Australian Government
Geoscience Australia

Resourcing Australia's Prosperity

Revealing Australia's net zero potential

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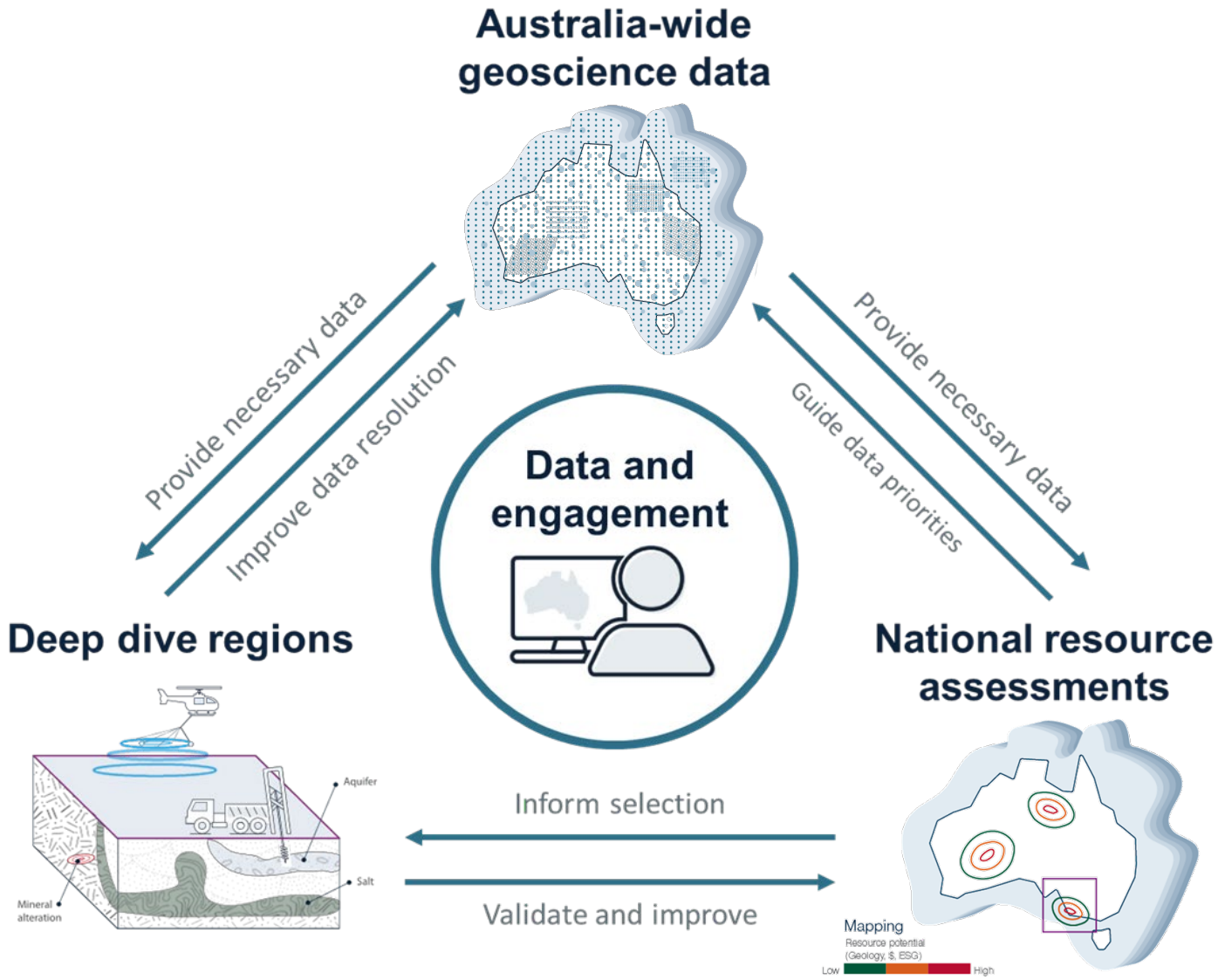
What is Resourcing Australia's Prosperity?



Australia-wide geoscience data

What are Australia-wide geoscience data?

- The building blocks used to see and understand what lies below the land surface and seabed
- Includes new data collection, compilation, interpretation and integration of existing data and derived products
- Key inputs for national resource assessments
- Prioritising coverages over deep dive locations

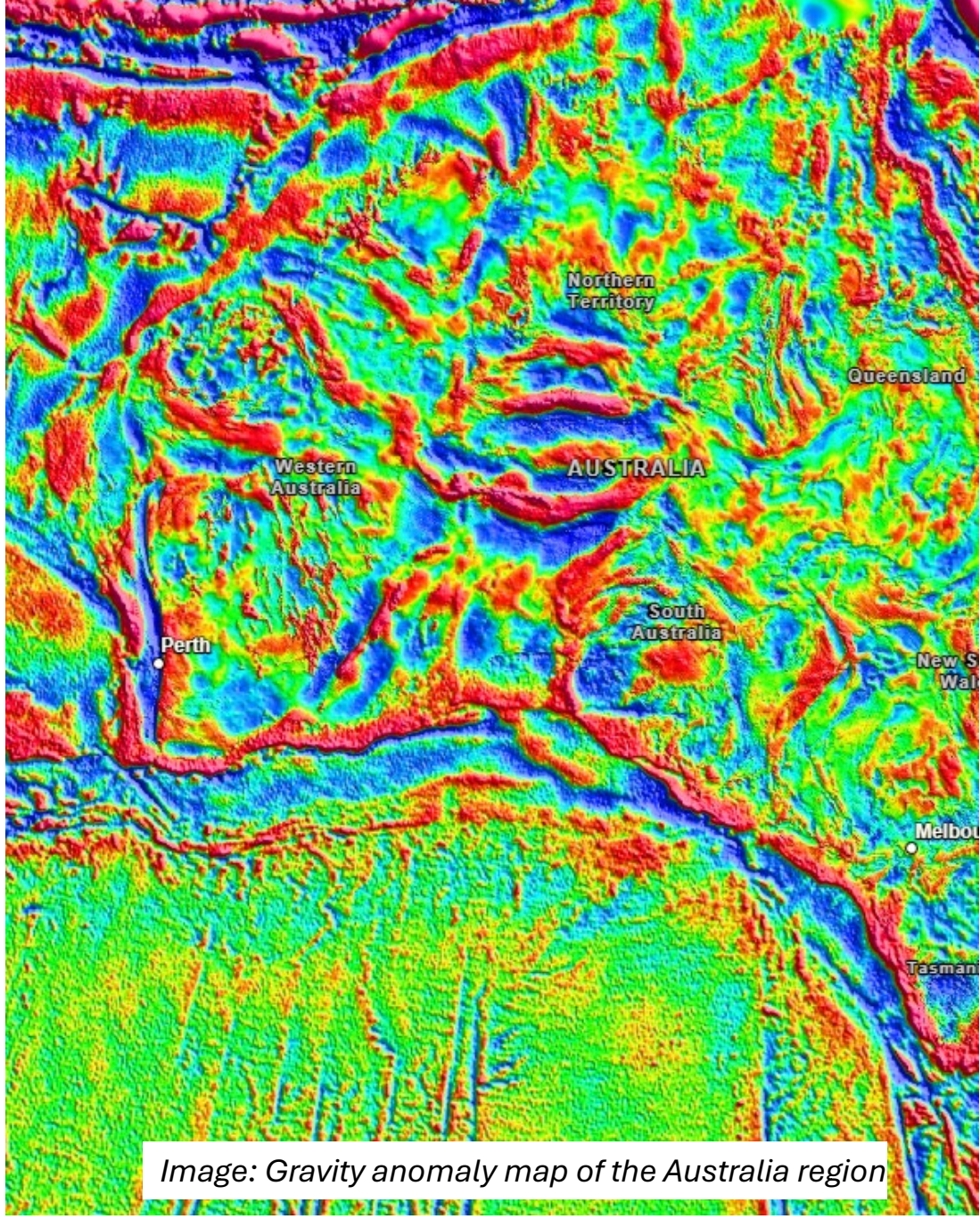
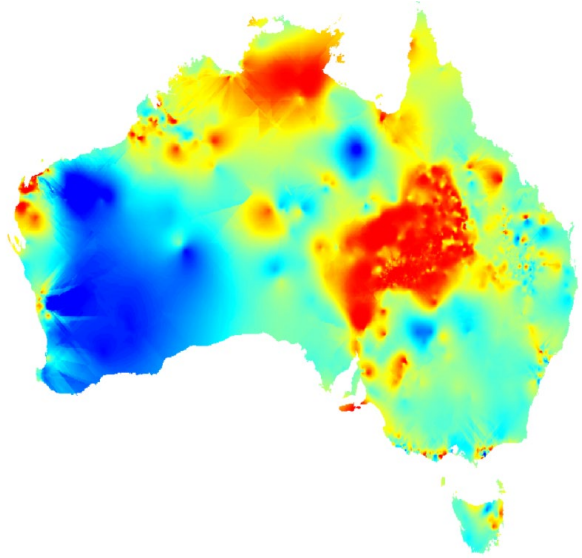


Image: Gravity anomaly map of the Australia region

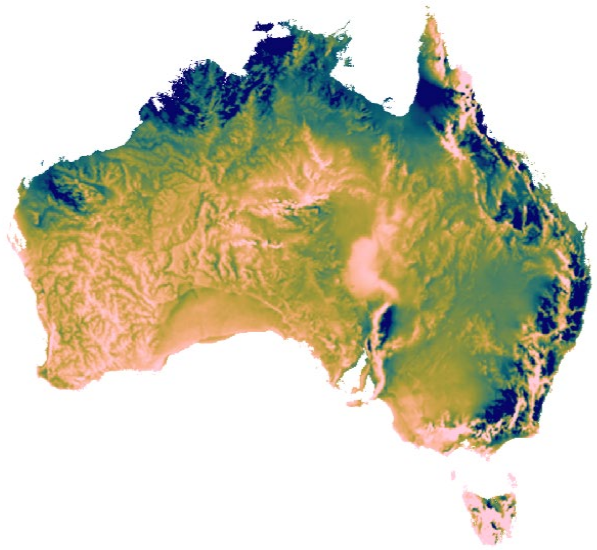
Australia wide geoscience data

- Spans fields of geology, geochemistry and geophysics, resource agnostic
- Rapid collection of new national data coverages
- World-leading and freely available

Geothermal

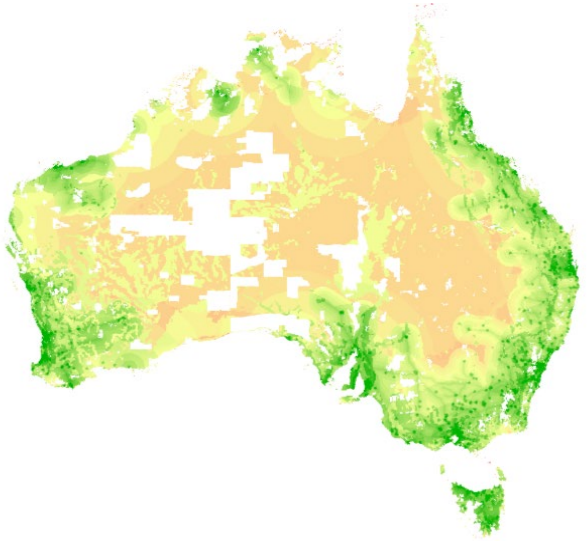


Wind Energy Capacity

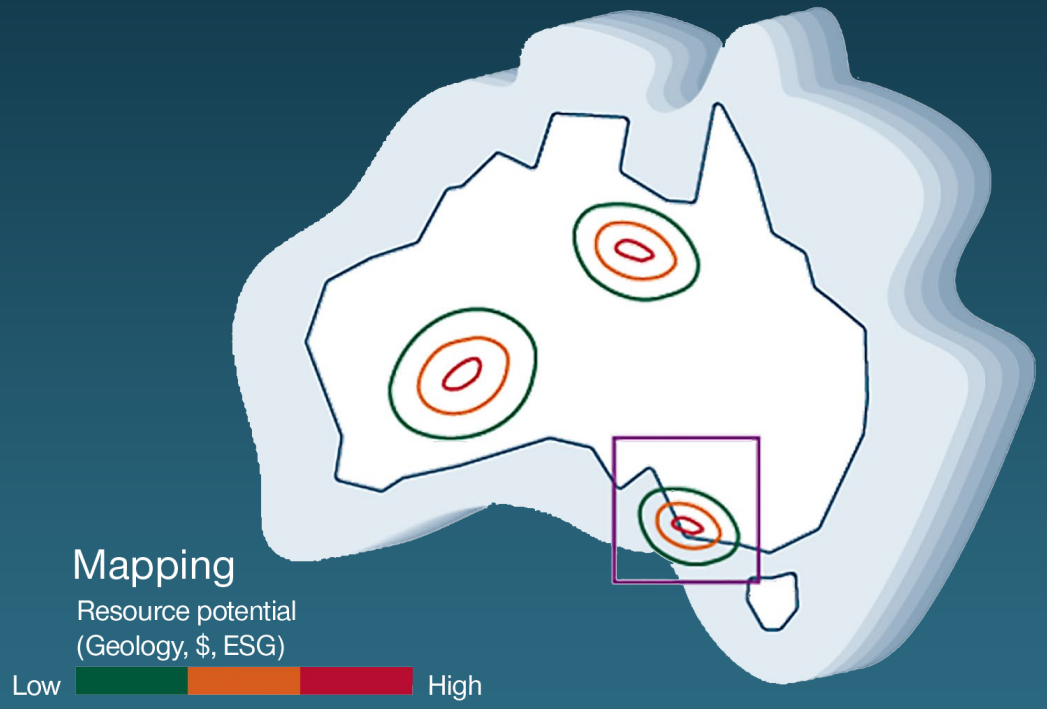


Solar Energy Capacity

Hydrogen Production Potential



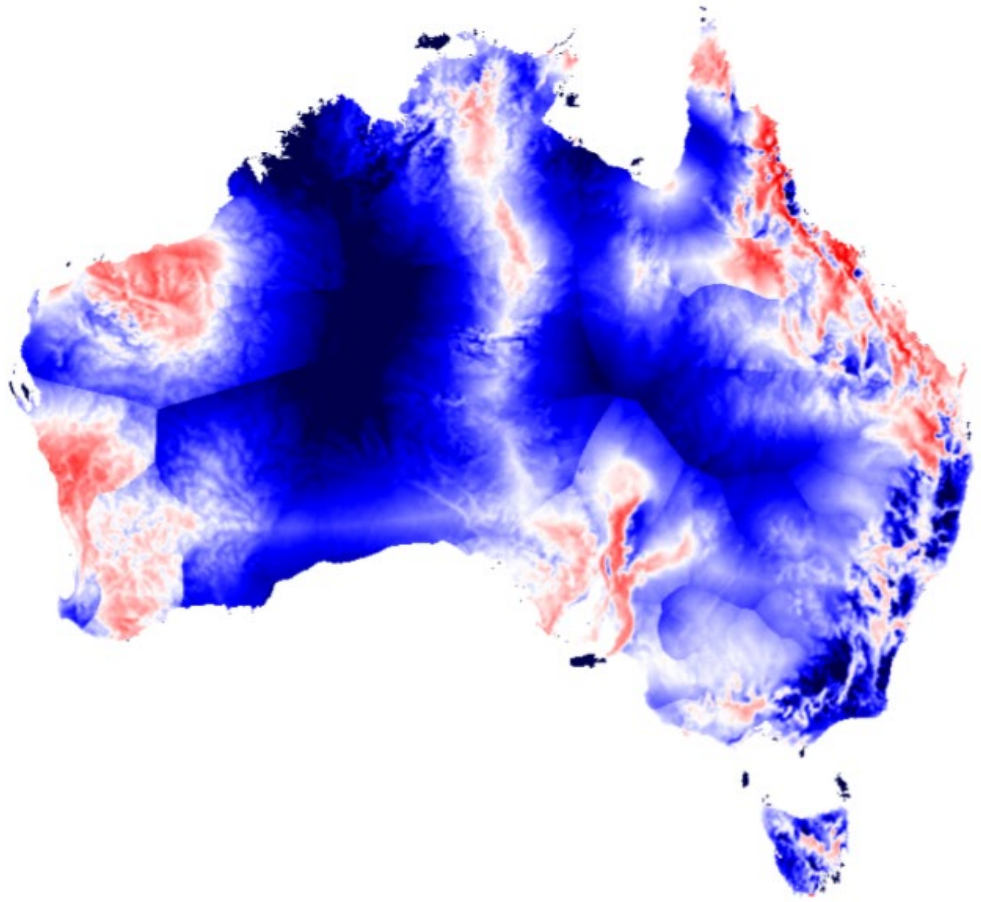
National resource assessments



What are national resource assessments?

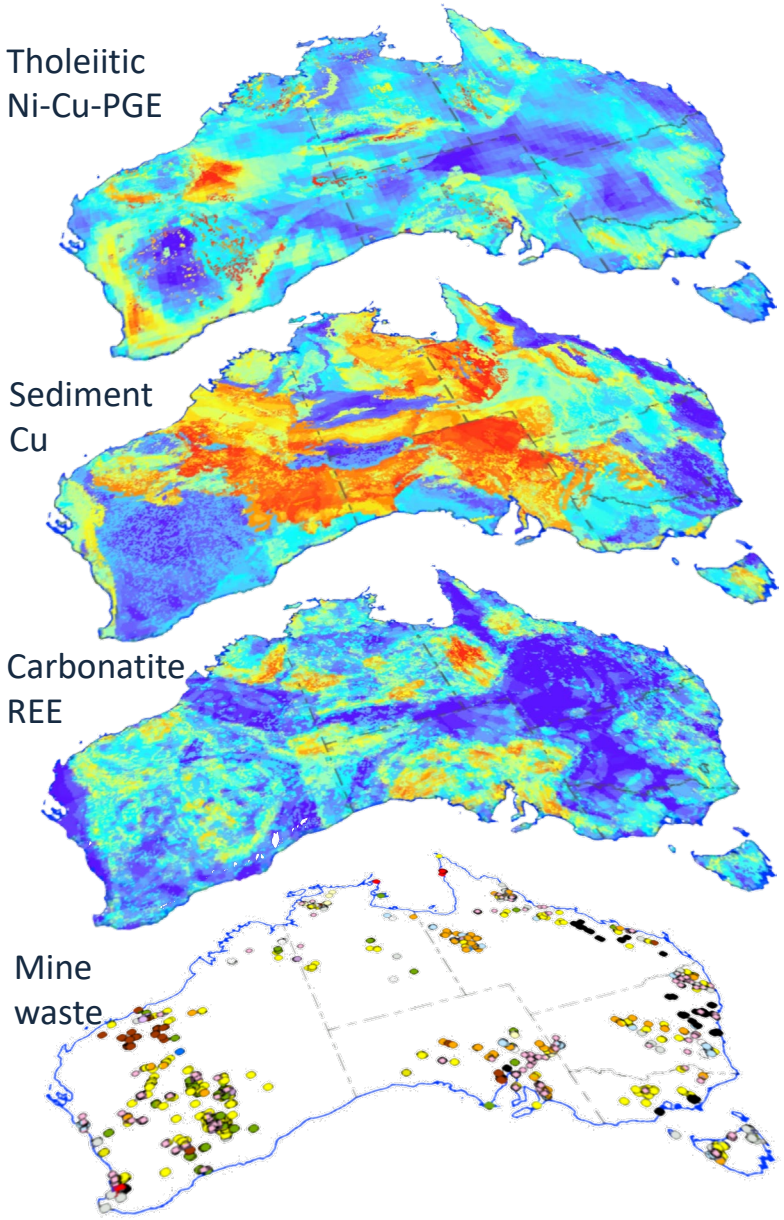
- Derived by integrating many Australia-wide geoscience data and highlight areas with the greatest resource potential
- Focus on assessing resources needed to support the net zero transition
  - All 36 Critical Minerals and Strategic Materials
  - Hydrogen production and storage
  - Renewables
  - Carbon Capture and Storage
- Provides a first pass estimation of resource potential that can be used by industry and policy makers

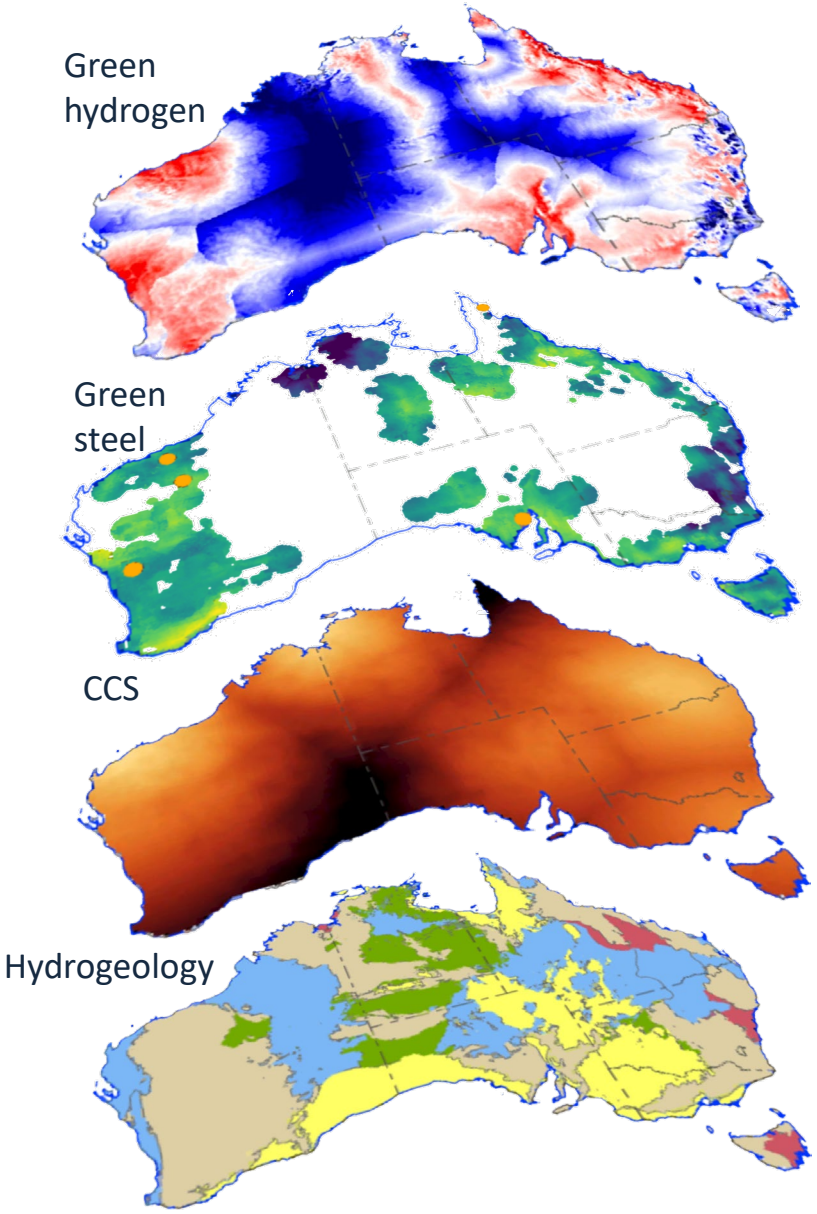
Hydrogen Economics (Hydrogen Economic Fairways Tool)



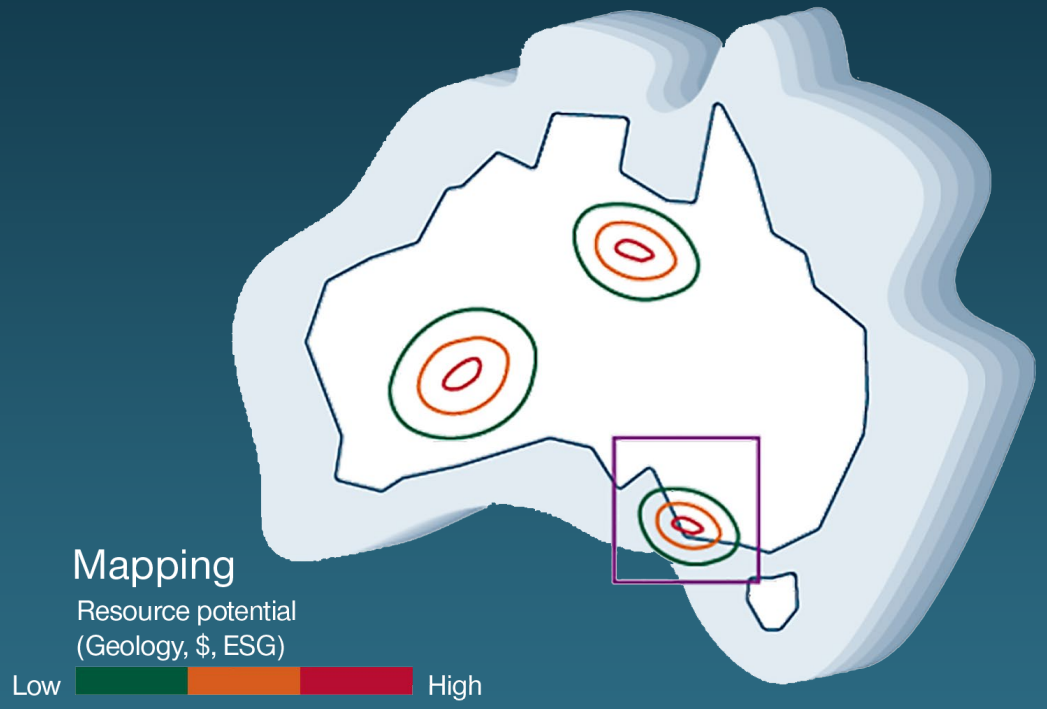
Beginning of a national inventory of resource potential

- New geological potential
- Mine tailings potential
- Economic potential
- Groundwater potential



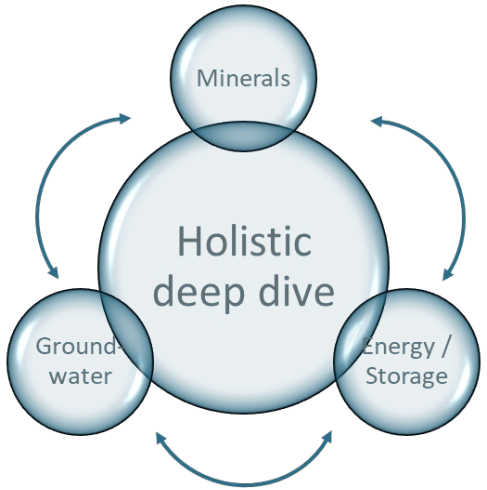


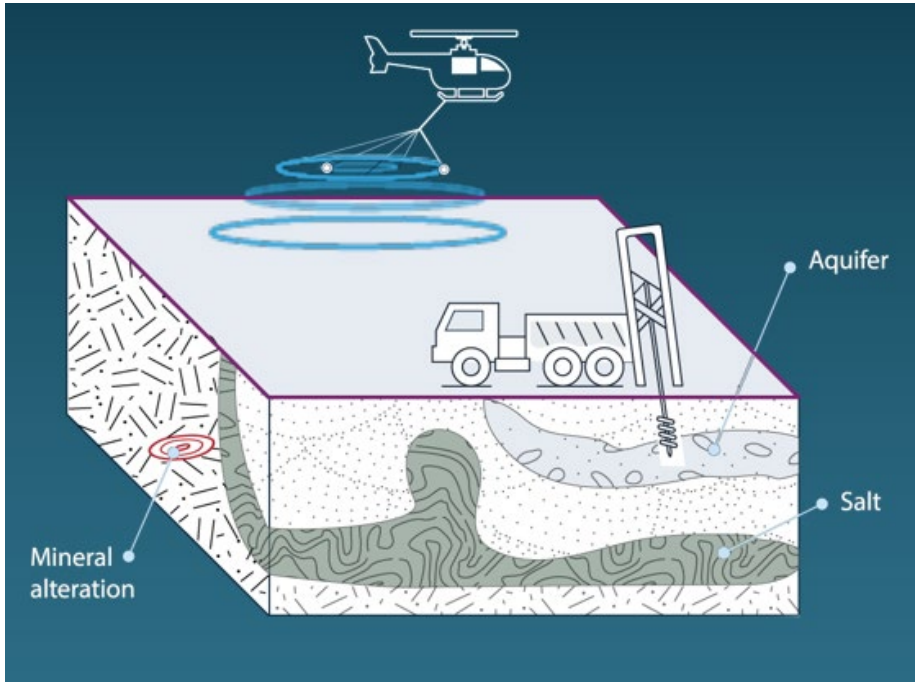
National resource assessments



What are deep dive regional studies?

- Will assess 12 onshore regions
- Multi-commodity assessments, integrated cross-discipline science (minerals, energy, groundwater, storage etc)
- Regional stakeholders will be engaged through deep dive reference groups (inc. industry, government, community and other key groups/stakehodlers)

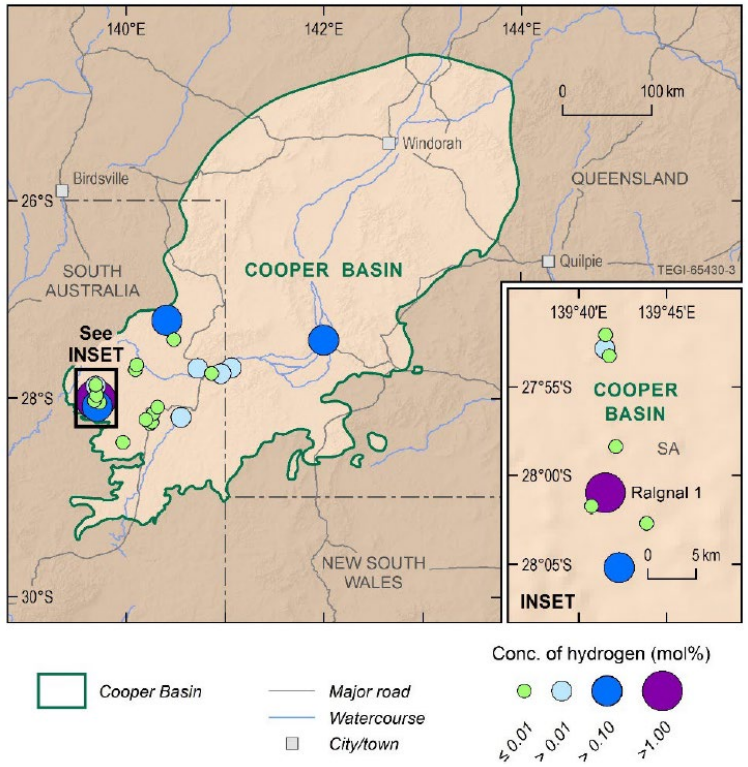




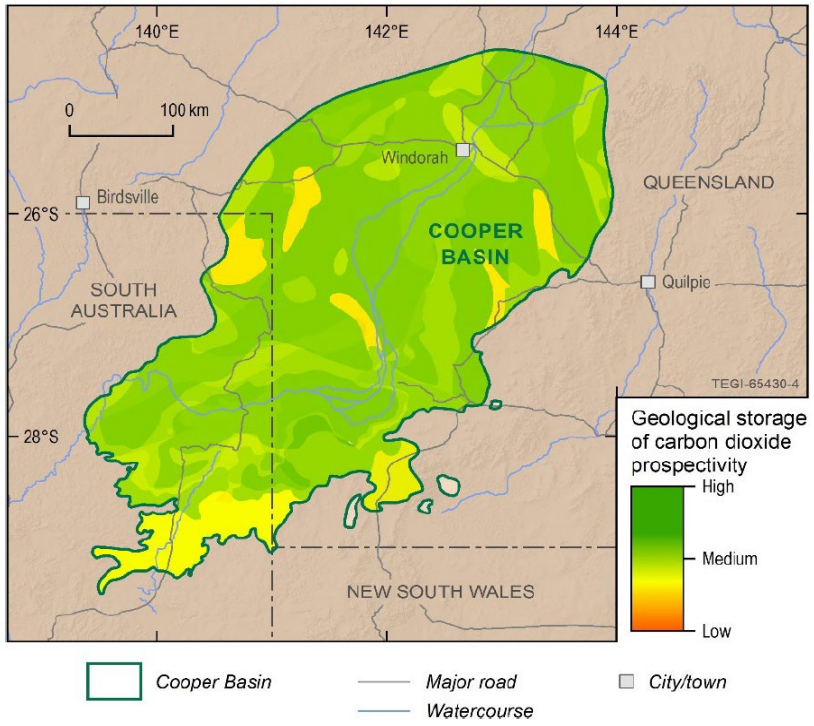
Cooper Basin Deep Dive

Trusted Environmental and Geological Information Program identified a number of important resources through the deep dive study

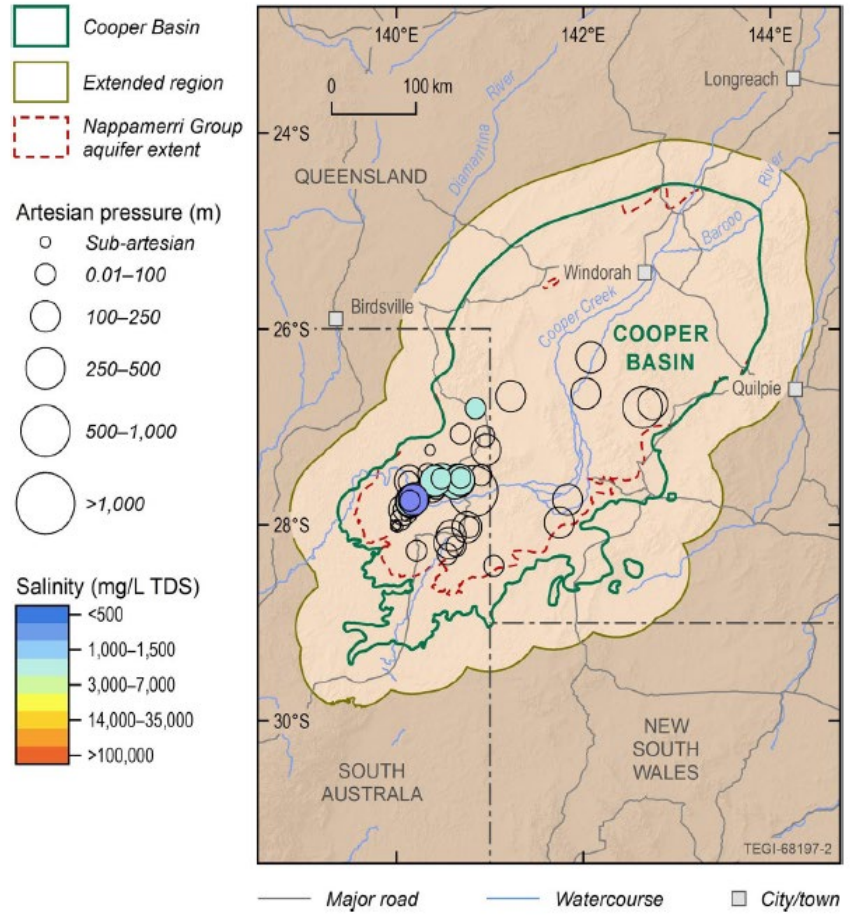
Natural Hydrogen



CCS potential



Aquifer Salinity and Pressure



Delivery, awareness raising and engagement

Engaging and exchanging knowledge with First Nations Australians

- Recognition
- Engagement
- Empowerment
- Governance

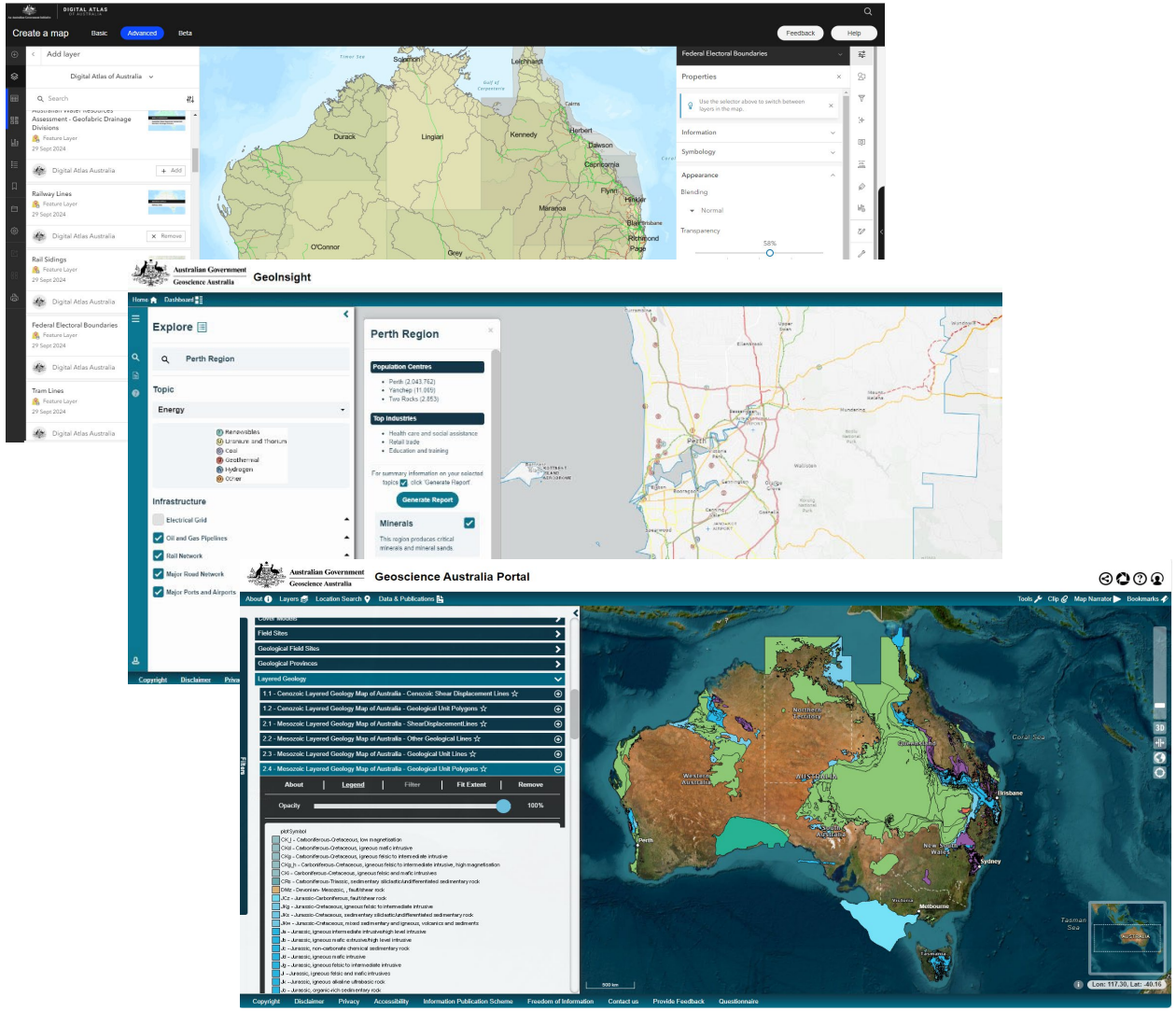
Product Delivery

Innovation

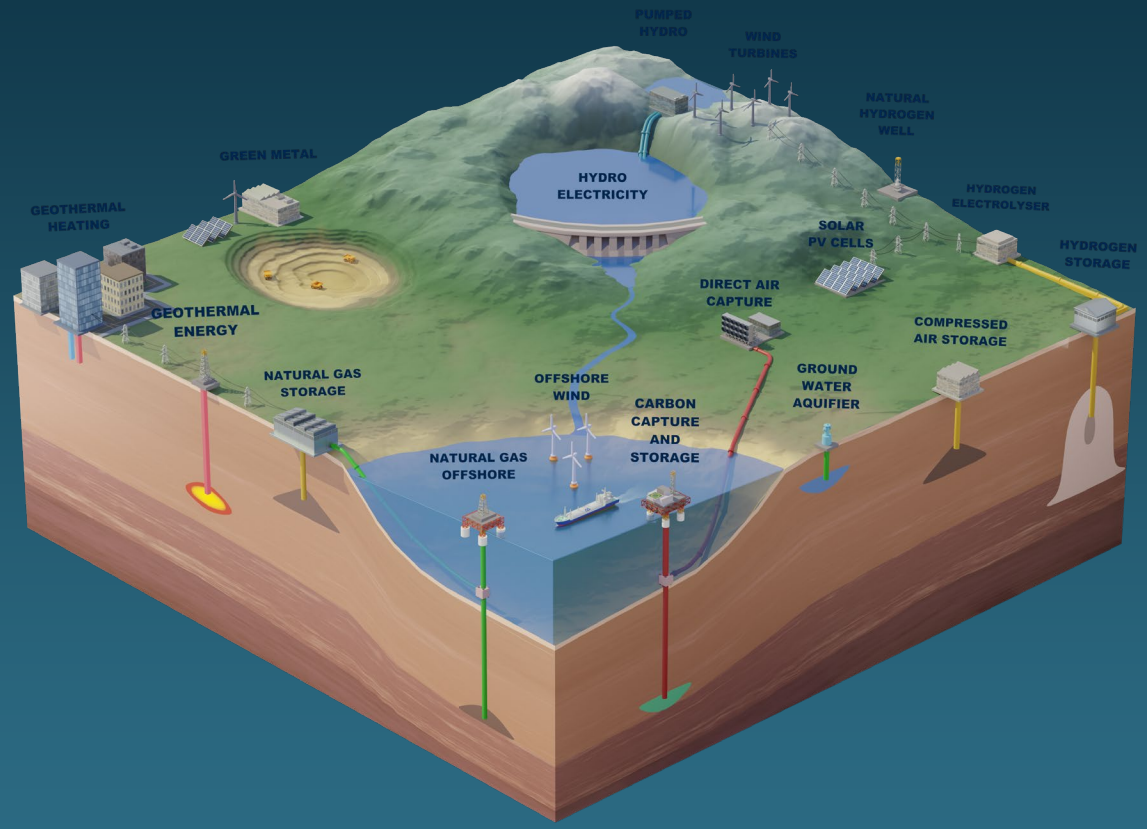
- Development of new modelling platforms for visualisation of potential resources (e.g. HEFT, Digital Atlas, Geoinsight Tool)
- The aim is 'To be AI ready' for an innovative and adaptable future

Service Experience

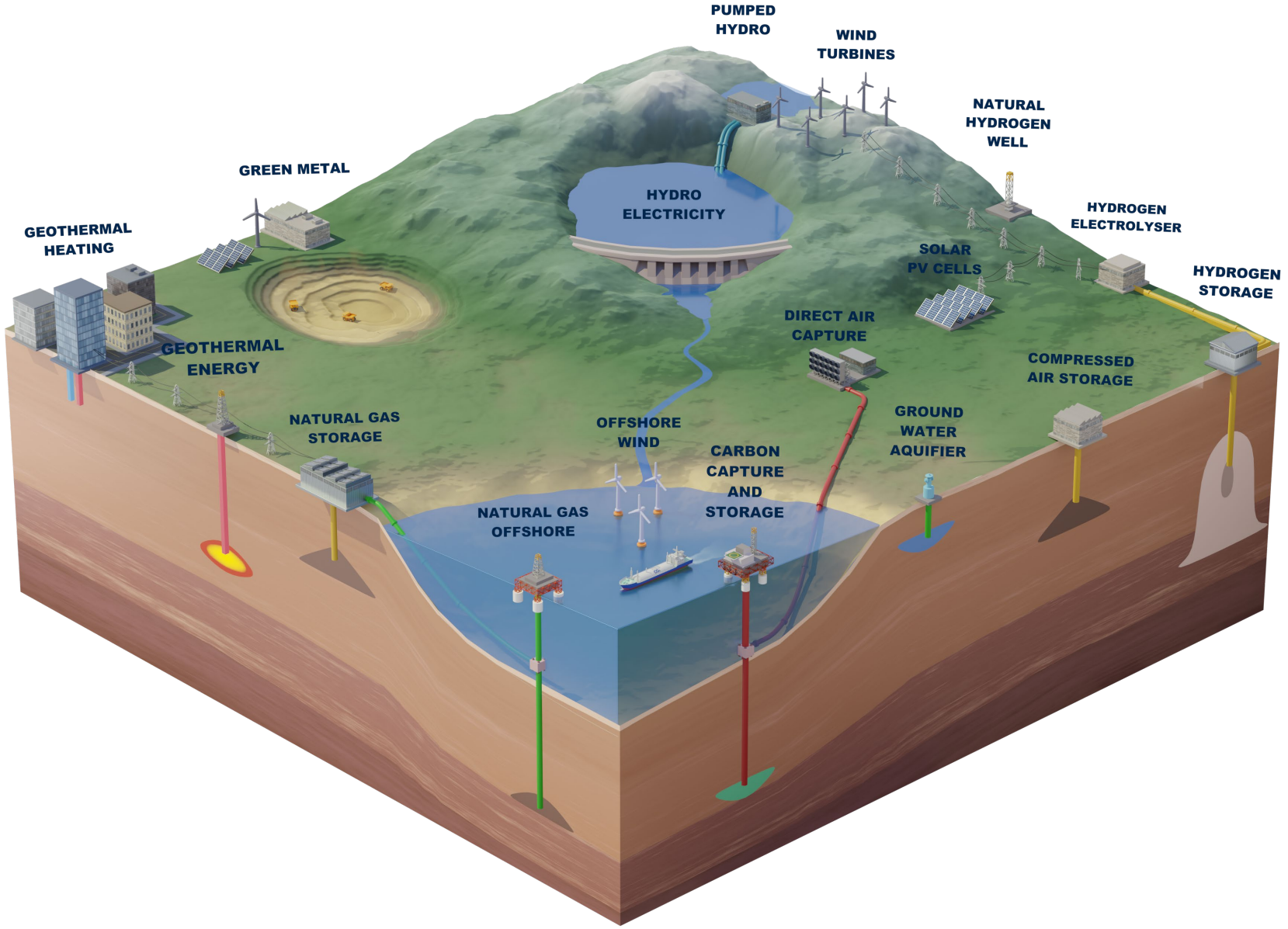
- Supporting diverse stakeholder needs and driving continuous improvement
- Opportunities to consistently apply human-centred design approaches (co-design) to our initiatives



Energy and decarbonisation



Geoscience and Net Zero



Proposed focus:

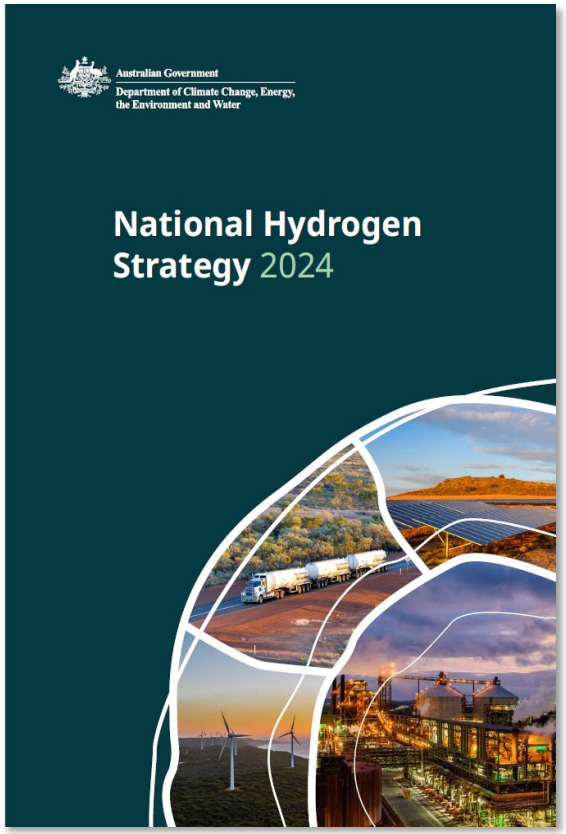
- Hydrogen
- CCS
- Offshore renewable energy
- Minerals and materials
- Groundwater

FUTURE MADE IN AUSTRALIA

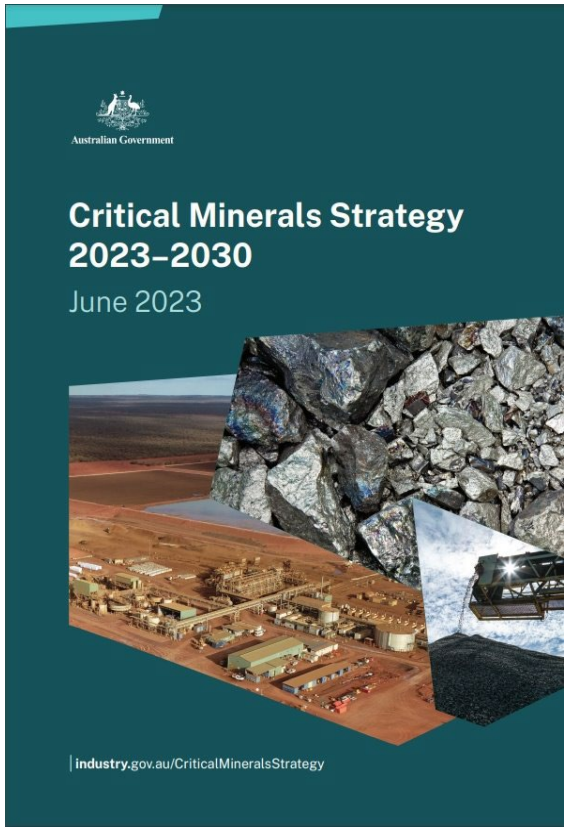
policy drivers for decarbonisation

Action 7:

Support Geoscience Australia's precompetitive data program to identify suitable sites for hydrogen storage opportunities

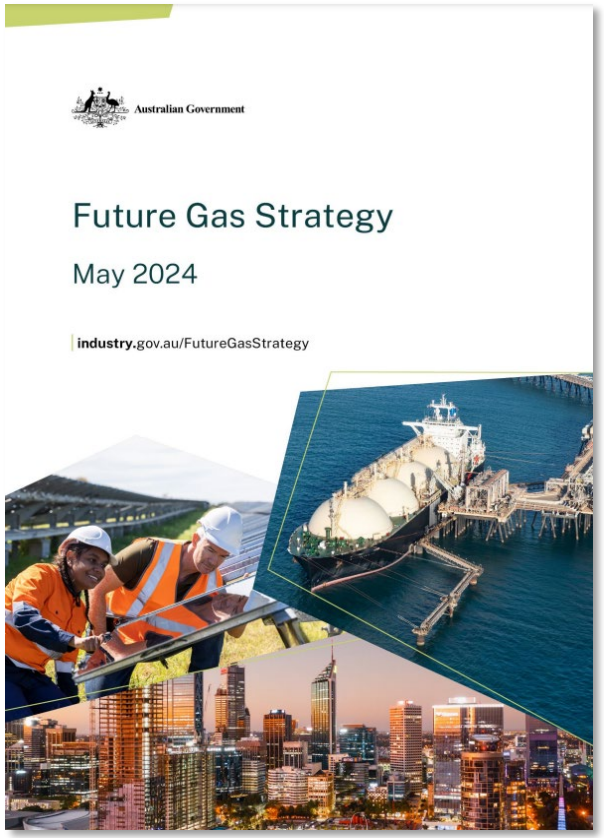


"Unlock our vast potential as a major supplier of the critical minerals needed to decarbonise the global economy"



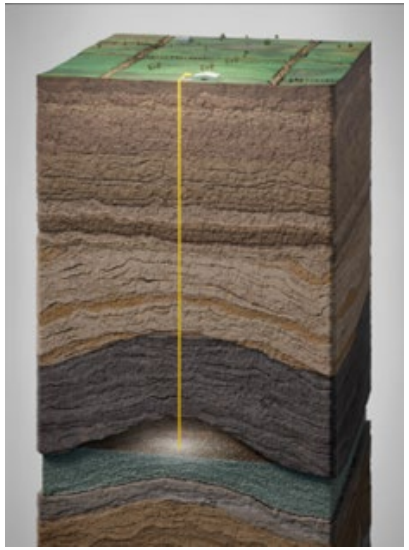
Action 5:

Promote geological storage of CO_2 and support our region's transition to net zero



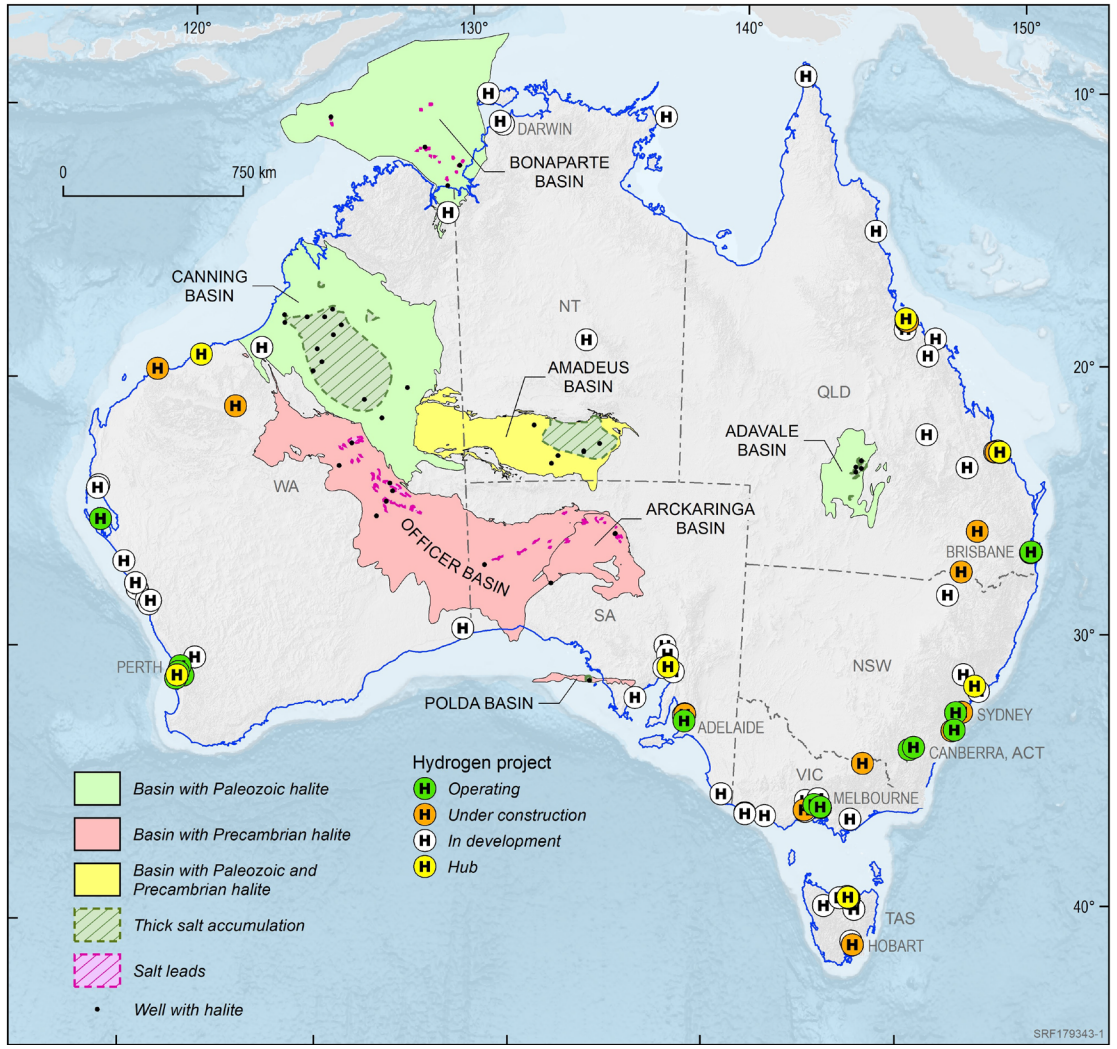
Hydrogen

- Identify underground hydrogen storage options for each regional hub
  - ➢ Salt, porous rock, hard rock caverns



Svartöberget, Sweden

- Explore for salt accumulations
  - ➢ Support Pilbara, Eyre Peninsula and Darwin
- Understand natural hydrogen resource potential
  - ➢ Where is hydrogen found? How much is there?



Hydrogen projects, hubs and salt accumulations

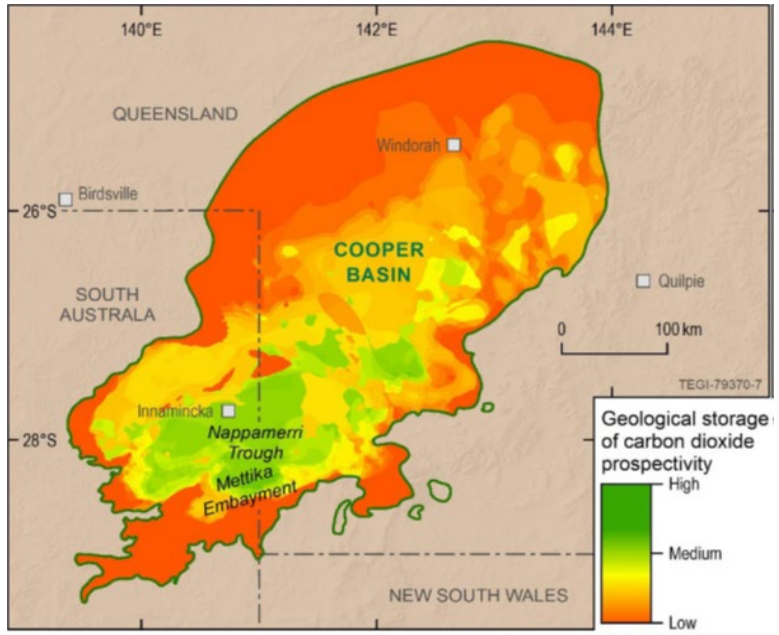
Carbon management

Onshore

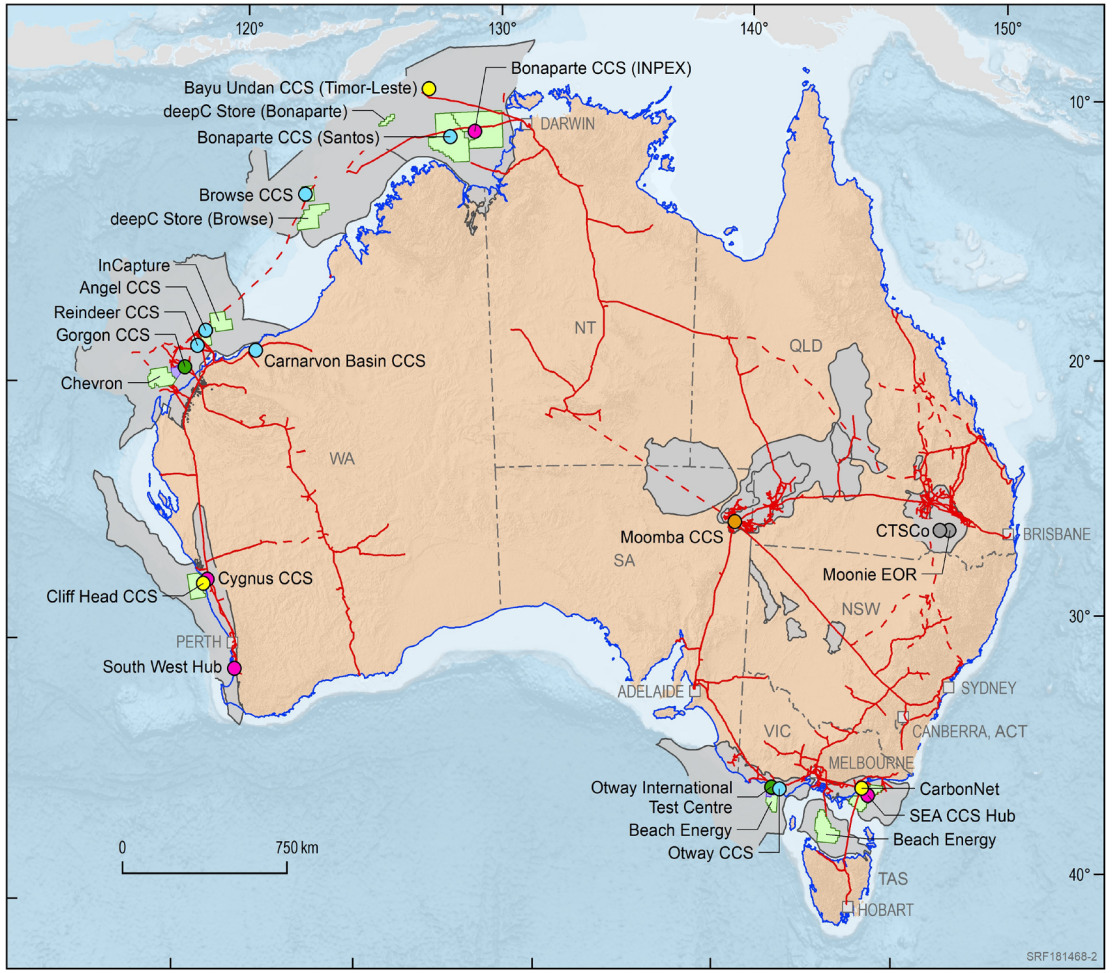
- Assess potential for geological storage of CO_2
- Carbon mineralisation (reactive rocks), carbon dioxide removal
- In-depth assessments through deep dives

Offshore geological sequestration of CO_2 prioritised by:

- Proximity to emissions
- Existing knowledge – depleted fields and saline aquifers

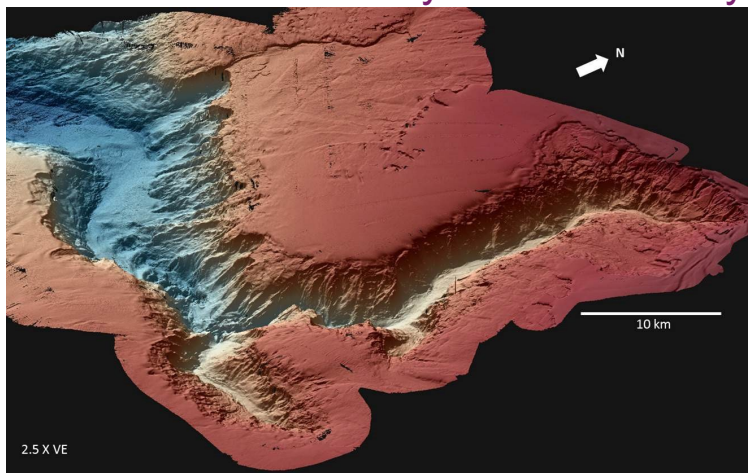


Example of much more detailed (play-based) assessment for CO_2 storage prospectivity (Toolachee Play, Cooper Basin https://dx.doi.org/10.26186/147511)

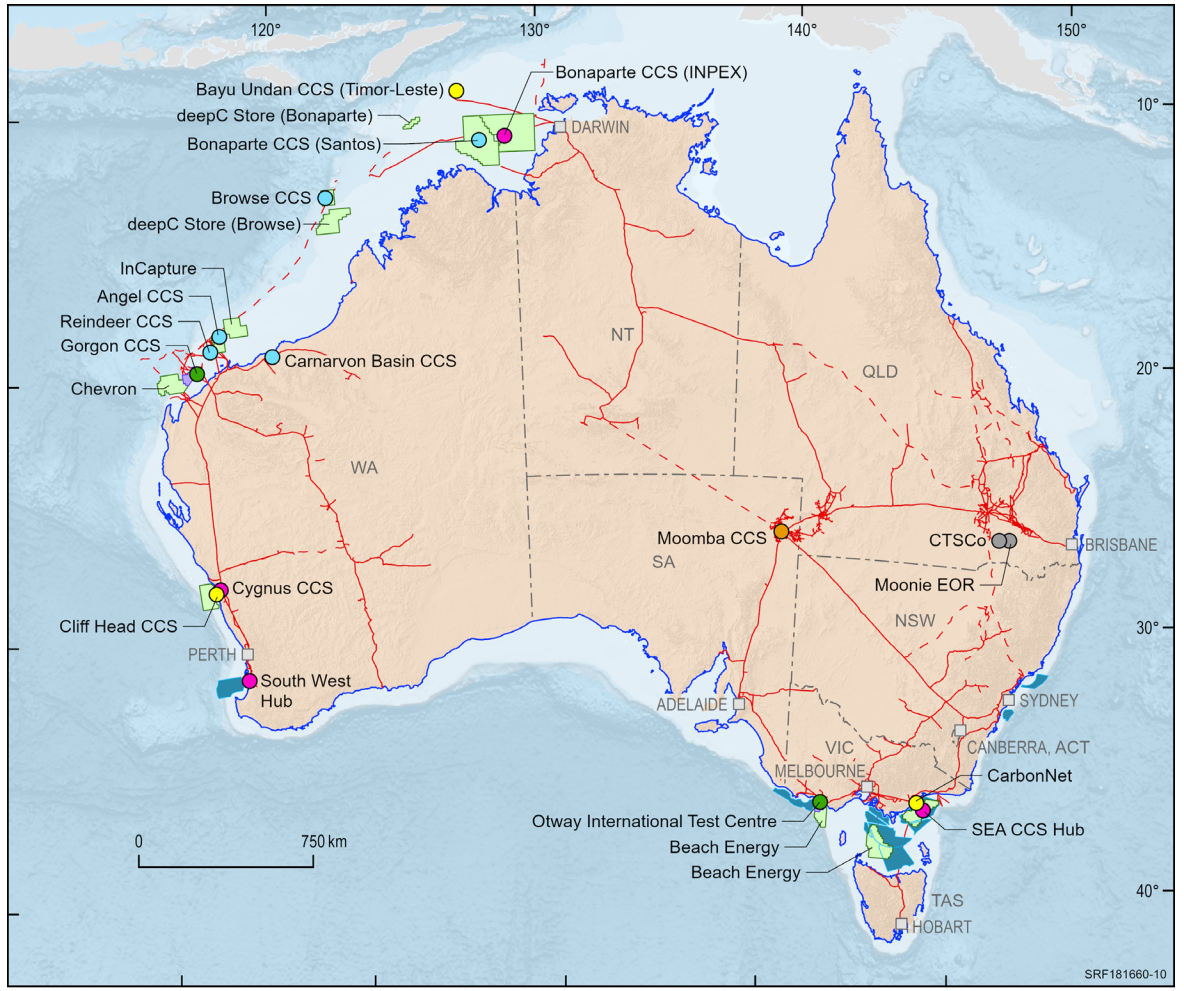


Seabed mapping - supporting offshore energy assessments

- Characterisation of seabed features at a national scale
- Providing information to support decision-making for offshore energy developments
  - Stability assessments
  - Suitability assessments (incl. ESG considerations)
- Priority locations
  - Where seabed mapping can inform multiple applications (CCS + offshore renewables)
  - Reliant on Aust-wide seabed mapping datasets
  - Constrained by data availability



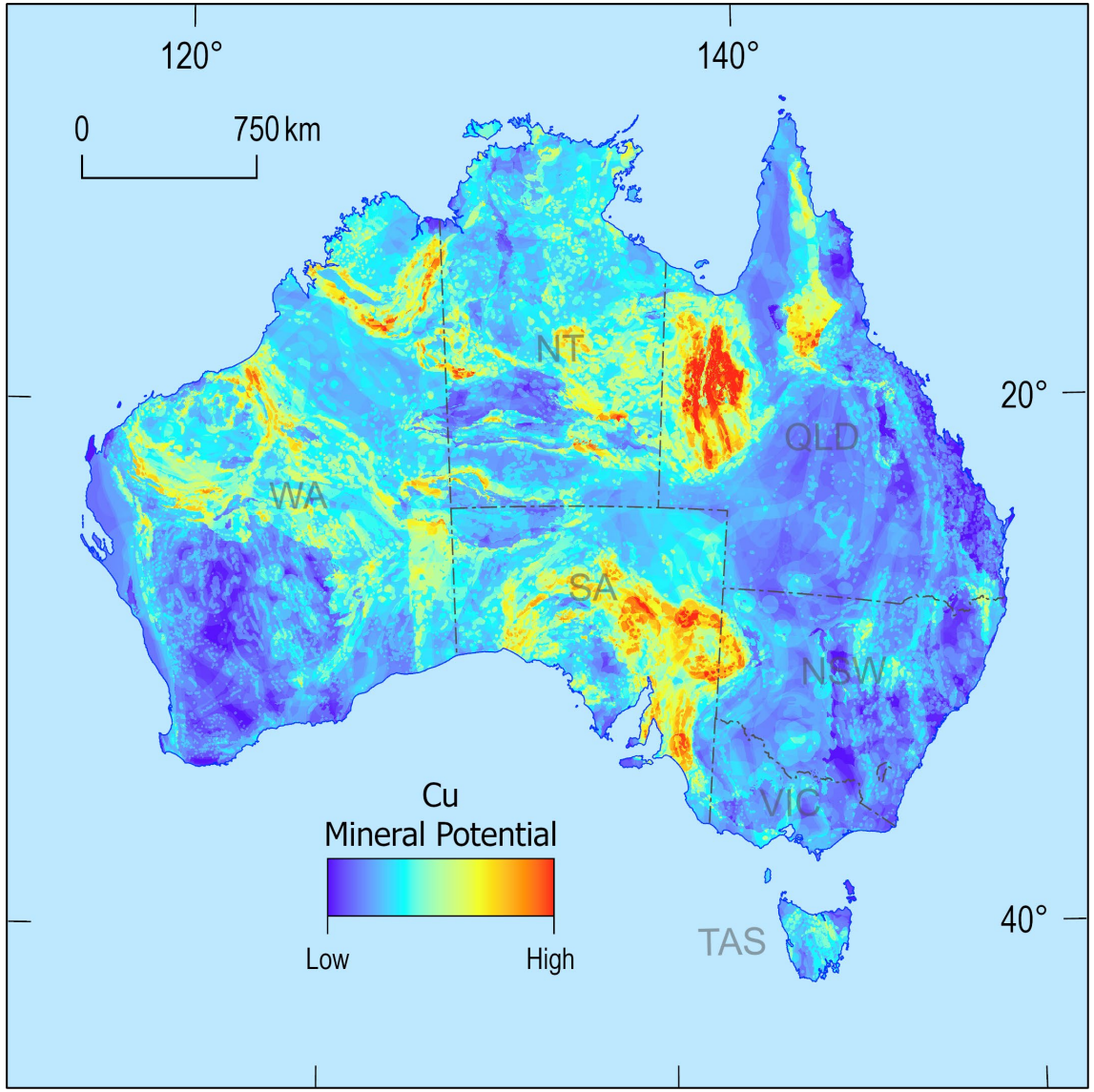
Bathymetry model - Perth Canyon



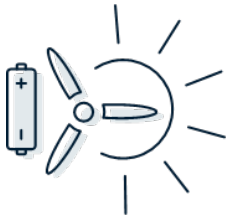
Minerals for net-zero

- Deliver commodity-based mineral potential maps for all 36 critical minerals and strategic materials
- Characterise existing opportunities to make best use of existing resources (by-products, undeveloped deposits, mine waste, etc.)
- Commodities prioritised based on strategic/govt importance, economics, geology and ease

- Initial priorities - first 10 years (subject to change):
  1. Rare earth elements (primary commodity)
  2. Copper (primary commodity)
  3. Cobalt (by/co-product)

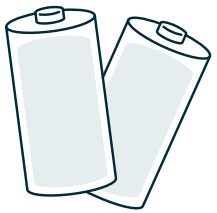


Minerals for the energy transition and beyond

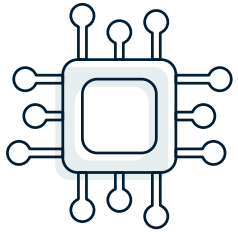


RENEWABLE ENERGY

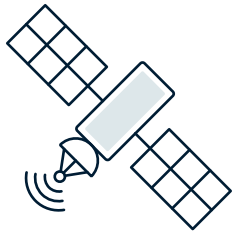
ELECTRIC VEHICLES



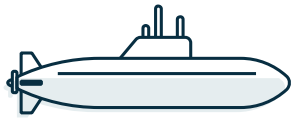
BATTERIES & STORAGE



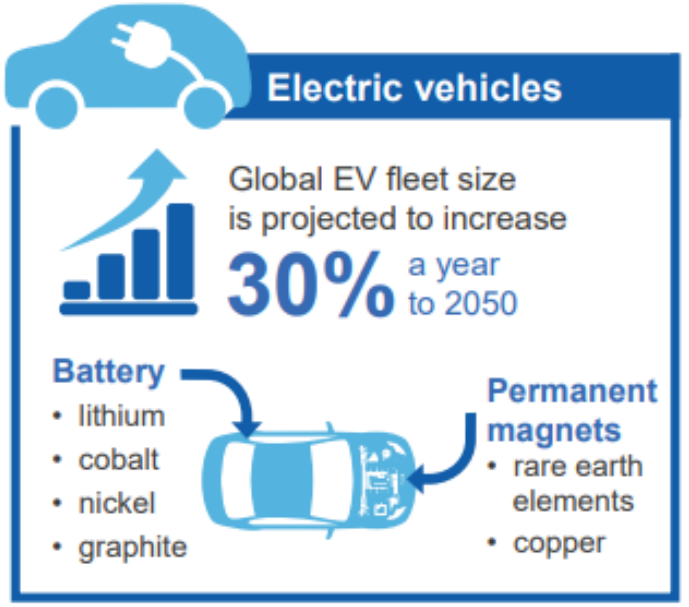
TECHNOLOGY & TELECOMMUNICATIONS

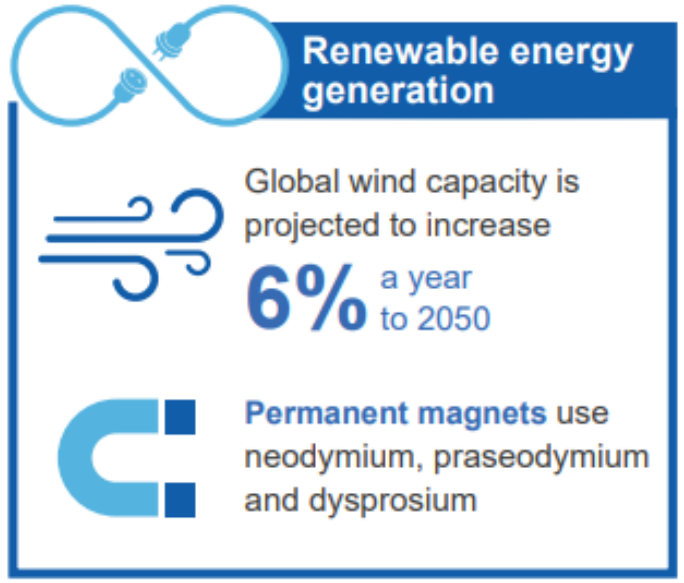


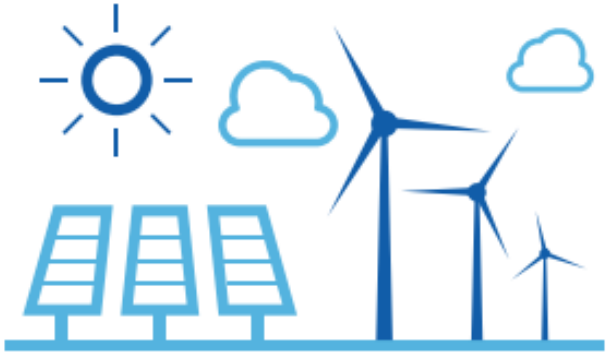
SPACE

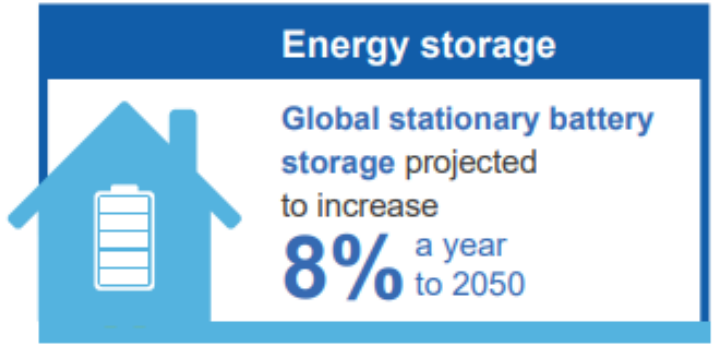


DEFENCE









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Geoscience Australia

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A $3.4 billion, 35-year investment in precompetitive geoscience

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Email: **RAPinitiative@ga.gov.au**