Barriers to Green Technology Adoption: Implications for Power Grid Infrastructure Growth

For decades, the utilities sector was perceived as a slow-moving and stable industry. However, the advent of green technologies, with electrification at its core for decarbonization, has propelled the power grid and the utilities that manage it to the forefront of our climate goals.

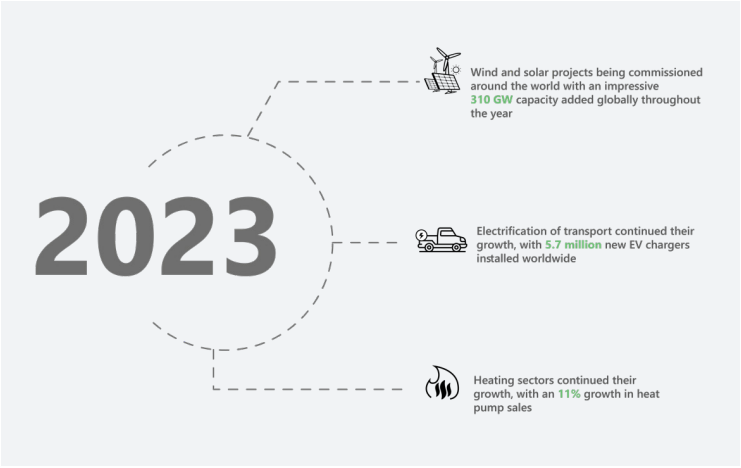
Recent progress in renewable adoption has been promising. 2023 witnessed a significant number of wind and solar projects being commissioned around the world with an impressive 310GW capacity added globally throughout the year, taking us to a cumulative installed capacity of 1.8 TW. [1] In addition to renewables, electrification of transport and heating sectors, continued their growth, with 5.7 million new EV chargers [2] installed worldwide and an 11% growth in heat pump sales [3] in 2023.

Projections by PTR Inc. indicate this growth trajectory will persist, with an estimated 670 GW of additional renewable capacity (wind and solar) expected to come online in the US and Europe by 2030. [1] The electric vehicle (EV) market is also poised for sustained growth, projected at a Compound Annual Growth Rate (CAGR) of 20% until the decade's end [2].

The rapid adoption of green technologies can be attributed in large part to significant cost reductions over the last decade. The cost of electricity from onshore wind and solar photovoltaic (PV) sources has become increasingly competitive, outpacing that of new and even existing fossil fuel plants in many countries. Similarly, the affordability of electric vehicles has surged, driven by decreasing battery costs and the economies of scale associated with mass production.

It is crucial to assess whether the anticipated high growth in grid infrastructure and equipment demand, driven by the adoption of clean technologies like renewables EV chargers, will materialize as initially predicted.

Despite these positive trends, the green technology adoption faces challenges that may impede its growth. Economic uncertainties, pressure on public budgets, the financial health of the energy sector and financing challenges due to a high cost of capital today, add complexity to



policy uncertainties for the adoption of clean technologies. Infrastructure hurdles, such as energy storage limitations, sluggish grid updates, delayed grid connections, and protracted permitting processes, further contribute to the deceleration of renewable and EV charging projects.

As the world grapples with geopolitical issues affecting public sentiment toward green technologies, a potential slowdown in the growth of renewables and EV charging infrastructure is becoming a reality. This raises critical questions for stakeholders in the electrical infrastructure space. From a planning perspective, it is crucial to

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assess whether the anticipated high growth in grid infrastructure and equipment demand, driven by the adoption of clean technologies like renewables EV chargers, will materialize as initially predicted.

Economic uncertainties, pressure on public budgets, the financial health of the energy sector and financing challenges due to a high cost of capital today, add complexity to policy uncertainties for the adoption of clean technologies.

The answer comes with a caveat - the electrical infrastructure market is growing, but not as rapidly as initially envisaged. Predictions of a 13% annual growth in renewable capacity additions in the US and Europe until 2030 may be tempered, potentially dropping to as low as 9% if bottlenecks persist. [1] Similarly, a potential decrease of up to 15% in overall EV charger sales in the US and Europe compared to previous expectations is on the horizon. [2]

This slower growth trajectory in the electrical infrastructure market, which has thrived on the integration of green technologies into the grid, could result in a demand growth as low as 4% in Europe and 8% in the US. [1] Realistically, if this trend persists, achieving net-zero targets will become increasingly challenging. The industry must keep these challenges and the potential impact due to them in mind, so we can focus on fostering innovation to address these barriers and ensure a sustainable and expedited transition to a greener future.

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Author:
Hassan Zaheer
Chief Operating Officer
at PTR Inc.

Hassan Zaheer is the Chief Operating Officer at PTR Inc. based in Abu Dhabi, UAE. With more than a decade of experience in the energy transition space, Hassan works for various Fortune-500 blue-chip clients on global market studies in the electrical infrastructure sector. In his current role at PTR, he works with clients to sustainably grow their businesses, both through custom consulting work and tailored research reports by PTR, helping their executive management and boards make data driven decisions. Hassan is also a Member of Advisory Board for CWIEME Berlin and an advisor to the educational non-profit Better Humans Academy. Hassan has a tech background with a Masters in Power Engineering from the Technical University of Munich (TUM) and a BS in Electrical Engineering from the Lahore University of Management Sciences (LUMS). Additionally, he is also an Alumni of Center for Digital Technology & Management (CDTM).