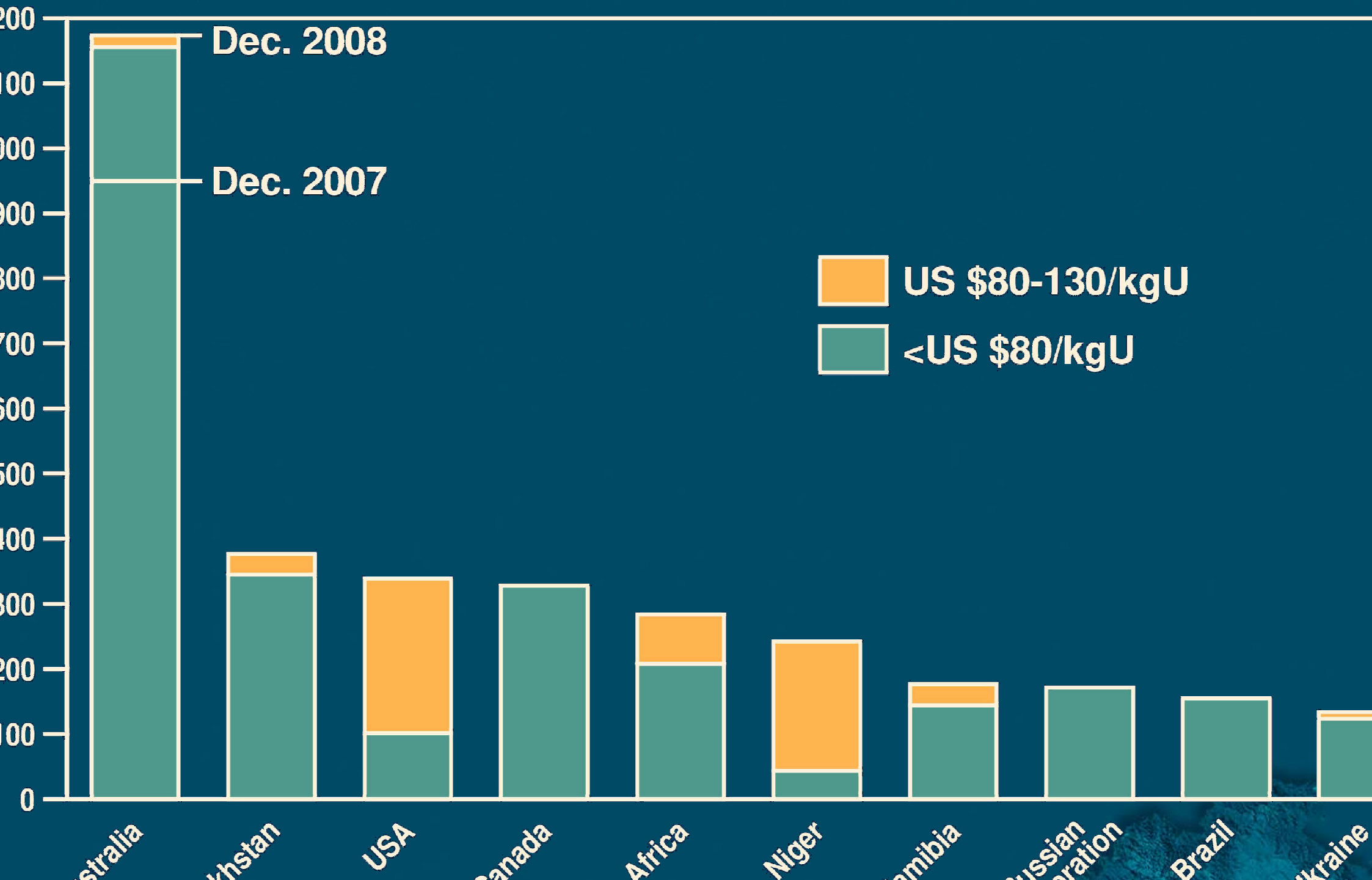
= major increase (18%) over previous year

➔ Olympic Dam, Ranger 3, Four Mile

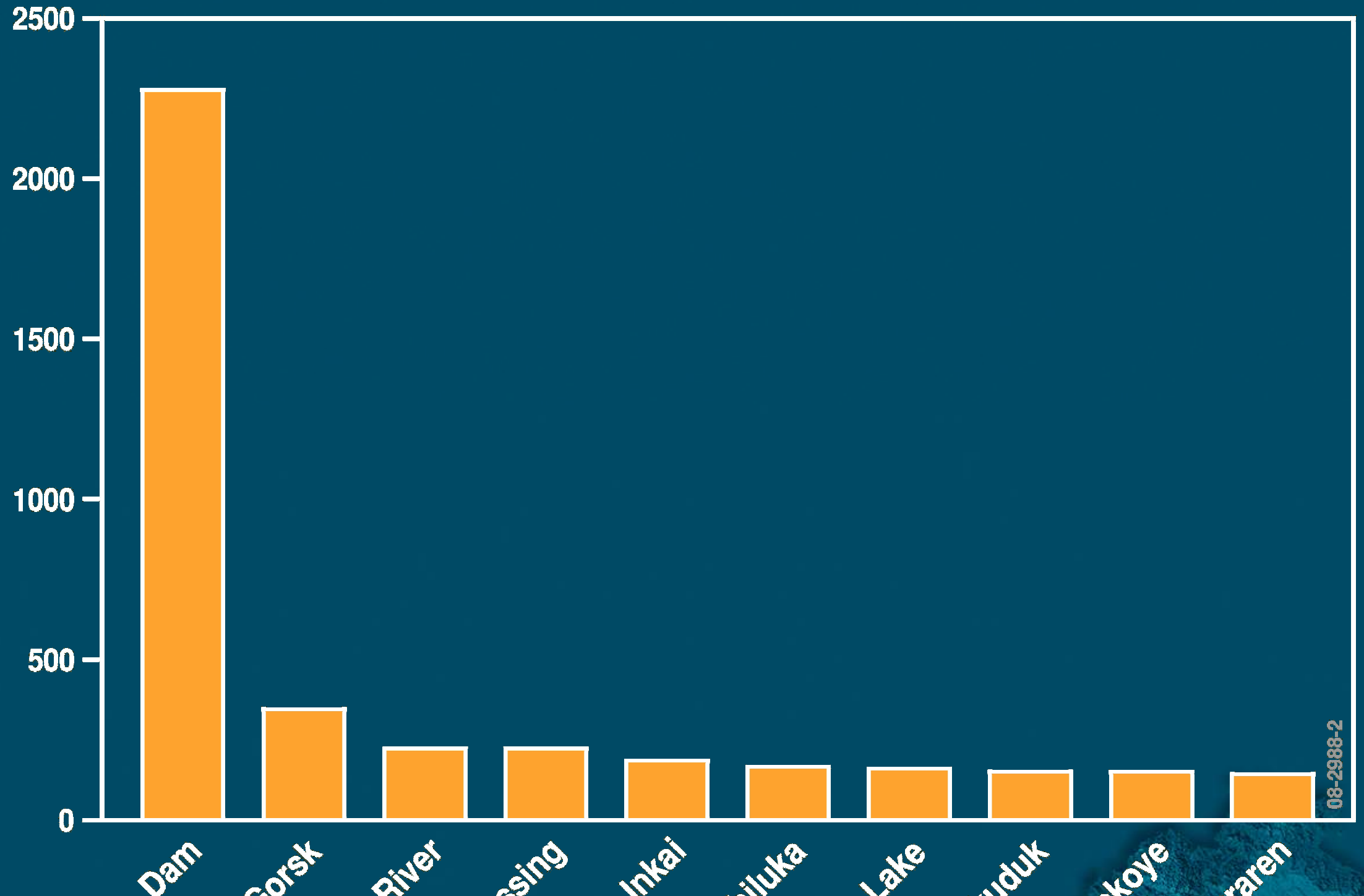
tal Identified Resources (RAR + Inferred) < US$80 / kg U
= 1,612,000 tonnes U (33% of world total)

S$80 / kg U = US$30 / lb U3O8 [current spot prices = US$50 / lb U3O8]

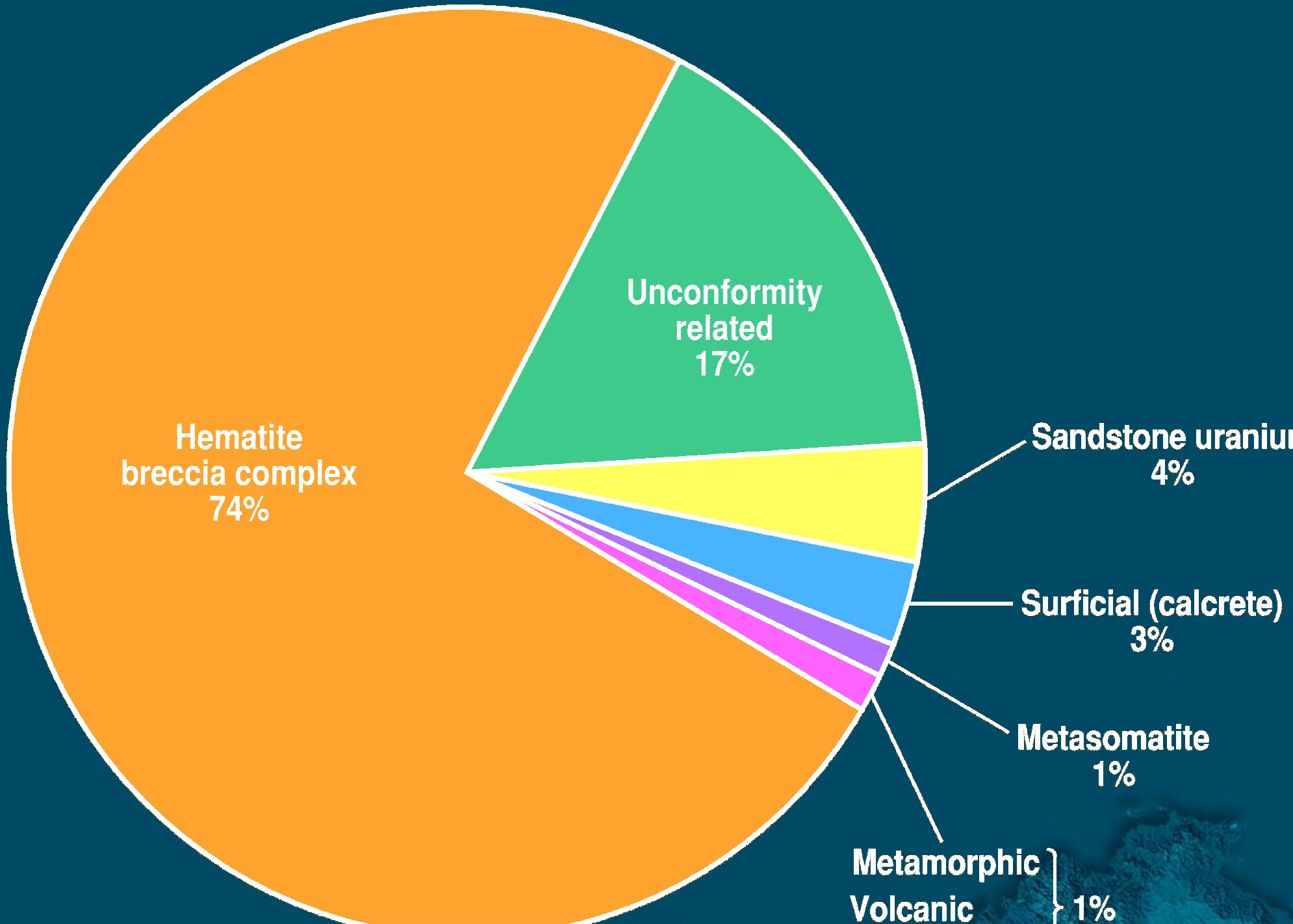
Uranium Resource Countries (Dec. 2008)



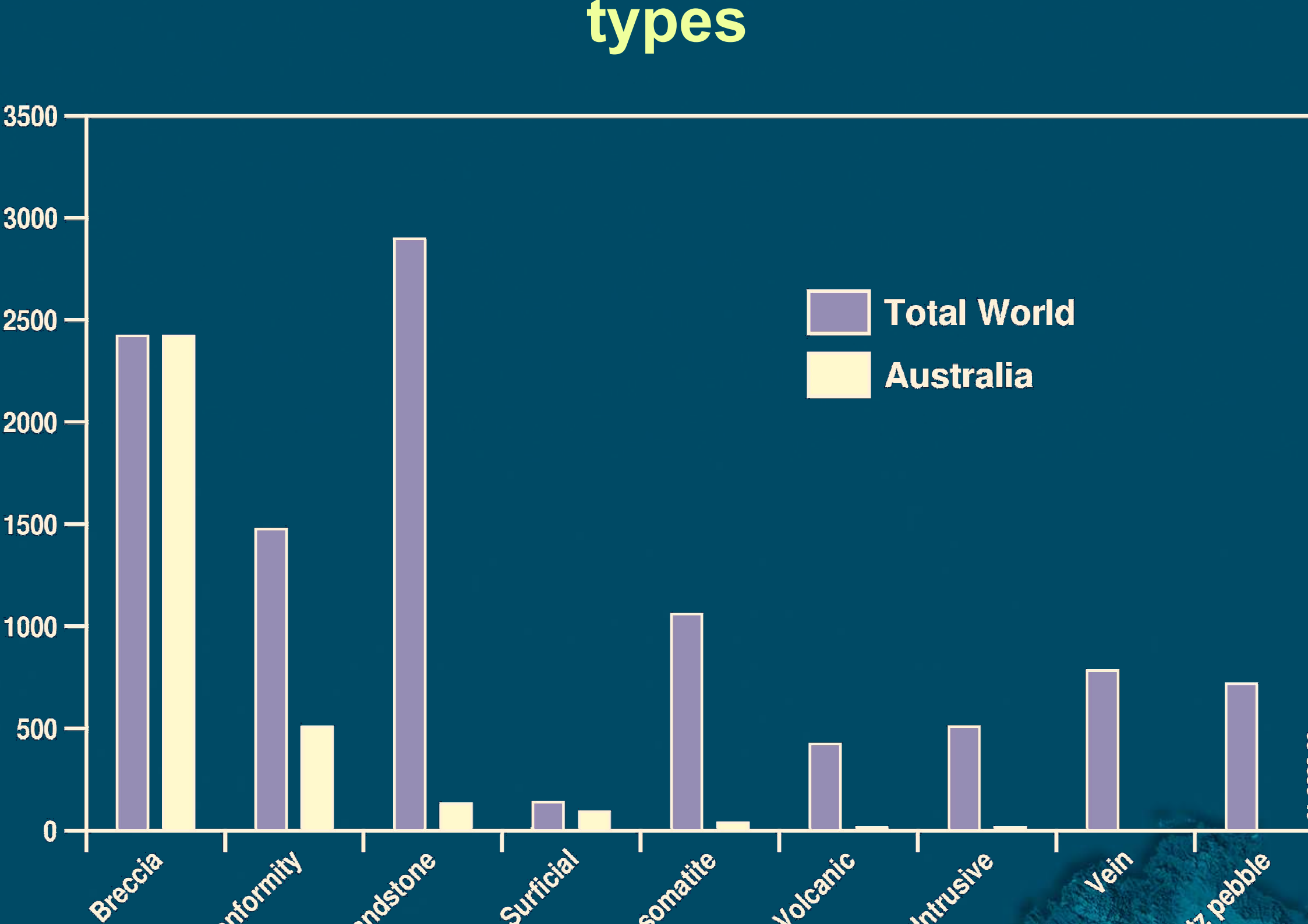
resources (Dec. 2007)



(Resources + Production)



types


3500
3000
2500
2000
1500
1000
500
0
Total World
Australia
Breccia
nformity
ndstone
Surficial
somatite
Volcanic
Intrusive
Vein
z pebble

World mine production 44,019 tU in 2008 (51,910 t U_3O_8)
7% higher than 2007

	Tonnes U	Share of Total (%)
Canada	9000	20
Kazakhstan	8521	19.4
Australia	8432	19.2
Namibia	4385	10
Russia	3521	8
Niger	3000	7
Uzbekistan	2338	5
USA	1430	3
Ukraine	808	2
Others	2584	6
TOTAL	44,019	100

Australia's uranium production 2008

Australia produced 9944 t U_3O_8 (8432 t U)
(2% less than for 2007)

- **Ranger 5342 t U_3O_8**
- **Olympic Dam 3943 t U_3O_8**
- **Beverley 659 t U_3O_8**

Mine	Country	Main owner	Mine type	Production (tU) 2007	% of world production 2007	Rank 2006	200
McArthur River	Canada	Cameco	Conventional	7199	17	1	1
Ranger	Australia	ERA (Rio Tinto 68%)	Conventional	4589	11	2	2
Olympic Dam	Australia	BHP Billiton	By - product (copper)	3388	8	5	3
riargunsky	Russia	TVEL	Conventional	3037	7	4	4
Rössing	Namibia	Rio Tinto (69%)	Conventional	2583	6	3	5
Arlit	Niger	Areva/Onarem	Conventional	1750	4	8	6
abbit Lake	Canada	Cameco	Conventional	1544	4	6	7
Akouta	Niger	Areva/Onarem	Conventional	1403	3	7	8
Akdala	Kazakhstan	Uranium One	ISL	1000	2	9	9
Mining Utility#5	Uzbekistan	Navoi	ISL	900	2	10	1
World total from top ten mines				27 392	66		

Olympic Dam – Recent Developments

- Olympic Dam – EIS for OD Expansion was released for public comment in May
  - Large open cut to mine SE portion of deposit
  - Increase annual capacity to
    - 19,000 t U3O8
    - 750,000 t copper
    - 800,000 ounces gold
  - Removal of overburden to start 2010
    - Processing of open cut ore to start 2016
  - Smelter to produce 350,000 t refined copper annually

    + 1.6 Mtpa copper cons with significant levels of U

Ranger Mine – Recent Developments

- Propose to construct heap leach facility to extract 20,000 t U_3O_8 from low grade stockpiled ore
- Construction of plant to treat lateritic ore was completed in 2008 to produce 11,000 t U_3O_8 from stockpiles
- Discovery of large extensions to E of Ranger 3 deposit – Ranger 3 Deeps
  - Clear structural control on ore
- Proposal to develop underground decline to further explore this ore zone

Beverley ISL mine

- New ore zones discovered to S and E of Beverley
- Extension of Beverley lease to allow mining of these lenses
- Development of nearby Four Mile ISL proje currently being considered
- Ion exchange plant to be constructed at Fo Mile and U-bearing resin to be trucked to Beverley plant to recover uranium, then returned to Four Mile for re-use.
- Production from Four Mile scheduled to commence in 2010

Honeymoon ISL project

- Construction of plant commenced in May
- Production to commence in 2010 at 400 t U_3O_8 per year

Other developments

- Yeelirrie deposit (calcrete)
  - BHP Billiton drilling to better define resource and commenced feasibility study for development of open cut mine
  - Outcome of overturning ban on U mining by Western Australian government
- Oban deposit (sandstone)
  - ISL field leach trials approved and will commence this year
- Crocker Well deposit (intrusive)
  - Early discussions with Government to commence EIS process for development of project

Concluding remarks

- Uranium exploration expenditure in Australia has increased rapidly since 2003 to reach record high levels in 2008
- Aust has dominant share of world's low cost uranium resources and is the world's third largest producer
- Mine production in Australia is expected to increase in future years mainly from Olympic Dam, Ranger and Beverley/Four Mile

THANK YOU

Uranium: Geoscience Australia's roles

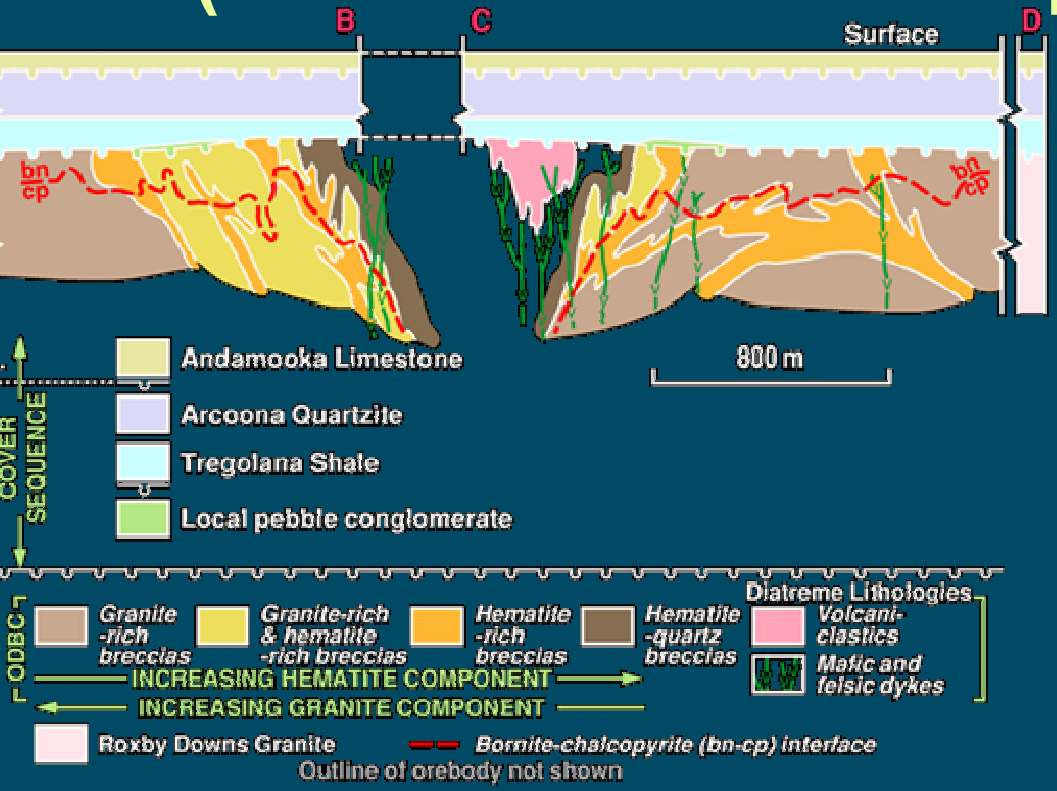
- Provides Australian Government with technical inputs in support of U policy and in relation to Environment Impact Assessments for U projects
- Obtains information (under Atomic Energy Act) from U exploration companies and reports to government on exploration, discovery and resources
- Produces annual estimates of national U resources
  - Reports national U resources to the IAEA / OECD Uranium Group and prepares the Australian chapter of the "Red Book"

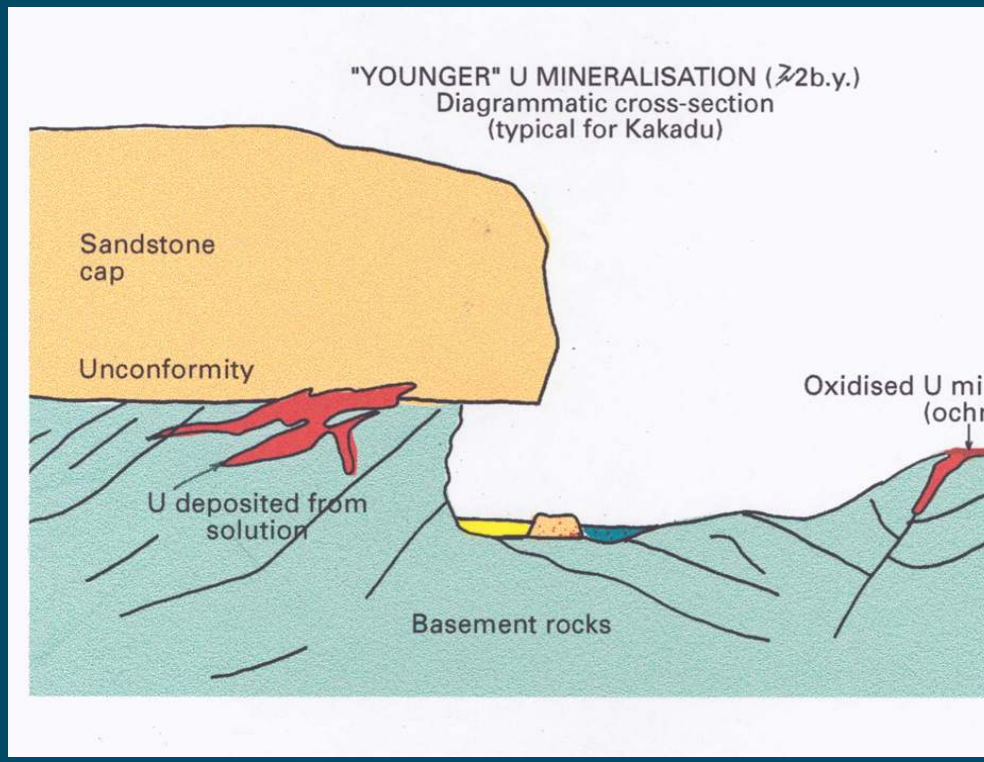
Australia's uranium sales

In 2008: 10,707 t U_3O_8 from Australia were sold to 1[illegible] countries (9048 t U_3O_8 in 2007):

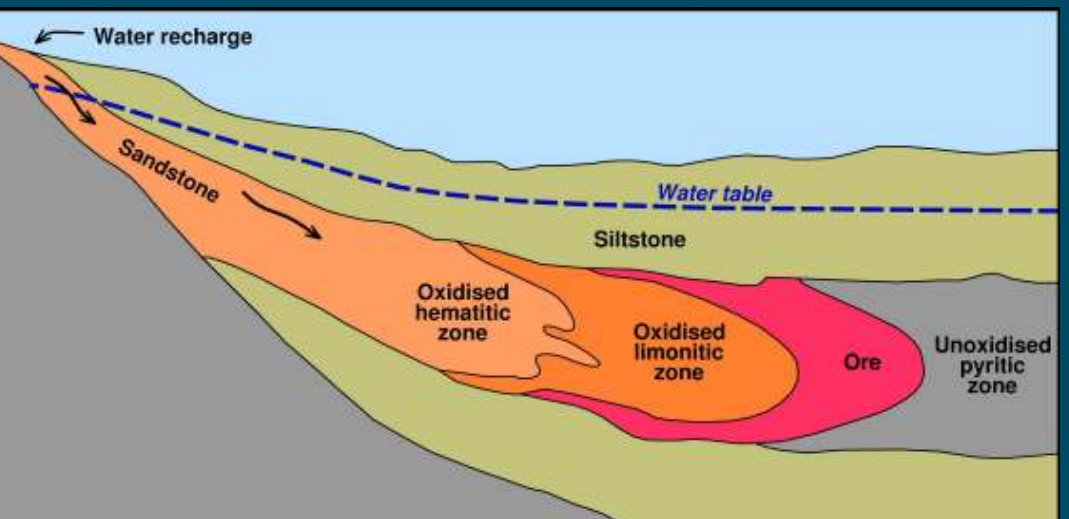
- **US, EU (Finland Germany Spain Sweden Belgium UK) Japan, China, South Korea, Canada**
- **All of Australia's mine production of uranium i[illegible] exported under long-term contracts to countries with which we have nuclear safeguards agreements**
- **Commonwealth Government permits are required for all uranium exports**

(IAEA /Uranium Group Classification Scheme)





Hematite breccia complex (IOCG)



Unconformity