Supply-Demand Dynamics of Power Transformers

Global Market Analysis

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Is the power transformers demand sustainable?

PTR Inc.

What is the supply situation with all the investments announced?

PTR Inc.

Where is the new production capacity being added?

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Will power transformers component and raw material suppliers be able to support the capacity additions?

Will there be enough talent: trained workforce to support this growth?

How will the international trade flows look like for power transformers?

PTR Inc.

Power Transformers Market Demand Forecast Globally

Accelerated by decarbonization, revitalization and expansions in the power grid

- **Energy Transition Driving Transformer Demand**

  Anticipated increase in renewable capacity, accelerated electrification, EVs penetrations and digitalization are fueling power transformer demand

- **Grid Revitalization**

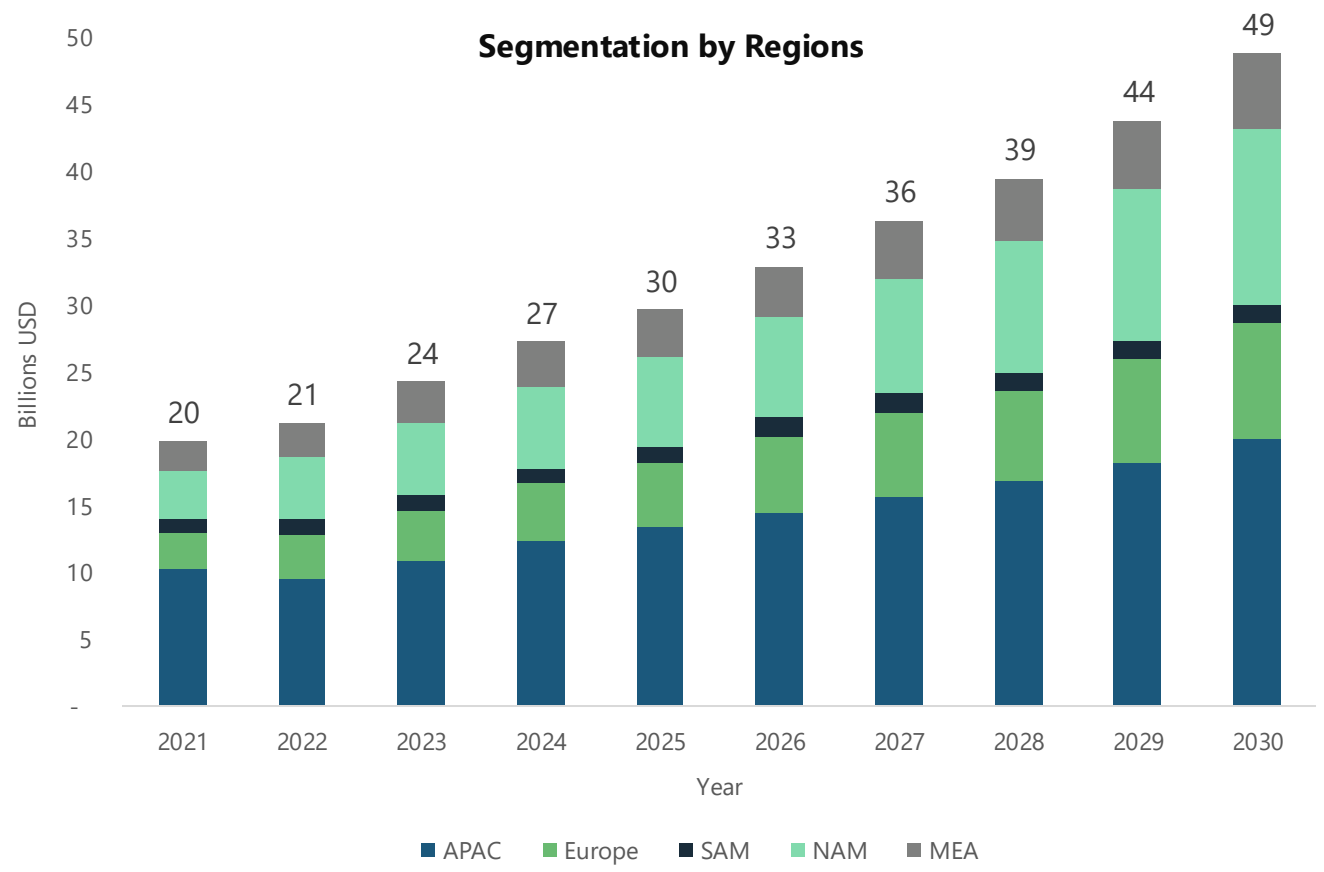
  Aging infrastructure and extreme weather events driving a global push for grid refurbishment

- **Grid Expansions**

  Urbanization and industrial growth to drive up electricity demand, requiring grid expansion and modernization

- **Policy Driven Demand**

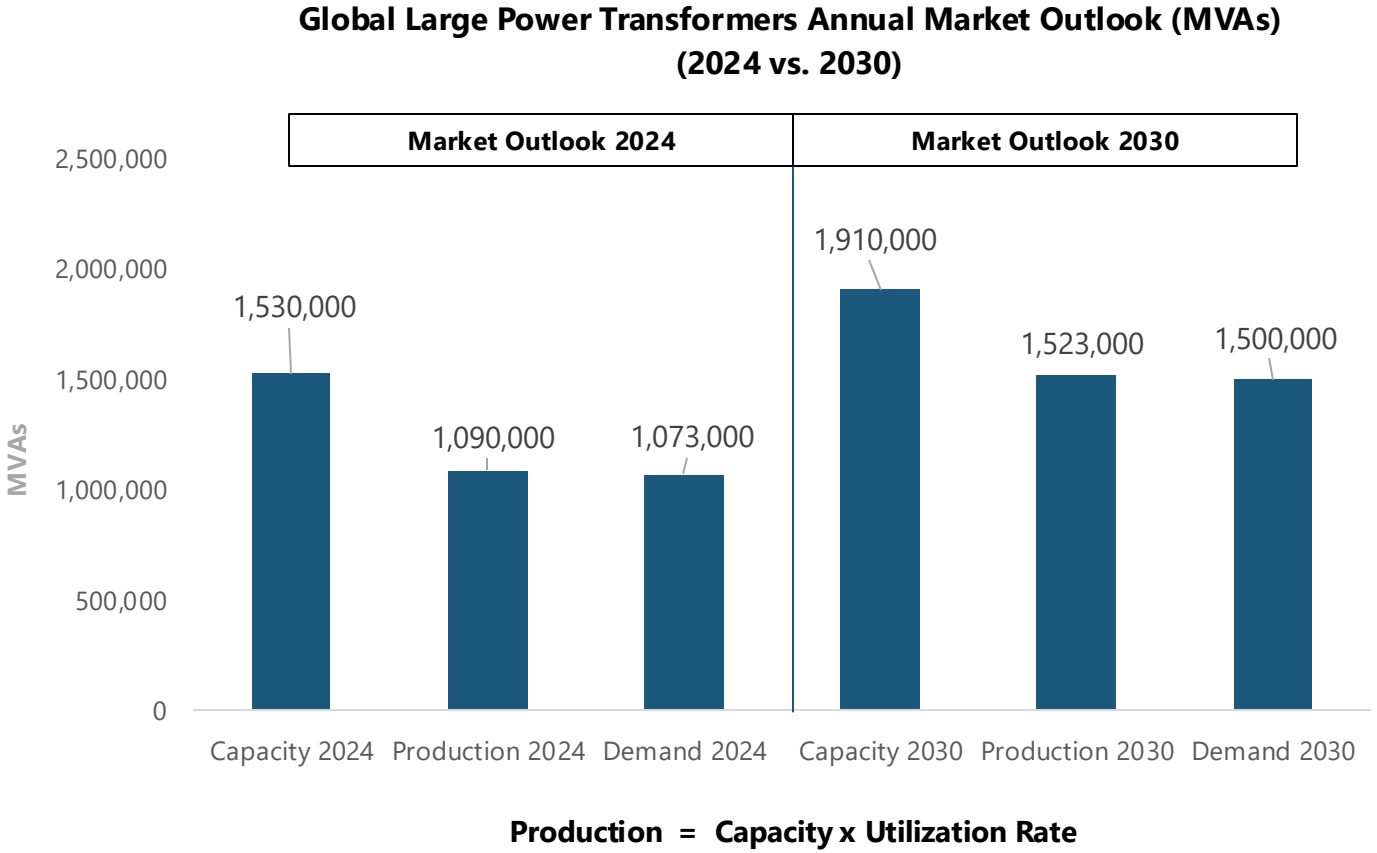
  Government stimulus packages and economic diversification plans are catalyzing large- scale infrastructure projects



Power Transformers Supply/Demand Forecast

The gap between supply and demand is likely to result in higher utilization rates by 2030

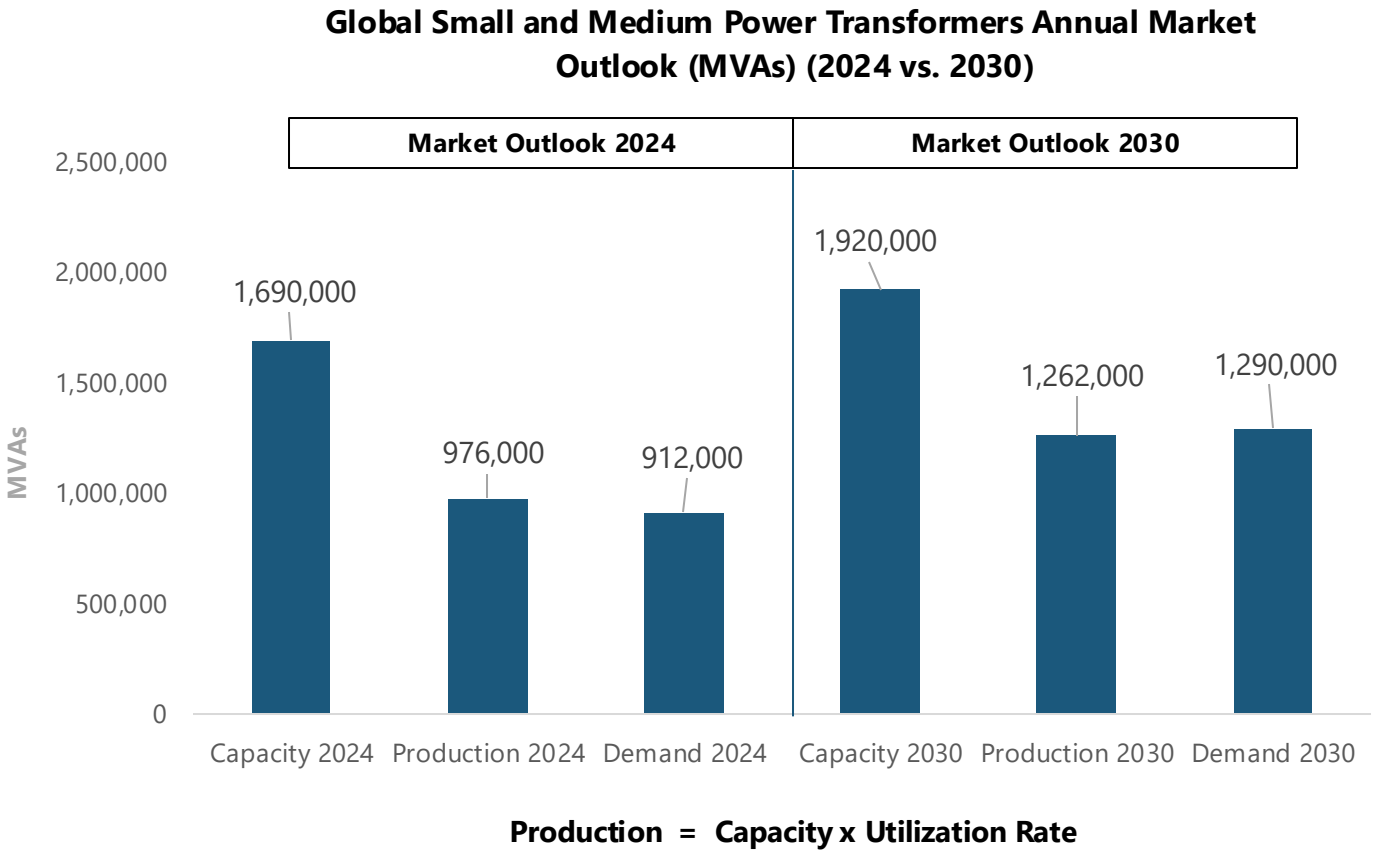
- **Continued need for >100 MVA facilities** in North America and MEA as demand outpaces production
- **Global capacity strained** – utilization rising from ~70% to 80% by 2030; top players already at 90%+, while smaller APAC players lag behind
- **Severe lead times of LPTs** – up to 5 years in Europe/North America vs. ~1 year in APAC; even APAC-to-North America shipments now delayed to 2028+
- **Capacity expansions underway,** but most new plants won't be online until 2026–2027, risking near-term shortages



Power Transformers Supply/Demand Forecast

Renewables to drive small to medium power transformers demand

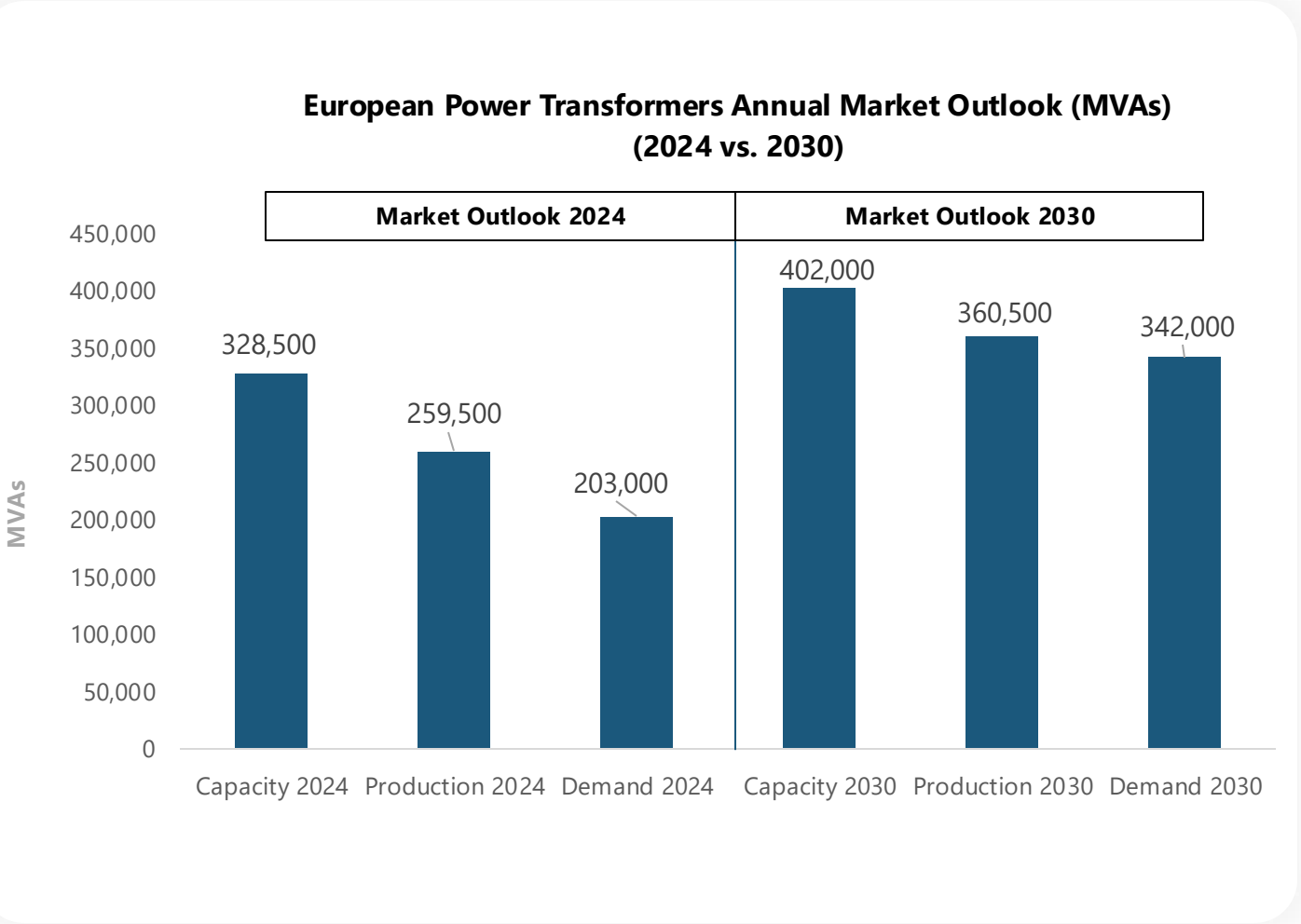
- **Demand-supply gap widening:** Small and medium power transformers (SMPTs) demand to grow at ~6% CAGR (2024–2030) vs. 2% capacity expansion.
- **Ample capacity exists for <100 MVA** segment and a low utilization rate of ~60%, resulting in limited investment in the segment.
- **Lead time risk:** Rising renewables demand may extend SMPT lead times; OEM utilization expected to hit 65% by 2030.
- **Regional expansion trends:** APAC leads SMPT capacity growth, driven by exports to MEA and Latin America; Europe follows in investment.



Regional Deep-Dive – Supply/Demand in Europe

Europe is exporting power transformers to North America and the Middle East

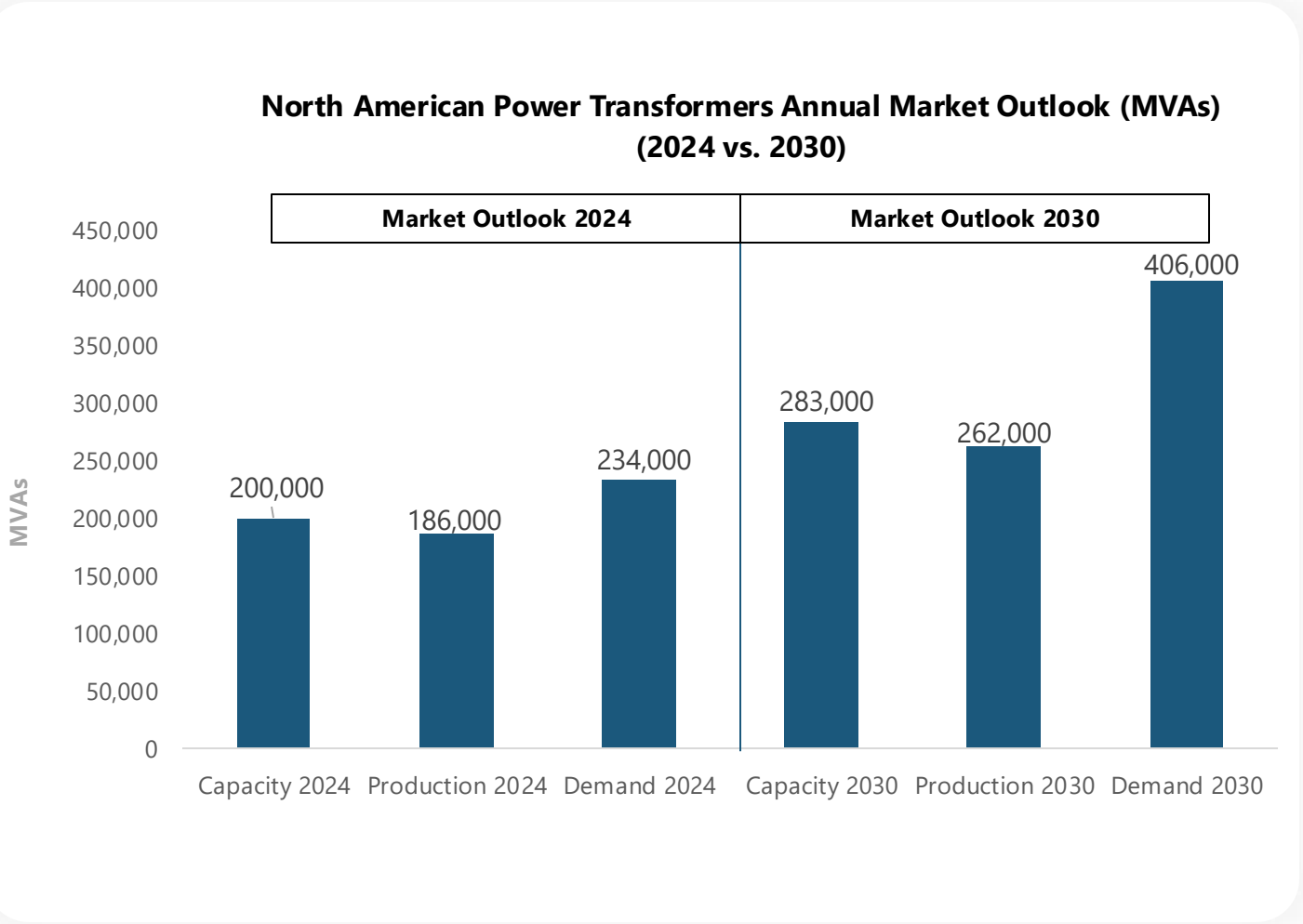
- **Europe's capacity exceeds local demand** – ~330,000 MVAs today, growing to ~400,000 MVAs by 2030; 40% of this growth already backed by investments
- **Utilization at 75–80%,** constrained by QC issues, testing failures, material shortages, and supply chain disruptions
- **Net exporter of transformers** – exports focused on large units to North America and MEA; imports of small-to-medium units (renewables)
- **Hitachi Energy leads** large power transformer expansions, while Kolektor Etra, Faramax Trafo, and R&S target small-to-medium segment upgrades



Regional Deep-Dive – Supply/Demand in North America

Large power transformers account for >80% imports, while small-to-medium power transformers make up 20%

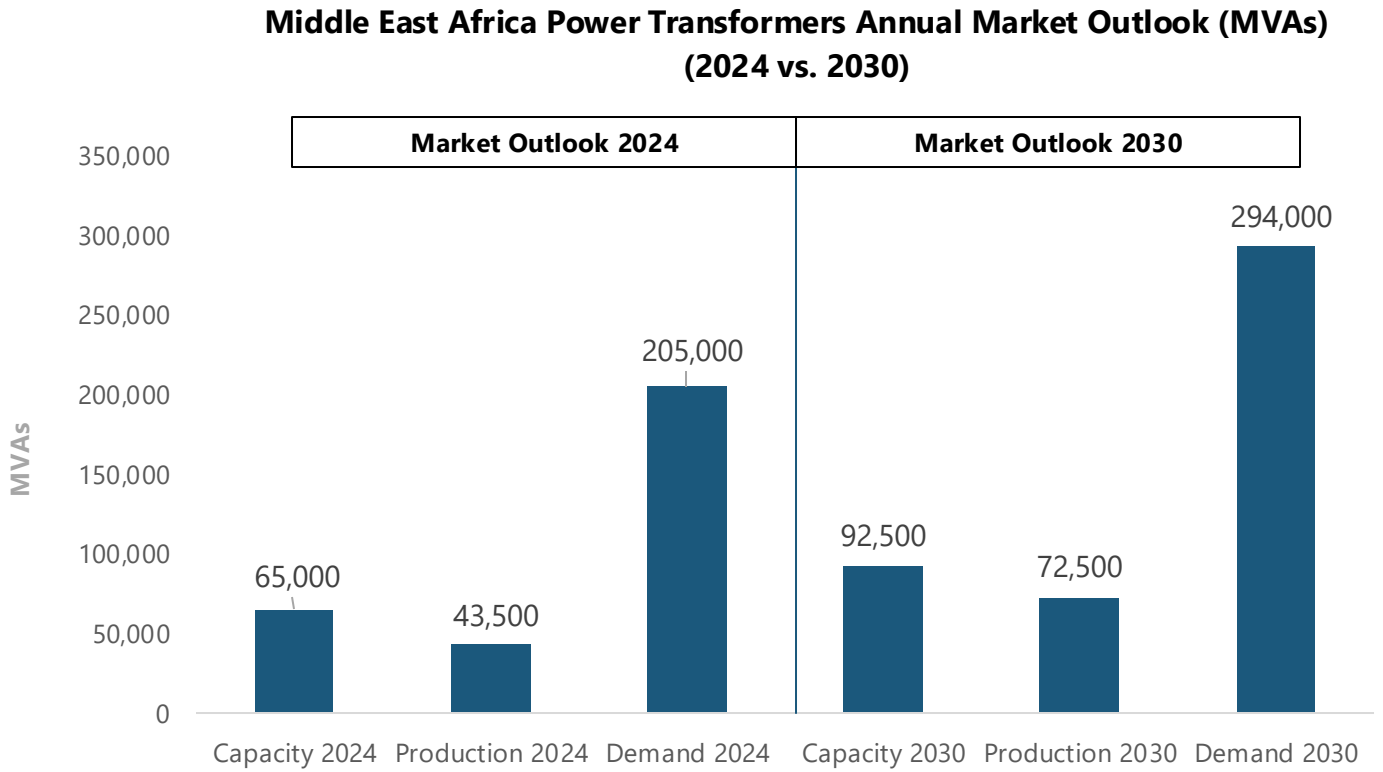
- **Heavy reliance on imports** – current LPT capacity at ~70,000 MVAs; expected to nearly double by 2030, with 65% of growth already announced
- **Facilities running at 90%+ utilization,** constrained by raw material delays (notably tap changers, bushings) and skilled labor shortages
- **Lead times stretched** – 1.5–2 years for small/medium units; 6–7 years for LPTs, with deliveries quoted into 2031
- **Major LPT investments** underway by WEG, Hitachi Energy, Siemens Energy, Hyosung, and HD Hyundai USA. Only Delta Star and Pennsylvania Transformer have announced new capacity in smaller segments



Regional Deep-Dive – Supply/Demand in Middle East Africa

Investments in large power transformers are primarily driven by localization policies

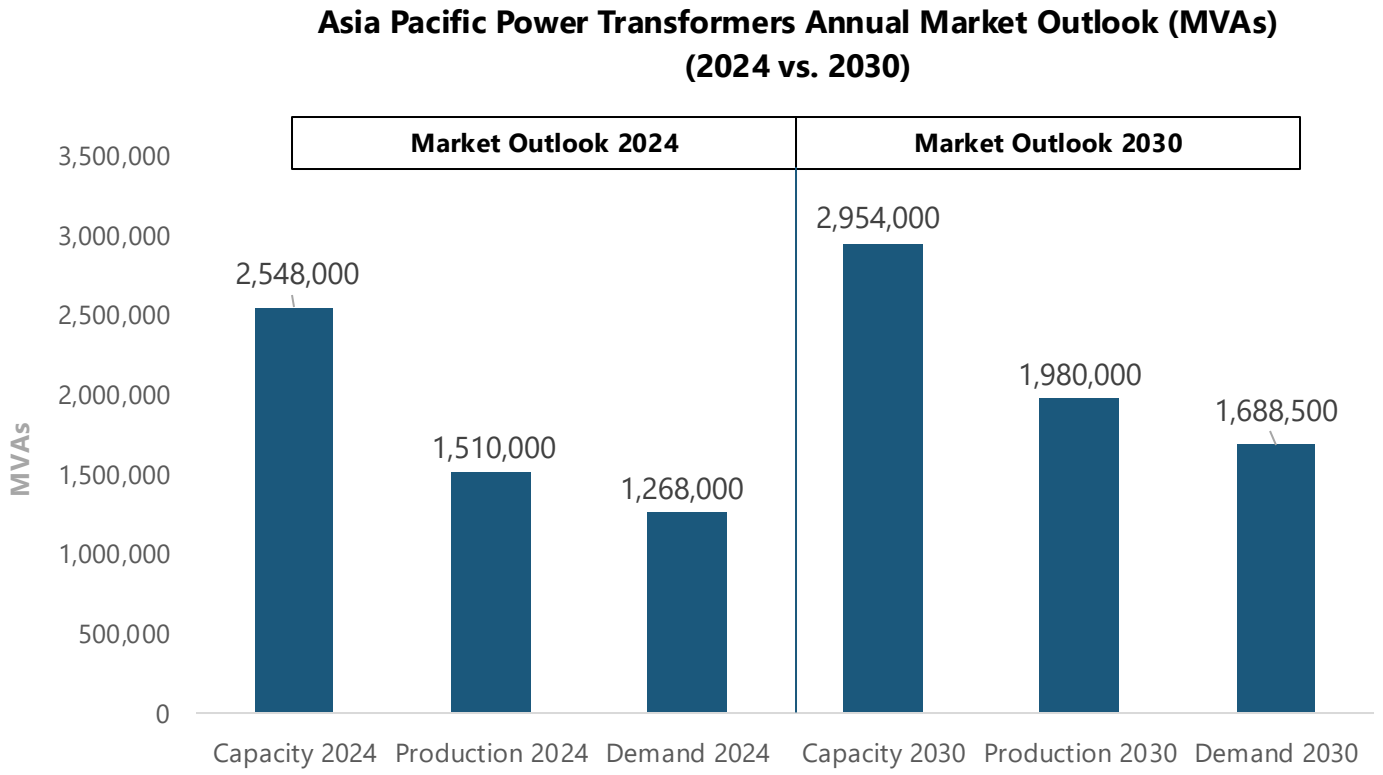
- **Capacity to grow by ~28,000 MVAs by 2030,** with 70% already backed by investment commitments
- **LPTs make up 90% of imports,** mainly from Europe and APAC; local players address small-to-medium transformers demand
- **Current utilization at around 70%,** projected to hit 80% by 2030 as Saudi Arabia drives localization and new capacity
- **Voltamp Oman, SPTC, and Elsewedy** expanding across transformer segments; **Chinese firms (TBEA, LEEC, Chint)** eye LPT projects—only one likely post-Local Purchase Agreement (LPA) in Saudi.



Regional Deep-Dive – Supply/Demand in Asia Pacific

Major transformer manufacturers hit maximum capacity last year due to rising demand worldwide

- **Current capacity: >2.5 million MVAs,** rising to ~3 million MVAs by 2030 amid strong regional and global demand
- **Although China holds ~70% of APAC capacity, Non-China APAC** remains well-equipped to meet global demand, especially for MEA and NAM
- **Utilization averages 60%,** but top players are near full capacity:
  - **HD Hyundai Electric & LS Electric: 95%**
  - **Toshiba: 90–95%**
  - **Hyosung: 86.5%**
- **Lead times:** ~1 year for LPTs; 3–6 months for small/medium units. Delays driven by shortages of **bushings and OLTCs**, especially for export orders sourcing from **MR Germany**



Key Takeaways for the Stakeholders

With eased trade restrictions & vendor approval challenges for Chinese players, APAC is primed to meet the global demand supply gap

For Transformer Manufacturers

- Act fast in NAM to gain early-mover advantage amid rising domestic demand
- Enter KSA via JVs – benefit from 2-year local content waiver and secure market access
- Expand existing LPT capacity in Europe to serve high-demand markets in MEA and North America
- Tariff risks = European opportunity – Mexico and Canada currently supply ~30% of U.S. LPT & 40% of SMPT demand

For Component & Raw Material Suppliers

- Partner with APAC OEMs entering global markets – especially where specific brands (e.g., tap changers, bushings) are preferred
- Expand into Europe and the U.S. – align growth with OEM capacity expansions already announced

For Utilities

- Plan ahead – place transformer orders well in advance to manage long lead times and avoid project delays
- Go digital – adopt online asset health monitoring to predict failures, reduce downtime, and lower repair costs for critical transformer assets
- Be open to new suppliers, not just for transformers, but also for specifications on components and raw materials.

Questions?

To download the presentation, scan the QR code

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