Office of the Principal Scientific Adviser
to the Government of India

India's Priority Corridors for Zero-Emission Trucking

REPORT / MAY 2025

अजय के. सूद
भारत सरकार के प्रमुख वैज्ञानिक सलाहकार
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FOREWORD

Trucking is the backbone of the Indian economy. It powers industrialisation, enables trade, creates livelihoods, and ensures the seamless movement of goods across the nation. Yet, as it fuels economic growth, the sector also stands among the largest contributors to greenhouse gas emissions. This duality presents a defining opportunity: to reimagine freight movement in a way that is not only efficient and reliable, but also clean and future-ready. The adoption of Zero-Emission Trucks (ZETs) in India will play a crucial role in decarbonising the logistics sector, improving public health, enhancing energy independence, and showcasing the country's leadership in the global transition to a net-zero future.

In 2024, the Government of India made a bold commitment through the PM E-DRIVE scheme, allocating ₹500 crore under the Ministry of Heavy Industries to accelerate the uptake of ZETs. This marks a pivotal moment. However, to sustain and scale this momentum, coordinated policy, infrastructure, and financing efforts are essential. A foundational step in this journey is the development of dedicated ZET corridors equipped with charging and refuelling infrastructure to unlock reliable, long-distance zero-emission freight movement.

To support this national transition, the Office of the Principal Scientific Adviser is proud to present this report on India's Priority Corridors for Zero-Emission Trucking. Drawing from over a year of rigorous analysis and extensive stakeholder engagement across the logistics ecosystem, the report identifies the top ten high-impact corridors best positioned for early ZET deployment. These corridors serve not only as the best candidates for ZET pilots, but as blueprints for the future of freight movement.

I hope this report acts as a strategic guide for policymakers, industry leaders, and investors, offering a clear path toward a cleaner, more resilient, and competitive freight system. I thank all the experts and partners whose contributions made this report possible, and I look forward to the collective action it will inspire.

(Ajay K. Sood)

Dated: 9th May, 2025

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Message

The Office of the Principal Scientific Adviser to the Government of India, through its missions and programs, has consistently supported and promoted the development of Science and Technology in key areas of national importance. Recognising the critical role of the logistics sector in driving economic growth and its simultaneous impact on the environment, the office has undertaken focused efforts in the sector.

A "Consultative Group on e-Mobility (CGeM)," was constituted to initiate efforts towards outlining technical framework essential for effective deployment of Zero-Emission Trucks (ZET) in India. Several reports have already been published as part of this initiative, and the current report serves as a significant advancement in this ongoing endeavour.

The report on *India's Priority Corridors for Zero-Emission Trucking* identifies the top ten high-impact corridors most suited for early ZET deployment, laying the groundwork for a dedicated national ZET infrastructure network. These corridors will serve not only as pilots but also as replicable models for long-distance, zero-emission trucking movement across the country.

The methodology adopted in the preparation of this report is unique and comprehensive, marking a first-of-its-kind effort in this domain. It has been a dynamic and insightful journey for the Office, reinforcing the potential of collaborative, science-led policymaking.

I take this opportunity to thank all contributors and stakeholders who made this report a reality. I urge all partners across government, industry, and civil society to come together and take collective action towards achieving the goal of Zero-Emission Trucking in India.

(Parvinder Maini)

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List of Abbreviations

BET	Battery electric truck
CO_2	Carbon dioxide
CoEZET	Centre of Excellence for Zero Emission Trucking
CPO	Charge point operator
DISCOM	Distribution company
e-FAST	Electric Freight Accelerator for Sustainable Transport
EVPCS	Electric vehicle public charging station
FCET	Fuel cell electric truck
GDP	Gross domestic product
IHMCL	Indian Highway Management Company Limited
kW	Kilowatt
LNG	Liquefied natural gas
MHI	Ministry of Heavy Industries
MMLP	Multimodal logistics park
MoP	Ministry of Power
NGO	Nongovernmental organisation
NOx	Nitrogen oxide variants
OD	Origin-destination
OEM	Original equipment manufacturer
PM E-DRIVE	Prime Minister Electric Drive Revolution in Innovative Vehicle Enhancement
PM	Particulate matter
PSA	Principal Scientific Adviser
TRANSCO	Transmission company
ZET	Zero-emission truck

Executive Summary

Movement of goods via trucks is crucial to sustaining economic growth in India. With rising industrial activity, growth in the e-commerce sector, and rapid urbanization, the demand for trucking is set to increase fourfold by 2050 compared with current levels [1]. It's imperative that this demand be satisfied with cleaner trucks without tailpipe emissions, also known as zero-emission trucks (ZETs). ZETs have multiple social and economic co-benefits, such as logistics cost reduction, energy security enhancement, air quality improvement, emissions reduction, and ultimately progress toward India's net-zero goal.

Efforts are already under way to kick-start ZET adoption in India. The central government has allocated ₹500 crore for the purchase of ZETs under the Prime Minister Electric Drive Revolution in Innovative Vehicle Enhancement (PM E-DRIVE) scheme [2]. To fully realise the potential of this scheme, a suite of actions can be taken by public and private stakeholders to stimulate market demand for ZETs. Identifying and developing ZET corridors with requisite infrastructure is one such strategy to initiate and sustain the ZET market in India through demand aggregation.

ZET corridors are highway segments equipped with charging or refuelling infrastructure to facilitate seamless goods movement. Establishing ZET corridors can help ensure the use of truck and infrastructure assets, demonstrate ZET operational and financial feasibility, help manage risks and lower costs, and unlock private capital for ZET projects.

Public and private stakeholders in India have begun working toward the development of ZET corridors. In 2023, the Office of the Principal Scientific Adviser (PSA) to the Government of India published the *Technical Roadmap for Deployment of Zero-Emission Trucking in India* [3], which highlighted ZET corridors as one of the effective levers to kick-start the ZET transition in India. In 2023, the PSA Office report *Technology Assessment of Zero-Emission Trucking on the Delhi-Jaipur Corridor* further showcased the techno-economic feasibility of ZET technologies along the Delhi-Jaipur corridor [4] .In addition, ZET corridor pilot projects are being announced and implemented in Gujarat, Maharashtra, Tamil Nadu, and Karnataka states.

Building on this momentum, the Office of the PSA has undertaken the initiative to identify the top corridors for ZET deployment in India. This report provides a deep dive into the process and key activities undertaken for corridor identification. The identification of ZET corridors is divided into three phases:

- Phase 1: Quantitative and qualitative assessment to short-list top 50 corridors
- Phase 2: Stakeholder convening to short-list top 24 corridors
- Phase 3: Field research to short-list the top 10 corridors

Phase 1

An initial list of 230 corridors was created based on traffic volume and goods movement patterns. After overlapping corridors were consolidated, the list was reduced to 103. These corridors were prioritised using toll transaction data or, where toll data was unavailable, satellite imagery. Following quantitative filtering, a qualitative assessment was conducted, including stakeholder interviews, identification of alternative transport modes, evaluation of future freight demand, and analysis of industrial activities. This process resulted in a final list of 50 prioritised corridors.

Phase 2

Once the top 50 corridors were identified, the PSA Office and RMI hosted an industry roundtable in New Delhi on June 19, 2024, to gain real-world insights into stakeholders' priorities and further short-list the top 20–30 ZET corridors. Participants highlighted key criteria for identifying ZET corridors, including truck traffic demand, applicable use cases for ZET deployment, ZET model and infrastructure availability, access to land, favourable policies, and economic viability. Using these key criteria, the stakeholders voted to identify the top 24 corridors.

Phase 3

The final phase of the corridor identification process quantitatively evaluated a corridor's ZET-readiness level from three parameter groups: primary data, secondary data, and stakeholder alignment.

The primary data was collected through field research along each corridor. Through a truck driver and fleet operator survey, factors such as truck traffic pattern, use case, and drivers' and operators' awareness around ZETs were considered in corridor selection. The secondary data analysis focused on the distribution of key facilities along the corridor that can benefit ZET and charging infrastructure development, such as power lines, substations, logistics hubs, original equipment manufacturer service stations, and others. The final category prioritised corridors where public and industry stakeholders have signalled interest in ZET deployment.

Weighted scores for each category were calculated and summed to determine the final scores, which were used to finalise the top 10 corridors shown in Figure 1.

Figure 1: Top 10 corridors identified in Phase 3

The scoring results of the corridors were reverified through expert consultations, gradient analysis, and sensitivity tests. None of the top 10 corridors have significant elevation gains over short stretches that would require either large battery capacity or numerous additional chargers, contributing to their technological and economic feasibility. Additionally, a sensitivity analysis was conducted by adjusting the weightages of the three parameter groups. The analysis showed that most of the top corridors remained consistent despite changes in weightages. Finally, expert consultations validated and approved the methodology and results of the corridor shortlisting.

In terms of geographic distribution, 50% of the top 10 corridors are in the Southern region. Field research indicates that these corridors have more ZET-ready applications with regular round trips between the corridor start and end points. Additionally, these corridors have high traffic volumes and active industrial growth, making them strong candidates for ZET deployment.

In general, identification of priority ZET corridors is the first key step in corridor development for seamless ZET movement. These highway segments can generate valuable insights and lay the foundation for large-scale ZET adoption along major highways in India, such as the Golden Quadrilateral[i]. The next step is to develop a corridor pilot case and business plan for each of the top 10 corridors that includes ZET and infrastructure cash flow analysis to demonstrate its financial and operational viability. The top 10 corridors identified through this process present a significant opportunity for India to kick-start and sustain the ZET market and demonstrate leadership in clean transportation.

[i] The Golden Quadrilateral is a national highway network connecting several major industrial and agricultural centres of India.

Background and Context

The zero-emission trucking opportunity in India

The trucking sector is crucial for driving India's economic growth and enhancing people's livelihoods by transporting goods and supporting industrial supply chains. With continued urbanization, industrial growth, and rise in e-commerce, India's truck fleet is expected to quadruple to roughly 17 million trucks by 2050 to meet growing demand [5].

However, this expanding demand also creates negative environmental impacts due to heavy reliance on diesel-powered trucks. Although trucks account for only 3% of India's road vehicle fleet, they contribute to 34% of CO_2 emissions and 53% of particulate matter (PM) emissions [6]. Transition to zero-emission trucks (ZETs) — which include battery electric trucks and fuel cell electric trucks — is therefore imperative to decarbonize this sector. According to NITI Aayog, ZETs are projected to reach 85% of truck sales in India by 2050 [7] — which could generate the following benefits:

- **Emissions reduction:** Because ZETs have no tailpipe emissions, ZET adoption can reduce 2.8–3.8 gigatons of CO_2 emissions cumulatively through 2050 [8].
- **Air quality improvement:** ZET adoption has the potential to reduce PM and nitrous oxide pollution by ~40% by 2050, improving public health, especially for truck drivers.
- **Cost savings:** Because of lower fuel and maintenance costs, ZETs can reduce logistics costs by 17% over a vehicle's lifetime. [9].
- **Energy security:** Road freight accounts for more than 25% of oil imports annually. Switching to ZETs can displace up to 993 billion litres of diesel, resulting in savings of ₹116 lakh crore by 2050 [10].
- **Industrial competitiveness:** The transition to ZETs will create a cumulative demand of 4,000 gigawatt hours for domestically produced batteries by 2050. This shift will boost India's competitiveness in the global battery and ZET manufacturing sectors, positioning the country as a leader in the transition to clean transportation.

India's ZET sector has just begun to take off, with ZETs making up 0.1% of total truck registrations in 2024 [11]. For the ZET sector to grow at the pace needed to realise these benefits will require coordinated efforts from government ministries, financial institutions, and the private sector. In 2024, the Government of India allocated ₹500 crore under the Prime Minister Electric Drive Revolution in Innovative Vehicle Enhancement (PM E-DRIVE) scheme to support the deployment of electric trucks [12]. This presents an opportunity to harness momentum and accelerate market growth. As the ZET market starts to develop in India, one key strategy to drive and sustain ZET adoption is the establishment of dedicated ZET corridors.

ZET corridors: Importance and current status

ZET corridors are highway segments equipped with necessary charging or refuelling infrastructure to facilitate ZET transport. Currently, 50% of India's vehicle freight traffic travels along seven major corridors [13]. Given the concentrated traffic along these routes, dedicating ZET and infrastructure investment along these corridors effectively aggregates demand, improves charger utilisation rates, and increases the overall economic viability of ZET projects. The advantages offered by ZET corridor deployment are summarised below.

- **Demand aggregation and asset utilisation:** The development of ZET corridors along high-traffic routes creates aggregated demand for original equipment manufacturers (OEMs) and charging point operators (CPOs) to invest in ZET projects. This ongoing demand also boosts

the utilisation rate of charging infrastructure, enhancing the profitability of charging projects. With the guaranteed utilisation and steady revenue flow, corridor development reduces the asset utilisation risks associated with ZET investment and therefore can attract more commercial financing.

- **Demonstration of ZET feasibility:** By running scalable technical trials and pilot programs along these corridors, fleet operators can evaluate the financial and operational viability of ZETs under real-world conditions and increase market confidence on their techno-economic viability. The technology performance and operations data collected through these ZET corridor projects can offer valuable insights for large-scale ZET adoption in India.
- **Long-term resource planning:** The concentration of policy support and investment along identified ZET corridors provides CPOs and electricity providers, including distribution companies and transmission companies, with greater ability to predict future demand. This clarity enables more efficient resource planning and long-term allocation.
- **Efficient policy implementation:** Identifying high-potential corridors as policy priorities can effectively allocate regulatory and fiscal resources to areas with the highest potential impacts. In the long term this enables a phased approach to fund allocation and policy implementation.

Globally, countries have recognised the benefits of ZET corridor deployment and are leveraging it as a key strategy to drive and solidify market growth. China has developed several ZET corridors equipped with battery swapping stations for heavy-duty trucks that enable trucks travelling on these routes to change battery packs in three to five minutes [14].

The United States released the National Zero-Emission Freight Corridor Strategy, aimed at deploying ZET infrastructure over 78,000 km of its freight highway network through phased investment and policy implementation. Implementation of this plan is expected to decarbonise the transport of more than 2.3 billion tons of goods by 2040 [15]. Similarly, the Northern Corridor Green Freight Strategy in Africa aims to create EV-ready corridors across Kenya, Uganda, Rwanda, Burundi, South Sudan, and areas of the Democratic Republic of Congo by 2030 [16] . The EU has also mandated charging stations with minimum output of 350 kilowatts every 100 km along its highways starting in 2025 [17].

In India, the Office of the Principal Scientific Adviser (PSA) to the Government of India has prioritised corridor development as one of the key strategies to support ZET growth. In March 2023, the PSA Office published the *Technical Roadmap for Deployment of Zero-Emission Trucking in India* highlighting the importance of corridor identification supported by real-world data. Following this effort, the PSA Office published a dedicated report that analyses the techno-economic feasibility of deploying different ZET technologies along the Delhi-Jaipur corridor [18]. In 2024, the PSA Office also published the *Bharat Zero Emission Trucking (ZET) Policy Advisory*, highlighting corridor development as critical for demand aggregation and deploying refuelling infrastructure [19].

An increasing number of ZET corridor pilots are also under development through public–private partnerships. Under the e-FAST (Electric Freight Accelerator for Sustainable Transport) platform, public and private partners have committed to deploying 550 electric trucks along key freight corridors in Gujarat and Maharashtra [20]. ZET corridor pilots are also being deployed along the Bengaluru-Chennai [21] and Chennai-Tiruchirappalli [22] highways through collaborations among OEMs, charging infrastructure providers, policymakers, and civil society organisations. Several states have moved to prioritise corridor deployment to accelerate ZET adoption. For example, the Telangana ZET Accelerator initiative plans to identify and develop priority ZET corridors for concentrated ZET deployment [23].

This ongoing momentum highlights the growing interest and efforts of stakeholders across the value chain to develop ZET trucking corridors. To gain in-depth understanding around the potential of ZET corridors in India, the PSA Office has taken the initiative to identify ZET corridors that are best suited for pilot development. This report offers a comprehensive overview of the key processes and outcomes of the project.

Overview of Corridor Selection Approach and Results

Building on the Office of the PSA's ongoing support for ZET corridor development, this initiative identifies the top corridors across India suitable for ZET deployment. The project aims to select high-potential corridors through a combination of quantitative and qualitative research as well as site visits, surveys and stakeholder interviews.

Given the diverse geography, types of cargo transported, road conditions, climate, driving and loading patterns, vehicle types, and usage conditions across the country, it is crucial to conduct ZET corridor pilots across multiple corridors that reflect this variation. Extensive field research is required to first identify the major freight corridors in India and then map the differences across them, in order to short-list suitable candidates for the pilot trials.

Figure 2 summarises the key activities of the ZET Corridor Development Project. The efforts to identify the 10 corridors that are best suited for ZET deployment in India consisted of three phases, with each phase further shrinking the pool. First, the top 50 corridors were identified from an initial list of 230 based on analytical research and stakeholder interviews. After that, a consultation with industry stakeholders further narrowed the list to 24 corridors. Finally, the top 10 corridors were chosen based on in-depth field research and comprehensive scoring.

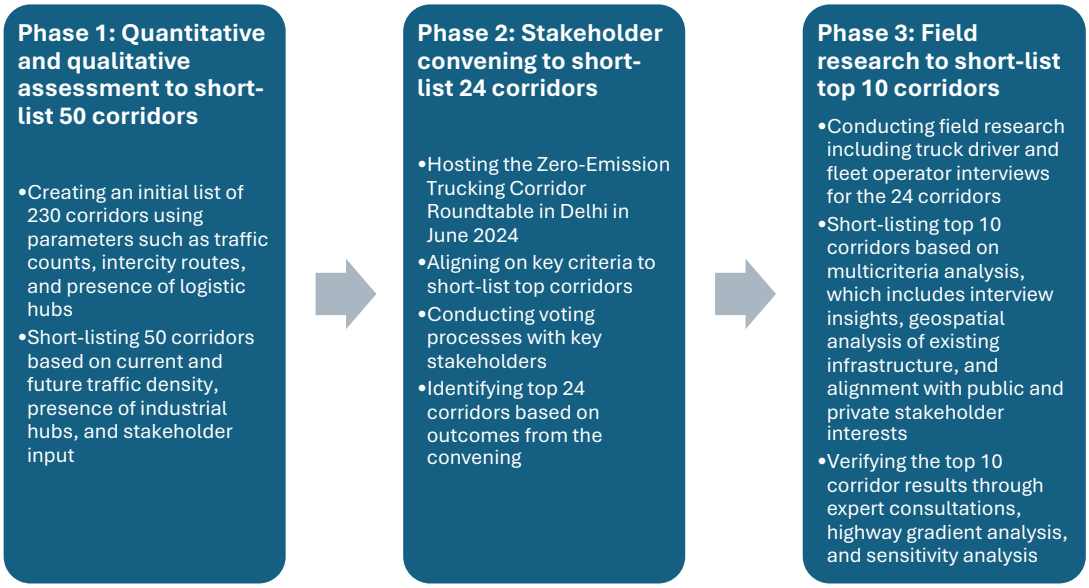

Figure 2: Overview of the corridor prioritization process

Ideal candidates for ZET corridors share common characteristics such as high traffic volume, active industrial growth, adequate ancillary services, and grid infrastructure. Selecting corridors with these criteria ensures greater economic and operational viability of ZET projects. Table 1 summarises several high-level criteria that guided the corridor selection process.

Table 1: Key criteria considered in the corridor short-listing process

Criteria	Explanation	Selection phase that considers the criteria
High trucking volume now and in the future	Ensures sustained demand for ZETs and guaranteed utilisation for charging infrastructure	Phase 1
Presence of industrial parks and multimodal logistics parks (MMLPs)	Indicates diverse use cases that are suitable for early stage ZET deployment	Phase 1
Suitable length	Ensures that the corridor length falls within the battery range[ii] of commercially available ZET models, allowing trucks to minimise long charging stops	Phase 1
Adequate grid infrastructure along corridors	Allows CPOs to invest in charging infrastructure while reducing associated costs with grid upgrade	Phase 3
Presence of ancillary services (rest stops, service centres, etc.)	Offers favourable locations for deploying charging infrastructure	Phase 3
Corridor's business and strategic importance viewed by public and private stakeholders	Ensures stakeholder buy-in during the corridor development phase	Phase 1, Phase 2, and Phase 3

Using the three-phased approach based on these key selection criteria, 10 corridors were prioritised from an initial list of 230. Figure 3 summarises the final results of the short-listed corridors.

[ii] Range refers to how far an electric vehicle can travel on a single charge before it needs to be recharged.

Figure 3: Location of the top 10 corridors

The following sections detail the three phases along with the short-listed corridors in each phase.

Phase 1: Quantitative and Qualitative Assessment to Short-List 50 Corridors

The first phase of short-listing started from an initial dataset of 230 corridors, which were then narrowed down through quantitative and qualitative filtering and verified through stakeholder consultation to produce a list of 50 corridors, as shown in Figure 4.

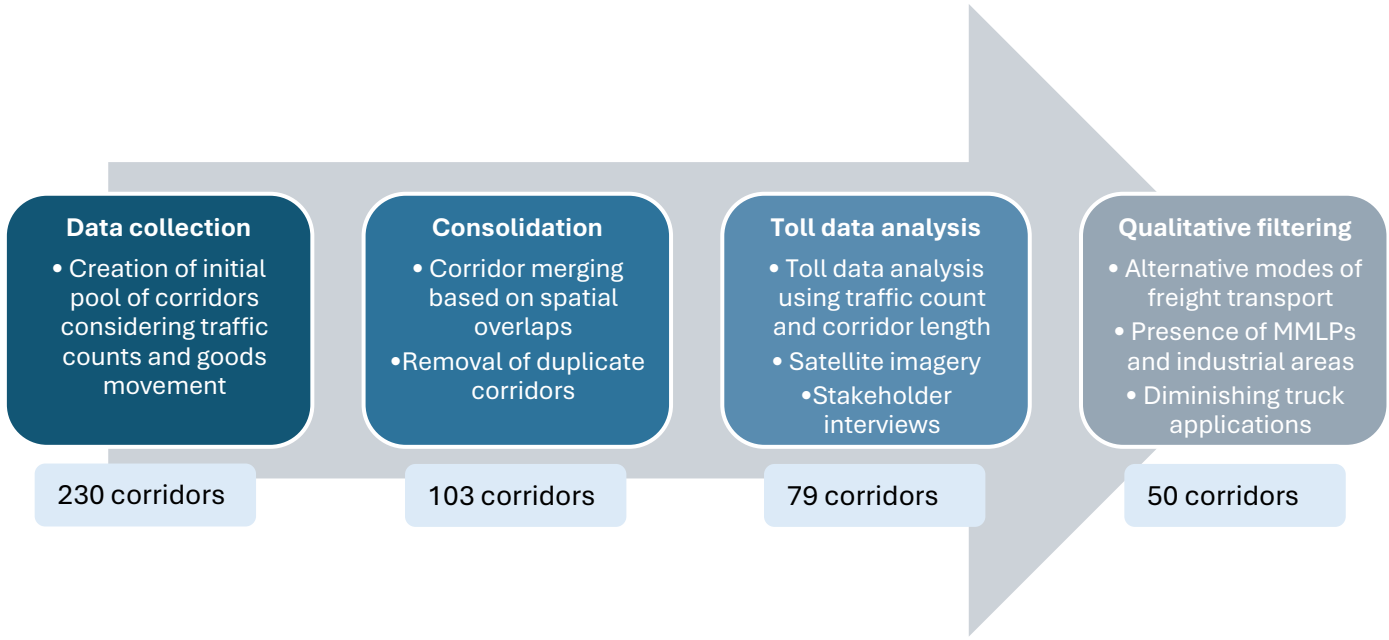

Figure 4: Overview of the approach to short-listing top 50 corridors

Data collection

The selection process began with lists from two sources, making up a comprehensive tally of 230 corridors. One list included 130 highly trafficked corridors[iii] selected based on toll transaction data, with a maximum length of 350 km. The other list of 100 corridors included routes between key logistics hubs as well as routes that link key demand and supply clusters.[iv] Including two different sources based on multiple selection criteria ensured that the initial list of corridors was as complete as possible. The lists of 130 corridors and 100 corridors can be found in Appendix A.

Consolidation

The next filtering process involved consolidating data from both lists by eliminating duplicate corridors and merging corridors based on spatial overlaps or extension. This produced a list of 103 corridors, as shown in Appendix B. Around 75% of the corridors in this dataset are less than 260 km in length, with most corridors being 140–200 km.

Toll data analysis

After the two corridor lists were consolidated, the 103 corridors underwent a prioritisation process based on toll transaction data collected over 15 months from March 2022 to May 2023. This data,

[iii] This list was provided by the Centre of Excellence for Zero Emission Trucking (CoEZET).
[iv] This list was provided by pManifold.

sourced from monthly toll reports of the Indian Highway Management Company Ltd. (IHMCL), covers all FASTag-enabled toll plazas across India. The toll plaza transaction data reflects traffic volume and therefore corridor use by trucks.

The corridors were ranked using a "toll index," defined as the number of truck-related toll transactions divided by the corridor length in kilometres. Corridors with a toll index below 700 were excluded from consideration, resulting in the elimination of 16 corridors. For corridors lacking toll transaction data, the toll index was estimated using satellite imagery. This analysis examined different sections of the corridor over multiple periods within the 15-month window, leading to the removal of 10 corridors with low traffic density.

The 26 eliminated corridors were then reviewed by fleet operators across various regions of the country. This was to ensure that traffic density, evaluated through either toll data or satellite images, was not the only criterion for corridor elimination in this step. Two eliminated corridors were reconsidered post-consultation.

This toll indexing process, along with satellite image filtering and stakeholder interviews, led to 79 short-listed corridors.

Qualitative filtering

The final step involved filtering based on various parameters that would affect the use of each corridor in the future. These included:

- **Alternative transport modes:** The availability of alternative and economically feasible transport modes for freight movement — such as rail and waterway — reduces the dependency on road transport. Corridors with such alternative transport modes were given lower priority.
- **Access to industrial areas, MMLPs, and ports:** Corridors that pass through industrial areas indicate high freight movement. Similarly, the presence of MMLPs along these routes and proximity of the corridor to ports indicate high freight movement and make them prime candidates for ZET deployment.
- **Diminishing applications:** Corridors were less likely to be selected if the key cargo type along the corridor will see reduced demand in the future. These corridors were given lower priority because of the likelihood of reduced traffic density.

A combination of these factors was used to narrow the short-listed 79 corridors to 50 corridors, which was then verified through further stakeholder consultations. Key takeaways from stakeholder consultations are summarised in

Appendix C: Key takeaways from stakeholder interviews used to short-list 50 corridors from 79C.

The list of 50 corridors is shown in Table 2, and Figure 5 shows the geographical distribution of these corridors.

Table 2: List of top 50 corridors

No.	Corridor	No.	Corridor
1	Adilabad-Nagpur	26	Hubballi-Chitradurga
2	Adilabad-Nizamabad-Hyderabad	27	Indore-Bhopal
3	Ahmedabad-Mundra	28	Jaipur-Delhi
4	Ambala-Jalandhar	29	Jaipur-Jodhpur
5	Aurangabad-Pune	30	Jawaharlal Nehru Port (JNPT)/Navi Mumbai-Pune
6	Ballari-Hubballi	31	Jodhpur-Udaipur
7	Bengaluru-Tiruchirappalli	32	Kanpur-Jhansi
8	Bhopal-Jabalpur	33	Kolhapur-Hubballi
9	Bhubaneswar-Balasore	34	Kolkata-Haldia
10	Bhubaneswar-Bhadrak	35	Kota-Indore
11	Bhubaneswar-Brahmapur	36	Madurai-Tiruchirappalli
12	Chandigarh-Ludhiana-Amritsar	37	Mangaluru-Chitradurga
13	Chennai-Bengaluru	38	Mumbai-Nashik
14	Chennai-Ongole	39	Nagpur-Chandrapur
15	Chennai-Villupuram	40	Nagpur-Raipur
16	Coimbatore-Kochi	41	Paradeep-Barbil
17	Coimbatore-Salem	42	Pune-Kolhapur
18	Delhi-Agra	43	Pune-Nashik
19	Delhi-Chandigarh	44	Surat-Vadodara
20	Dhanbad-Kolkata	45	Thiruvananthapuram-Kochi
21	Dhanbad-Ranchi-Jamshedpur	46	Vadodara-Udaipur
22	Gorakhpur-Lucknow	47	Varanasi-Prayagraj
23	Gwalior-Agra	48	Vijayawada-Hyderabad
24	Gwalior-Kota	49	Vijayawada-Visakhapatnam
25	Hosapete-Chitradurga	50	Visakhapatnam-Brahmapur

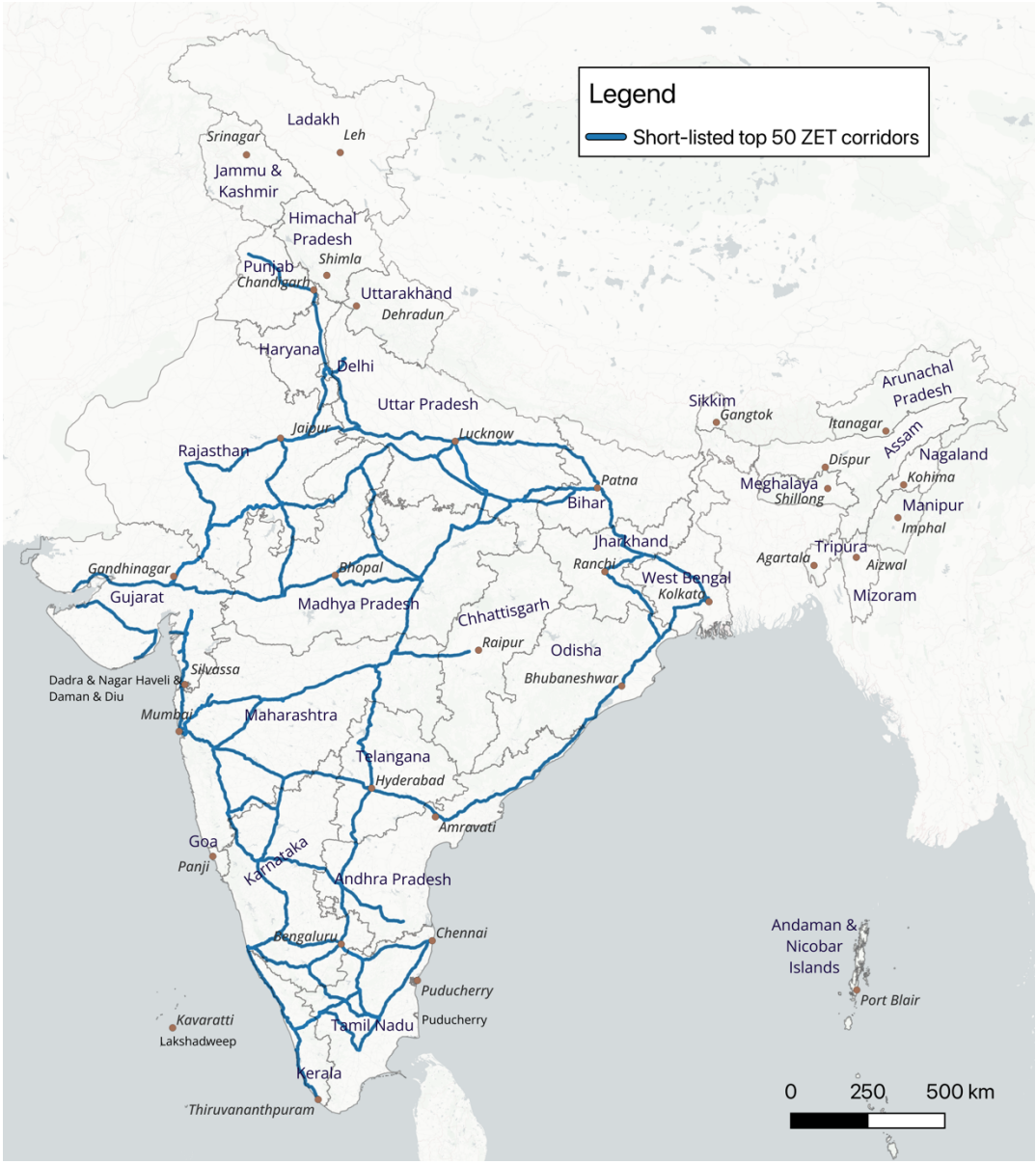

Figure 5: Location of top 50 corridors

Detailed analysis of the characteristics of top 50 corridors is provided in Appendix D.

Phase 2: Stakeholder Convening to Short-List 24 Corridors

The second step of the corridor prioritisation process was a stakeholder consultation roundtable, which was co-hosted by the Office of the PSA to the Government of India and RMI in New Delhi on June 19, 2024. The key objective of the roundtable was to create a short list of 20–30 corridors from the 50 selected in Phase 1. This roundtable was identified as a critical step in the corridor selection process for the following reasons:

- **Incorporating real-world insights:** The consultations ensure that the corridor selection process is informed by on-the-ground knowledge of trucking operations, corridor conditions, and infrastructure availability.
- **Building stakeholder buy-in:** The convening socialized the ongoing efforts on corridor identification with industry players, helping prepare for the upcoming field research and eventual ZET pilot development along the corridors.

About 30 participants attended the Zero-Emission Trucking Corridor Roundtable. The attendees represented a diverse set of organisations, including OEMs, CPOs, fleet operators, end-use customers, power sector companies, and nongovernmental organisations. The full list of companies that participated in the consultation can be found in Appendix E. Dr. Preeti Banzal, Adviser/Scientist 'G', Office of the PSA to the Government of India, chaired the event and gave keynote remarks highlighting the importance of developing ZET corridors. She outlined key initiatives undertaken by the PSA Office to support the transition to ZET, and corridor development in particular.

The key activities of the convening are summarised in Figure 6.

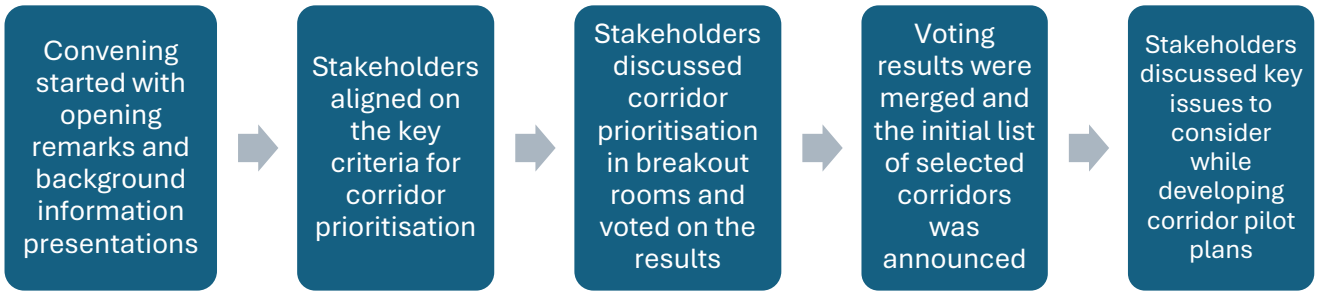

Figure 6: Key activities of the Zero-Emission Trucking Corridor Roundtable

The main goal of this convening was to narrow the list of 50 corridors to 20–30. To begin, participants identified and discussed key criteria for short-listing corridors. Those criteria were then used to guide the corridor selection process. Figure 7 summarises key ZET corridor selection criteria that stakeholders aligned on.

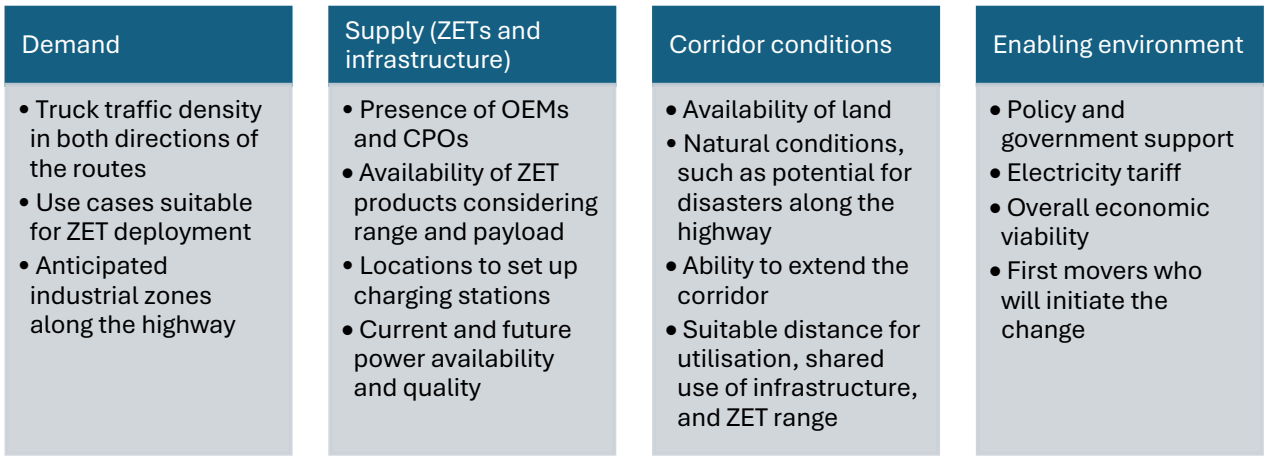

Figure 7: Key selection criteria for ZET corridors identified by stakeholders

Participants had in-depth discussions around corridor prioritisation in breakout groups. The list of top 50 corridors was divided into three regions: Northern and Eastern, Central and Western, and Southern. For each region, participants exchanged views on the corridors' ZET readiness level and collectively identified top corridors through voting. A list of 24 corridors was finalized shortly after the convening, based on vote outcomes and consultations with expert groups. Table 3 identifies the top 24 corridors and their length.

Table 3: Top 24 corridors short-listed by stakeholders during convening

S.No.	Short-listed corridors	Length (km)
1	Dhanbad-Ranchi-Jamshedpur	266
2	Kolkata-Haldia	122
3	Paradeep-Barbil	302
4	Dhanbad-Kolkata	273
5	Visakhapatnam-Brahmapur	274
6	Delhi-Jaipur	276
7	Delhi-Agra	229
8	Delhi-Chandigarh	255
9	Ambala-Jalandhar	173
10	Chandigarh-Ludhiana-Amritsar	239
11	Vijayawada-Hyderabad	277
12	Chennai-Bengaluru	347
13	Vijayawada-Visakhapatnam	320
14	Coimbatore-Salem	169
15	Chennai-Ongole	300
16	Coimbatore-Kochi	187
17	Hubballi-Chitradurga	221
18	Chennai-Villupuram	164
19	Ahmedabad-Mundra	329
20	JNPT/Navi Mumbai-Pune	131
21	Surat-Vadodara	154
22	Pune-Nashik	215
23	Mumbai-Nashik	182
24	Pune-Kolhapur	233

The session concluded with a discussion on key considerations when developing pilot project plans. Participants emphasised the importance of considering the primary truck use cases along the corridor when creating the implementation plan, as well as collecting data on use-case-specific operational patterns to ensure well-structured pilot plans. They concluded that each pilot should involve a coalition of stakeholders, with lead agencies driving momentum and establishing the business structure.

Economic viability emerged as a critical topic. Participants highlighted the need to identify funding sources for charging infrastructure development as well as upstream grid upgrades early in the process. A favourable power tariff is crucial to the project's economic success, especially for corridors that span multiple states. Overall, participants stressed the importance of further research into the economics of the ZET corridor project, with a focus on reaching the break-even point within five years.

Phase 3: Field Research to Short-List Top 10 Corridors

The final step in the corridor selection process was to narrow the list of 24 corridors to 10 based on field research and multicriteria analysis. This phase aimed to collect detailed data regarding corridor conditions and truck operations through site visits and interviews, providing valuable insights on the ZET readiness level of each corridor. This field research is critical, because it provides on-the-ground data on parameters such as infrastructure locations, truck operational schedules, and stakeholder buy-in for ZET deployment, which ensures that granular corridor-specific details are considered in the prioritisation process.

Overview of methodology

The process of finalizing the top 10 was based on quantitative prioritisation, incorporating data from field interviews and desktop research. Three key groups of criteria were considered:

- **Primary data** was collected by surveying truck drivers and fleet operators along the top 24 corridors. Several key parameters from these surveys were incorporated into corridor prioritisation, including the percentage of truck volume suitable for transitioning to ZETs and the willingness of drivers and operators to make the transition.
- **Secondary data** was collected primarily through desktop research and focused on the corridors' readiness for ZET infrastructure deployment. Key data points included distribution of facilities such as truck stops, eateries, and grid facilities, as well as fire stations and OEM service stations for hazard mitigation.
- **Stakeholder alignment** reflected the interests and actions of public and private partners in deploying ZET pilots along specific corridors. Corridors were prioritised if a real-world ZET pilot was deployed, if they received more votes during the stakeholder convening to short-list 24 corridors, or if they were identified by the Ministry of Heavy Industries (MHI) as priority corridors for ZET development — as per the draft guidelines for infrastructure deployment under the PM E-DRIVE scheme [24].

Under the three groups, each parameter was assigned a weightage from 1 to 5, with higher values given to those that are better suited for ZET pilot deployment. The weighted scores were then summed to generate a final score, which was used to identify the top 10 corridors. The detailed methodology is summarised in Figure 8.

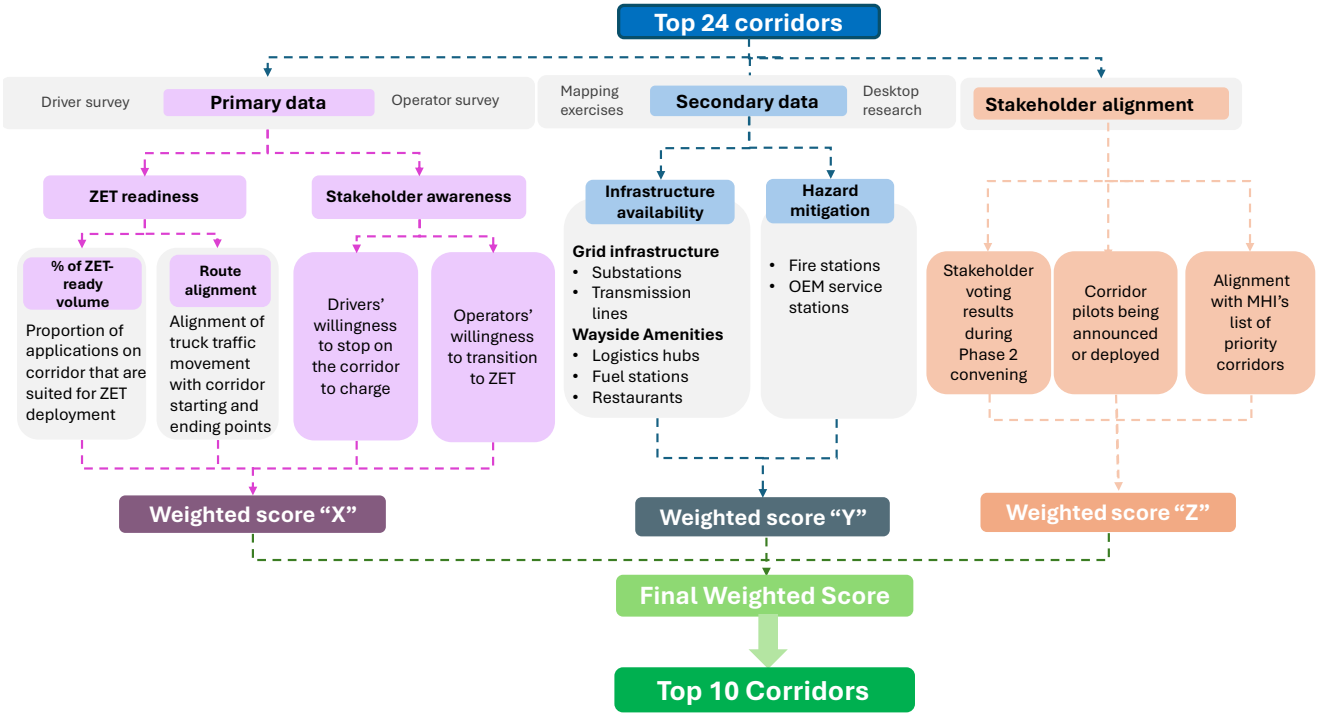

Figure 8: Detailed methodology for weighted scoring of top 24 corridors

Primary data collection and analysis

Primary data was collected through questionnaire surveys, providing real-world insights into trucking operations along corridors. This step included two surveys, both conducted for the 24 corridors.

The first survey was an origin-destination (OD) survey targeting truck drivers at specific locations along these corridors to gather insights on cargo and vehicle types, operational patterns, drivers' perceptions and awareness of ZET adoption. The OD survey was conducted by visiting specific sites along the corridor. The second survey was conducted through phone interviews and focused on fleet operators, collecting data on truck specifications, revenue, cost components for various use cases, and challenges related to ZET adoption. Detailed questionnaires for both surveys can be found in Appendix F and Appendix G.

The first step in conducting the OD survey was determining the sample size and selecting survey locations for driver interviews. Choosing the right sample size is crucial to ensuring that the data accurately represents the entire corridor. The sample size was determined based on truck toll volume, balancing statistical robustness with data collection feasibility.

Next, the ideal locations for the OD survey on each corridor were determined. This process began by identifying heavy traffic segments within the corridor, then selecting locations along these segments with wayside amenities such as logistics hubs, fuel stations, restaurants, and OEM service stations where truck drivers could be interviewed. This approach resulted in 27 survey locations across 24 corridors, with interviews conducted within a 10–15 km radius of these locations. More details on the sample sizes and interview locations across the 24 corridors can be found in Appendix H.

The OD and fleet operator surveys were used to inform the following criteria in the corridor prioritization process:

- **ZET readiness:** This indicates whether the corridor has ZET-ready applications that make frequent round trips between the start and end points. Applications with predictable frequency of operations and readily available ZET models on the market are considered ZET-ready and are thus prioritised.
- **Stakeholder awareness:** This mainly considers drivers' and operators' willingness to switch to ZETs and awareness around ZET operations, as reflected in survey answers.

Secondary data collection and analysis

This step involved collecting data from secondary sources and evaluating key parameters to assess the ease of infrastructure deployment, ZET operation, and the viability of future infrastructure expansion along these corridors. These parameters include the presence of the following infrastructure:

- **Substations and transmission lines,** which are essential for ensuring adequate power supply for truck charging and can reduce the cost of infrastructure upgrade
- **Logistics hubs,** which can be ideal sites for depot charging, reducing vehicle downtime and maximising use of charging infrastructure
- **Restaurants and fuel stations,** which serve as rest stops for drivers and can become alternative locations for en route charging
- **OEM service stations and fire stations,** which provide timely hazard mitigation service for trucks in case of emergencies

Stakeholder alignment

In addition to the above parameters, the plans and actions of public and private stakeholders across the value chain provide valuable signals regarding which corridors are more likely to attract ZET pilot deployment. Prioritisation of certain corridors by external stakeholders sends strong demand signals, making these areas more likely to attract investment. Therefore, the analysis aligns with stakeholder signals through three key parameters:

- **Pilot projects being announced or deployed:** Corridors were prioritised if a real-world ZET pilot had been announced or deployed, signalling industry interests and the availability of charging infrastructure.
- **Stakeholder voting results from in-person convening:** Voting results from the convening to short-list 24 corridors indicate industry stakeholders' alignment on the strategic importance of candidate corridors. Those with more votes were prioritised in this final selection phase.
- **MHI corridor prioritisation:** MHI has signalled that it will provide ₹346 crore in subsidies to support the upgrade of infrastructure for around 1,800 chargers for electric buses and electric trucks, prioritising projects developed along 20 corridors based on truck traffic per the draft guidelines for infrastructure deployment under the PM E-DRIVE scheme [25]. This indicates investment direction from the government, so corridors that align with MHI's suggested 20 corridors were given higher priority.

The scores from primary data, secondary data, and stakeholder alignment analysis were aggregated to generate the final corridor prioritization score for each of the top 24 corridors. The weightage assigned for each parameter is summarized in Figure 9. For a detailed explanation on definition of these parameters, rationale behind weightage assigned, scoring methodology, and scoring criteria, refer to Appendix I.

Primary Data

Parameters	Weightage
% ZET ready volume density	5
Origin-destination dependency	5
Operator preference to transition to EV	0.5
Driver preference to stop on the route	0.5

Secondary Data

Parameters	Weightage
Energy Infrastructure	
• Substations	1.5
• Transmission lines	2.5
Wayside Amenities	
• Logistics hubs	3
• Eateries	2
• Fuel stations	1
Hazard Mitigation	
• Fire stations	3
• OEM service stations	3

Additional

Parameters	Weightage
Stakeholder votes	5
Public and private sector initiatives	3
MHI list alignment	5

Figure 9: Parameters and associated weightages in the final corridor prioritization process

Verification of top 10 corridors

The top 10 corridors went through additional verification processes to ensure their real-world relevance and accuracy.

First, the elevation profile of each corridor was analyzed to assess the energy consumption of operating a ZET. If a corridor included segments with steep elevation gains, deploying ZETs would require them to have a large battery capacity. Additionally, extra chargers would have to be placed in these locations and situating them in such space-constrained areas (such as hilly terrain) would be difficult.

Among the top 24 corridors examined, five corridors have segments with steep inclines, including JNPT/Navi Mumbai-Pune, Mumbai-Nashik, Dhanbad-Ranchi-Jamshedpur, Paradeep-Barbil, and Pune-Kolhapur. The top 10 corridors identified do not include significant elevation gain in short stretches and are technologically and economically feasible for ZET deployment. The only exception is the Chennai-Bengaluru corridor, which, despite having a relatively high elevation gain, features a consistent incline that makes infrastructure development more manageable. Appendix J shows the elevation profile of the top 10 corridors.

In addition, a sensitivity analysis assessed whether changes in the weightages shown in Figure 9 would affect the corridor prioritisation results. With increases and decreases in the weightages of primary, secondary, and additional parameter categories, the majority of the top corridors remain unchanged.

Finally, through expert consultations, stakeholders vetted and approved the methodology and results of the corridor prioritization project.

Results

As shown in Table 4, corridors were ranked according to their total score, which is calculated using the weighted average of all parameters. The top 10 corridors were then selected in the final prioritization. A detailed breakdown of individual parameter scores is provided in Appendix K.

Table 4: Summary of corridor scoring results

		Corridor length (km)	Primary data total score	Secondary data total score	Stakeholder alignment total score	Total score	Ranking
Selected top 10 corridors	Chennai-Villupuram	164	32.0	30.1	13.0	75.1	1
	Delhi-Jaipur	276	26.5	29.3	18.0	73.8	2
	Vijayawada-Visakhapatnam	320	31.0	27.6	15.0	73.6	3
	Chennai-Bengaluru	347	23.0	30.3	18.0	71.3	4
	Coimbatore-Kochi	187	32.5	26.7	10.0	69.2	5
	Coimbatore-Salem	169	26.0	31.8	10.0	67.8	6
	Kolkata-Haldia	122	28.0	29.5	10.0	67.5	7
	Delhi-Chandigarh	255	16.0	30.0	15.0	61.0	8
	Dhanbad-Kolkata	273	33.0	26.8	0.0	59.8	9
	Pune-Nashik	215	21.0	28.4	10.0	59.3	10
Remaining 14 corridors	Delhi-Agra	229	21.5	22.2	15.0	58.7	11
	Paradeep-Barbil	302	23.0	23.9	10.0	56.8	12
	Ahmedabad-Mundra	329	16.5	25.0	15.0	56.5	13
	Vijayawada-Hyderabad	277	23.0	27.5	5.0	55.5	14
	Mumbai-Nashik	182	17.0	27.9	10.0	54.9	15
	Dhanbad-Ranchi-Jamshedpur	266	13.0	25.4	15.0	53.4	16
	Pune-Kolhapur	233	22.0	31.3	0.0	53.3	17
	Surat-Vadodara	154	17.0	30.9	5.0	53.0	18
	Hubballi-Chitradurga	221	26.0	26.3	0.0	52.3	19
	JNPT/Navi Mumbai-Pune	131	17.0	25.9	8.0	50.8	20
	Visakhapatnam-Brahmapur	274	22.0	23.9	0.0	45.8	21
	Chandigarh-Ludhiana-Amritsar	239	11.5	24.1	10.0	45.7	22
	Chennai-Ongole	300	16.5	27.6	0.0	44.1	23
	Ambala-Jalandhar	173	18.0	22.8	0.0	40.8	24

Figure 10 illustrates the location of the top 10 corridors and their alignment with MHI's 20 priority corridors for charging infrastructure development. Of the top 10 short-listed corridors, 9 are also designated as priority corridors by MHI. The only exception is the Dhanbad-Kolkata corridor, which is unique to the top 10 list.

A closer look of the top 10 corridors shows that among them, 5 are in the Southern region, 2 are in the Northern region, 2 are in the Eastern region, and 1 is in the Western region. All the top 10

corridors are between 120 km and 350 km in length, which aligns with the ranges of ZET models that are readily available in the Indian market.

Figure 10: Top 10 priority corridors identified in this report compared to MHI top 20 corridors

Using a quantitative scoring assessment based on survey data, geospatial analysis, and desktop research, this project identified the top 10 corridors best suited for early-stage ZET deployment. These corridors currently have — and will continue to have — high truck traffic volume, feature ZET-ready applications that regularly travel along them, have access to sufficient ancillary infrastructure, and align with ongoing stakeholder interests in ZET corridor deployment. Identifying high-potential corridors lays a solid foundation for strategic corridor deployment and then widespread ZET adoption in India.

The Way Forward

The top 10 corridors identified can effectively unlock the first wave of ZET corridor projects in India. Prioritizing these high-potential corridors with strong technical and economic feasibility ensures that policy and financial resources are allocated effectively. These corridors serve as a hub-and-spoke system for the broader network of long corridors, especially along the Golden Quadrilateral.

As corridors are identified, detailed pilot plans and business cases must be developed as a next step, including the key aspects below:

- Identifying top ZET-ready use cases that frequently involve round trips on the corridor
- Selecting the ZET model that meets the needs of these use cases and projecting near-term ZET growth
- Analyzing the cash flow of ZET operations for fleet operators, based on cost and revenue data
- Sizing and siting charging infrastructure to meet fleet needs while ensuring the business viability of CPO investments
- Identifying upstream grid upgrade requirements and making early, future-proof investments

Corridor business case and infrastructure planning can serve as a stepping stone for the seamless deployment of pilot projects. For fleets, the truck ownership financial analysis helps clarify the financial viability of ZET projects and identify where additional financial and policy support is needed. For financiers, the business case helps demonstrate the bankability of ZET projects, providing certainty for investors and ultimately securing and de-risking financing for pilot development. For infrastructure providers, this analysis helps identify truck charging needs and grid upgrade requirements early on, enabling strategic, long-term resource allocation. For policymakers, the business case highlights where additional regulatory and fiscal support may be needed, allowing central and state governments to direct resources where they will have the greatest impact.

Bringing together the right stakeholders, including state and national governments as well as industry leaders, is crucial to piloting the concept, documenting results, and scaling up deployment. Effective coordination and knowledge exchange will be key to moving from development of 10 ZET corridors to full-scale ZET adoption across all major highways in India. Eventually, the ZET corridor network can be gradually expanded across India, unlocking a widespread charging and refuelling infrastructure network to support ZET movement along highways.

Conclusion

Through comprehensive quantitative and qualitative assessments, along with field research, the top 10 corridors best suited for early-stage ZET pilot deployment in India were identified. This process involved three key phases.

First, an initial list of 230 high traffic corridors was narrowed down to 50 based on factors such as current and projected traffic density, industrial activity, and stakeholder consultations. Second, during the Zero-Emission Trucking Corridor Roundtable held in Delhi in June 2024, a voting process further prioritised 24 corridors from the top 50. Finally, each of the top 24 corridors was analysed using data from three sources: primary data from driver and operator surveys, secondary data focused on geospatial distribution of corridor facilities, and additional data from stakeholder alignment. The final corridor scoring was based on evaluation across these three parameter groups, and the 10 highest-scoring corridors were selected as prime candidates for ZET deployment.

With the groundwork laid for corridor identification and technology assessment, it is now prime time to move toward pilot design and implementation. Developing a pilot plan and business case is a crucial step in bridging the gap between corridor identification and real-world pilot deployment. Successful deployment of ZET pilots on these identified routes will require early-stage coordination and collaboration among public and private stakeholders to generate momentum and ensure efficiency and alignment throughout the project.

The first movers that deploy pilots on these corridors can demonstrate market leadership, build early-stage customer trust, and ensure technology competitiveness. The ZET corridor pilot projects can also offer valuable real-world insights into ZET technology performance, operational patterns, infrastructure requirements, and the policy and financial interventions needed for large-scale adoption across major highways in India. Deploying ZET corridors presents a significant opportunity for India to take the lead in ZET adoption while realizing its environmental, social, and economic benefits.

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Appendix

Appendix A: Initial list of corridors

Table 5 lists the initial set of 130 corridors identified by CoEZET, and Table 6 lists the initial set of 100 corridors identified by pManifold, the combination of which generated the input list of 230 corridors.

Table 5: List of 130 corridors identified by CoEZET

S. No.	Corridor name	Length of corridor (km)
1	Adilabad-Nagpur	194
2	Agra-Jhansi	235
3	Ambala-Jalandhar	173
4	Aurangabad-Dhanbad	247
5	Aurangabad-Durgapur	343
6	Aurangabad-Beed	123
7	Aurangabad-Hazaribagh	157
8	Aurangabad-Varanasi	163
9	Bareilly-Shahjahanpur	83
10	Beed-Dharashiv	116
11	Bhubaneswar-Bhadrak	128
12	Bhubaneswar-Brahmapur	173
13	Bhubaneswar-Kharagpur	348
14	Bhubaneswar-Baleshwar	203
15	Bhuj-Palanpur	350
16	Chennai-Bengaluru	348
17	Chennai-Ongole	300
18	Chennai-Tindivanam	130
19	Chennai-Tiruchirappalli	329
20	Chennai-Vellore	139
21	Chennai-Villupuram	164
22	Coimbatore-Kochi	187
23	Coimbatore-Salem	169
24	Coimbatore-Tiruchengode	108
25	Darbhanga-Gorakhpur	315
26	Dewas-Guna	245
27	Dhanbad-Kolkata	273
28	Etawah-Fatehpur	233
29	Faizabad-Deoria	191
30	Firozabad-Etawah	82
31	Firozabad-Mathura	98
32	Gaya-Varanasi	254
33	Ghaziabad-Moradabad	147
34	Gorakhpur-Faizabad	141
35	Guna-Shivpuri	99
36	Guntur-Eluru	95
37	Guwahati-Alipurduar	308
38	Gwalior-Agra	121
39	Gwalior-Shivpuri	118
40	Hosapete-Chitradurga	128

41	Hubballi-Belagavi	99
42	Hubballi-Chitradurga	211
43	Hubballi-Davanagere	147
44	Hubballi-Ranibennur	107
45	Hyderabad-Mahbubnagar	102
46	Hyderabad-Nalgonda	104
47	Hyderabad-Nizamabad	176
48	Hyderabad-Suryapet	135
49	Indore-Bhopal	192
50	Indore-Dhule	263
51	Jaipur-Ajmer	132
52	Jaipur-Beawar	186
53	Jaipur-Bhiwadi	198
54	Jaipur-Chittaurgarh	314
55	Jaipur-Hindaun	156
56	Jaipur-Kishangarh	110
57	Jaipur-Pali	303
58	Jalgaon-Akola	184
59	Jamnagar-Gandhidham	223
60	Jhansi-Lalitpur	97
61	Kanpur-Etawah	153
62	Kanpur-Jhansi	226
63	Kanpur-Orai	110
64	Kishanganj-Berhampore	279
65	Kishanganj-Siliguri	104
66	Kochi-Palakkad	144
67	Kochi-Thrissur	84
68	Kolhapur-Satara	122
69	Kolkata-Asansol	209
70	Kolkata-Burdwan	104
71	Kolkata-Haldia	122
72	Kolkata-Kharagpur	141
73	Krishnagiri-Bengaluru	90
74	Krishnanagar-Raghunathganj	145
75	Kurnool-Dharmavaram	185
76	Kurnool-Hyderabad	216
77	Lucknow-Faizabad	131
78	Lucknow-Shahjahanpur	175
79	Lucknow-Sitapur	86
80	Mehsana-Udaipur	250
81	Moradabad-Shahjahanpur	183
82	Morena-Datia	128
83	Mumbai-Nashik	182
84	Muzaffarpur-Gorakhpur	262
85	Muzaffarpur-Motihari	85
86	Nagpur-Bhilai	259
87	Nagpur-Chandrapur	152
88	Nashik-Dhule	156
89	Nellore-Ongole	127
90	Delhi-Karnal	129
91	Delhi-Mohali	255
92	Delhi-Panipat	95
93	Nizamabad-Adilabad	152

94	Palanpur-Beawar	348
95	Palanpur-Pali	246
96	Palwal-Agra	141
97	Palwal-Gwalior	257
98	Panipat-Jalandhar	284
99	Prayagraj-Fatehpur	139
100	Pune-Satara	110
101	Pune-Solapur	253
102	Raiganj-Raghunathganj	162
103	Raipur-Bilaspur	114
104	Sagar-Jhansi	201
105	Sagar-Seoni	264
106	Salem-Krishnagiri	114
107	Sambalpur-Raipur	272
108	Samserganj-Raiganj	131
109	Seoni-Nagpur	126
110	Siliguri-Alipurduar	165
111	Siliguri-Cooch Behar	144
112	Solapur a-Beed	181
113	Solapur-Vijayapura	98
114	Srikakulam-Brahmapur	159
115	Surat-Mumbai	292
116	Surat-Vadodara	152
117	Tumakuru-Kolar	135
118	Tumakuru-Chitradurga	131
119	Udaipur-Chittaurgarh	113
120	Ujjain-Bhilwara	326
121	Vadodara-Udaipur	343
122	Varanasi-Prayagraj	130
123	Vellore-Bengaluru	212
124	Vijayapura-Hosapete	202
125	Vijayawada-Hyderabad	274
126	Vijayawada-Kakinada	217
127	Vijayawada-Ongole	150
128	Visakhapatnam-Rajahmundry	198
129	Visakhapatnam-Srikakulam	107
130	Walajapet-Vaniyambadi	93

Table 6: List of 100 corridors identified by pManifold

S. No.	Corridor name	Length of corridor (km)
1	Adilabad-Nizamabad	142
2	Agra-Gwalior	110
3	Agra-Jaipur	238
4	Agra-Lucknow	330
5	Ahmedabad-Mundra	329
6	Ahmedabad-Bhavnagar	160
7	Ahmedabad-Rajkot	205
8	Ahmedabad-Vadodara	103
9	Anantapur-Ballari	92
10	Anantapur-Bengaluru	194
11	Anantapur-Kurnool	133
12	Anantapur-Tirupati	249
13	Asansol-Kolkata	199

14	Aurangabad-Pune	221
15	Balasore-Bhubaneswar	182
16	Balasore-Jamshedpur	184
17	Balasore-Kolkata	232
18	Ballari-Hubballi	199
19	Bengaluru-Chennai	317
20	Bengaluru-Tiruchirappalli	311
21	Bengaluru-Mysuru	131
22	Bhavnagar-Pipavav	115
23	Bhopal-Jabalpur	300
24	Brahmapur-Bhubaneswar	158
25	Chandigarh-Ludhiana	100
26	Chennai-Tiruchirappalli	301
27	Chikkamagaluru-Bengaluru	222
28	Chikkamagaluru-Davanagere	140
29	Chikkamagaluru-Mangaluru	138
30	Coimbatore-Erode	91
31	Coimbatore-Madurai	195
32	Davanagere-Hubballi	137
33	Delhi-Agra	229
34	Delhi-Chandigarh	223
35	Delhi-Jaipur	290
36	Delhi-Meerut	102
37	Dhanbad-Asansol	61
38	Dhanbad-Ranchi	147
39	Erode-Salem	63
40	Erode-Tiruchirappalli	139
41	Gorakhpur-Lucknow	267
42	Gwalior-Jhansi	94
43	Gwalior-Kanpur	260
44	Gwalior-Kota	322
45	Hyderabad-Nizamabad	160
46	Hyderabad-Vijayawada	255
47	Indore-Ahmedabad	373
48	Indore-Bhopal	186
49	Jabalpur-Nagpur	249
50	Jabalpur-Satna	189
51	Jaipur-Jodhpur	326
52	Jaipur-Kota	236
53	Jalna-Wardha	316
54	Jhansi-Lalitpur	89
55	Jodhpur-Udaipur	227
56	Kanpur-Prayagraj	191
57	Kochi-Thrissur	76
58	Kolhapur-Hubballi	189
59	Kota-Indore	298
60	Kurnool-Hyderabad	200
61	Lalitpur-Sagar	107
62	Lucknow-Kanpur	86
63	Lucknow-Prayagraj	187
64	Ludhiana-Amritsar	139
65	Madurai-Tiruchirappalli	113
66	Mangaluru-Kannur	130

67	Mysuru-Erode	180
68	Mysuru-Mangaluru	233
69	Nagpur-Bhilai	239
70	Mumbai-Aurangabad	333
71	Mumbai-Nashik	176
72	Mumbai-Pune	131
73	Patna-Dhanbad	295
74	Patna-Gorakhpur	255
75	Patna-Varanasi	250
76	Prayagraj-Varanasi	119
77	Pune-Kolhapur	212
78	Pune-Solapur	237
79	Rajkot-Sikka	114
80	Ranchi-Jamshedpur	119
81	Rewa-Prayagraj	119
82	Sagar-Bhopal	162
83	Sagar-Jabalpur	149
84	Satna-Varanasi	273
85	Solapur-Hyderabad	292
86	Solapur-Vijayapura	88
87	Thiruvananthapuram-Kochi	180
88	Thrissur-Coimbatore	104
89	Thrissur-Kannur	188
90	Udaipur-Ahmedabad	240
91	Udaipur-Kota	272
92	Vadodara-Mumbai	375
93	Vadodara-Surat	141
94	Varanasi-Patna	253
95	Vijayapura-Hubballi	180
96	Vijayapura-Kolhapur	183
97	Vijayawada-Visakhapatnam	320
98	Visakhapatnam-Brahmapur	253
99	Wardha-Adilabad	135
100	Wardha-Nagpur	71

Appendix B: List of 103 corridors

Table 7 lists the top 103 corridors after consolidation during Phase 1 and corridor length. Certain corridors did not have toll data readily available, and these were subsequently analysed through satellite imagery and data collection from other sources.

Table 7: List of 103 corridors

Corridor name	Length of corridor (km)
Adilabad-Nagpur	194
Agra-Jaipur	238
Agra-Lucknow	330
Ahmedabad-Mundra	329
Ambala-Jalandhar	173
Ambala-Kotputli	320
Anantapur-Bengaluru	194
Aurangabad-Durgapur	343

Aurangabad-Pune	221
Balasore-Kolkata	280
Ballari-Hubballi	199
Bengaluru-Tiruchirappalli	311
Bengaluru-Mysuru	131
Bhopal-Jabalpur	300
Bhopal-Nagpur	352
Bhubaneswar-Balasore	197
Bhubaneswar-Bhadrak	128
Bhubaneswar-Brahmapur	173
Bhubaneswar-Kharagpur	348
Chandigarh-Ludhiana	100
Chennai-Bengaluru	347
Chennai-Tindivanam	130
Chennai-Villupuram	164
Chennai-Ongole	300
Chennai-Tiruchirappalli	344
Chikkamagaluru-Bengaluru	222
Coimbatore-Kochi	187
Coimbatore-Salem	169
Coimbatore-Tiruchengode	108
Delhi-Agra	229
Delhi-Chandigarh	255
Delhi-Jaipur	290
Dhanbad-Ranchi	147
Dhanbad-Kolkata	273
Erode-Tiruchirappalli	139
Firozabad-Etawah	82
Ghaziabad-Moradabad	147
Gorakhpur-Lucknow	141
Gwalior-Kota	322
Gwalior-Agra	120
Hosapete-Chitradurga	128
Hubballi-Chitradurga	211
Hubballi-Davanagere	474
Hyderabad-Mahbubnagar	102
Hyderabad-Nizamabad	175
Indore-Bhopal	194
Jabalpur-Nagpur	249
Jaipur-Jodhpur	326
Jaipur-Kota	236
Jaipur-Bhiwadi	198
Jaipur-Pali	303
JNPT/Navi Mumbai-Pune	131
Jodhpur-Udaipur	227
Kadapa-Kurnool	199
Kanpur-Prayagraj	191

Kanpur-Jhansi	226
Kishanganj-Berhampore	279
Kochi-Palakkad	144
Kochi-Thrissur	84
Kolhapur-Hubballi	189
Kolkata-Asansol	211
Kolkata-Burdwan	104
Kolkata-Haldia	122
Kota-Indore	298
Kurnool-Hyderabad	218
Ludhiana-Amritsar	139
Madurai-Tiruchirappalli	113
Moradabad-Shahjahanpur	183
Mumbai-Nashik	182
Muzaffarpur-Gorakhpur	262
Mysuru-Mangaluru	233
Mysuru-Erode	180
Nagpur-Bhilai	255
Nagpur-Chandrapur	152
Nashik-Dhule	156
Nellore-Ongole	127
Delhi-Karnal	129
Adilabad-Nizamabad-Hyderabad	151
Palanpur-Beawar	348
Palwal-Gwalior	257
Paradeep-Barbil	302
Patna-Gorakhpur	255
Pune-Kolhapur	110
Pune-Nashik	215
Raiganj-Raghunathganj	162
Raipur-Bilaspur	114
Rajkot-Sikka	114
Ranchi-Jamshedpur	119
Sagar-Jhansi	201
Sambalpur-Raipur	272
Siliguri-Alipurduar	165
Solapur-Hyderabad	292
Surat-Vadodara	154
Thiruvananthapuram-Kochi	180
Tumakuru-Kolar	135
Udaipur-Kota	272
Vadodara Udaipur	343
Varanasi-Prayagraj	121
Vellore-Bengaluru	212
Vijayawada-Hyderabad	277
Vijayawada-Kakinada	217

Vijayawada-Visakhapatnam	320
Visakhapatnam-Brahmapur	107

Appendix C: Key takeaways from stakeholder interviews used to short-list 50 corridors from 79

Table 8 outlines the key qualitative insights from stakeholder interviews that informed the selection of 50 corridors from 79 in Phase 1. These insights were used either to justify the elimination of corridors based on quantitative data or to reconsider eliminated corridors due to favourable conditions for ZET operation.

Table 8: Key insights from stakeholder interviews to short-list 50 corridors

Number	Main zones	Key insights
1	Eastern	Retain corridors near ports as export from northern India primarily takes place via Haldia, Bhubaneswar, and Visakhapatnam ports.
2	Central and Northern	1. The western Maharashtra belt which extends to Karnataka and Kerala should be considered because these corridors have high truck traffic and significant presence of industrial areas. 2. All corridors near ports should be retained. 3. Agricultural produce and cattle feed from Nagpur, Adilabad, Hyderabad, Nizamabad, Bezawada Junction, etc., are exported from Visakhapatnam port leading to high trucking movement in these corridors. 4. In addition to commenting on Central and North corridors, the interviewee also suggested retaining all corridors where steel is transported, especially in the Eastern zone.
3	Central, Western, and Eastern	1. All corridors near a port should be retained to encourage ZET operation for export goods. 2. Provided insights on goods transported on specific corridors to further inform suitable applications for corridor development in the short-listing process. 3. Recommended the retention of interstate corridors.
	Central, Northern, and Eastern	1. Recommended the retention of interstate corridors. 2. Provided information on top applications and goods transported in the Central, Northern, and Eastern zones to further inform suitable applications for corridor development in the short-listing process. 3. Recommended the retention of corridors near ports and multimodal logistic parks.
4	Southern	Validated the list of the corridors from the Southern zone and suggested addition of others (e.g., Mangaluru-Chitradurga) in the top 50 list.
5	Central and Eastern	Validated the elimination of corridors in the Central and Eastern zones due to low traffic.

Appendix D: Geographic and length distribution of top 50 corridors

The top 50 corridors are widely distributed across the Central, Eastern, Northern, Southern, and Western regions of India. Figure 11 summarises the regional distribution of the top 50 corridors. The Southern region has the highest percentage of top 50 corridors, given its high traffic volume, industrial activities, and connection to ports. The remaining regions have similar percentages of top 50 corridors, ranging between 16% and 20%.

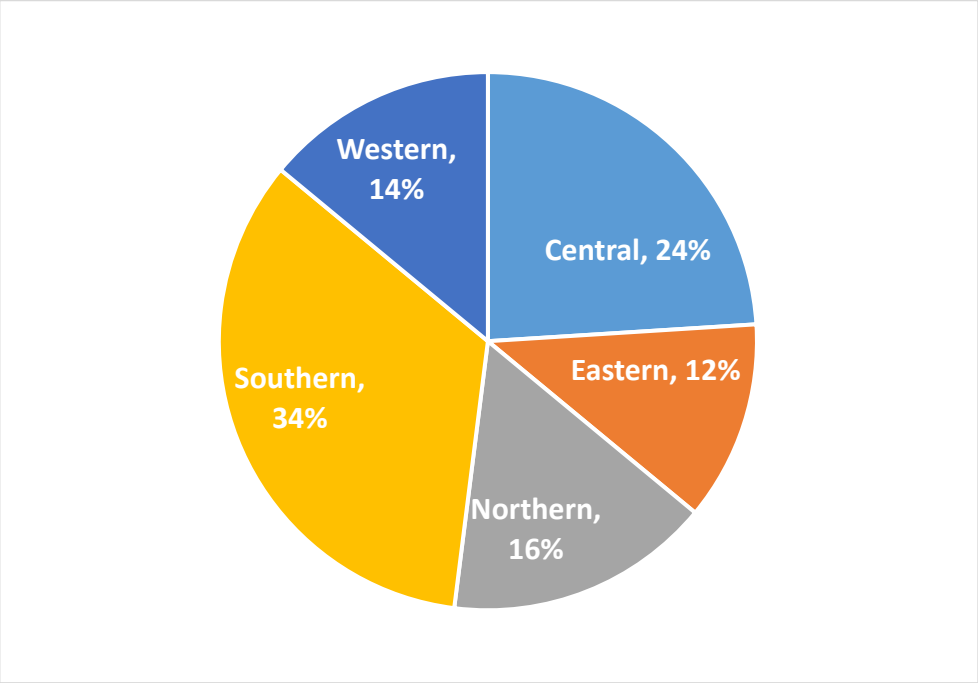

Figure 11: Regional distribution of top 50 corridors

Ninety-six percent of the top 50 corridors are under 340 km, which is about the range of the largest battery in commercially available electric truck models in India's market today. This ensures that trucks can cover the entire corridor without needing to stop for charging. Around half of the corridors are between 100 and 200 km. Figure 12 summarises the length distribution of the top 50 corridors.

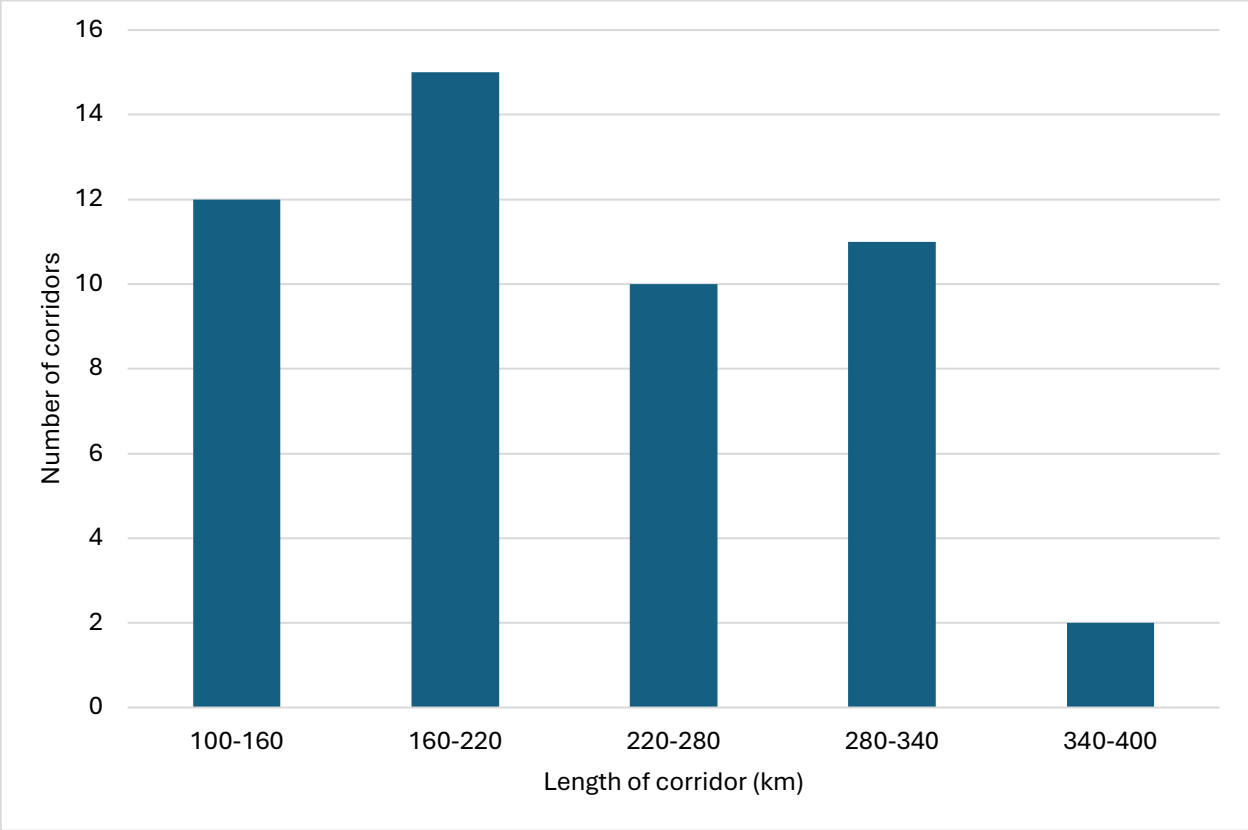

Figure 12: Length distribution of top 50 corridors

Appendix E: Companies that participated in the stakeholder convening to short-list 24 corridors from 50

Table 9 lists the stakeholders that participated in the convening during Phase 2 of the short-listing process.

Table 9: Stakeholders that participated in Phase 2 convening

Company/organization	Industry
Ashok Leyland	OEM
Volvo Eicher (VE) Commercial Vehicles	OEM
Volvo Trucks	OEM
Tata Motors	OEM
Amazon	Fleet aggregator
Magenta Mobility	Fleet aggregator
Switch Labs	Fleet aggregator
ChargeZone	CPO
Statiq	CPO
Sun Mobility	Battery swapping operator
Tata Power	CPO
National Highways for Electric Vehicles	Government body
CALSTART	Civil society organisation (CSO)
CoEZET IIT Madras	CSO
International Council on Clean Transportation (ICCT)	CSO
The Energy and Resources Institute	CSO
World Resources Institute India	CSO
pManifold	Consulting firm

Appendix F: Questionnaire for truck driver OD survey

Table 10 details the OD survey questions asked of truck drivers on each corridor.

Table 10: Driver OD survey questions

Data category	Question	Unit
Driver details	Driver name	Text
	Age	Years
	Driving experience	Years
	Contact number (optional)	#
Operator details	Operator name	Text
	Contact number	#
Vehicle details	Vehicle registration number	#
	Make-model	Text
	Year	#
	Fuel type	Diesel/LNG
	Ownership	Driver/Operator
Trip details	Trip origin	Location
	Trip destination	Location
	Avg. speed	km/hr
	Total trip duration	Hours
	Driving duration	Hours
	Rest stops during the day	#
	Duration of rest during the day	Hours
	Rest stops during the night	#
	Duration of rest during the night	Hours
	Commodity carried	Name
	Payload utilisation	%
	Volume utilisation	%
	Fuel consumed (one-way trip)	Litres
Route details	Route type	Fixed/variable
	Cargo type	Fixed/variable
Driver's perception and awareness	Willingness to take break for an hour every four hours	Yes/no
	Willingness to use an app for tracking and monitoring purposes	Yes/no
	Willingness to reserve charging slot	Yes/no
	Preferrable time to charge electric trucks	Day/night

Appendix G: Questionnaire for truck operator survey

Table 11 details the questions asked to fleet operators under the operator survey.

Table 11: Questions used for the fleet operator survey

Data category	Question
Vehicle details	Is the vehicle part of a fleet?
	Fleet size (if applicable)
	Fleet details split by vehicle tonnage
Financing details	Financier
	Financing tenure
	Rate of interest
	Vehicle life cycle
Trip details	Primary customer for cargo
	Operational expenses (fuel, driver, toll, maintenance, insurance, etc.)
	Revenue
Origin-destination details	What are the common origins for your trips (start locations)?
	What are the common destinations for your trips (end locations)?
	Average distance per trip (origin to destination)
Monitoring and data collection	Do you use telematics data collection systems?
	Do you use an app for maintenance, fuel, driving improvement, safety, or other parameters?
Operator's perception and awareness of electric trucks	Are you aware of electric vehicles in the 2W/3W/4W truck categories?
	What advantages do you think electric trucks have over conventional fuel-powered trucks?
	What challenges do you foresee with electric trucks?
	Are you interested in switching to electric trucks?
	If yes, what factors would motivate you to make the switch?
	If no, what are the main reasons holding you back?
	What support would you need to transition to electric trucks (e.g., incentives, infrastructure, training)?
Future planning	Do you have any plans to purchase electric trucks in the future?
	What factors would influence your decision to buy an electric truck?
	How do you perceive the future of electric trucks in your industry (e.g., cost efficiency, environmental concerns, government policy)?

Appendix H: Determination of survey sample size and interview locations

Determining the right sample size for the OD survey plays an important role in ensuring an accurate representation of trucks operating in that corridor. The sample size to be surveyed for each corridor was calculated using the formula for sample size estimation in proportion-based surveys defined as:

$$n_o = \frac{(z^2 * p * (1-p))/e^2}{1 + \frac{(z^2 * p * (1-p))}{(e^2) * N}}$$

where:

n_0: Number of samples to be surveyed.

N: Total size of the population (i.e., average daily truck volume)

z: Z-value. This is set at 1.96 (95% confidence level) to balance comprehensive coverage of the corridor and feasibility of the survey.

p: Estimated proportion of the population. This is set at 50% of total truck volume.

e: Margin of error. This is set at 5% to balance statistical accuracy and feasibility of survey implementation.

Table 12 summarises the sample size for each vehicle type as well as the number of survey locations for the top 24 corridors.

Table 12: Distribution of sample size and survey locations for top 24 corridors

Corridor name	Average daily traffic volume	Sample size	Number of survey locations	2-axle	3-axle	4-axle	5-axle	6-axle	>6 axle
Kolkata-Haldia	12,838	149	1	53	38	45	20	6	2
Dhanbad-Ranchi-Jamshedpur	2,419	142	1	0	38	54	28	9	2
Dhanbad-Kolkata	15,017	149	1	36	31	60	26	8	2
Paradeep-Barbil	5,677	147	1	15	20	63	46	15	2
Visakhapatnam-Brahmapur	5,529	147	1	33	32	56	31	8	2
JNPT/Navi Mumbai-Pune	N/A	150	1	30	30	30	30	30	2
Ahmedabad-Mundra	14,735	149	1	9	12	44	58	25	2
Mumbai-Nashik	5,817	147	2	56	16	47	31	9	2
Pune-Nashik	2,929	143	1	86	24	29	13	4	2
Surat-Vadodara	22,152	150	1	40	24	56	31	11	2
Pune-Kolhapur	6,690	147	1	68	27	38	21	6	2
Delhi-Jaipur	4,010	145	1	0	14	28	34	44	2
Delhi-Agra	N/A	150	1	40	24	56	31	11	2
Delhi-Chandigarh	10,482	148	1	63	26	35	20	14	2
Chandigarh-Ludhiana-Amritsar	1,860	146	1	25	16	8	7	4	2
Ambala-Jalandhar	7,548	148	2	67	29	36	18	11	2
Vijayawada-Hyderabad	6,746	147	1	47	27	51	30	6	2
Chennai-Bengaluru	10,366	148	1	49	28	58	20	5	2
Vijayawada-Visakhapatnam	7,644	148	1	36	30	49	37	9	2
Coimbatore-Salem	5,386	146	1	58	27	48	18	7	2
Chennai-Ongole	8,473	148	2	33	28	56	33	9	2
Coimbatore-Kochi	5,856	147	1	48	31	61	15	5	2
Hubballi-Chitradurga	4,305	146	1	61	35	42	16	4	2
Chennai-Villupuram	6,752	147	1	55	33	47	21	9	2

Survey locations for the OD survey in the top 24 corridors split by region — Northern, Eastern, Western, and Southern — used in the primary data analysis during Phase 3 of the short-listing process are shown in Figures 13-16. For each survey location, a buffer of 5 km around the location was considered to interview the drivers.

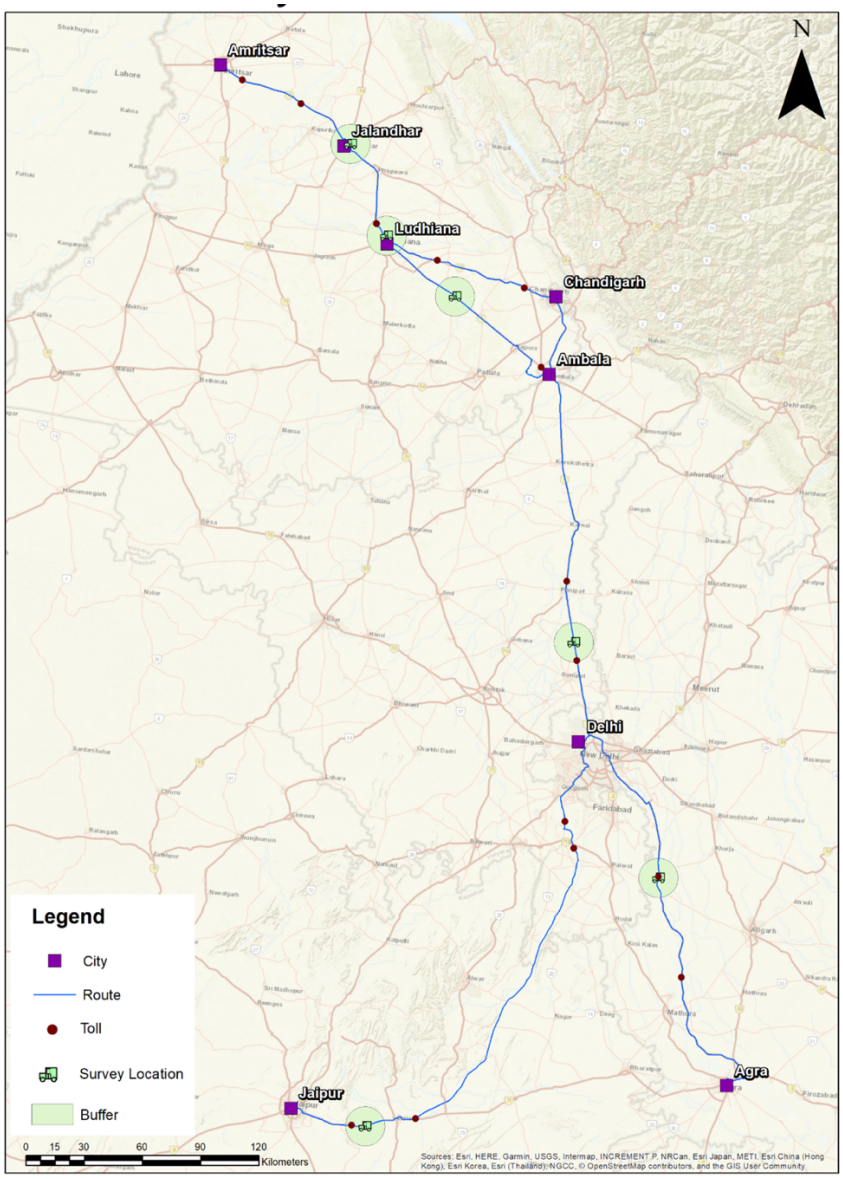

Figure 13: Survey locations in the Northern region

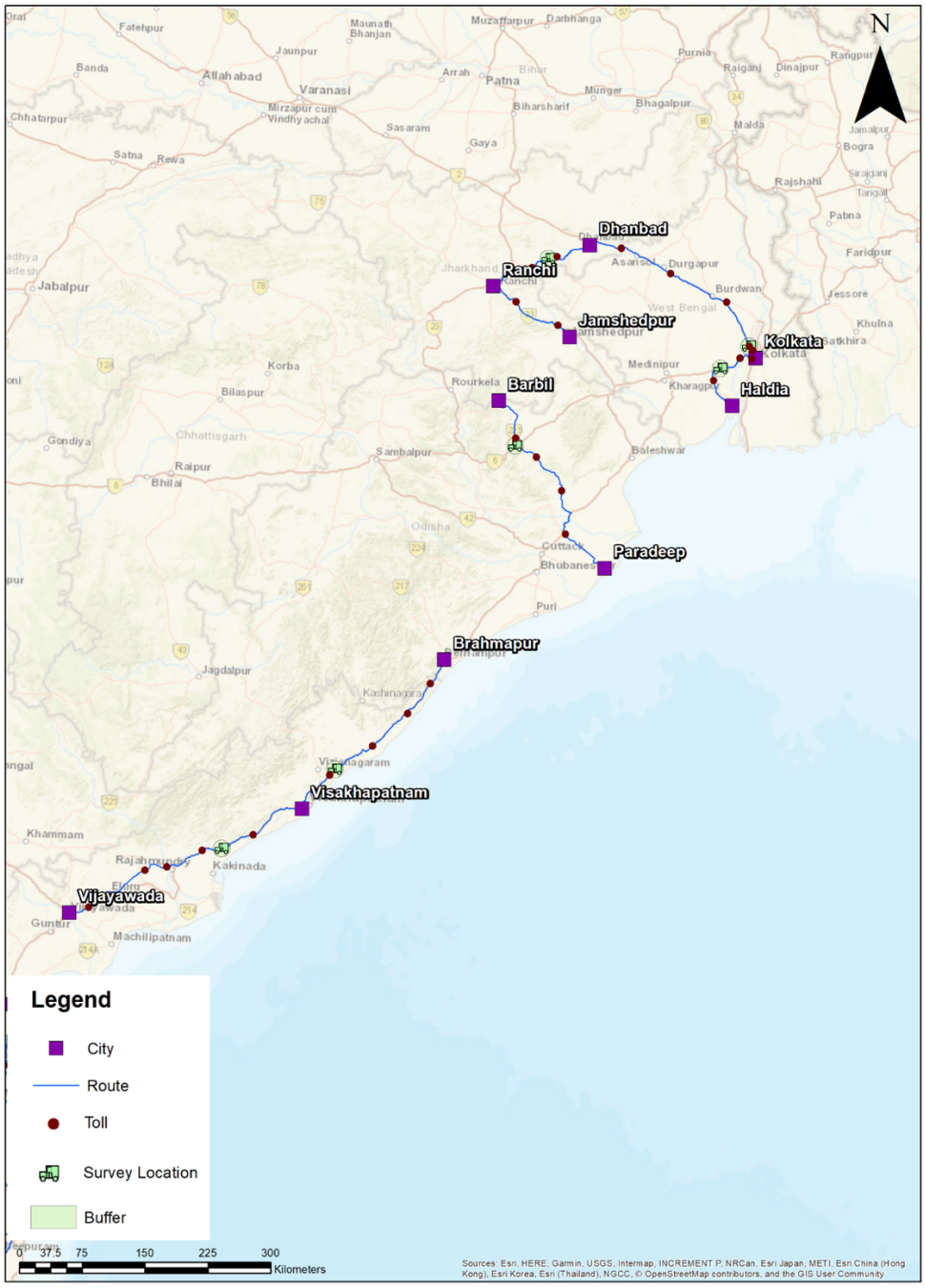

Figure 14: Survey locations in the Eastern region

Figure 15: Survey locations in the Western region

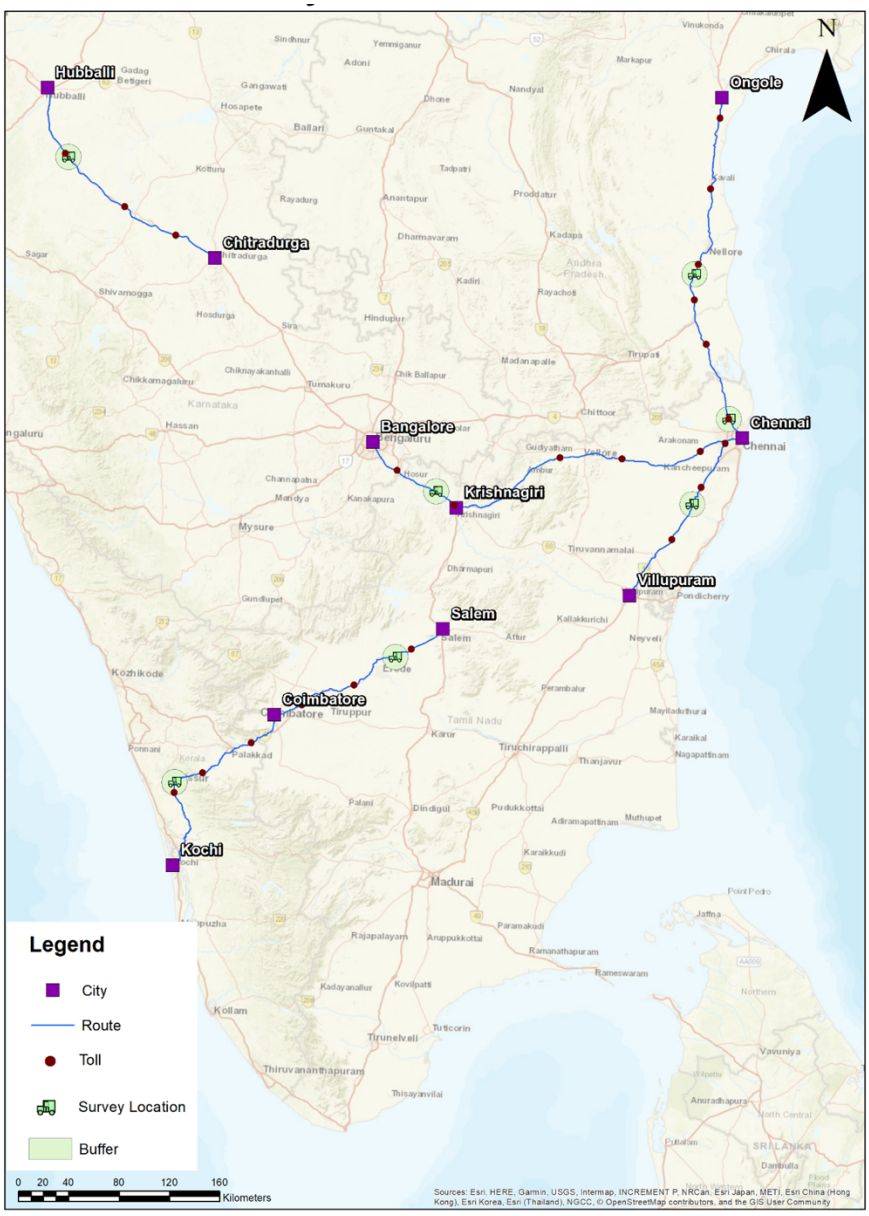

Figure 16: Survey locations in the Southern region

Appendix I: Detailed methodology for primary, secondary, and stakeholder alignment analysis.

Primary data analysis: Table 13 summarises the details of parameters considered in the primary data analysis, as well as the rationale behind the weightage assigned.

Table 13: Details of parameters used in primary data analysis

Parameter	Weightage	Rationale for weightage	Details
Percentage of ZET-ready volume	5	Essential for evaluating which applications are easiest to switch over to ZETs.	Using data from the OD survey, the percentage of trucks that are considered ZET-ready is calculated based on the following criteria: — Applications where using ZETs is legally permitted — Truck traffic that follows a fixed route — Daily or weekly travels on corridor — Where a ZET model with equivalent tonnage is readily available in the market
OD dependency	5	Essential for evaluating how much of the corridor aligns with the traffic pattern of ZET-ready applications.	For the ZET-ready truck samples in the OD survey, the percentage of the corridor covered in their frequently travelled route.
Percentage of operators preferring to transition to ZET	0.5	Captures the possibility of early ZET adoption through willingness of fleet operators. Lesser priority because operator knowledge on ZETs could be limited.	Using data from the operator survey, the percentage of operators who responded positively when asked about switching to ZETs is calculated.
Percentage of drivers preferring to stop en route	0.5	Captures drivers' awareness to operate ZETs and charge along the route. Lesser priority because drivers might overestimate stopping time.	Using data from the OD survey, percentage of drivers who responded positively when asked about stopping along the route is calculated.

Percentile method is used for assigning a score between 1 and 3, where 1 is assigned for percentage values below 33%, 2 for values between 33% and 66%, and 3 for values above 66%. This is then multiplied with the respective weightage to generate the final weighted score.

Secondary data analysis: Secondary data for facilities was collected based on Google Earth, OEM websites, Visualisation of Earth Observation Data and Archival System (VEDAS) Portal, and other desktop research. For each facility, a service area was defined based on guidelines or regulations from the government. Table 14 lists the facilities analysed during secondary data collection, the weightage assigned, and the defined service area.

Each facility listed is scored against three criteria:

- **Perpendicular distance:** Measures the proximity of the facility to the corridor, with a higher score assigned for facilities closer to the corridor.

- **Coverage:** Measures how much of the corridor falls within the defined service area of the facility based on government guidelines wherever applicable, with a higher score assigned for higher coverage.
- **Density:** Measures the number/length of installations of the facility per kilometre of the corridor, with a higher score assigned for higher density.

Table 14: Details of parameters used in secondary data analysis

Facility	Weightage	Rationale for weightage	Service area
Substation	2.5	Essential to ensure adequate power for truck charging	5 km
Transmission lines	1.5	Essential to ensure adequate power for truck charging	5 km
Logistic hubs	3	Ideal locations for depot charging	100–200 km, based on Ministry of Commerce & Industry guidelines [26]
Restaurants	2	Ideal locations for en route charging	40–60 km, based on Ministry of Road Transport and Highways guidelines [27]
Fuel stations	1	Alternative charging locations but less critical for electric trucks	40–60 km, based on Ministry of Road Transport and Highways guidelines [28]
Fire stations	3	Ensure hazard mitigation and emergency response along the route	10–50 sq. km (depending on area), based on National Disaster Management Authority guidelines [29]
OEM service stations	3	Facilitate maintenance and repair of ZETs	15 km (providing a turnaround time of 1–3 hours)

For each facility, a score between 1 and 3 is assigned (Table 15). The analysis also evaluates these criteria on both sides of the corridor to better map their availability and accessibility. The scores for each facility are averaged across the three criteria and multiplied by its associated weightage to give the weighted score. In the case of transmission lines, perpendicular distance is not considered.

Table 15: Scoring criteria for parameters used in secondary data analysis

Criterion	Scoring metric		
	Low (1)	Medium (2)	High (3)
Perpendicular distance	>= 1.65 km	0.52–1.65 km	<= 0.52 km
Coverage	<=30%	30%–74%	>=74%
Density	<=0.45/km	0.45–3.58/km	>=3.58/km

Stakeholder alignment analysis: Table 16 provides a list of the parameters analysed during stakeholder alignment, along with the weightage assigned and scoring criteria. The score for each parameter is multiplied by its associated weightage to calculate its weighted score.

Table 16: Details of parameters used in stakeholder alignment analysis

Parameter	Rationale for weightage	Weightage	Scoring criteria
Stakeholder voting	Reflects stakeholder prioritisation of corridors	5	**1** — If corridor has received no fewer than 15 total votes or 3 group votes **0** — If corridor has either received fewer than 15 votes or 1 or 2 group votes
Real-world pilot projects	Provides opportunity to leverage existing assets and learnings	3	**1** — If pilot projects are currently running or planned on corridor **0** — If no pilot projects are running or planned on corridor
Alignment with MHI corridor list	Signals government interest and investment direction	5	**2** — If corridor appears in MHI's top 20 priority list **0** — If corridor does not appear in MHI's top 20 priority list

Appendix J: Elevation profile of top 10 corridors

Figure 17 summarizes the elevation profiles of the top 10 corridors. The top 10 corridors identified do not include significant elevation gain in short stretches and are technologically and economically feasible for ZET deployment. The only exception is the Chennai-Bengaluru corridor, which, despite having a relatively high elevation gain, features a consistent incline that makes infrastructure development more manageable.

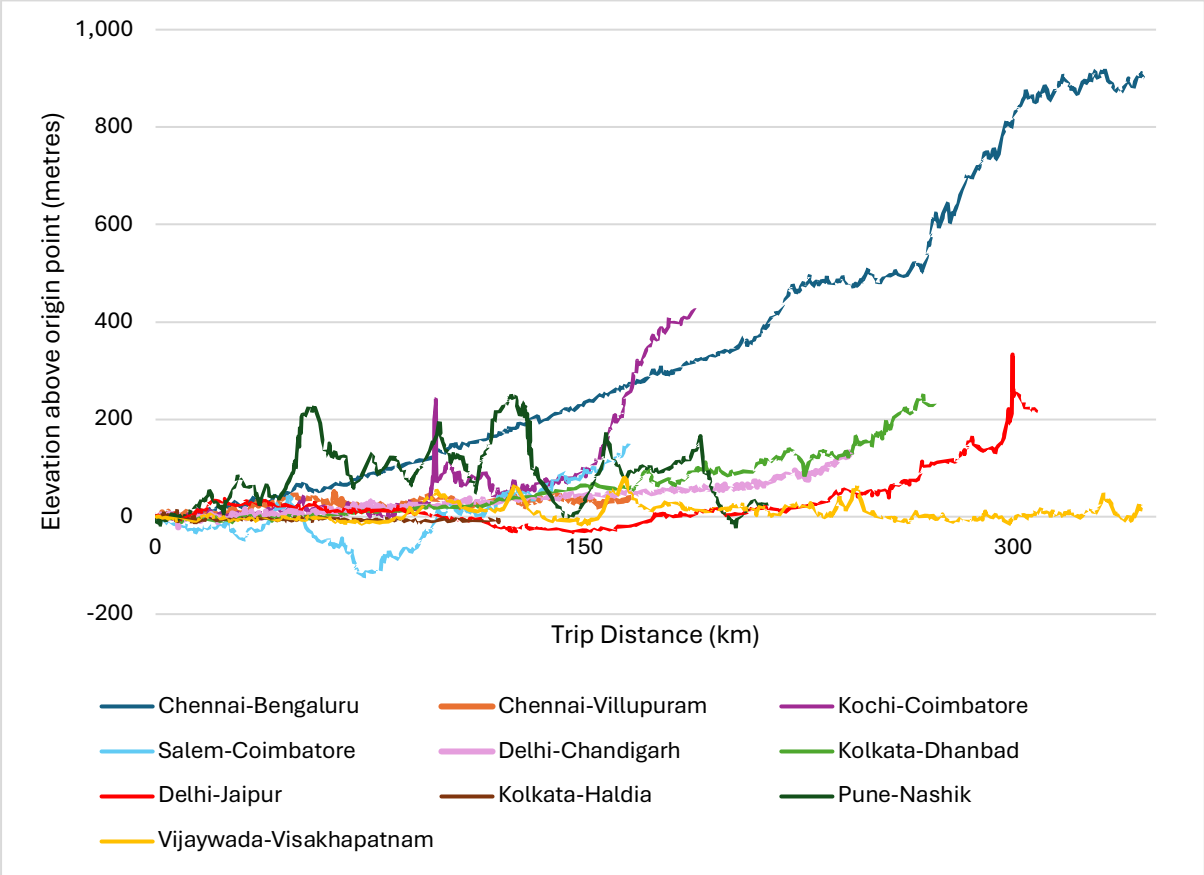

Figure 17: Elevation profile of top 10 corridors

Appendix K: Weighted score of individual parameters for top 24 corridors

Table 17 below details the individual scores of the top 24 corridors for each parameter and the final weighted score used to rank the corridors in Phase 3 of the short-listing process.

Table 17: Individual scores of parameters used in Phase 3 of the short-listing process for the top 24 corridors

Route name		Primary parameters				Secondary parameters							Stakeholder alignment			Grand total
		ZET-ready volume	OD dependency	Operator preference	Driver preference	Sub-stations	Transmission lines	Restaurants	Fuel stations	Logistics hubs	Fire stations	OEM service stations	Stakeholder votes	MHI alignment	Public-private initiatives	
Weightage		5	5	0.5	0.5	2.5	1.5	2	1	3	3	3	5	5	3	
Selected top 10 corridors	Chennai-Villupuram	15	15	1	1	2.5	1.3	6	2.3	6	6	6.0	0	3	10	75.1
	Delhi-Jaipur	15	10	1	0.5	2	3	5.3	2	5	5	7.0	5	3	10	73.8
	Vijayawada-Visakhapatnam	15	15	0.5	0.5	1.5	3.4	4.7	2	6	4	6.0	5	0	10	73.6
	Chennai-Bengaluru	10	10	1.5	1.5	2.5	1.8	5.3	2.7	6	6	6.0	5	3	10	71.3
	Coimbatore-Kochi	15	15	1	1.5	2	1.4	5.3	2	6	5	5.0	0	0	10	69.2
	Coimbatore-Salem	10	15	0.5	0.5	2.5	3	5.3	2	8	6	5.0	0	0	10	67.8
	Kolkata-Haldia	10	15	1.5	1.5	2.5	1.3	4.7	2	7	6	6.0	0	0	10	67.5
	Delhi-Chandigarh	10	5	0.5	0.5	2	3	4.7	2.3	6	5	7.0	5	0	10	61
	Dhanbad-Kolkata	15	15	1.5	1.5	2	1.8	5.3	2.7	5	4	6.0	0	0	0	59.8

	Pune-Nashik	10	10	0.5	0.5	2.5	3.2	4.7	2	7	4	5.0	0	0	10	59.3
Rest of the top 24 corridors	Delhi-Agra	10	10	1	0.5	2.5	3.4	4	1.3	3	4	4.0	5	0	10	58.7
	Paradeep-Barbil	15	5	1.5	1.5	2	1.2	4.7	2	4	5	5.0	0	0	10	56.8
	Ahmedabad-Mundra	10	5	0.5	1	1.5	1.8	4.7	2	6	4	5.0	5	0	10	56.5
	Vijayawada-Hyderabad	15	5	1.5	1.5	2	1.8	4.7	2	5	6	6.0	5	0	0	55.5
	Mumbai-Nashik	5	10	1	1	2.5	3.1	5.3	2	6	4	5.0	0	0	10	54.9
	Dhanbad-Ranchi-Jamshedpur	5	5	1.5	1.5	2	2.1	5.3	2	4	4	6.0	5	0	10	53.4
	Pune-Kolhapur	5	15	1.5	0.5	2.5	1.8	5.3	2.7	7	6	6.0	0	0	0	53.3
	Surat-Vadodara	5	10	1	1	2.5	1.8	5.3	2.3	7	5	7.0	5	0	0	53
	Hubballi-Chitradurga	10	15	0.5	0.5	2.5	1.1	4.7	2	5	6	5.0	0	0	0	52.3
	JNPT/Navi Mumbai-Pune	10	5	1	1	2	1.5	4.7	1.7	6	4	6.0	5	3	0	50.8
	Visakhapatnam-Brahmapur	5	15	1	1	2	2.5	4.7	1.7	4	5	4.0	0	0	0	45.8
	Chandigarh-Ludhiana-Amritsar	5	5	0.5	1	2.5	3	3.3	2.3	4	5	4.0	0	0	10	45.7
	Chennai-Ongole	10	5	0.5	1	2	2.3	5.3	2	4	5	7.0	0	0	0	44.1
	Ambala-Jalandhar	5	10	1.5	1.5	2	1.8	4	2	4	4	5.0	0	0	0	40.8

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