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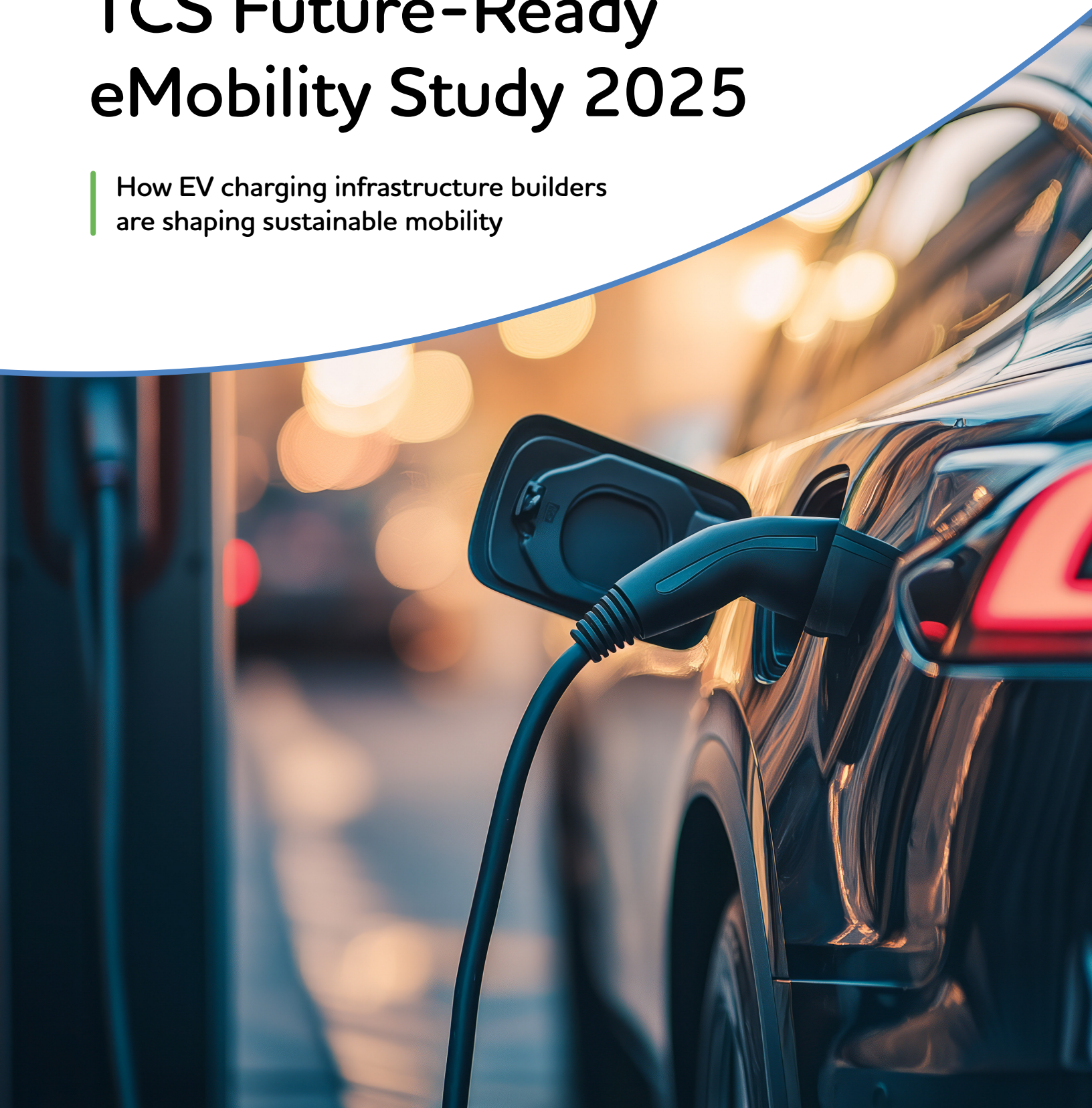
TCS Future-Ready eMobility Study 2025

How EV charging infrastructure builders are shaping sustainable mobility



Executive summary

EV charging infrastructure builders are critical to sustainable mobility, creating the charging network essential for widespread EV adoption. In essence, these chargers are building the backbone of electrified transportation, powering the EV revolution one station at a time.

To better understand how chargers and other key stakeholders are navigating the EV transition, TCS conducted a global survey in August – September 2024 of five segments that play a critical role in shaping a successful EV transition.

Our survey results show that many chargers are clear on the challenges they face, including high upfront costs, evolving technologies, and grid integration complexities.

Despite these hurdles, they're expanding charging networks, innovating payment systems, and collaborating with stakeholders to enhance accessibility. By bridging the gap between EVs and energy systems, the chargers are not just facilitating adoption but actively shaping the future of smart, sustainable transportation.

Essential takeaways

Nearly three-fourths of charging infrastructure respondents expect significant consolidation, driven by economic viability and limited scalability

of charging infrastructure builders say they’re satisfied with the current level of collaboration and coordination among stakeholders in the EV ecosystem

of charging companies find government collaboration effective in fostering partnerships

Challenges remain, but the future looks brighter

Despite the industry's well-documented ups and downs, EV chargers have a largely positive industry outlook for the near future. Less than a third of charging infrastructure builders expect industry outlook to worsen in the next 12-24 months, and 44% expect it to improve (see Figure 1).

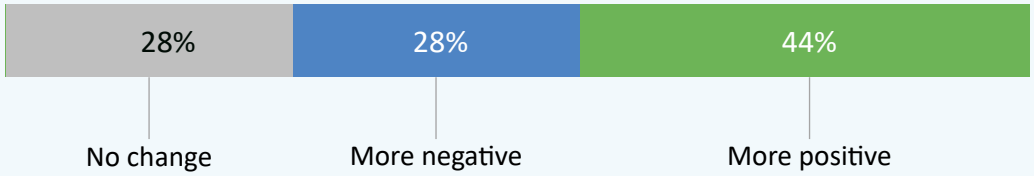


Figure 1. How do you expect EV industry outlook to change over the coming 12-24 months?

While a positive outlook signals progress for the future, chargers say they have to overcome key challenges to expansion, particularly around costs and profitability (see Figure 2). Improved charging infrastructure is top of mind for all EV stakeholders, but those who produce it want to see better ROI.

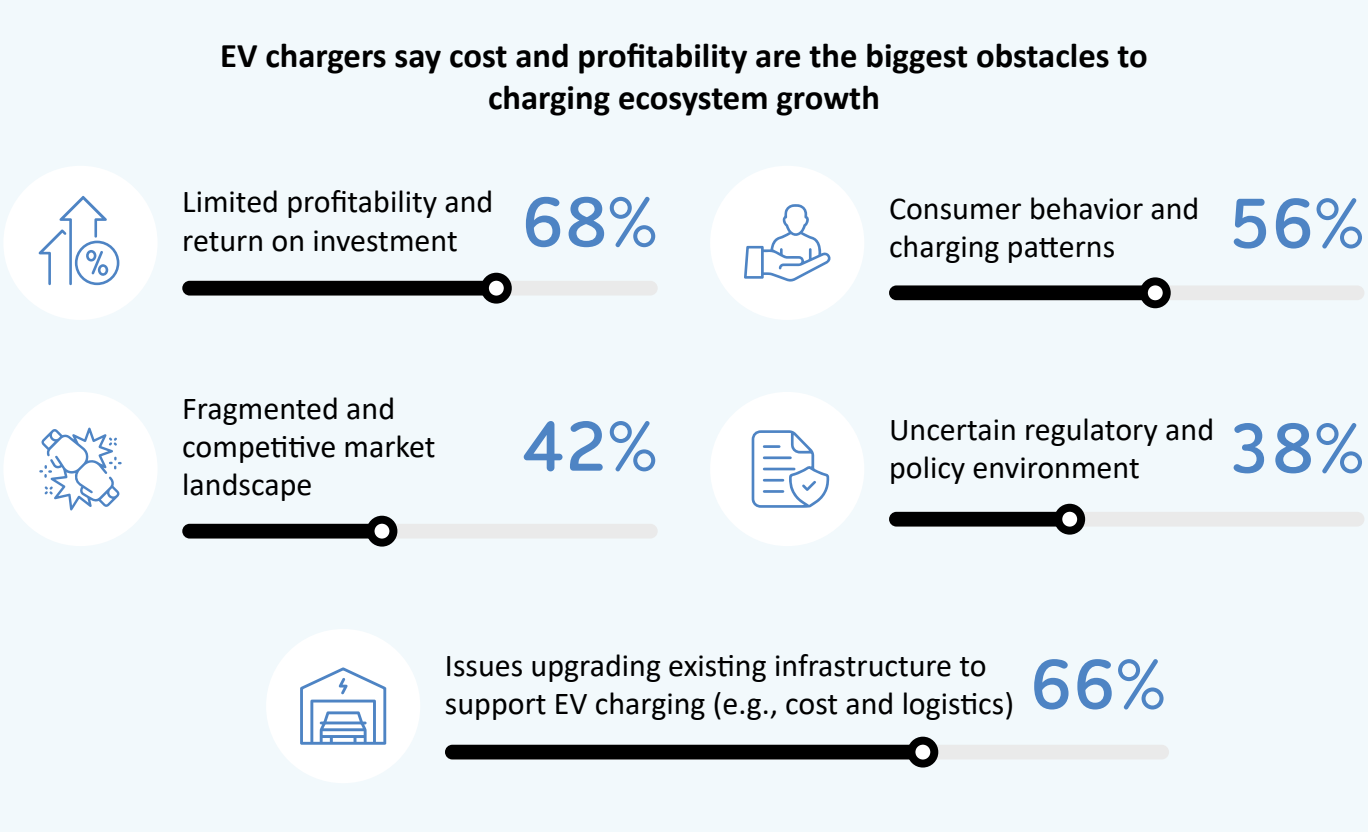
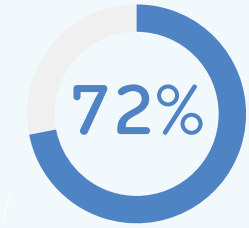


Figure 2. What commercial realities or obstacles do you foresee in the growth of the EV charging ecosystem overall?

Chargers and the mobility ecosystem

Chargers anticipate that intense competition and high capital requirements are likely to spur rapid consolidation, reshaping the landscape as companies struggle to stay competitive. Nearly three-fourths of survey respondents say significant consolidation is likely, driven by economic viability and limited scalability.



of charging infrastructure builders surveyed think significant consolidation (M&A, buyouts etc.) among EV charging infrastructure companies is likely or very likely

Top 3 drivers for consolidation

- Economic viability
- Ability to scale
- Greater profitability/ROI

Q. How likely is significant consolidation (M&A, buyouts etc.) among EV charging infrastructure companies?
Q. What do you think will drive consolidation among EV charging infrastructure companies?

Strategic partnerships between manufacturers, energy, retail and commercial property owners, and government entities also offer a vital path forward, enabling shared resources and innovation to scale infrastructure efficiently. Charging infrastructure builders are actively seeking these partnerships (see Figure 3).

Charging infrastructure builders seek partnerships with retail commercial property owners, among others

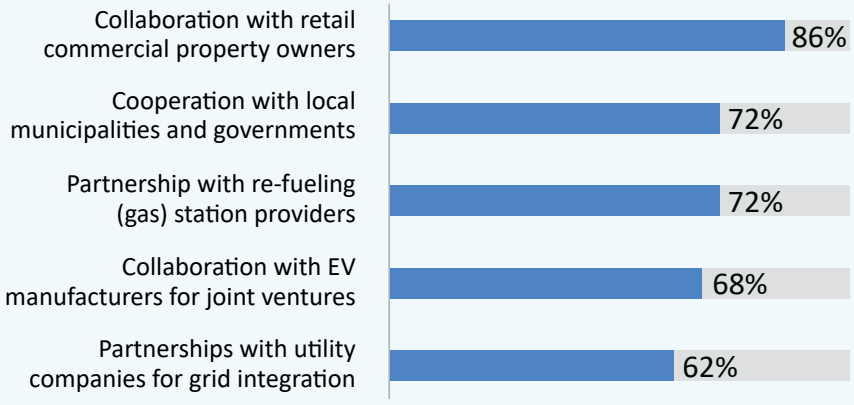


Figure 3. What collaborations or partnerships do you seek to accelerate the expansion of EV charging infrastructure?

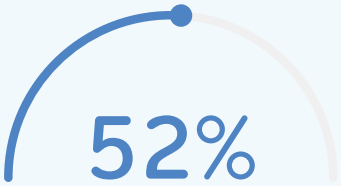
Beyond these sought-after partnerships, collaboration among all stakeholders is essential for the EV industry to reach its full potential. How and where chargers integrate and interact with other EV stakeholders is equally critical. Yet few chargers – less than a third – are satisfied with the current level of collaboration across stakeholders in the EV ecosystem.

of EV chargers say they're satisfied with the current level of collaboration and coordination among stakeholders in the EV infrastructure ecosystem

Q. How satisfied are you with the current level of collaboration and coordination among stakeholders in the EV infrastructure ecosystem?

The role of governments and utilities

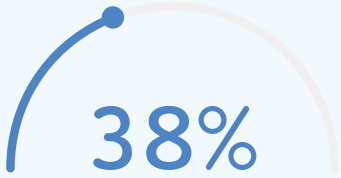
Governments across the globe have undertaken initiatives to accelerate the infrastructure development for EV transition. These efforts are gaining traction with EV chargers, though more work is needed to promote collaboration. However, collaboration between utilities and charging infrastructure builders, who would seem to be natural partners, is strained with limited active coordination.



More than half of chargers say they are satisfied with the current level of government policies and incentives provided for EV charging infrastructure development

Fewer see government collaboration as successful in fostering EV partnerships.

Say government collaboration in fostering partnerships between different EV ecosystem players is effective



Most chargers are engaged in partnerships or initiatives with utilities and energy providers, but the majority are either still exploring potential collaborations or have limited collaboration around specific areas such as integrating renewable sources or charging infrastructures (see Figures 4 and 5).

Just over a third of respondents say they are actively collaborating with utilities and energy providers to integrate renewable sources

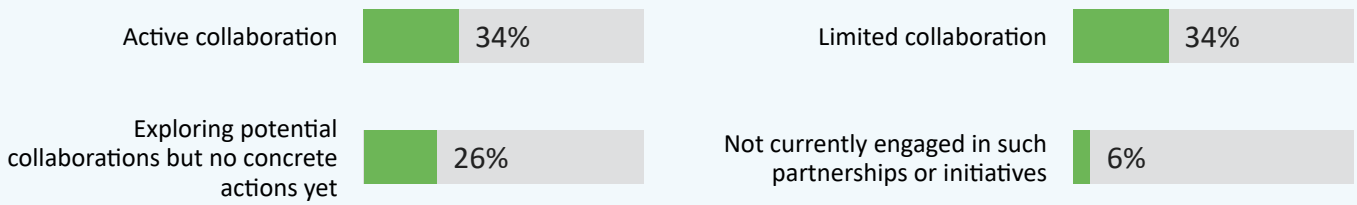


Figure 4. How extensively are you collaborating with utilities and energy providers to integrate renewable sources?

More than half of respondents have limited or no collaboration with utilities and energy providers for charging infrastructure integration

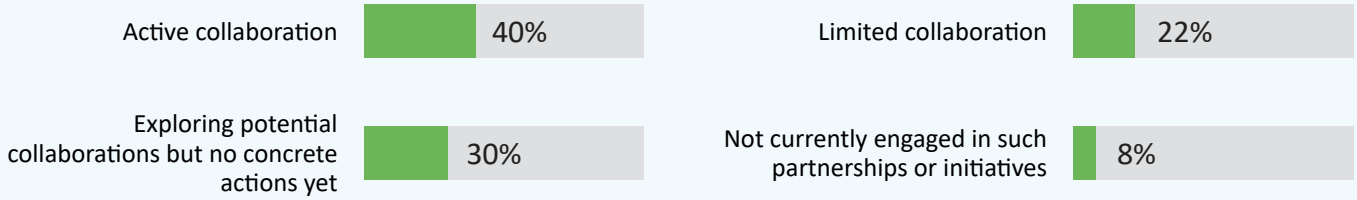
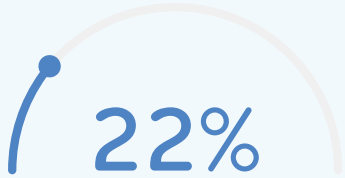


Figure 5. How extensively are you collaborating with utilities and energy providers to integrate EV charging infrastructures?

Further, while 62% of charging infrastructure builders say they view utilities as a potential partner, only 22% say they're satisfied with the current level of support utilities are providing.



Say they are satisfied with the current level of utilities support provided for EV charging infrastructure development

The path forward

EV chargers surveyed are taking a multifaceted strategy for the future, emphasizing investments in fast-charging stations, strategic partnerships, and adaptive supply chains.

Given the need to balance significant cost considerations with the unpredictability of an industry still finding its footing, EV chargers must carefully weigh investments to ensure maximum impact.

The majority of chargers say they're prioritizing investments in fast-charging stations along highways and major routes. Others are focused on public charging stations in urban areas and fleet-specific charging infrastructure (see Figure 6).

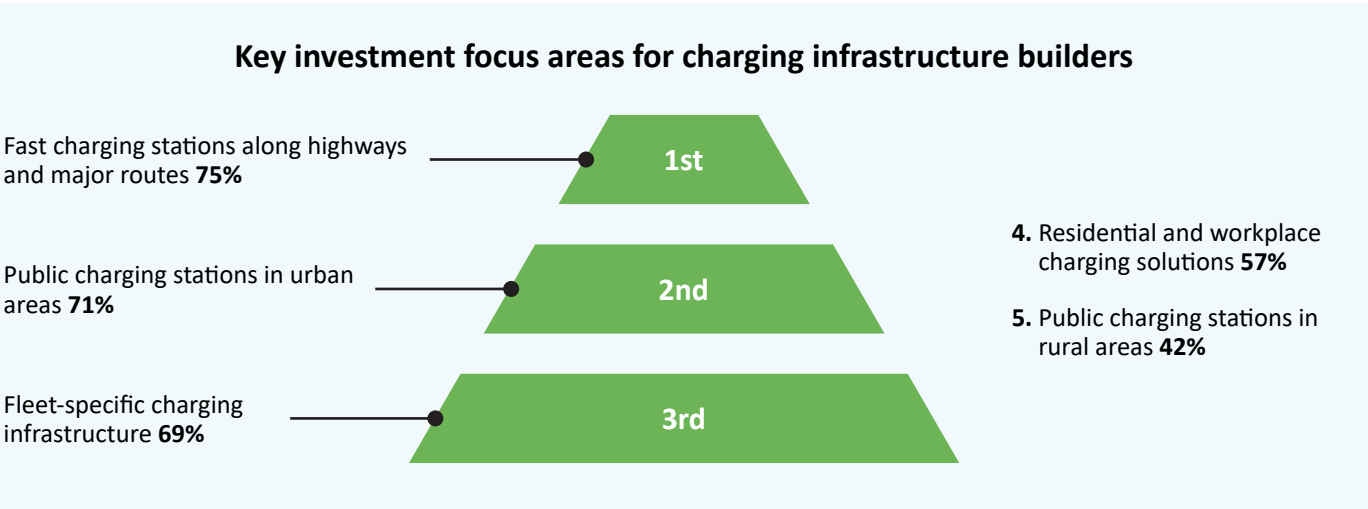


Figure 6. From the most important to least, please rank how you are focusing your investments in different types of charging infrastructure.

Among their challenges, EV chargers also point to the need to fine-tune their supply chains, though there's little agreement on what changes are needed. Nearly three-fourths (74%) of charging infrastructure builders say they foresee making changes to their supply chain, but are evenly split on their approaches (see Figure 7).

Figure 7. In what ways, if any, are supply chain challenges impacting how you approach materials sourcing?

Next steps: Strategic focus areas for EV chargers

Our analysis of the survey results found there is steady advancement in charging infrastructure investments and the formation of partnerships, but the gradual pace of progress remains frustrating to many stakeholders. While scalable solutions, urban and highway accessibility, and resilient supply chains are key to closing the infrastructure gap, successful partnerships and collaboration will define the leaders.

To help set a course for future growth, charging infrastructure builders can focus on strategic areas, including:

Enabling charging ecosystems through collaborative business models

Rapid adoption of EVs is incumbent on concurrent expansion of EV charging infrastructure. The expansion in turn demands broader cross-industry collaboration to address challenges like standardization, grid integration, and customer experience. Equally critical is the need for robust cybersecurity measures to fortify the interconnected EV ecosystem, ensuring resilience against physical and cyber threats that could undermine adoption at scale. There is a pressing need for frameworks and business models that can enable mutually beneficial partnership between these parties.

Delivering superior customer experience with subscription management

EV charging subscriptions offer multiple benefits for both consumers and service providers like predictable revenue and seamless access, but a poorly designed model can frustrate users and create complexity. An integrated subscription management system that ensures real-time updates, automated billing, and secure transactions is critical to delivering a superior customer experience. Scalable cloud-based solutions and AI-driven insights can further enable dynamic pricing models and personalized services.

Ensuring seamless integration through zero-touch operations

One of the biggest challenges is the complexity of managing multiple systems, from station operations to payments and customer interactions. By enabling automated, zero-touch operations, providers can integrate and streamline charging station management, ensuring real-time connectivity between vehicles and creating a frictionless customer experience.

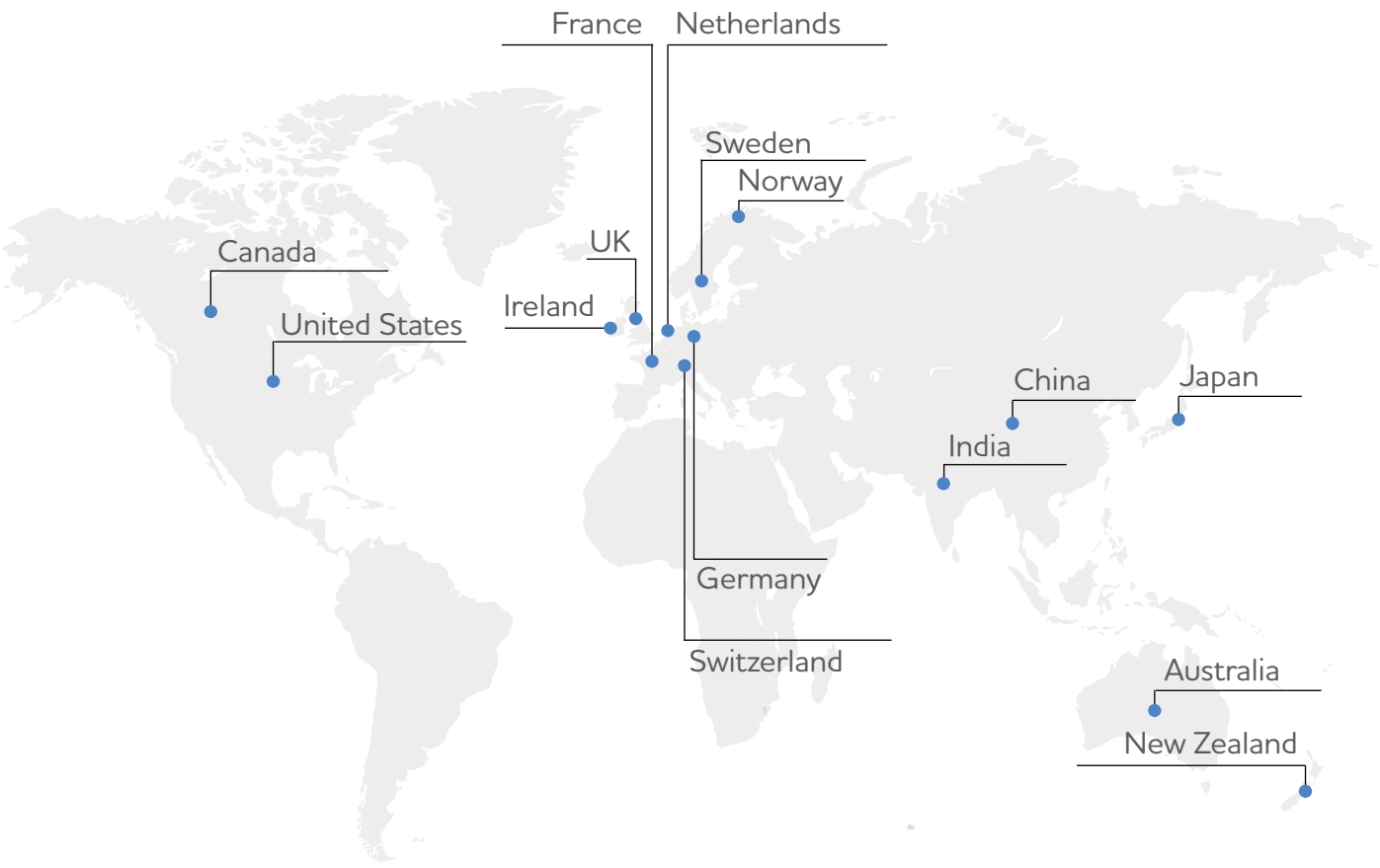
Study Demographics

EV Charging Infrastructure Builders

Charging Infrastructure Builders "the Chargers" (n=50)

- Charge point operators (CPOs)
- Fuel stations
- Cities and municipalities

Country representation



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About the study

The TCS Future-Ready eMobility Study surveyed five segments that play a critical role in shaping a successful EV transition. The 1,300+ respondents from across 18 countries and 12 industries ranged from manufacturers and charging infrastructure builders to consumer and commercial adopters and industry influencers. Comprising 50 of the 1,308 respondents, the charging infrastructure builder segment included charge point operators (CPOs) and fuel stations, as well as cities and municipalities.

TCS Future-Ready Mobility

As the world accelerates toward electric mobility, TCS is committed to enabling manufacturers and other EV stakeholders to navigate the evolving landscape and thrive in this defining era. Our future-ready mobility vision is rooted in technological innovation, strategic collaboration, and deep domain expertise.

TCS drives transformative change across the mobility value chain, spanning vehicle design and development, gigafactory planning and execution, digital platform enablement, deployment of generative AI solutions, and hyper-personalized customer experiences. With a focus on driving sustainable mobility and delivering measurable value, TCS partners with customers to shape a bold and sustainable future. For more information, visit: tcs.com/what-we-do/industries/manufacturing

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A part of the Tata group, India's largest multinational business group, TCS has over 601,000 of the world's best-trained consultants in 55 countries. The company generated consolidated revenues of US $29 billion in the fiscal year ended March 31, 2024, and is listed on the BSE and the NSE in India. TCS' proactive stance on climate change and award winning work with communities across the world have earned it a place in leading sustainability indices such as the MSCI Global Sustainability Index and the FTSE4Good Emerging Index. For more information, visit www.tcs.com