A global snapshot of next-generation geothermal technologies
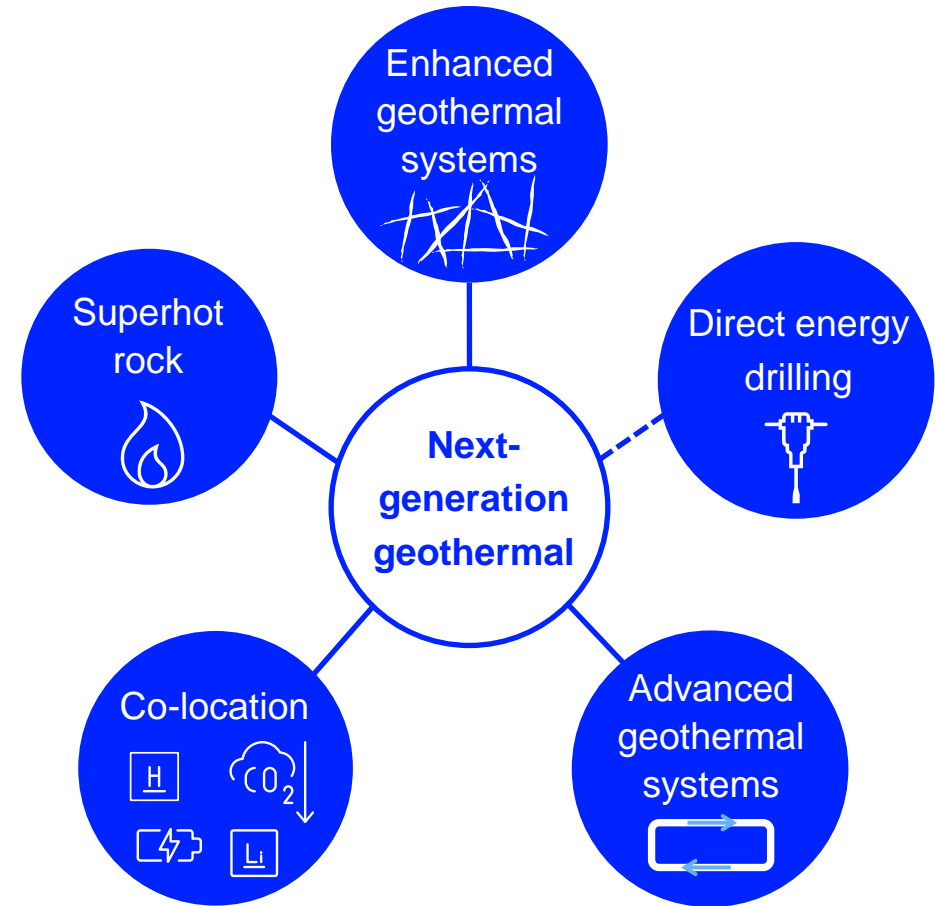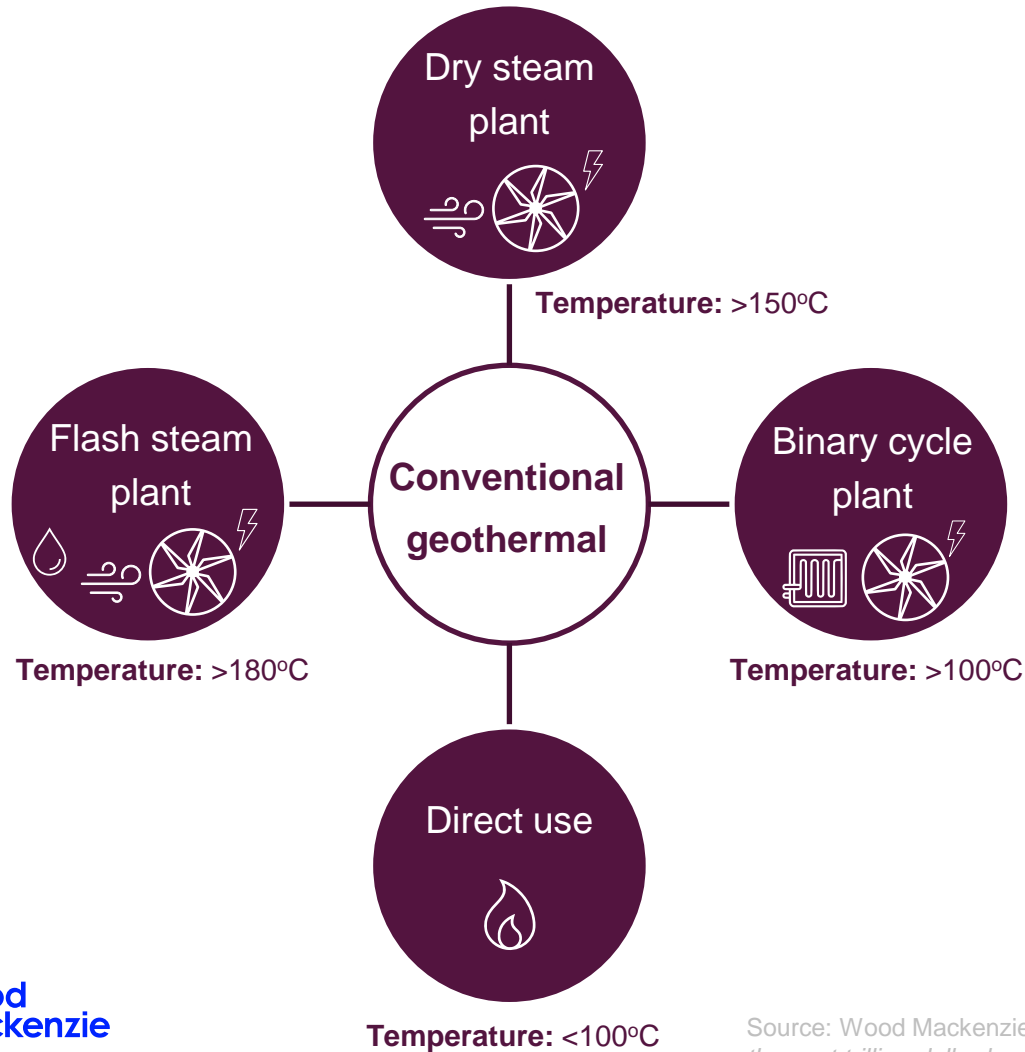
SPE Aberdeen Geothermal Seminar:
Gaining Momentum

26-27th February 2025

Wood Mackenzie

How will next-generation geothermal unlock new opportunities?

Emerging technologies are designed to exploit vast, undeveloped geothermal resources and maximise resource value

Temperature: >150°C

Temperature: >180°C

Temperature: >100°C

Temperature: <100°C

Conventional geothermal diagram: Dry steam plant, Flash steam plant, Binary cycle plant, Direct use, Conventional geothermal

Next-generation geothermal diagram: Enhanced geothermal systems, Superhot rock, Direct energy drilling, Co-location, Advanced geothermal systems, Next-generation geothermal

2

Global snapshot: first movers gaining ground in Europe and the US

Europe

- **Technology to watch: Advanced geothermal (AGS)**
- **Eavor raised US$500M+**
- **Brine extraction can unlock European geothermal growth**

North America

- **Market leader: Enhanced geothermal (EGS)**
- **Fervo Energy raised US$800M+**
- **Government funded projects: data availability reduces risk**

Technology

- ○ Geothermal (drilling)
- Advanced Geothermal (AGS)
- Enhanced Geothermal (EGS)
- Super Hot Rock EGS
- Energy Storage
- Geothermal (CCS)
- Geothermal (Mineral Extraction)
- Multiple
- Unknown

Asia-Pacific

- **Technology to watch: Enhanced geothermal (EGS)**
- **Earth's Energy holds >12,000 km² exploration acreage in SA and QLD**
- **Challenges have hampered growth in Australia**

Cape Station

Eavor-Europe

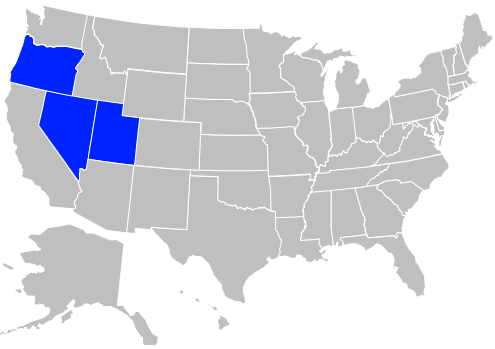Paralana

Wood Mackenzie, Esri
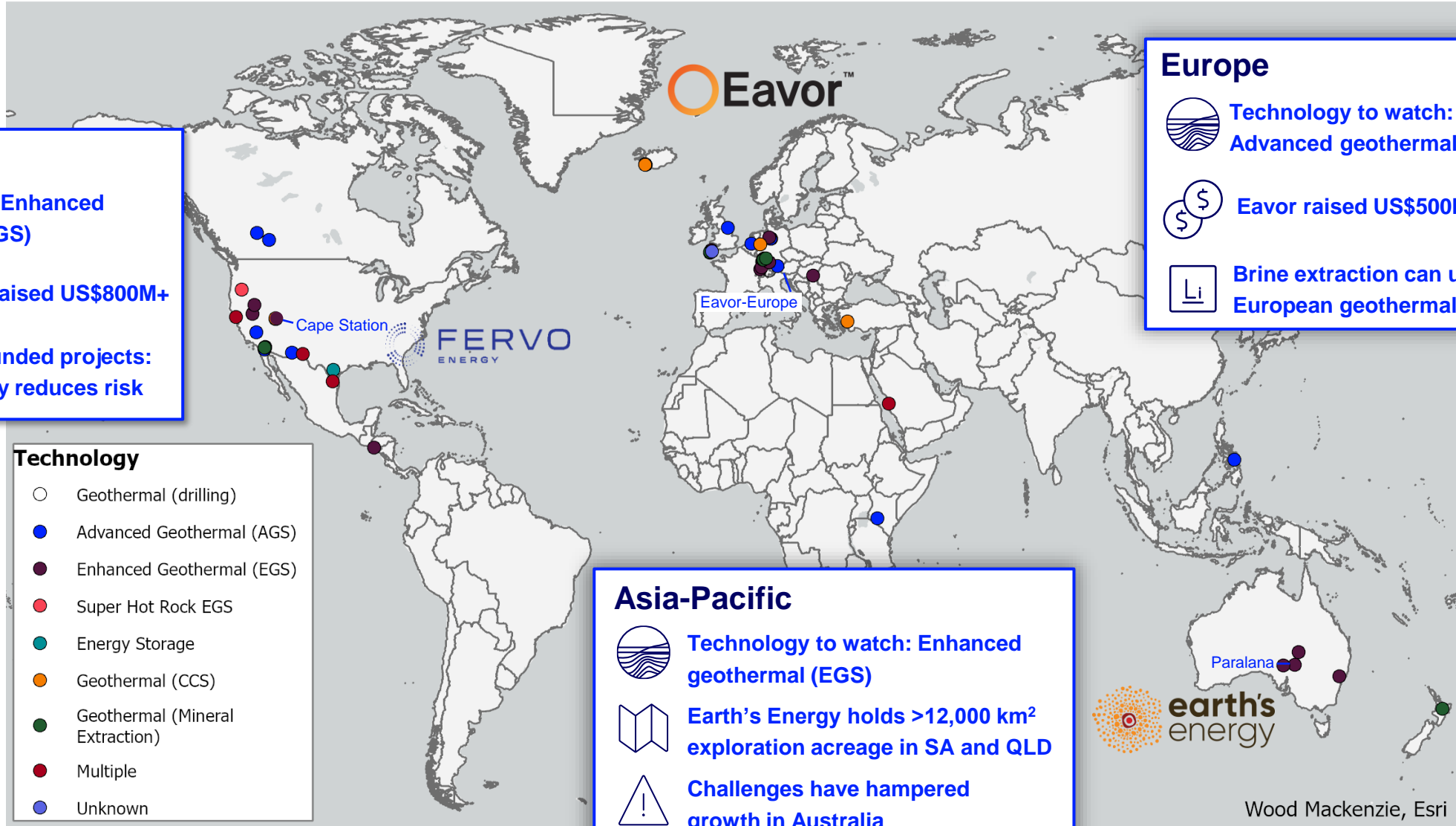
Next-generation geothermal: 2025 outlook

Two themes which will shape the industry this year
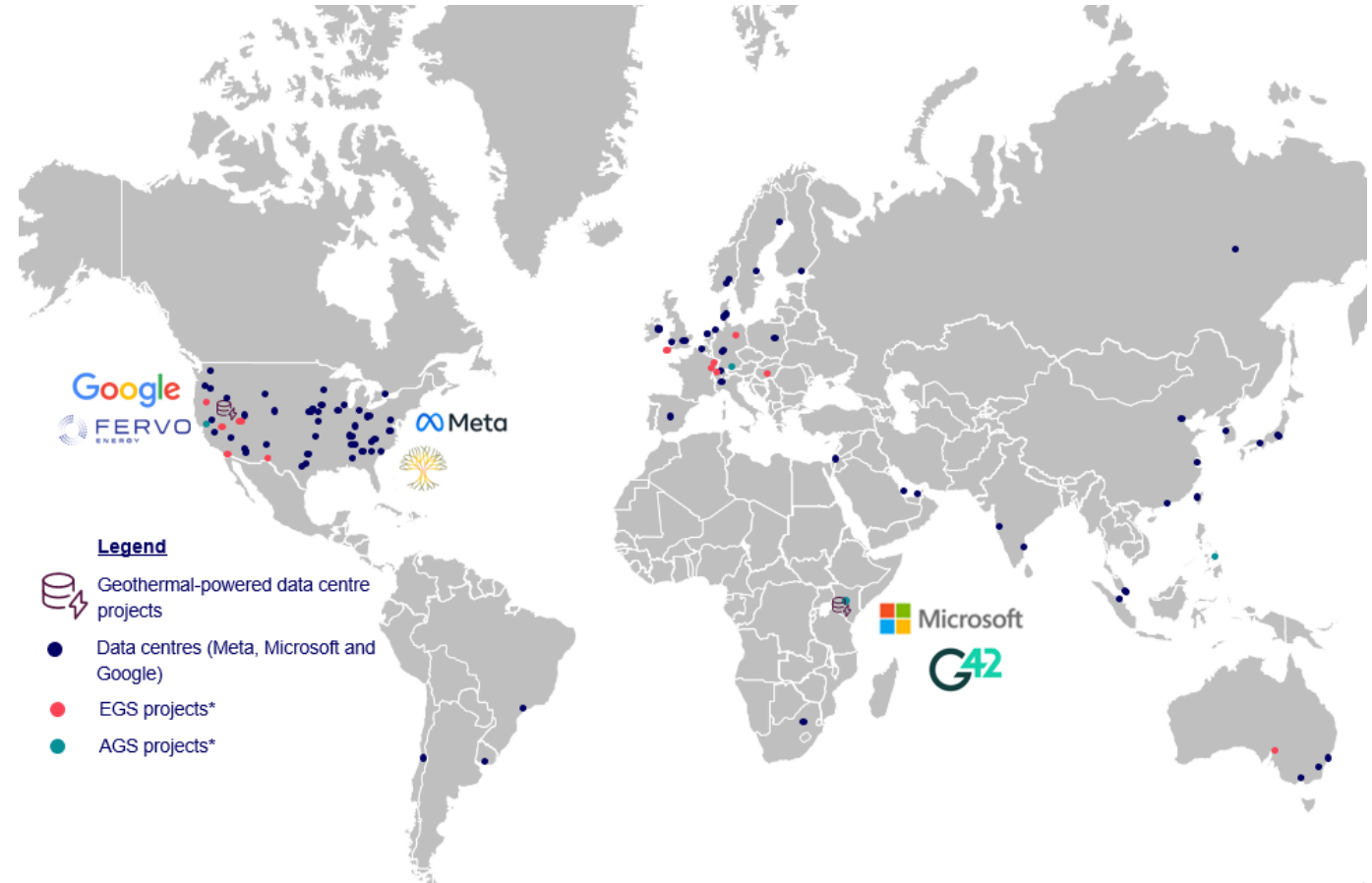
1. An appetite for growth in the US

Market leader

Political backing

EGS is in development in **Utah, Nevada** and **Oregon**. Fervo Energy's **Cape Station** is the project to watch.
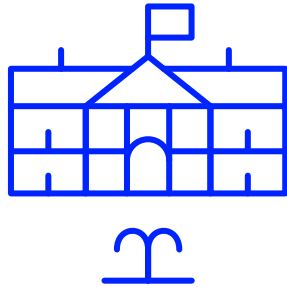
✓ **Cabinet support** from Energy Secretary

✓ **Accelerating permitting** timelines

2. The AI arms race

Google
FERVO ENERGY
∞ Meta
Microsoft
G42

Legend
Geothermal-powered data centre projects
● Data centres (Meta, Microsoft and Google)
● EGS projects*
● AGS projects*

Source: Wood Mackenzie Research. **Subsurface: 5 things to look for in 2025**

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Kate Adie

Research Analyst, Subsurface (New Energies)

Biography

Since joining Wood Mackenzie in 2023, Kate has become a key contributor to our global research on established and developing geoenergy technologies. She provides insight and analysis on developing geothermal markets and has supported the growth of our CCUS subsurface offering. Kate also monitors activity in the nascent natural hydrogen industry.

Prior to joining Wood Mackenzie, Kate spent two years in academic research, investigating the technical feasibility of subsurface hydrogen storage as a long duration energy storage technology.

Kate holds a BSc (Hons) in Geology and Physical Geography and an MSc in Geoenergy from the University of Edinburgh.

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