



# European Geothermal Energy Market Intelligence Report



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**North East Energy Supply Chain Companies**

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## Executive Summary

European geothermal energy is at a genuine inflection point. After years of subdued investment constrained by high interest rates and energy price volatility, the sector entered 2025–2026 with strong momentum: record levels of exploration activity, a growing pipeline of new power plants and district heating systems, landmark technology milestones, and the imminent release of the EU's first-ever Geothermal Action Plan. For North East Scotland energy supply chain companies, many of whom hold deep transferable expertise in drilling, well engineering, subsurface services, and project development, the non-UK European geothermal market represents a significant, strategically aligned export opportunity.

The European geothermal market generated approximately USD 16.93 billion in 2025, representing around 22.76% of the global market. The global market itself was valued at approximately USD 9.81 billion (by power-focused metrics) growing to USD 13.56 billion by 2030 at a CAGR of 5.3%, with broader market definitions reaching USD 66.9 billion in 2025 when heating, cooling, and direct-use applications are included. Global geothermal investment is forecast to grow at approximately 20% annually through 2030, with sector investment potentially reaching \$1 trillion by 2035.

Global geothermal power capacity reached 17,173 MW by year-end 2025, with Turkey leading Europe's installed base. Across the continent, 147 geothermal electricity plants were in operation by end-2024, with plans for approximately 50 additional power plants and 500+ new district heating and cooling (DHC) systems in various stages of development.

## Section 1: European Market Overview

### Scale and Composition

The European geothermal energy landscape is characterised by a structural split between electricity generation (concentrated in Turkey, Iceland, and Italy) and an extensive, rapidly expanding heating and cooling market spread across Central and Western Europe. Understanding this distinction is critical for export market positioning.

Europe's total installed geothermal heating and cooling capacity reached 6 GWth across 29 countries, with leading countries including Germany, France, the Netherlands, and Sweden developing projects in greenfield areas, while Hungary and Poland have set ambitious national objectives. The most dynamic growth segment is geothermal district heating and cooling (GeoDHC), with output rising 4.6% between 2023 and 2024, reaching 993.4 ktoe. By contrast, geothermal electricity generation decreased slightly in 2024 (–0.9%) due to reduced output from Italian plants, which account for just over 90% of EU27 geothermal power production.

The European Geothermal Energy Council (EGEC), with over 200 members from 30 countries, projects exponential growth in the number of wells to be drilled beginning in 2025, driven by the high volume of projects now in development across both power and heating applications. A record of more than 17 exploration surveys was conducted in Europe in 2024, up from 10 in 2023, and at least 10 three-dimensional seismic campaigns started in the first half of 2025 alone.

### Market Structure by Application

Application	Status (End 2024)	Pipeline	Key Markets
Geothermal Power	147 plants operational	~50 plants in development	Turkey, Italy, Iceland
District Heating & Cooling	412 systems operational	~500 systems in development	France, Germany, Netherlands, Hungary, Poland
Geothermal Heat Pumps	6 GWth installed, 29 countries	Market recovering post-2024 dip	Sweden, Germany, France
Industrial Direct Heat	Emerging	Growing via EU Innovation Fund	Germany, France, Central Europe

### Investment Climate

Geothermal investment was suppressed in 2022–2024 by elevated interest rates and energy price volatility. However, conditions are now shifting. The European Commission's Affordable Energy Action Plan (February 2025) acknowledged geothermal's role in reducing energy costs, and the EU Geothermal Action Plan, committed to by EU Energy Commissioner Dan Jørgensen, is expected in early 2026. A 20-strong coalition of organisations including Baker Hughes, OMV, and Clean Air Task Force has formally urged the Commission to adopt a full-spectrum strategy encompassing next-generation high-temperature systems.

Geothermal energy's value chain is almost entirely European, which is strategically significant given the EU's Industrial Competitiveness agenda. European companies currently account for approximately 42% of total global geothermal technology exports, a strong but threatened position, as Chinese and US competitors receive more robust government export support.

## Section 2: Country-by-Country Market Analysis

### 2.1 Turkey (Türkiye) — Europe's Largest Geothermal Power Market

Turkey is by far Europe's largest geothermal power producer, with an installed electricity generating capacity of approximately 1,915 MWe as of early 2025. The country achieved this position through aggressive deployment over the past decade, with capacity growing from 1.5 GWe to 3.5 GWe (broader European measure) over that period. In 2024, Turkey commissioned two new geothermal power plants as part of the 40 MW added across Europe.

Turkey's geothermal sector is driven primarily by private developers operating under a competitive concession and licensing regime. Zorlu Enerji is the leading company with 305 MW of installed geothermal capacity. Turkey's high surface geothermal temperatures, predominantly in the Aegean and Anatolian regions, give it naturally lower development costs compared to Northern and Central European counterparts, making it cost-competitive for power generation.

From a supply chain export perspective, Turkish geothermal project developers are active buyers of drilling rigs, downhole tools, well casing, turbines (particularly Organic Rankine Cycle systems), and engineering services. However, Turkey has developed a substantial domestic supply base and competition from local and Asian suppliers is intense. The opportunity for UK/North East supply chain companies lies primarily in advanced technologies, specialised drilling services, high-temperature downhole equipment, and digitalisation/reservoir monitoring solutions.

### 2.2 Italy — Power Sector Certainty After Decades of Stagnation

Italy is Europe's largest geothermal power producer within the EU27, with the Tuscany region accounting for just over 90% of Europe's geothermal electricity generation. Deep geothermal capacity stood at approximately 770 MW at end-2023, with a national target of 1,000 MW by 2030.

The single most significant recent development is the 20-year extension of Enel Green Power's geothermal concessions in Tuscany until 2046, approved by the Tuscany regional council in February 2025 in exchange for a commitment of nearly EUR 3 billion in new investment. Enel currently operates 34 geothermal power plants in Tuscany and plans to build three additional plants, adding approximately 65 MW of capacity. When complete, geothermal energy will supply roughly 40% of Tuscany's electricity requirements.

This concession decision, delayed for years amid regulatory uncertainty, ends a decade of near-stagnation in Italy's geothermal power sector and creates a substantial, well-funded development programme. It represents a meaningful export opportunity for drilling services, plant engineering, power conversion equipment, and O&M services. Notably, Exergy International, an Italian turbine technology company providing Organic Rankine Cycle

systems, is already an active European and global player with over 500 MW of geothermal capacity deployed worldwide.

### 2.3 Iceland — Mature Market with Cascading Heat Economy

Iceland represents the world's most advanced national geothermal economy. Geothermal energy accounts for 65% of Iceland's primary energy supply, with 9 geothermal power plants delivering a total installed capacity of 785 MWel. Annual electricity generation is approximately 6 TWh (~30% of the country's electricity), and the remaining geothermal use covers space heating (90%+ of all house heating), snow melting, swimming pools, industrial processes, greenhouses, aquaculture, and emerging tourism spa applications.

Total direct geothermal use in Iceland is estimated at 36,335 TJ annually. The largest plant is Hellisheidi (303 MWel), operational since 2006, and the newest is the Flúðir plant at 0.6 MWel. Iceland's Svartsengi field feeds the Blue Lagoon geothermal spa — a global visitor attraction — and also delivers 190 MWth for district heating and 76.4 MWel of electricity.

Iceland's market, while mature, continues to evolve technologically. The country hosted some of the world's first deep drilling experiments, and its geothermal training programme (GRÓ) makes it a global knowledge hub. For UK supply chain companies, Iceland offers niche opportunities in technology provision, specialised high-temperature drilling, and industrial direct heat applications, though the domestic engineering and services sector is well developed.

### 2.4 Germany — Policy Acceleration and Closed-Loop Breakthrough

Germany is emerging as the most dynamic geothermal market for district heating and industrial heat in Central Europe, driven by aggressive decarbonisation policy and significant government financial support. The German Geothermal Heat Pump Market alone was valued at approximately USD 1.52 billion in 2024 and is projected to reach USD 3.85 billion by 2032 (CAGR 12.5%).

Key policy and financial developments in 2025 include:

- August 2025: The German Cabinet approved a Geothermal Acceleration Act to fast-track project approvals
- December 2025: Munich Re and KfW (Germany's development finance institution), in partnership with the Federal Ministry of Economic Affairs, launched a new geothermal exploration risk insurance scheme insuring 30–70% of loan amounts for failed exploration drilling. The scheme targets 65 new geothermal projects by 2030, representing EUR 2–3 billion in total investment funded by nearly EUR 50 million in federal commitments
- The Federal Funding for Efficient Heat Networks (BEW) makes approximately USD 3.57 billion available through 2026 for renewable heat sources including deep geothermal
- Stadtwerke München (Munich's municipal utility) received USD 52.2 million in federal funding in 2024 to expand geothermal district heating

Germany's Fraunhofer Institute identifies Germany as having some of the largest geothermal reserves in Europe, capable of meeting more than a quarter of the country's annual heating

requirements. However, progress has historically been hindered by local opposition and regulatory complexity.

The landmark technology event of 2025 was the December commissioning of Eavor Technologies' Geretsried facility, the world's first commercial closed-loop (Eavor-Loop™) geothermal project to deliver electricity to a commercial power grid. The facility deploys four Eavor-Loops providing 64 MWth and 8 MWe for combined heat and power, supported by a €45 million InvestEU guaranteed loan from the European Investment Bank. This milestone validates closed-loop Advanced Geothermal Systems (AGS) as a commercially viable pathway, particularly relevant for areas lacking naturally permeable rock — which describes much of Northern Europe.

Vulcan Energy Resources is additionally developing an integrated geothermal energy and direct lithium extraction project in the Upper Rhine Valley, combining geothermal heat and power generation with battery-grade lithium hydroxide production from geothermal brine. This "Zero Carbon Lithium" model represents an important emerging application for geothermal technology.

## **2.5 France — Established Deep Geothermal with Expanding Ambitions**

France has a well-established geothermal district heating sector, primarily concentrated in the greater Paris Basin (Île-de-France), Alsace, and Aquitaine regions. ENGIE Solutions has invested more than EUR 300 million in geothermal over a decade, undertaking 20 low-energy geothermal drilling operations.

Recent market activity includes the March 2025 announcement by the municipalities of Melun and Vaux-le-Pénil (Seine-et-Marne) to expand their district heating network in partnership with Dalkia, with a new geothermal well to be drilled in 2026. The network will add 17 km of pipeline (43 km total), 115 new substations, and deliver 68 GWh of additional heat to 18,500 equivalent homes.

The French national government's MaPrimeRénov scheme supports residential adoption of renewable heating, and the Renovation Wave Strategy targets retrofitting 7 million buildings with energy-efficient systems by 2030. France has grown its district heating networks from 500 to approximately 1,000 by the early 2020s.

A particularly strategic emerging application is geothermal lithium extraction in Alsace. The Lithium de France project in the Upper Rhine Graben uses a closed-loop system to simultaneously generate heat energy and extract lithium from hot deep brine using Direct Lithium Extraction (DLE) technology, targeting production of 27,000 tonnes of lithium carbonate equivalent per year by 2028 — approximately one-third of France's projected lithium demand. This represents a compelling dual-revenue geothermal model, reinforcing France as a key market for advanced geothermal project services.

France is also expected to be a primary driver of additional geothermal district heating production, with forecasts anticipating an additional 2 TWh of geothermal DHC production by 2030.

## **2.6 Hungary — National Strategy and Abundant Untapped Resources**

Hungary ranks in the top five European countries for direct geothermal utilisation, with geothermal currently providing a 6.5% share of total heat production. The country sits on abundant geothermal resources due to favourable regional geology, with significant untapped reserves remaining.

Hungary adopted a National Geothermal Utilisation Concept in October 2024, setting ambitious targets to double geothermal energy use by 2030, save approximately 500 million cubic metres of natural gas annually, and raise the geothermal share in thermal energy production from 6.5% to 25–30% over the following decade. The specific targets are to boost geothermal energy use from 6.4 PJ to 8 PJ by 2026, then to 12–13 PJ by the early 2030s. EUR 420 million of funding has been identified as necessary, with an initial HUF 34 billion (approximately EUR 87 million) credit facility launched for drilling risk mitigation.

Hungary's state energy company MVM — currently holding over 900 MW of renewable capacity in solar, wind, and small hydro — has set a target of 100 MW of geothermal electricity by 2035. This represents a significant greenfield opportunity for technology and service providers.

## **2.7 Poland — Accelerating District Heat Decarbonisation**

Poland has approximately 200 MW of geothermal district heating capacity installed, with steady growth anticipated through 2030, supported explicitly by the state financial institution. Three new geothermal DHC systems were launched in Poland in 2024 alone.

Poland is currently updating its geothermal roadmap, with strategic pillars addressing district heating, cogeneration, EGS, geological databases, risk insurance, and workforce development. The country has set an indicative target of a 4–5% share of geothermal in the energy mix over the next decade, from less than 1% today. Cities including Poznań and Łódź are actively exploring geothermal energy for district heating transitions.

This represents a significant expansion market. Poland's extensive legacy district heating infrastructure, currently heavily gas-dependent, creates substantial demand for geothermal conversion projects, where drilling services, heat exchangers, and DHC engineering expertise are required.

## **2.8 Netherlands — Regulatory Reform and Network Expansion**

The Netherlands has a well-developed district heating and geothermal DHC sector undergoing significant regulatory reform. On 3 July 2025, the Dutch House of Representatives approved the Warmtewet (Wcw), which took effect in January 2026, shifting control of district heating networks to municipalities and establishing cost-based tariff structures. This legislative shift is expected to accelerate publicly-directed investment in sustainable heat sources including geothermal.

The Dutch geothermal sector received one new DHC system in 2024. The broader WarmtelinQ project, a large regional heat transport infrastructure connecting Rotterdam to The Hague, Leiden, and Rijswijk, has seen costs rise to over EUR 1 billion (from an original estimate of EUR 600–650 million) but remains on track for completion by 2027–2028. Geothermal sources are expected to contribute significantly to the energy supply within these networks.

**Supportive subsidy instruments including the Warmtenetten Investeringssubsidie (WIS) and the Investeringssubsidie Duurzame Energie en Energiebesparing (ISDE) lower financial barriers for network build-out and geothermal connections.**

## **2.9 Central and Eastern Europe — Emerging High-Potential Markets**

Croatia has over 80 MW of installed geothermal thermal and district heating capacity across five cities, making it one of the more advanced Central European geothermal markets.

Romania and Slovakia represent significant untapped potential, particularly for geothermal district heating, where deep geothermal resources could play a major role in urban heat networks if supported by appropriate policies and investment. Slovakia attracted more than \$20 million in geothermal investment over the 2019–2024 period.

Austria commissioned one new geothermal power plant in 2024, contributing to a modest but growing power generation sector alongside its more established spa and balneology applications.

Czech Republic presents a predominantly EGS opportunity; the geological conditions do not favour conventional hydrothermal development, meaning deep geothermal utilisation will require HDR/EGS approaches. Ground-source heat pump installations have doubled in recent years, though from a low base.

## **2.10 Nordic Countries — Heat Pump Leadership**

Sweden accounts for nearly 30% of Europe's geothermal heat pump installations, driven by its advanced district heating infrastructure, cold climate, and progressive policy environment. The Swedish geothermal power market is projected to grow at a CAGR of 8.7% between 2025 and 2033. Sweden's model, integrating geothermal heat pumps with renewable district heating, offers a blueprint exportable to other markets.

Finland is a newcomer showing significant geothermal growth potential and attracted notable investment in geothermal over recent years.

# **Section 3: Technology Landscape and Innovation**

## **3.1 Conventional Hydrothermal**

Conventional hydrothermal systems, exploiting naturally occurring high-temperature permeable rock or aquifer reservoirs, remain the backbone of European geothermal electricity generation (Turkey, Italy, Iceland) and geothermal district heating (Paris Basin, Hungary, Netherlands, Poland). These projects require:

- Deep drilling services (typically 2–5 km)
- Well casing, completion, and perforation equipment
- Production and injection pumping systems
- Heat exchangers and surface plant engineering
- Reservoir monitoring and management
- Regulatory and permitting expertise

### 3.2 Enhanced Geothermal Systems (EGS)

EGS has made the critical transition from demonstration to commercial-scale deployment in 2025. The technology creates artificial permeability in hot dry rock, unlocking geothermal resources virtually anywhere in Europe, not just in areas with naturally hot permeable formations. Key 2025 advances include:

- Average drilling rates in commercial EGS wells have more than doubled compared to earlier projects
- Modern projects routinely drill deeper than 4 km, with horizontal well segments often over 1 km
- Drilling costs have been cut to less than 20% of historical averages in some cases
- New pilots exceeding 330°C are enabling breakthroughs toward supercritical resources
- Horizontal, multistage EGS wells demonstrate reproducible high flow rates and stable thermal output

The EU's technical potential for EGS is estimated at approximately 40 TW, equivalent to 35 times the EU's current installed capacity across all energy sources. Europe has hosted some of the most influential EGS test sites, including Soultz-sous-Forêts (France) and Groß Schönebeck (Germany).

### 3.3 Closed-Loop / Advanced Geothermal Systems (AGS)

The December 2025 commissioning of Eavor's Geretsried facility in Germany represents the world's first commercial deployment of a fully closed-loop AGS system delivering electricity to a commercial grid. The Eavor-Loop™ design uses multilateral wells drilled in a closed circuit through hot rock, circulating a working fluid without any hydraulic fracturing or fluid interaction with underground formations eliminating both the induced seismicity risk and the requirement for naturally permeable rock. The system delivers 64 MWth and 8 MWe for the local municipality.

This breakthrough is strategically important for Northern Europe (including Scotland, Ireland, and Scandinavia), where the absence of naturally hot permeable rock has previously limited conventional geothermal development. Eavor's success at Geretsried validates AGS as a replicable blueprint for wider European and global rollout.

### 3.4 Geothermal + Critical Minerals Co-Production

An important emerging application involves the simultaneous extraction of geothermal energy and critical minerals, particularly lithium, from geothermal brines. Key projects include:

- Vulcan Energy Resources (Upper Rhine Valley, Germany): integrated geothermal energy and direct lithium extraction (DLE) targeting battery-grade lithium hydroxide
- Lithium de France (Alsace, France, Upper Rhine Graben): targeting 27,000 tonnes of lithium carbonate equivalent (LCE) per year by 2028
- GEL's United Downs (Cornwall, UK — reference case): first commercial geothermal electricity and lithium co-production, with geothermal fluid containing 340 ppm LCE

This co-production model strengthens the economics of geothermal projects by diversifying revenue streams, directly aligning with EU strategic priorities around critical mineral supply chain independence from China.

### 3.5 Geothermal Heat Pumps (GHP)

The European GHP market, valued at approximately USD 4.10 billion in 2024, is projected to reach USD 9.50 billion by 2032 at a CAGR of 11.0%. Sweden leads with approximately 30% of European installations, followed by Germany and France. The EHPA projects a CAGR of 12% from 2023–2030. GHP sales fell in most EU countries in 2024 due to a lack of favourable regulation, but EGEN expects the forthcoming Geothermal Action Plan to create more supportive conditions.

GHP systems reduce heating and cooling energy consumption by up to 50% compared to conventional fossil fuel systems, according to the IEA.

## Section 4: Regulatory and Policy Environment

### 4.1 EU Policy Framework

The European geothermal sector operates within a multi-layered policy environment. Key instruments include:

- EU Renewable Energy Directive (RED III): Sets binding renewable energy targets, under which geothermal qualifies
- EU Energy Efficiency Directive: Mandates local heat planning, creating structural demand for geothermal DHC
- REPowerEU Plan: Geothermal explicitly identified as a tool to reduce Russian gas dependency
- EU Affordable Energy Action Plan (February 2025): Acknowledged geothermal's role but criticised by EGEN as lacking specific delivery mechanisms
- EU Geothermal Action Plan (expected early 2026): The first dedicated EU-level geothermal strategy, committed to by Commissioner Jørgensen and supported by a 20-organisation industry coalition. Expected to include targets, permitting reform, and a financial risk-sharing facility

The EGEN has argued that geothermal could cover approximately 25% of EU heating and cooling and 10% of EU electricity by 2030. More ambitious projections from Fraunhofer estimate geothermal could meet 75% of Europe's heating and cooling needs and 15% of electricity demand by 2040.

### 4.2 National Policy Highlights

Country	Key Policy Development	Status
Germany	Geothermal Acceleration Act; KfW/Munich Re risk insurance	Law approved Aug 2025; insurance launched Dec 2025
Hungary	National Geothermal Utilisation Concept	Adopted Oct 2024

Country	Key Policy Development	Status
Netherlands	Warmtewet (Wcw) — municipal control of district heating	Took effect Jan 2026
France	MaPrimeRénov renovation subsidies; Renovation Wave Strategy	Ongoing
Poland	Geothermal roadmap update; state finance institution support	In progress
Italy	Enel concession extension to 2046; EUR 3B investment commitment	Completed Feb 2025
EU-wide	EU Innovation Fund: €1B industrial heat auction (geothermal eligible)	Launched Dec 2025

### 4.3 Financial Risk Instruments

High upfront exploration and drilling costs, combined with geological uncertainty, represent the primary barrier to geothermal investment. Several European countries are addressing this through dedicated risk mitigation mechanisms:

- Germany: KfW/Munich Re exploration risk insurance, insuring 30–70% of loan amounts for failed drilling, with KfW granting partial debt waiver on same terms. Nearly EUR 50 million committed for 65 projects
- Hungary: National geothermal risk financing facility; HUF 34 billion state-subsidised investment credit for drilling
- France: Established national guarantee fund for geothermal exploration (BPCE/ADEME model)
- EU level: EGEC and industry partners pushing for a European financial guarantee scheme to unlock private capital

The proliferation of these instruments lowers the effective risk threshold for project developers and therefore accelerates the demand for drilling and project services — a direct signal for supply chain opportunity.

## Section 5: Competitive Landscape and Key Players

### 5.1 Project Developers and Operators

Company	Country	Segment	Scale
Enel Green Power	Italy	Geothermal power	34 plants in Tuscany; EUR 3B investment pipeline
Zorlu Enerji	Turkey	Geothermal power	305 MW installed
ENGIE Solutions	France	DHC	EUR 300M invested; 20 drilling projects
Dalkia	France	DHC	Active network expansion; Melun 2026 project

Company	Country	Segment	Scale
Eavor Technologies	Canada/Germany	AGS closed-loop	World's first commercial closed-loop, Geretsried
Vulcan Energy Resources	Australia/Germany	Geothermal + Lithium	Upper Rhine Valley ZERO CARBON programme
Stadtwerke München	Germany	DHC	Major municipal geothermal expansion programme
MVM	Hungary	Geothermal power	100 MW target by 2035

## 5.2 Technology and Equipment Providers

Company	Country	Specialisation
Exergy International	Italy	ORC turbines; 500 MW+ globally deployed
Turboden	Italy	ORC systems for geothermal and WHR
SLB (Schlumberger)	Global (France active)	Drilling services, reservoir engineering
Baker Hughes	Global	Drilling; downhole tools; ORC; active EU expansion
Vulcanix™ (Baker Hughes)	Global	High-temperature geothermal drill bits
GA Drilling	Slovakia	Advanced plasma/electrothermal drilling
CeraPhi Energy	UK (export)	Well repurposing and advanced heat systems
Causeway GT	UK/Ireland (export)	Advanced geothermal heat systems

## 5.3 Financial Services

- Munich Re: Global leader in geothermal exploration risk insurance
- KfW (Germany): State development bank providing low-interest geothermal loans
- European Investment Bank (EIB): InvestEU guaranteed loans (e.g., €45M to Eavor Geretsried)
- EU Innovation Fund: Process heat auction with geothermal eligibility
- Baseload Capital: Geothermal project finance specialist; strategic investment from Baker Hughes

# Section 6: Export Market Opportunities for NES Supply Chains

## 6.1 Transferable Skills and Capabilities

North East Scotland's oil and gas supply chains possess a range of capabilities directly transferable to European geothermal markets.

Key transferable capability areas include:

### **Drilling and Well Engineering**

- Directional drilling expertise applicable to deviated and horizontal geothermal wells
- Drill bit technology (high-temperature variants in growing demand)
- Casing, completion, and perforation equipment
- Well integrity and intervention services
- Electric drilling rig technology (increasingly preferred for geothermal)

### **Subsurface Services**

- Seismic survey and data interpretation (17+ surveys conducted in Europe in 2024)
- Reservoir modelling and simulation
- Borehole logging and measurement while drilling (MWD/LWD)
- Geochemical analysis and fluid handling

### **Engineering and Project Management**

- Heat exchanger design and fabrication
- Fluid handling systems and pipework
- Surface plant integration and commissioning
- Environmental monitoring (including induced seismicity)

### **Digital and Monitoring**

- Remote monitoring and SCADA systems
- Subsurface data analytics and AI-assisted reservoir management
- Digital twin applications for plant performance optimisation

## **6.2 Priority Target Markets for Export**

Based on market size, growth trajectory, regulatory readiness, and transferable capability alignment, the highest-priority target markets for North East supply chain export are:

### **Tier 1 — Immediate Opportunity (2025–2027)**

1. Germany: Largest immediate market with Geothermal Acceleration Act, risk insurance, BEW funding (~USD 3.57B), and a pipeline of 65+ new projects by 2030. Eavor's Geretsried project is a blueprint for AGS expansion. High alignment with UK drilling and engineering services.
2. France: Well-established DHC infrastructure expanding rapidly, with new well drilling in 2026 and active network extensions. Major operators (ENGIE Solutions, Dalkia) require equipment and specialist services. Geothermal-lithium co-extraction projects add a strategic dimension.
3. Italy: Enel's EUR 3 billion, 20-year investment programme now secured, with 3 new power plants and significant upgrade work. Clear demand for drilling services, plant engineering, and ORC turbines.

### **Tier 2 — Medium-Term Opportunity (2027–2030)**

1. Turkey: Largest installed base; active expansion. Procurement-oriented market requiring competitive technology and specialist services. High drilling volume provides consistent services demand.
2. Hungary: Ambitious national strategy, double-use target by 2030, new state-backed financing facility. Early-stage market requiring expertise in exploration, drilling risk assessment, and DHC engineering.
3. Poland: Growing DHC market with state financial backing. 3 new systems installed in 2024, strong pipeline. Procurement aligned with district heating engineering capabilities.

### **Tier 3 — Emerging Opportunity (Post-2028)**

- Netherlands: Regulated growth market with stable DHC expansion and supportive subsidy environment
- Romania and Slovakia: High geological potential, emerging policy frameworks
- Nordic markets: Sweden and Finland for GHP technology and system integration

## **6.3 Strategic Entry Points**

- Technology partnerships: Align with AGS/EGS developers (e.g., Eavor, GA Drilling, Causeway GT) as equipment and service providers for their European expansion programmes
- Major operator supply chains: Target Enel, ENGIE Solutions, Dalkia, and Stadtwerke München procurement pipelines
- Oilfield services majors: Partner with Baker Hughes, SLB and other OFS companies actively developing geothermal divisions in Europe
- Risk insurance schemes: Qualifying projects under KfW/Munich Re and EIB InvestEU instruments require vetted supply chains — engagement at the scheme level provides systematic access
- EGEC network: Membership and participation in EGEC events provides direct access to the EU's primary geothermal industry body and its 200+ member organisations across 30 countries

# **Section 7: Market Drivers, Risks, and Barriers**

## **7.1 Market Drivers**

- Energy security imperative: Russia's invasion of Ukraine (2022) catalysed European governments to accelerate domestic, indigenous energy sources. Geothermal is the ultimate domestic energy — a stable, local, baseload resource immune to geopolitical supply disruption. The current Middle East conflict significantly increases the energy security imperative.
- EU decarbonisation targets: Heating and cooling accounts for ~50% of European final energy demand; geothermal is a primary tool for sector decarbonisation

- Advancing technology: EGS cost reductions of up to 80%, closed-loop AGS commercial validation, and declining drilling costs are expanding the economically viable geothermal resource base dramatically
- Natural gas phase-out: Germany's commitment to phase out fossil fuel heating by 2045; EU-level ambitions to reduce gas dependence create structural demand
- Industrial heat decarbonisation: EU Innovation Fund's €1 billion industrial heat auction (December 2025) includes geothermal for process heat below 200°C
- Critical minerals alignment: Geothermal-lithium co-production aligns with EU Critical Raw Materials Act priorities

## 7.2 Risks and Barriers

Risk/Barrier	Severity	Mitigation
High upfront exploration and drilling costs	High	Risk insurance schemes (Germany, Hungary; EU-level plan)
Geological risk (insufficient resource)	High	Pre-drill seismic surveys; insurance instruments; better subsurface data
Permitting complexity and delays	High	Geothermal Acceleration Act (Germany); EU Action Plan expected to streamline
Induced seismicity concerns	Medium	Closed-loop AGS eliminates risk; rigorous monitoring for EGS sites
High interest rates	Medium	Declining; government-backed low-interest loans partially offset
Competition from Asian/US suppliers	Medium	EU preference for European value chain; technology differentiation required
GHP regulatory gaps	Medium	EU Geothermal Action Plan expected to improve policy environment
Local community opposition	Medium	Engagement models from Bavaria, Netherlands improving acceptance

## Section 8: Strategic Outlook and Conclusions

The non-UK European geothermal energy market is entering a sustained growth phase of potentially decade-long duration. The structural drivers - energy security, decarbonisation, technology cost reductions, and policy momentum - are robust and mutually reinforcing. EGEN's expectation of exponential growth in drilling activity beginning in 2025, combined with a pipeline of 50 new power plants and 500+ district heating systems across Europe, represents a substantial and durable market for supply chain services.

Several developments make the current moment strategically important for NES companies considering export market entry:

- The EU Geothermal Action Plan (expected Q1 2026) will define a long-term policy and investment framework, creating regulatory certainty for project developers and their supply chains

- Germany's Geothermal Acceleration Act and risk insurance scheme create a near-term, well-funded project pipeline that is actively seeking qualified supply chain partners
- Enel's EUR 3 billion Italian programme provides a multi-year, well-capitalised drilling and engineering opportunity in Europe's largest EU geothermal power market
- The Eavor AGS commercial breakthrough in Germany validates a technology pathway replicable across Northern Europe, directly relevant to UK expertise
- Baker Hughes' 800 MW geothermal pipeline and EU expansion provides a potential channel partnership for North East supply chain companies

The geothermal sector remains predominantly a services and equipment export opportunity rather than a project ownership play. North East Scotland companies should position themselves as preferred suppliers — leveraging oil and gas drilling expertise, subsurface engineering capabilities, and project management experience — within the growing networks of European geothermal developers and the major operators now accelerating their programmes.

The window for establishing first-mover supply chain relationships in Germany, France, Italy, Hungary, and Poland is open now, before the EU Geothermal Action Plan triggers a step-change in market activity that will intensify both opportunity and competition.

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*Report compiled by ExportCentral AI | Sources: EGEN, EurObserv'ER, European Commission, Rystad Energy, Reuters, Nature, Clean Air Task Force, and primary industry disclosures. All data points reflect the most recently available information as of April 2026.*

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