Executive summary

Given current prices, few households in emerging markets can afford to buy four-wheeled electric vehicles and few policymakers can afford to subsidize them. Nonetheless, some emerging markets are making important early strides in decarbonizing their transportation sectors. As EV battery prices fall, deployment opportunities are poised to widen, potentially quite quickly.

In this second of three planned 2022 Climatescope research notes, BloombergNEF surveys the status and opportunities for EV investment and deployment in 136 markets globally, with special attention on 107 emerging markets. With one massive exception (Mainland China), the EV evolution has yet to arrive in developing countries. However, some nations are doing far more than others.

• Emerging markets understandably trail wealthier nations in transitioning to electrified four-wheeled transport. The main reason: EVs have yet to achieve unsubsidized price parity with internal combustion engine (ICE) cars.

• However, 22% of emerging markets surveyed now have some form of long-term clean transport target on the books. Five markets have pledged to phase out internal combustion engine (ICE) vehicle sales entirely.

• Still, the adoption of EV-friendly policies in emerging markets trails far behind activity in wealthier nations. Developed European nations receive the highest average Climatescope policy scores at 2.78 (out of a maximum of 5). At the other end of the spectrum, developing markets in Africa scored 0.

6.6 million EVs sold globally in 2021
3.1 million EVs sold in Mainland China in 2021
120,000 EVs sold in the 106 other emerging markets surveyed

Average Climatescope transport policy score by region

Europe 1.39
Asia Pacific 1.20
Middle East 0.88
Americas 1.22
Africa 0.23

Source: BloombergNEF
Executive summary (2)

- Mainland China is the absolutely massive exception to the rule among emerging markets, both in its embrace of EV policies and recent deployment rates. The country’s 3.1 million EVs sold represented just under half the 6.6 million sold globally in 2021 and 96% of emerging markets sales.

- All other emerging markets combined to account for 120,000 units – under 2% of global sales. What progress has been achieved to date should not be overlooked, however. The number of units sold in these nations has nearly doubled in each of the last two years.

- Excluding Mainland China, Ukraine, India and Brazil were the other biggest EV demand markets in 2021 among developing nations. Together, these countries accounted for over half of emerging markets (ex-China) 2021 sales. Other emerging markets with top EV sales rates include Romania, Croatia, Taiwan and Turkey.

- EV penetration rates in emerging markets remain minor. Among the top 10 developed countries, EVs averaged 30% of total sales. In emerging markets, with the exception of Mainland China, the best performers generally did not top 2%.

- Relatively few emerging markets have clean transport policies in force. Some 86% of developed nations surveyed by Climatescope have clean transport targets on the books. In emerging markets, the total is just 22%.

- Direct purchase incentives, which lower the upfront costs of buying EVs, are effective at kick-starting markets, but are still limited to a small share of developing nations. Such subsidies are expensive for governments and thus harder for poorer nations to introduce. They typically include EV purchase incentives, EV income tax reductions and EV import tax reductions.

- Climatescope creates scores for individual markets based on over 40 quantitative and qualitative indicators. Each year, it ranks markets based on their readiness to attract clean transport investment and deployment.

- Mainland China retains its status as the most conducive emerging market for electrified transport investment and deployment based on its Climatescope score. Supportive policies include VAT exemptions, upfront purchase grants, recurring vehicle use and road tax exemptions. Fuel economy standards, which mandate fuel consumption limits for passenger vehicles, were first set in Mainland China in 2004.

*Note: For more global trends in clean transportation, see BNEF’s Zero-Emissions Vehicles Factbook.*
India has risen one position to achieve the second-highest advanced transport score among emerging markets in the 2022 Climatescope rankings. The share of EVs sold in India compared to overall vehicle sales nearly tripled from 2020 to 2021. The federal government’s Faster Adoption and Manufacturing of Electric Vehicles (FAME) program is emblematic of the country’s broader EV push. National policies include exemptions from registration fees (and renewal), reduced VAT and income tax deductions. Provinces also offer differentiated policies for EVs, such as purchase subsidies.

A stable outlook for EV growth placed Romania third in the Climatescope advanced transport ranking. At just over 15,000 vehicles, EVs are now around 1% of Romania’s total passenger fleet. Romania’s generous purchase grants incentivize EV adoption. Other incentives include annual car tax exemptions for battery-electric vehicles (BEVs) and reductions for plug-in hybrid EVs (PHEVs). Scrappage of vehicles can also include government grants.

Chile ranked fourth among emerging markets for its advanced transport score and first among Latin American countries. In 2021, the country released a strategy calling for 100% of passenger and public transportation (buses and taxis) vehicle sales to be electric by 2035. EVs benefit from green tax exemptions and accelerated depreciation. Chile’s fuel standards mandate passenger vehicles meet European emission requirements.

Taiwan’s policy regime offers strong support for EV adoption, particularly for two- and three-wheelers, and propelled the market to fifth on the list among emerging markets. Electric two-wheelers were 11% of overall two-wheeler sales in the last three years. Taiwan aims to phase out ICE passenger vehicles sales by 2040, ICE two-wheelers by 2035 and all ICE public and governmental transportation by 2030.

Note: For more global trends in clean transportation, see BNEF’s Zero-Emissions Vehicles Factbook.
Global trends

Strong growth, concentrated in wealthy nations
Global asset finance for clean road vehicles and infrastructure totaled $732 billion from 2017-2021. In 2021 alone, the sector attracted $285 billion, up 87% from the previous year and more than triple the investment seen in 2017.

Sales of EVs to consumers accounted for 79% of the total capital deployed for clean transport across 2017-2021 and 89% in 2021. This is the fastest growing segment of clean transport investment as consumer uptake accelerates. EV sales measured on a dollar basis doubled from 2020 to 2021, and 2021 sales were six times those of 2017. Electric bus investment and sales have consistently been the second-largest segment and hit a high of $20 billion in 2017. Investment has been lower since, totaling $14 billion in 2021.

Source: BloombergNEF. Note: Includes passenger and commercial vehicles, buses, public and home charging and hydrogen refuelling. Includes battery-electric vehicles (BEVs), plug-in hybrids (PHEVs) and fuel-cell vehicles (FCVs)
Mainland China accounted for nearly half global clean transport investment across 2017-2021

Global investment in clean road transport vehicles and infrastructure by country

Mainland China attracted $315 billion in clean transport investment from 2017-2021. Globally, asset finance in the sector doubled in 2021 after a two-year decline. Although passenger EV sales represent most of the clean transport investment in Mainland China, the country also accounts for 98% of global electric bus investment.

The US and Germany followed with $38 billion and $34 billion in clean transport investment in 2021. In Germany, investment is up 10-fold in four years, from less than $3.4 billion in 2019 to $34 billion in 2021.

Clean transport investment remains nearly entirely focused on wealthy nations. High and upper-middle-income countries attracted no less than 99.9% of the global clean transport investment from 2017-2021.

Source: BloombergNEF. Note: Includes passenger and commercial vehicles, buses, public and home charging and hydrogen refuelling. BEVs, PHEVs, FCVs.
Transportation is the world’s third-highest polluting sector and accounted for 20% of emissions in 2021. Power and other industrial combustion sectors are the top polluters, with power alone accounting for 36% of global emissions. Few developing countries have the infrastructure, incentives and policies to adequately support the scale-up of clean transportation.

Within transport, passenger vehicles account for over a third of total emissions. Medium- and heavy-duty trucks, aviation and shipping follow as the other high polluting segments, which together represent another third of the sector’s overall emissions. Climatescope focuses on passenger vehicles, two- and three-wheelers, and buses. Most policy efforts related to electrifying transport have focused on this area to date.

Source: EDGAR (CO2e), IEA (CO2), BloombergNEF.
Global EV sales doubled from 2020 to 2021

Global passenger EV sales (left axis) and share of passenger EVs vs. total car sales (right)

Global passenger EV sales hit 6.6 million in 2021, more than doubling from 2020. BNEF’s Electrified Transport Market Outlook projects 2022 to be yet another record year with 10.3 million sold in total.

EV sales accounted for 8.7% of global car sales in 2021. This was up from 3.5% in 2020 and 0.9% in 2016. In just five years (2017-2021), EVs went from 1.1% to nearly 9% of global passenger vehicle sales in 2021.

Record-high EV sales in 2021 put a dent in internal combustion engine (ICE) vehicle sales. Global demand for vehicles is still growing. While ICE sales rose 8% in 2021 after three years of consistent decline, EVs are consistently gaining bigger slices of the market.

Source: BloombergNEF. Note: Includes passenger BEVs and PHEVs.
In developed nations, annual EV sales jumped 71%, from 1.9 million in 2020 to 3.3 million in 2021. Sales have grown more than sixfold since 2017.

Among developed nations, Germany was the biggest market for EV sales. The country’s market took flight from 2019 to 2020 when sales nearly quadrupled to 432,000. Sales then spiked further in 2021 to 690,000. The US followed with 656,000 EVs sold in 2021, just over double the 2020 total of 324,000.

EVs reached over 13% of total car sales in developed nations in 2021. This was up from 7.9% in 2020 and just 1.7% in 2017.

Source: BloombergNEF. Note: Includes passenger BEVs and PHEVs. Developed markets include OECD countries, minus Chile, Colombia, Costa Rica, Mexico and Turkey. Developing markets include all other economies. “Other” includes all other developed markets covered by Climatescope.
Mainland China accounted for 96% of 2021 EV sales in emerging markets with 3.1 million vehicles sold. Since 2016, the country has seen 7.3 million of such vehicles sold, more than the top 10 developed markets for electric vehicles combined.


Other emerging markets represent a tiny share of total global EV sales, but their progress should not be overlooked. In 2021, these nations accounted for just 1% of global EV sales and 4% of sales among emerging markets. However, the number of units sold in these nations nearly doubled each year from 2019-2021.

Source: BloombergNEF. Note: Includes passenger BEVs and PHEVs. Developed markets include OECD countries, minus Chile, Colombia, Costa Rica, Mexico and Turkey. Developing markets include all other economies. “Other” includes all other developing markets covered by Climatescope.
Emerging markets (excluding Mainland China) saw steep growth in EV sales from 2020 to 2021, to more than 120,000 units. Sales spiked 90% from 2020 and are up 10-fold since 2017, though the overall figures remain small.

Excluding Mainland China, Ukraine, India and Brazil were the biggest EV demand markets among developing nations in 2021. Together, these countries accounted for over half of emerging markets 2021 EV sales.

Despite the strong growth, EVs were just 0.7% of emerging markets’ total car sales in 2021. This was up from 0.2% in 2019 and 0.05% in 2016, but far below the global average of 5%.

Source: BloombergNEF. Note: Includes passenger BEVs and PHEVs. Developed markets include OECD countries, minus Chile, Colombia, Costa Rica, Mexico and Turkey. Developing markets include all other economies. “Other” includes all other developing markets covered by Climatescope.
Among the top 10 developed countries for EV adoption, the share of EVs in overall sales averages 30%. Among emerging markets with the highest sales rates, most of the best performers don’t top 2% and the average among the group is 4%. Despite this, activity is gearing up in these markets, driven in part by improving policy regimes.

Many barriers hinder EV growth in emerging markets. Inadequate regulatory support, lack of EV models, high upfront costs, the popularity of used cars and sparse charging infrastructure are all to blame.

Source: BloombergNEF. Note: Includes passenger BEVs and PHEVs. Note: Other developing markets depicted: Singapore and Taiwan
Electric two- and three-wheeler sales are highly concentrated in Asia Pacific

In 2021, Mainland China accounted for 97% of global electric two- and three-wheeler sales. India followed with 1.5% and over 600,000 units sold. The Asia-Pacific region as a whole accounted for 99.7% of global sales and 41.8 million units.

Emerging markets have begun implementing battery-electric two- and three-wheeler specific incentives to spark market activity. Taiwan’s electric two-wheeler purchase grants, for instance, has helped spur 280% growth in the sales of such vehicles in the last five years.

Away from Asia Pacific and developed markets, Latin America is also growing, particularly Colombia and Costa Rica. Colombians bought over 5,000 electric two- and three-wheelers in the last three years. Sales in Costa Rica have grown at an average annual pace of 67% over the last five years.

Source: BloombergNEF
Developed markets offer stronger EV policy frameworks

Climatescope analyzes the ambition, accessibility and stability of individual markets’ EV policies. This year, the global average transport policy score was 1.22 (out of a maximum of 5). Developed markets averaged 2.69 and developing markets 0.82. Only two developing countries were among the 10 highest scoring nations overall. Mainland China was third globally at 3.85. Romania was 10th at 3.23. Governments in emerging markets have largely withheld support for EVs given their relative unaffordability to many consumers. By contrast, policymakers in developed markets have often set policies to incentivize EV adoption. Some have even canceled policies after sales spiked, incurring higher liabilities for governments than originally intended.

Source: BloombergNEF. Note: Climatescope transport policy score ranges from zero to 5 with 5 as best.
Relatively few emerging markets have clean transport policies in force. Some 86% of developed nations surveyed by Climatescope have clean transport targets on the books. In emerging markets, the total is just 22%.

Direct purchase incentives, which lower the upfront costs of buying EVs, are effective at kick-starting markets, but are still limited to a small share of developing nations. Such subsidies are expensive for governments and thus harder for poorer nations to introduce. They typically include EV purchase incentives, EV income tax reductions and EV import tax reductions.

Charging infrastructure policies help lower EV deployment barriers. Nearly half of developed nations have EV charging infrastructure targets in place, compared to only 15% of emerging markets surveyed.

Source: BloombergNEF, Climatescope. Note: Tax reduction incentives include tax exemptions. Developed markets include OECD countries, minus Chile, Colombia, Costa Rica, Mexico and Turkey. Developing markets include all other nations.
Among the world’s regions, Europe has the highest adoption of clean transport policies, while the African continent has the lowest, with nearly 75% of countries there having no such policies in place. Both Europe’s developed and developing markets have higher policy scores in part due to the European Union’s role. The EU’s policy regime boosts the scores of all countries in the bloc. Countries not in the EU but aspiring to join have adopted similar policies. The Asia-Pacific region follows with countries such as Mainland China and South Korea leading as the best scored markets in the region.

Regional scores of developed markets are on average three times higher than those of emerging countries. Policy frameworks typically set the stage for EV sales. The lack of such frameworks in developing countries explains in part why the region continues to see little activity.

Source: BloombergNEF  Note: Developed markets are defined as OECD countries minus Chile, Colombia, Costa Rica, Mexico and Turkey.
Governments are implementing internal combustion engine phase-outs

National and regional targets to phase out ICE vehicle sales

Some 20 national governments have set dates to eliminate internal combustion engine (ICE) vehicle sales. Another 28 regional and municipal authorities have such goals in force. The European Commission’s proposal to phase out ICE vehicle sales in the EU by 2035, approved in October 2022, would add another 18 countries to this list. (However, Climatescope 2022 only takes into account policy developments through 1H 2022 in its scoring.)

Regional and state level ICE phase-out targets matter. Sub-national targets can drive real impact, especially in countries where national mandates have yet to be implemented. The US currently has no national phase-out target, but state-level ICE phase-out targets already cover about 40% of 2021 new passenger car sales in the country.

Progress in setting ICE phase-out targets is slow in emerging markets. On average, one emerging market has introduced an ICE target ban per year since 2017. However, no major emerging market, such as Mainland China, India, Russia and Brazil have made such a move. These countries represented nearly half of global passenger vehicles sales in 2021.

Source: BloombergNEF, BNEF Zero-Emissions Vehicles Factbook. Note: Data as of July 2022.
Five emerging markets have national ICE vehicle phase-out goals

Chile, Costa Rica, Cape Verde, Taiwan and Vietnam have set national ICE phase-out targets. Chile and Cape Verde aim to reach 100% EV sales by 2035. In 2020, Costa Rica announced a 100% goal by 2050. Vietnam, one of the latest additions to the list, has set a target to phase out ICE by 2050. The Taiwanese government was the first emerging market to set such a target. In 2017, it legislated a phase-out of ICE passenger vehicle sales by 2040.

Source: BloombergNEF. Note: Climatescope surveys 107 emerging markets. Mapped data show target type for distinct economies. Data as of July 2022. Represented on the map are all markets with national or regional targets, with emerging markets highlighted with the legend.
Mainland China leads the push to electrify public transport

National and regional e-bus reduction targets

Among the 21 countries that have set national targets to expand e-bus adoption, 13 are emerging markets. An additional 14 markets have set regional or provincial targets.

Global e-bus sales are growing briskly, largely thanks to Mainland China. E-buses accounted for 41% of all new bus sales globally in 1H 2022, according to BNEF’s Zero-Emission Vehicles Factbook. However, no less than 98% of all e-buses on the road today are in Mainland China.

E-bus sales are also growing in Latin America and elsewhere in the Asia-Pacific region. Chile and Colombia combined account for 75% of Latin America e-bus sales. In Asia Pacific, India and South Korea are the region’s second- and third-largest markets, both trailing well behind Mainland China.

Source: BloombergNEF. Note: Mapped data show target type for distinct economies. Data as of July 2022. Represented on the map are all countries with national or regional targets.
Country scores

Mainland China leads by example
Mainland China tops the advanced transport table for emerging markets

Top 10 highest scoring emerging markets for advanced transport investment/deployment

Climatescope scores all 136 markets in the survey on an overall 0-5 scale based on their relative attractiveness for clean transport investment and deployment. Scores take into account 40 indicators, or data inputs, which fall under three parameters: fundamentals, opportunities and experience. These key topic areas encompass each market’s previous accomplishments, its current investment environment and the future opportunities it presents. The 2022 edition marks the third year the project has covered 107 emerging markets and the second year it has encompassed transport sector activities. It also includes 29 developed economies.

Mainland China tops the overall Climatescope emerging markets ranking for the second year with a score of 2.55. Latin America and the Asia-Pacific regions represent eight of the top 10 countries, and 14 of the top 20. The full ranking is available at global-climatescope.org/results.

Source: BloombergNEF. Note: Maximum score is 5. Fundamentals, opportunities and experience are the parameters that total up to a market’s overall score for clean power. Between them, the parameters encompass over 40 indicators, or individual data inputs collected by Climatescope researchers.
Mainland China has kept its status for the second consecutive year as the most conducive market for electrified transport investment and deployment. A substantial policy framework including incentives was behind a 2020-21 EV sales surge. Policies include VAT exemptions, upfront purchase grants, recurring vehicle use and road tax exemptions. Fuel economy standards, which mandate fuel consumption limits for passenger vehicles, were first set in Mainland China in 2004.

Mainland China aims for EVs to account for 20% of all vehicle sales by 2025. The country is likely to reach that target as 15% of sales were EVs in 2021. The country is expecting to see sales top 3 million for the first time in 2022.

Clean transport investment in Mainland China grew 54% in 2021, the country attracted over $109 billion in electrified transport asset finance, up from $47 billion in 2020. In the last three years, the market attracted over $200 billion alone. Charging infrastructure availability is expected to continue expanding. BNEF’s Zero-Emissions Vehicle Factbook indicates that over 2.3 million home and public chargers were installed in the country in 2021.

Source: BloombergNEF Note: Climatescope transport policy score range 0-5 with 5 as best. Climatescope detailed methodology is available at global-climatescope.org/about/methodology/
India has risen one position to achieve the second-highest advanced transport score among emerging markets in Climatescope. The share of EVs sold in India compared to overall vehicle sales nearly tripled from 2020 to 2021. Still, that share was still under 2% in 2021. Further growth is expected for both passenger vehicles and battery-powered two- and three-wheelers, BNEF projects.

The federal government’s Faster Adoption and Manufacturing of Electric Vehicles (FAME) program is emblematic of the country’s broader EV push. National policies include exemptions from registration fees (and renewal), reduced VAT and income tax deductions. Provinces also offer differentiated policies for EVs, such as purchase subsidies.

India boosted a customs duty on imported EVs to 15% in 2020 in an effort to incentivize local EV manufacturing. In addition, clean transport investment in India doubled in 2021, reaching over $769 million, up from $200 million in 2020. In the last five years, India attracted over $1.2 billion in advanced transport investment.

Source: BloombergNEF
Note: Climatescope transport policy score range 0-5 with 5 as best. Climatescope detailed methodology is available at global-climatescope.org/about/methodology/
A stable outlook for EV growth placed Romania third in the Climatescope advanced transport ranking. The country’s National Energy and Climate Plan (NECP) estimates that up to 700,000 electric vehicles (both battery-electric and plug-in hybrids) might be needed by 2030 to achieve its clean transportation target. In 2021, EV sales grew 144% from the year prior. Including plug-in hybrids, EVs made up 7% of new sales in 2021, compared to just 1% in 2019. At just over 15,000 vehicles, EVs are now around 1% of Romania’s total passenger fleet.

Romania’s generous purchase grants incentivize EV adoption. Other incentives include annual car tax exemptions for battery-electric vehicles and reductions for plug-in hybrids. Scrappage of vehicles can also include government grants. Romania must abide by EU fuel economy standards.

Romania has pledged to install around 600,000 chargers by 2030. Charging infrastructure installations are incentivized by the government through offering subsidies.

Source: BloombergNEF Note: Climatescope transport policy score range 0-5 with 5 as best. Climatescope detailed methodology is available at global-climatescope.org/about/methodology/
Chile ranked fourth among emerging markets for its advanced transport score and first among Latin American countries. Chile’s EV market is still in its infancy with EV sales under 1% of total passenger vehicle sales in 2021. The numbers are rising quickly, however.

In 2021, Chile released its latest National Electromobility Strategy setting passenger vehicle targets. The strategy calls for 100% of passenger and public transportation (buses and taxis) vehicle sales to be electric by 2035. There is also a target for 100% of freight transport sales to be electric by 2045.

EV imports to Chile also benefit from bilateral agreements that either exempt or reduce import taxes to less than 1%. Incentives are available for EVs such as green tax exemptions and accelerated depreciation. Chile’s fuel standards mandate that passenger vehicles meet European stage V emission requirements.

Source: BloombergNEF Note: Climatescope transport policy score range 0-5 with 5 as best. Climatescope detailed methodology is available at global-climatescope.org/about/methodology/
Taiwan’s policy regime offers strong support for EV adoption, particularly for two- and three-wheelers, and propelled the market to fifth on the list among emerging markets. EV passenger vehicle sales represented less than 1% of total passenger vehicle sales. However, electric two-wheelers are 11% of overall two-wheeler sales in the last three years.

Taiwan aims to phase out ICE passenger vehicles sales by 2040, ICE two-wheelers by 2035 and all ICE public and governmental transportation by 2030. Policies such as purchase grants, VAT rebates and import tax exemptions are available exclusively for two-wheelers. Passenger vehicles enjoy import tax reductions, fuel tax exemptions and license plate tax exemptions.

As EV sales have grown, regional governments have provided support for charging infrastructure. A few cities offer grants to support installation of chargers at both public and private buildings.

Source: BloombergNEF Note: Climatescope transport policy score range 0-5 with 5 as best. Climatescope detailed methodology is available at global-climatescope.org/about/methodology/
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