

Geothermal Energy Market Outlook 2025-2034: Market Share, and Growth Analysis By Technology (Binary Cycle Plants, Flash Steam Plants, Dry Steam Plants, Ground Source Heat Pumps, Direct Systems, Other Technologies), By Application (Power Generation, Residential Heating And Cooling, Commercial Heating And Cooling), By End Use

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Abstracts

The Geothermal Energy Market is valued at USD 8.2 billion in 2025 and is projected to grow at a CAGR of 7.7% to reach USD 16 billion by 2034. The global geothermal energy market is experiencing steady growth, driven by increasing demand for renewable energy and the global transition towards low-carbon power generation. Geothermal energy offers a reliable, sustainable, and continuous power source, making it an attractive alternative to fossil fuels. Governments and energy companies are investing in geothermal projects to diversify their energy portfolios and reduce greenhouse gas emissions. Advancements in drilling and exploration technologies have improved the efficiency of geothermal plants, making previously untapped resources viable for commercial use. Additionally, supportive policies and financial incentives are encouraging the development of new geothermal projects worldwide. However, high initial investment costs and site-specific resource availability remain key challenges. Despite these hurdles, the long-term economic and environmental benefits of geothermal energy continue to drive market expansion. The geothermal energy market saw significant advancements in both capacity expansion and technological innovation. Several countries, including the United States, Indonesia, and Kenya, commissioned new geothermal plants to strengthen their renewable energy infrastructure. Enhanced Geothermal Systems (EGS) gained traction, allowing geothermal development in regions with lower natural permeability. The integration of geothermal energy with

hybrid renewable systems, such as solar-geothermal and geothermal-battery storage, improved overall energy efficiency and reliability. Additionally, policy reforms and carbon reduction commitments accelerated investments in geothermal projects, particularly in Europe and Asia-Pacific. Geothermal heat applications, including district heating and industrial processes, also gained momentum, diversifying the market beyond electricity generation. These developments positioned geothermal energy as a critical component in achieving global decarbonization goals. The geothermal energy market is expected to witness further expansion, driven by technological breakthroughs and increased government support. AI and machine learning will play a growing role in optimizing exploration and resource assessment, reducing project risks and costs. The development of supercritical geothermal systems, which can extract energy from deeper and hotter reservoirs, is anticipated to enhance power generation efficiency. Geothermal desalination projects are also expected to gain traction, addressing both energy and water scarcity challenges in arid regions. Additionally, growing collaboration between public and private sectors will facilitate faster project approvals and financing. However, competition from other renewable sources, such as solar and wind, may create pricing pressures and affect investment decisions. Nonetheless, the geothermal sector's ability to provide stable baseload power will continue to make it a crucial part of the global renewable energy mix.

Key Insights Geothermal Energy Market

Expansion of Enhanced Geothermal Systems (EGS): Advancements in drilling and fracturing technologies are enabling geothermal power generation in new regions with lower natural permeability.

Hybrid Renewable Energy Integration: Geothermal energy is increasingly being integrated with solar and battery storage systems to enhance grid reliability and energy efficiency.

Geothermal Direct Use Applications: The use of geothermal energy for heating, cooling, and industrial applications is expanding, reducing reliance on fossil fuels beyond electricity generation.

AI and Digitalization in Exploration: Artificial intelligence and machine learning are improving geothermal resource identification and operational efficiency, reducing project risks and costs.

Growth in Emerging Markets: Developing countries, particularly in Asia, Africa,

and Latin America, are investing in geothermal projects to strengthen their renewable energy infrastructure.

Rising Demand for Clean Energy: Governments and industries are prioritizing geothermal energy as a stable and low-carbon alternative to fossil fuels.

Technological Advancements in Drilling: Innovations in deep drilling and reservoir stimulation techniques are making geothermal projects more cost-effective and widely accessible.

Government Incentives and Policies: Supportive regulations, tax credits, and funding initiatives are driving increased investment in geothermal energy projects worldwide.

Energy Security and Baseload Power Supply: Unlike intermittent renewables, geothermal energy provides continuous power generation, ensuring grid stability and reducing dependency on fossil fuels.

High Initial Capital Costs: The upfront costs associated with geothermal exploration, drilling, and plant construction remain a significant barrier to market growth, limiting project development in some regions.

Geothermal Energy Market Segmentation

By Technology

Binary Cycle Plants

Flash Steam Plants

Dry Steam Plants

Ground Source Heat Pumps

Direct Systems

Other Technologies

By Application

Power Generation

Residential Heating And Cooling

Commercial Heating And Cooling

By End Use

Industrial

Residential

Commercial

Key Companies Analysed

Berkshire Hathaway Energy

Chevron Corporation

Mitsubishi Corporation

Enel Group

Engie SA

Siemens AG

General Electric Group

KEPCO Group

PT. Pertamina Geothermal Energy

Asea Brown Boveri Ltd.

Toshiba International Corporation

Calpine Corporation

Tetra Tech Inc.

Aboitiz Power Corporation

First Gen Corporation

Ormat Technologies

Energy Development Corporation

EthosEnergy Group

Therma Source LLC

Sarulla Operations Ltd.

Turboden S.P.A.

Terra-Green Power LLC

Gradient Resources

ElectraTherm

Reykjavik Geothermal

Geothermal Energy Market Analytics

The report employs rigorous tools, including Porter's Five Forces, value chain mapping, and scenario-based modeling, to assess supply–demand dynamics. Cross-sector influences from parent, derived, and substitute markets are evaluated to identify risks and opportunities. Trade and pricing analytics provide an up-to-date view of international flows, including leading exporters, importers, and regional price trends.

Macroeconomic indicators, policy frameworks such as carbon pricing and energy security strategies, and evolving consumer behavior are considered in forecasting scenarios. Recent deal flows, partnerships, and technology innovations are incorporated to assess their impact on future market performance.

Geothermal Energy Market Competitive Intelligence

The competitive landscape is mapped through OG Analysis' proprietary frameworks, profiling leading companies with details on business models, product portfolios, financial performance, and strategic initiatives. Key developments such as mergers & acquisitions, technology collaborations, investment inflows, and regional expansions are analyzed for their competitive impact. The report also identifies emerging players and innovative startups contributing to market disruption.

Regional insights highlight the most promising investment destinations, regulatory landscapes, and evolving partnerships across energy and industrial corridors.

Countries Covered

North America — Geothermal Energy market data and outlook to 2034

United States

Canada

Mexico

Europe — Geothermal Energy market data and outlook to 2034

Germany

United Kingdom

France

Italy

Spain

BeNeLux

Russia

Sweden

Asia-Pacific — Geothermal Energy market data and outlook to 2034

China

Japan

India

South Korea

Australia

Indonesia

Malaysia

Vietnam

Middle East and Africa — Geothermal Energy market data and outlook to 2034

Saudi Arabia

South Africa

Iran

UAE

Egypt

South and Central America — Geothermal Energy market data and outlook to 2034

Brazil

Argentina

Chile

Peru

** We can include data and analysis of additional countries on demand.*

Research Methodology

This study combines primary inputs from industry experts across the Geothermal Energy value chain with secondary data from associations, government publications, trade databases, and company disclosures. Proprietary modeling techniques, including data triangulation, statistical correlation, and scenario planning, are applied to deliver reliable market sizing and forecasting.

Key Questions Addressed

What is the current and forecast market size of the Geothermal Energy industry at global, regional, and country levels?

Which types, applications, and technologies present the highest growth potential?

How are supply chains adapting to geopolitical and economic shocks?

What role do policy frameworks, trade flows, and sustainability targets play in shaping demand?

Who are the leading players, and how are their strategies evolving in the face of global uncertainty?

Which regional “hotspots” and customer segments will outpace the market, and what go-to-market and partnership models best support entry and expansion?

Where are the most investable opportunities—across technology roadmaps, sustainability-linked innovation, and M&A—and what is the best segment to invest over the next 3–5 years?

Your Key Takeaways from the Geothermal Energy Market Report

Global Geothermal Energy market size and growth projections (CAGR), 2024-2034

Impact of Russia-Ukraine, Israel-Palestine, and Hamas conflicts on Geothermal Energy trade, costs, and supply chains

Geothermal Energy market size, share, and outlook across 5 regions and 27 countries, 2023-2034

Geothermal Energy market size, CAGR, and market share of key products, applications, and end-user verticals, 2023-2034

Short- and long-term Geothermal Energy market trends, drivers, restraints, and opportunities

Porter's Five Forces analysis, technological developments, and Geothermal Energy supply chain analysis

Geothermal Energy trade analysis, Geothermal Energy market price analysis, and Geothermal Energy supply/demand dynamics

Profiles of 5 leading companies—overview, key strategies, financials, and products

Latest Geothermal Energy market news and developments

Additional Support

With the purchase of this report, you will receive

An updated PDF report and an MS Excel data workbook containing all market

tables and figures for easy analysis.

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Contents

1. TABLE OF CONTENTS

- 1.1 List of Tables
- 1.2 List of Figures

2. GLOBAL GEOTHERMAL ENERGY MARKET SUMMARY, 2025

- 2.1 Geothermal Energy Industry Overview
 - 2.1.1 Global Geothermal Energy Market Revenues (In US\$ billion)
- 2.2 Geothermal Energy Market Scope
- 2.3 Research Methodology

3. GEOTHERMAL ENERGY MARKET INSIGHTS, 2024-2034

- 3.1 Geothermal Energy Market Drivers
- 3.2 Geothermal Energy Market Restraints
- 3.3 Geothermal Energy Market Opportunities
- 3.4 Geothermal Energy Market Challenges
- 3.5 Tariff Impact on Global Geothermal Energy Supply Chain Patterns

4. GEOTHERMAL ENERGY MARKET ANALYTICS

- 4.1 Geothermal Energy Market Size and Share, Key Products, 2025 Vs 2034
- 4.2 Geothermal Energy Market Size and Share, Dominant Applications, 2025 Vs 2034
- 4.3 Geothermal Energy Market Size and Share, Leading End Uses, 2025 Vs 2034
- 4.4 Geothermal Energy Market Size and Share, High Growth Countries, 2025 Vs 2034
- 4.5 Five Forces Analysis for Global Geothermal Energy Market
 - 4.5.1 Geothermal Energy Industry Attractiveness Index, 2025
 - 4.5.2 Geothermal Energy Supplier Intelligence
 - 4.5.3 Geothermal Energy Buyer Intelligence
 - 4.5.4 Geothermal Energy Competition Intelligence
 - 4.5.5 Geothermal Energy Product Alternatives and Substitutes Intelligence
 - 4.5.6 Geothermal Energy Market Entry Intelligence

5. GLOBAL GEOTHERMAL ENERGY MARKET STATISTICS – INDUSTRY REVENUE, MARKET SHARE, GROWTH TRENDS AND FORECAST BY SEGMENTS, TO 2034

5.1 World Geothermal Energy Market Size, Potential and Growth Outlook, 2024- 2034 (\$ billion)

5.1 Global Geothermal Energy Sales Outlook and CAGR Growth By Technology, 2024-2034 (\$ billion)

5.2 Global Geothermal Energy Sales Outlook and CAGR Growth By Application, 2024-2034 (\$ billion)

5.3 Global Geothermal Energy Sales Outlook and CAGR Growth By End Use, 2024-2034 (\$ billion)

5.4 Global Geothermal Energy Market Sales Outlook and Growth by Region, 2024-2034 (\$ billion)

6. ASIA PACIFIC GEOTHERMAL ENERGY INDUSTRY STATISTICS – MARKET SIZE, SHARE, COMPETITION AND OUTLOOK

6.1 Asia Pacific Geothermal Energy Market Insights, 2025

6.2 Asia Pacific Geothermal Energy Market Revenue Forecast By Technology, 2024-2034 (USD billion)

6.3 Asia Pacific Geothermal Energy Market Revenue Forecast By Application, 2024-2034 (USD billion)

6.4 Asia Pacific Geothermal Energy Market Revenue Forecast By End Use, 2024- 2034 (USD billion)

6.5 Asia Pacific Geothermal Energy Market Revenue Forecast by Country, 2024- 2034 (USD billion)

6.5.1 China Geothermal Energy Market Size, Opportunities, Growth 2024- 2034

6.5.2 India Geothermal Energy Market Size, Opportunities, Growth 2024- 2034

6.5.3 Japan Geothermal Energy Market Size, Opportunities, Growth 2024- 2034

6.5.4 Australia Geothermal Energy Market Size, Opportunities, Growth 2024- 2034

7. EUROPE GEOTHERMAL ENERGY MARKET DATA, PENETRATION, AND BUSINESS PROSPECTS TO 2034

7.1 Europe Geothermal Energy Market Key Findings, 2025

7.2 Europe Geothermal Energy Market Size and Percentage Breakdown By Technology, 2024- 2034 (USD billion)

7.3 Europe Geothermal Energy Market Size and Percentage Breakdown By Application, 2024- 2034 (USD billion)

7.4 Europe Geothermal Energy Market Size and Percentage Breakdown By End Use, 2024- 2034 (USD billion)

7.5 Europe Geothermal Energy Market Size and Percentage Breakdown by Country, 2024- 2034 (USD billion)

7.5.1 Germany Geothermal Energy Market Size, Trends, Growth Outlook to 2034

7.5.2 United Kingdom Geothermal Energy Market Size, Trends, Growth Outlook to 2034

7.5.2 France Geothermal Energy Market Size, Trends, Growth Outlook to 2034

7.5.2 Italy Geothermal Energy Market Size, Trends, Growth Outlook to 2034

7.5.2 Spain Geothermal Energy Market Size, Trends, Growth Outlook to 2034

8. NORTH AMERICA GEOTHERMAL ENERGY MARKET SIZE, GROWTH TRENDS, AND FUTURE PROSPECTS TO 2034

8.1 North America Snapshot, 2025

8.2 North America Geothermal Energy Market Analysis and Outlook By Technology, 2024- 2034 (\$ billion)

8.3 North America Geothermal Energy Market Analysis and Outlook By Application, 2024- 2034 (\$ billion)

8.4 North America Geothermal Energy Market Analysis and Outlook By End Use, 2024- 2034 (\$ billion)

8.5 North America Geothermal Energy Market Analysis and Outlook by Country, 2024- 2034 (\$ billion)

8.5.1 United States Geothermal Energy Market Size, Share, Growth Trends and Forecast, 2024- 2034

8.5.1 Canada Geothermal Energy Market Size, Share, Growth Trends and Forecast, 2024- 2034

8.5.1 Mexico Geothermal Energy Market Size, Share, Growth Trends and Forecast, 2024- 2034

9. SOUTH AND CENTRAL AMERICA GEOTHERMAL ENERGY MARKET DRIVERS, CHALLENGES, AND FUTURE PROSPECTS

9.1 Latin America Geothermal Energy Market Data, 2025

9.2 Latin America Geothermal Energy Market Future By Technology, 2024- 2034 (\$ billion)

9.3 Latin America Geothermal Energy Market Future By Application, 2024- 2034 (\$ billion)

9.4 Latin America Geothermal Energy Market Future By End Use, 2024- 2034 (\$ billion)

9.5 Latin America Geothermal Energy Market Future by Country, 2024- 2034 (\$ billion)

9.5.1 Brazil Geothermal Energy Market Size, Share and Opportunities to 2034

9.5.2 Argentina Geothermal Energy Market Size, Share and Opportunities to 2034

10. MIDDLE EAST AFRICA GEOTHERMAL ENERGY MARKET OUTLOOK AND GROWTH PROSPECTS

10.1 Middle East Africa Overview, 2025

10.2 Middle East Africa Geothermal Energy Market Statistics By Technology, 2024-2034 (USD billion)

10.3 Middle East Africa Geothermal Energy Market Statistics By Application, 2024-2034 (USD billion)

10.4 Middle East Africa Geothermal Energy Market Statistics By End Use, 2024- 2034 (USD billion)

10.5 Middle East Africa Geothermal Energy Market Statistics by Country, 2024- 2034 (USD billion)

10.5.1 Middle East Geothermal Energy Market Value, Trends, Growth Forecasts to 2034

10.5.2 Africa Geothermal Energy Market Value, Trends, Growth Forecasts to 2034

11. GEOTHERMAL ENERGY MARKET STRUCTURE AND COMPETITIVE LANDSCAPE

11.1 Key Companies in Geothermal Energy Industry

11.2 Geothermal Energy Business Overview

11.3 Geothermal Energy Product Portfolio Analysis

11.4 Financial Analysis

11.5 SWOT Analysis

12 APPENDIX

12.1 Global Geothermal Energy Market Volume (Tons)

12.1 Global Geothermal Energy Trade and Price Analysis

12.2 Geothermal Energy Parent Market and Other Relevant Analysis

12.3 Publisher Expertise

12.2 Geothermal Energy Industry Report Sources and Methodology

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