

Brunei Darussalam's Potential to Lead the Regional EV Revolution

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Key Messages

- 1 Brunei Darussalam has a strong national desire to shift towards EVs, a crucial strategy for meeting its climate targets under the Brunei National Climate Change Policy (BNCCP) and the Wawasan Brunei 2035 vision by reducing transport emissions.
- 2 Despite ambitious targets, viable strategy, robust policy support and strong potential for an EV revolution, there were only 19 EVs registered in Brunei by the end of 2023.
- 3 Given Brunei's favourable geographic, demographic, and economic conditions, the country holds immense potential to drive an EV revolution and ability to establish itself as a regional leader in this domain.
- 4 Overcoming policy implementation challenges is a critical hurdle in achieving the country's green and sustainable transportation goals.
- 5 Achieving key national targets, such as increasing new car sales to 60% by 2035, converting 50% of government fleet vehicles to electric by 2030, establishing 500 charging stations nationwide by 2025, and attaining a 10% EV market share by 2030, appears challenging.
- 6 Based on a feasibility and SWOC analysis, this brief highlights Brunei's inherent geographic, demographic, and economic advantages that render it uniquely poised for widespread EV adoption, effectively mitigating range anxiety and ends up saving 59% of energy cost.



Executive Summary

With Brunei's land transport sector being one of the largest carbon emitter, Brunei Darussalam is pursuing an ambitious agenda towards carbon neutrality. A key component of this effort is the adoption of electric vehicles, which is a cornerstone of the Brunei National Climate Change Policy and Wawasan Brunei 2035. Key targets include converting 50% of government fleet vehicles to electric by 2030, establishing 500 charging stations nationwide by 2025, and achieving a 10% EV market share by 2030. Aiming for EVs to represent 60% of new vehicle sales by 2035, Brunei's strategy targets the transportation sector, responsible for a substantial share of the nation's CO₂ emissions (94.7%). With a high vehicle ownership rate (680 vehicles per 1,000 people), Brunei's commitment reflects both its domestic climate action ambitions and alignment with the Paris Agreement.

Brunei's EV related policy is ambitious yet achievable by leveraging unique geographic, demographic, and economic advantages. Its compact size and concentrated population distribution reduce range anxiety, with BEVs like the BYD Seal (450-500 km range) suited for daily commutes and PHEVs, such as the BYD Sealion (1100 km combined range), addressing longer travel needs. Brunei's energy pricing further strengthens EV feasibility: subsidised electricity costs (BND 0.12/kWh) make EV charging significantly cheaper than fueling ICE vehicles, with models like the BYD Atto 3 delivering 59% savings per kilometer. Moreover, with some policy adjustments, Brunei can attract existing automakers to introduce their EV models in the market on competitive prices instead of ICEs, giving more options to consumers for optimised decisions.

While EVs like the BYD Sealion (BND 39,900) remain competitively priced, their long-term economic benefits, including lower maintenance costs, minimal servicing requirements, and savings on parts replacements, enhance their appeal. In addition, high per-capita income and growing environmental consciousness bolster the economic case for EV adoption in Brunei. Nonetheless, limited progress on infrastructure development and policy implementation delays challenge the EV transition in the country.

This policy brief culminates in a set of strategically imperative recommendations, encompassing enhanced capital allocation toward charging infrastructure, the introduction of calibrated subsidies to incentivise consumer adoption, and the implementation of robust regulatory frameworks to underpin the nation's paradigm shift toward electric mobility. These measures, synergistically deployed, position Brunei to not only catalyse a transformative transition within its domestic transport sector but also to emerge as a vanguard of sustainable mobility across Southeast Asia. Such initiatives hold the potential to fortify Brunei's resilience against the multifaceted exigencies of global climate imperatives, aligning national ambitions with a future-oriented vision of environmental stewardship and economic sustainability.



- Challenges: Delays in EV infrastructure and policy implementation risk Brunei's goals under Wawasan 2035, such as 60% of new car sales being EVs and electrifying 50% of the government fleet by 2030.
- Policy Solutions: Brunei must prioritise an extensive charging network, foster public-private partnerships, offer financial incentives like subsidies, and enforce stricter emissions and import restrictions on ICE vehicles.
- Desired Impact: Accelerated measures will position Brunei as a leader in sustainable transportation, aligning with its national and international climate commitments.

1. Background

In 2023, the transport sector retained its position as the second most significant contributor to global Carbon Dioxide (CO₂) emissions, responsible for 21.11%[1] of total emissions, underlining its critical role in global climate crisis. While efforts to reduce carbon emissions from transport sector have historically focused on transitioning from internal combustion engines (ICEs)[2] to Electric Vehicles (EVs)[3], substantial progress has only been observed in recent years. This acceleration is largely due to consistent, effective, and stringent policy measures that have facilitated global EV adoption, along with ongoing advancements in EV technology, making EVs increasingly cost-effective with decreasing range anxiety. Currently, one in every four new vehicle registrations worldwide are now an EV, with Norway leading at 90% of new vehicle sales being electric, followed by China at 40%. Projections indicate that by 2030, EVs will make up over 80% of total new car sales, supporting the global ambition for net-zero emissions (IEA,2024). Although EV sales are currently concentrated in a selected number of countries–improvement in driving range, competitive pricing, and an increasing energy and environmental security concerns are fostering wider EV adoption across the developing world.

While Brunei inherently benefits from a natural capacity to offset a substantial portion of its carbon emissions, the nation has resolutely committed to rigorous carbon abatement strategies. This commitment demonstrates Brunei’s alignment with international climate change mitigation efforts, while also reflecting a strategic foresight to protect against its own environmental vulnerabilities–extreme temperatures, rising sea levels, erratic rainfall patterns, frequent weather changes, and recurrent forest fires. Currently, carbon dioxide (CO₂) constitutes 94.7% of Brunei’s greenhouse gas (GHG) emissions, largely stemming from the energy sector (See Figure 1). Within this context, land transport ranks as the third largest emissions contributor, following the industrial and household sectors. The substantial role of the transport sector, alongside high vehicle ownership rates of approximately 680 vehicles per 1,000 people, positions it as a focal point in Brunei’s climate action strategy.

Given Brunei’s high-income level, size, population, and highly subsidies electricity prices, the country possesses a strong foundation to become a regional leader in EV adoption. Additionally, Brunei’s commitment to global climate action is evidenced by the establishment of the Brunei National Climate Change Policy (BNCCP) in 2020. This framework aligns with Brunei’s Nationally Determined Contributions (NDCs) under the Paris Agreement, signaling a robust approach to mitigating climate impacts while advancing sustainable socio-economic growth. Among its ambitious targets, the BNCCP aims to ensure that 60% of new vehicle sales are electric by 2035. However, as of 2023, only 19 electric vehicles were registered in the country, highlighting the challenges that lie ahead on the path to a green economy.

2. Brunei’s Policy Imperative for EVs

This policy brief examines Brunei’s core policy documents (i.e., BNCCP and Wawasan Brunei 2035)[4], outlines key policy imperatives for EVs, and discusses the current opportunities and challenges in technology, infrastructure, and socio-economic viability.

2.1 Brunei National Climate Change Policy (BNCCP) and EVs

Brunei Darussalam’s commitment to addressing climate change is exemplified by BNCCP, a transformative strategy introduced in 2020 (See Figure 2). This comprehensive blueprint aims to reshape the transport sector through the adoption of EVs, a critical step toward reducing emissions and promoting sustainable mobility. Embedded within the BNCCP are principal directives designed to foster EV adoption: the development of a nationwide EV charging infrastructure, financial incentives such as tax breaks and subsidies, and the phased electrification of public sector fleets to reflect on the government’s commitment to sustainable practices. Furthermore, the strategy emphasises collaboration with private enterprises to enhance technological progress and expand the national charging network.

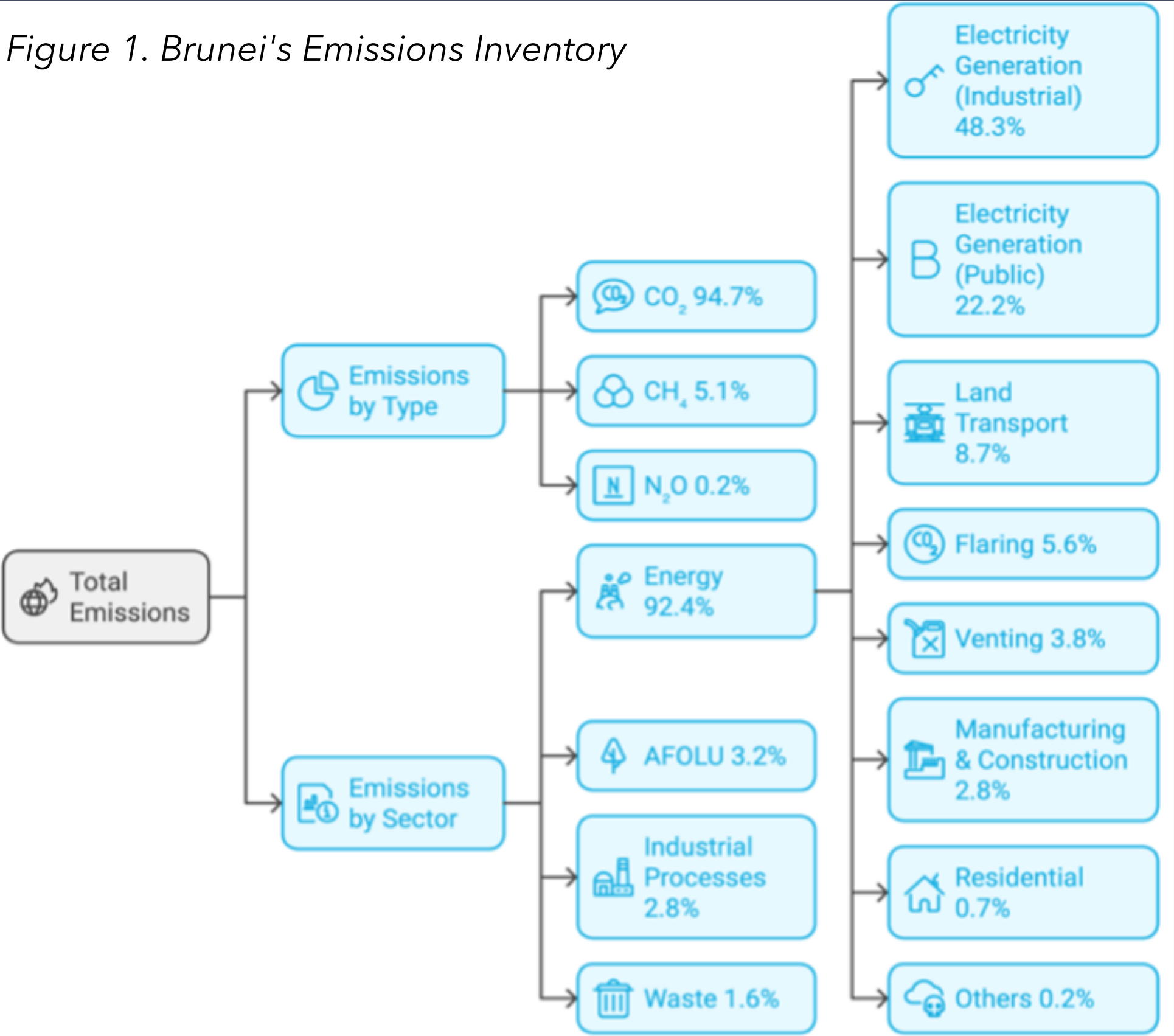


Figure 2. Brunei's National Climate Change Policy Strategies



2.2 Intersection with Wawasan Brunei 2035

The directives outlined in the BNCCP are inherently aligned with Brunei’s long-term strategic framework Wawasan Brunei 2035, a strategic blueprint designed to catalyse holistic and sustainable socio-economic progress. The integration of EVs within Brunei’s overarching ambitious goals represents nation’s commitment to recalibrating its developmental paradigm towards sustainability. The EV strategy contributes directly to Goal 2 by fostering healthier urban environments and enhancing the quality of life through reduced land transport emissions. Concurrently, it advances Goal 3 by stimulating economic diversification and encouraging the growth of green technology industries. This alignment is underlined by targeted milestones, including a projected 20% reduction in greenhouse gas emissions by 2030 and the establishment of an expansive EV charging network to build public confidence in EV adoption.

To ensure effective progress, the BNCCP incorporates Key Performance Indicators (KPIs) that track developments in EV market penetration, expansion of charging infrastructure, and the electrification of public sector fleets (see Figure 3). By advancing these benchmarks, Brunei’s EV strategy strengthens its commitment to environmental sustainability and positions the nation as an emerging leader in regional green innovation. This approach not only reduces reliance on fossil fuels but also reinforces technological innovation, aligning with Brunei’s aspiration to balance economic growth with environmental stewardship.

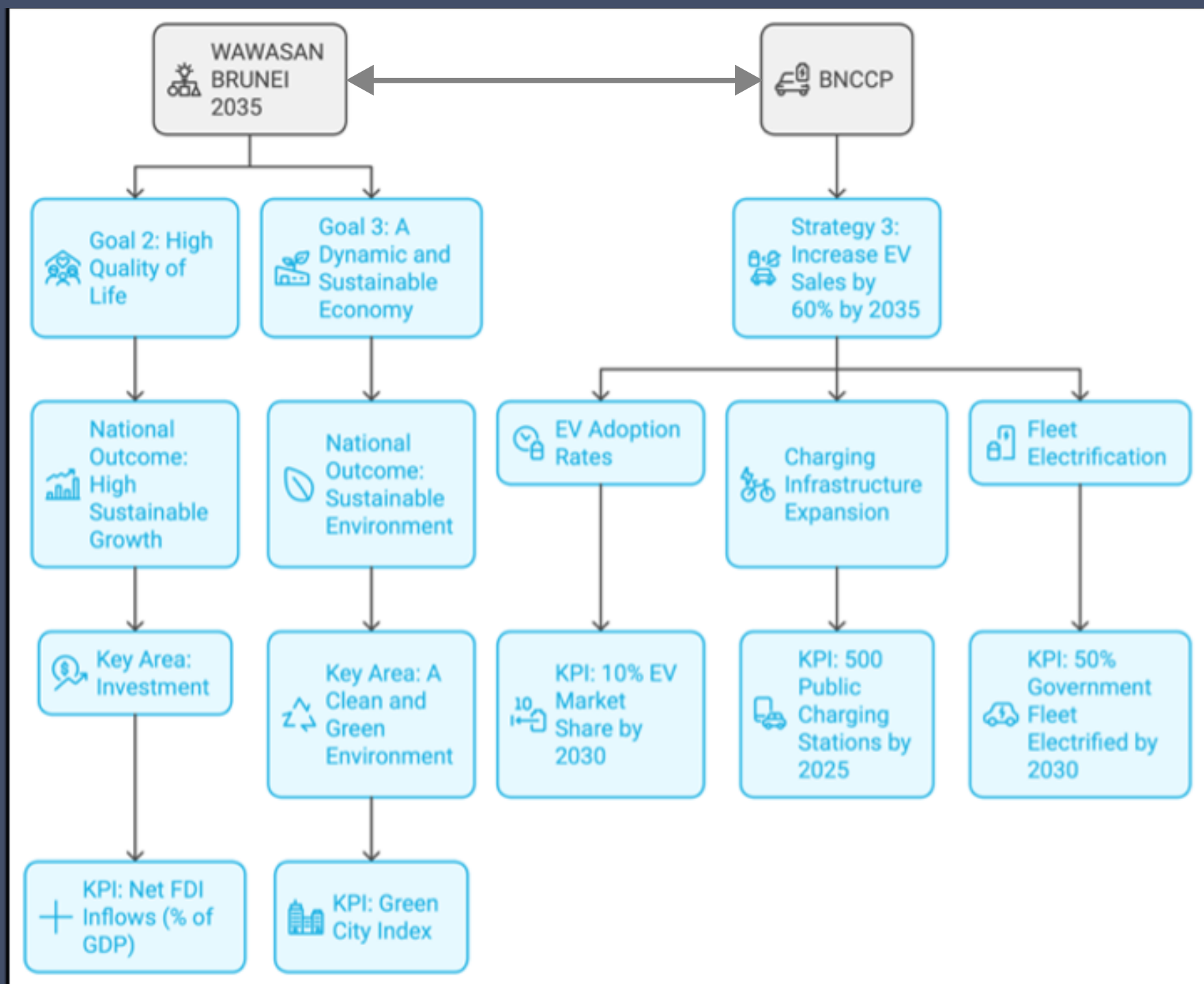
[1] <https://www.statista.com/statistics/1129656/global-share-of-co2-emissions-from-fossil-fuel-and-cement/>

[2] Represents vehicles running on fossil fuels only.

[3] EVs represent both Battery Electric Vehicles (BEVs) and Plug-in Hybrid vehicles (PHEVs)

[4] <https://www.wawasanbrunei.gov.bn/SitePages/Home.aspx>

Figure 3. Policy Intersection of Wawasan 2035 and BNCCP



2.3 Strategic implications and risks of policy stagnation

While Brunei's climate policy framework offers a robust foundation for EV adoption, the path to achieving its targets is not without challenges. The slow progress on developing charging infrastructure, high upfront costs of EVs, and the moderate EV market penetration represent fundamental obstacles. Thus, few electric vehicles were registered in the country till 2023, necessitating proactive measures to facilitate widespread EV adoption.

Failure or even delaying to prioritise these strategic imperatives could impede Brunei's trajectory toward fulfilling its NDCs under the Paris Agreement and its broader Wawasan Brunei 2035 objectives. Policy stagnation in these critical areas not only jeopardises Brunei's pursuit of regional prominence in green innovation but also risks constraining the nation's ability to reduce dependency on carbon-intensive sectors. Consequently, such an implementation-related stagnation risks Brunei's competitive edge in regional sustainability efforts, diminishing its ability to achieve a diversified, resilient, and sustainable economy. To elaborate more on this, the following section undertakes contextual analysis and argues how Brunei's inherent demographic, geographic, and economic strengths uniquely position the nation to circumvent the structural barriers that typically hinder EV adoption globally.

3. Brunei's Potential for EVs

Brunei's target to increase the share of electric vehicles (EVs) in new vehicle sales to 60% by 2035 is ambitious yet achievable. The country holds significant advantages across demographic, geographic, and economic dimensions that position it well to lead in EV adoption within the region. These advantages not only support the feasibility of meeting national climate goals but also highlight Brunei's potential to become a regional leader in sustainable land transport.

3.1. Demographic and geographical competitiveness

Brunei's compact geographical size and concentrated population distribution create a conducive environment for EV adoption by significantly reducing range anxiety compared to larger or more dispersed countries. In Muara District, where the majority (70% approx.) of Brunei's population resides, average daily travel distances are well within the range capabilities of many EV models, making EVs ideal for local commutes and inter-district travel. For instance, two BEV options available in Brunei, the BYD Seal and BYD Atto 3, offer ranges of approximately 450-500 kilometers and 420 kilometers, respectively. These ranges comfortably meet the daily needs of most Bruneians, offering a sustainable, cost-effective alternative to traditional internal combustion engines. For those who require additional range flexibility, PHEVs present a viable solution. The BYD Sealion 6 PHEV, for example, has claimed 1100 kilometers (km) range (electric+gasoline, combined) for longer journeys, enhancing mobility options for diverse driving needs. Other PHEV models, such as the Toyota Prius Prime and Mitsubishi Outlander, provide similar versatility, with a ranges of 700-800 km.

The country's dense urban areas and well-developed road infrastructure further strengthen the case for a large-scale shift to EVs, as Brunei's geography and demography naturally align with the operational strengths of EV technology. Despite having clear-cut vision sound strategies EVs, the lack of EV infrastructure and policy implementation delays still favors ICEs. Nonetheless, small regulatory push can encourage several existing automakers in the market to introduce EVs, providing range of alternatives in the market.

3.2. Economic competitiveness

Brunei's economic conditions present a favorable landscape for EV adoption. The country's high per capita income and growing environmental awareness enhance the appeal for EVs, positioning them as a compelling choice for socially conscious consumers. Despite the upfront cost difference between EV and ICE vehicles, Bruneians can benefit from the long-term economic advantages of EVs, including lower maintenance costs, highly subsidised electricity prices and competitive pricing on newer models.

3.2.1 EV Affordability and price competitiveness

While EV prices continue to decline, driven by innovations and competition—particularly from the Chinese market—a modest price gap remains between EVs and traditional ICE vehicles. However, given Brunei's relatively high-income level and the population's increasing environmental consciousness, EVs represent a high-value investment.

Models like the BYD Sealion, priced at BND 39,900, the Atto 3 at BND 64,403, and the BYD Seal at BND 79,888, offer Bruneians a high-value alternative to gasoline-powered vehicles. Although some EV models may carry a slightly higher initial price, the cost savings over time are substantial due to lower maintenance requirements. EV technology operates without complex engine systems, requires negligible routine servicing and comes with fewer parts replacement compared to ICE vehicles, saving substantial costs.

In addition, EVs offer advanced driving experience characterised by quiet-operation, smooth handling, and cutting-edge safety features. These attributes, combined with reduced carbon emissions, align well with Brunei's climate change strategies and underline the environmental and economic advantages of EVs. Transition to EVs reduces Brunei's hydro carbon dependence, thereby ensures a more sustainable economy.

3.2.2 Energy prices competitiveness (Gasoline vs Electricity)

The economic feasibility of transitioning from ICE to EV in Brunei is prop up by a favorable energy pricing structure. With government-subsidised fuel prices and a tiered electricity tariff system, the cost-benefit analysis for EV adoption leans favorably for consumers.

Currently, the gasoline (95 RON[5]) is priced[6] at BND 0.53 per liter, while diesel costs BND 0.31 per liter—rates that are substantially low compared to international retail prices. On the other hand, Brunei's residential consumer electricity price structure, capped at a maximum rate of BND 0.12 per kWh, offers significant savings for EV users. Electricity price enables affordable charging and enhances the economic appeal for EVs. For example, the BYD Atto 3, a compact electric SUV with a 60.5 kWh battery, incurs a cost of approximately BND 7.26 to reach a full charge (60.5 kWh × BND 0.12). This full charge provides a range of about 420 km, equating to nearly BND 0.017 per km. By contrast, a gasoline vehicle (SUV) with a fuel efficiency of 8 liters per 100 kilometers would consume around 33.6 liters over the same distance, costing around BND 17.81 (33.6 liters × BND 0.53) or approximately BND 0.042 per km. Thus, the Atto 3 achieves around 59% savings in energy costs per km compared to an ICE vehicle.

[5] Research Octane Number (RON)

[6] Retail prices at pumps

Similarly, the BYD Han EV, equipped with an 85.4 kWh battery, achieves substantial cost reductions, further reinforcing the cost-competitiveness of EVs in Brunei. Moreover, unlike in large cities with dispersed populations, where long-distance journeys necessitate frequent charging points, Brunei's compact geography allows most households to rely primarily on home charging stations due to the shorter travel distance, where the range 420km and 600km can last 4 to 6 days, respectively - considering 100km of travel each day on average.

3.3. Overall competitiveness and feasibility analysis

Table 1 provides a SWOC (Strengths, Weaknesses, Opportunities, and Challenges) analysis that assesses the feasibility of adopting electric vehicles (EVs) in Brunei, with a focus on the comparative aspects of internal combustion engine (ICE) vehicles, PHEVs and BEVs.

BEVs exhibit high feasibility in demographic and geographic terms due to Brunei's compact size and concentrated population, which alleviates concerns about driving range. PHEVs are also viable options, offering flexibility with extended range capability. ICE vehicles, although feasible, increasingly conflict with Brunei's sustainability objectives and long-term climate commitments.

Economically, BEVs offer advantages due to lower energy and maintenance costs, despite the higher initial purchase price. PHEVs demonstrate moderate feasibility, with higher operational costs linked to their dual-system design. Environmentally, BEVs align closely with Brunei's Wawasan Brunei 2035 targets for zero emissions, while PHEVs provide moderate environmental compatibility, and ICE vehicles are progressively less viable.

Brunei's policy landscape supports EV adoption with defined short- and long-term targets. However, policy implementation remains a critical bottleneck, delaying progress and the realisation of key goals. Ineffective policy execution has led to insufficient follow-up and reform, hindering Brunei's ability to overcome obstacles to EV adoption. Prioritising BEVs through targeted subsidies, expanded infrastructure, and stronger policy enforcement is essential for Brunei's sustainability trajectory. PHEVs can serve as an interim solution, while phased-out ICE vehicles should be discouraged through regulatory disincentives.

Table 1. The Feasibility of EVs with SWOC analysis for Brunei

Type		ICE	PHEV	BEV
Fuel Source		Gasoline	Electric+Gasoline	Electric
Demographically		F/H/S	F/H/S	F/H/S
Geographically		F/H/S	F/H/S	F/M/S
Economically	Unit Cost	F/H/S	F/M/C	F/L/C
	Energy Cost	F/M/S	F/H/C	F/H/C
	Maintenance Cost	F/M/W	F/M/W	F/H/S
Environmentally		NF/H/C	F/M/O	F/H/O
Sustainable		NF/H/C	F/M/O	F/H/O
Policy/Regulations		F/M/W	F/M/S	F/H/S
Implementation		NF/M/W	NF/M/W	NF/M/W
Follow-up		NF/M/C	NF/M/C	NF/M/C
Reforms		NF/M/C	NF/M/C	NF/M/C

Note: Table shows the Feasibility (F=Feasible, NF=Not-Feasible), the level of Feasibility (L=Low, M= Medium, H=High), and SWOC analysis (S=Strength, W=Weakness, O=Opportunity, C=Challenges). Dark green areas show highly feasible with strength or opportunity; light green shows the highly or moderately feasible either with challenges. Dark Grey and Light Grey areas shows the item Not-feasible or Feasible at low level with challenges, needing attention to boost EV adoption.

3.4 Projected Consumer Preference

Based on the discussion so far, consumer preference is projected to favor BEVs for daily commutes, as models like the BYD Seal and Atto 3 meet range needs at a lower operational cost. Brunei's urban density and shorter travel distances reduce range anxiety, making BEVs an ideal choice for most residents. For consumers with occasional longer travel requirements, PHEVs offer flexibility, combining electric efficiency with extended range options, such as the BYD Sealion's 1100-km combined capacity.

The economic appeal is further reinforced by Brunei's energy pricing, where charging an EV remains significantly cheaper than fueling ICE vehicles, promising substantial long-term savings. However, limited EV infrastructure and delays in policy implementation could hamper adoption, emphasising the need for government incentives and expanded infrastructure to boost consumer confidence.

While these projections highlight likely trends, a dedicated research survey is crucial to capture actual consumer insights on EV preferences, range concerns, and readiness to transition. This data would enable policymakers to design targeted interventions and support mechanisms, ensuring that Brunei's EV strategy aligns closely with consumer behavior and accelerates sustainable transport adoption.

4. Policy Conclusion

Achieving Brunei's ambitious EV adoption targets is crucial for advancing the nation's broader environmental and economic aspirations outlined in Wawasan Brunei 2035. While the Brunei National Climate Change Policy (BNCCP) outlines a foundational framework, current policy execution and delay in EV related infrastructure development pose significant threats to critical strategic milestones. Notably, the action plan—comprising the electrification of 50% of government fleet by 2030, installation of 500 public charging stations by 2025, and achieving a 10% of EV market penetration by 2030—appears increasingly unattainable under the current pace of implementation. This can further impede the major target of achieving 60% of total new car sales to be EV under Wawasan Brunei 2035. In the face of these challenges, a recalibrated, actionable strategy that integrates stronger financial, regulatory, and infrastructure support is imperative.

To actualise these targets, Brunei must first prioritise the rollout of an extensive, accessible EV charging network. Such an infrastructure expansion, facilitated through strategic public-private partnerships is critical in alleviating consumer range anxiety, thereby catalysing widespread EV adoption. Financial incentives, such as subsidies, lower interest rates and investment incentives, should also be introduced to bridge the cost gap between EVs and ICEs, especially given the initial high capital requirements associated with EV purchases.

Furthermore, the incremental enforcement of stringent emissions standards and import restrictions on ICE vehicles is essential to accelerate the transition toward a sustainable land transportation. Concurrently, Brunei's EV policy must be supported by integrated monitoring framework and adaptive KPIs, ensuring responsive adjustments to address market, technological, and consumer behavior shifts effectively.

By implementing these tailored measures, Brunei can leverage its inherent demographic and geographic strengths to drive a sustainable transportation ecosystem, establishing an aspirational benchmark for eco-conscious mobility in the ASEAN region. This trajectory not only reinforces Brunei's commitment to environmental stewardship but also fortifies its positioning as a leader in green technology and sustainable development, aligning with both its national and international climate targets.