Climate Scenario Analysis

Nissan

Report 2019

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2° Investing Initiative

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This Report has been prepared by the 2° Investing Initiative (2dii) a leading not-for-profit think-tank on climate-related metrics and policies in financial markets. The Report summarises our Company Climate Scenario Analysis (CCSA) in relation to **Nissan**. The CCSA is our limited 'point in time' estimate of the alignment between **Nissan**'s revealed business plans in the period 2019-2024, versus the economic trends embodied in the International Energy Agency's (IEA's) 'Energy Technology Perspective' scenarios (all else being equal). The methodology applied in the CCSA, its data inputs, general assumptions and limitations, are set out in a Methodology statement on page 8 of this Report.

Limitations and assumptions:

The CCSA does not purport to analyse all issues associated with climate change that may be relevant to **Nissan**. Such issues may include (for example) physical or ecological impacts that may be caused by, or to, the operations of the company, and any climate-related litigation exposures.

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The choice of any scenario should not be taken as any endorsement of it, nor any statement as to the accuracy or completeness of its methodologies or assumptions, nor as a general preference for it over any other economic scenario(s). The CCSA may be carried out using other economic scenarios, and users must form their own view as to the decarbonisation or economic scenarios, trajectories and models that are most appropriate to their circumstances. No explicit or implicit assumption is made in relation to the current or future alignment of the scenarios with climate-related policies of any government at international, national or sub-national level.

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Executive Summary
Nissan

This report by 2° Investing Initiative provides an assessment of **Nissan**'s automotive production capacity by technology, its future alignment with climate transition pathways and evaluates its performance against other automotive companies globally.

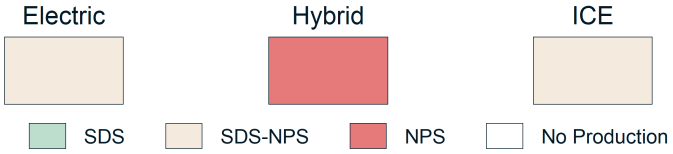
Production capacity in 2019

Nissan has the production capacity to build 5,010,224 vehicles with 0% coming from low carbon technologies - electric and hybrid. By 2024, it intends to add 224,418 MW (an increase of 4.5%) of which 0% is low carbon.

	Electric	Hybrid	ICE
2019 Production Mix (Vehicles)	88,883	150,647	4,770,694
Planned Additional Production (Vehicles) 2019-2024	91,076	71,532	61,810

Comparison of investment plans with transition scenarios

Nissan's planned additional production capacity is compared to the different climate scenarios of the International Energy Agency (IEA) for each technology as described on page 4. The additional production planned by **Nissan** aligns it .



Changes in production required to align with the SDS by 2024

In order to align with the Sustainable Development Scenario (SDS) by 2024, **Nissan** would require the following changes in production by technology to its current plans by 2024:

	Electric	Hybrid	ICE
2024 Planned Production (Vehicles)	179,959	222,179	4,832,504
Required Changes to Planned Production (Vehicles)	76,367	705,200	-806,649

Introduction

Key Questions

This climate scenario report addresses five key questions regarding **Nissan**'s climate strategy:

1. How does the company's current production mix compare to the automotive market's production mix? (Page 6)
2. How do the company's investment plans compare to different climate transition scenarios? (Page 7)
3. How does the company's planned production mix by 2024 compare to the scenario-aligned market? (Page 9)
4. How can the company adjust its investment plans to align with the SDS by 2024? (Page 10)
5. How does the company's climate alignment compare to other automotive companies? (Page 11)

This document solely presents the results of the above analyses. For more information on the methodology, scenarios, underlying data, and limitations, please refer to "A Guide to Company Scenario Analysis" available at www.transitionmonitor.com.

Why is scenario analysis important?

Scenario analysis is highlighted within by the Task Force for Climate-related Financial Disclosures (TCFD) as a recommended tool for understanding the resilience of organization's strategies under different climate related scenarios. It supports both companies and investors in developing action plans as a response to the Paris Agreement.

How does this scenario analysis work?

This scenario analysis is an assessment of the physical assets owned by **Nissan** and its investment plans in new production capacity, based on third party data. The share of responsibility, defined by climate scenarios that outline possible transition pathways, has been allocated to the company according to the regional distribution of its automotive production capacity. Further analyses allow us to understand how **Nissan** is currently, and in the future, exposed to climate transition risks and opportunities.

How can it be used?

For **Companies**, this analysis provides a comparison of its performance relative to peers, and an understanding of how climate change responses differ. It also provides an overview of how planned production changes compare to the climate scenarios developed by the International Energy Agency (IEA). It highlights potential areas for action by companies.

For **Investors**, this report may be used to inform their decision making by highlighting the alignment of the trajectories of companies in their portfolio with different climate scenarios and therefore their potential exposure to transition risks. The information provided in this report can support engagement activities with companies and may provide data for reporting requirements.

For **other stakeholders**, such as policy makers or NGOs, this may support the development of guidelines for reporting or research.

What this report doesn't do: this report is not a financial analysis of the company and should not be taken as investment advice.

Data used in this report is based on third party data from Wards Automotive (effective as of 12/2018) and may vary from what is announced by the company in annual reports; the data in this report reflects an aggregation of the known subsidiaries of **Nissan** aggregated under the equity share principle. Details regarding the data sources and processing can be found on page 14. Companies are invited to review the data and provide feedback to assist in improving the underlying data sets by emailing 2dii at transitionmonitor@2degrees-investing.org.

Reading the Report

Report Contents

This report consists of three elements:

1. **Company profile:** information about the current installed production capacity of the company, its technology mix and its global production capacity distribution.
2. **Scenario Analysis:** results of the comparison of the company investment plans to different scenarios and the market.
3. **Peer Comparison:** a comparison of the scenario analysis results to peer companies operating in the same market.

Key Concepts

To understand the results presented in this report, some of the key concepts are summarised below. For detailed information about the methodology, scenarios and underlying data, please refer to "A Guide to Company Scenario Analysis" available at www.transitionmonitor.com.

Low carbon technologies: This report treats both electric and hybrid vehicles as low carbon technologies, and internal combustion engine vehicles (ICE) as high carbon technologies.

Production capacity: Refers to the capacity of the company to produce new vehicles based upon the size of its production facilities.

Production mix: The distribution of the automotive production capacity of **Nissan** is used as an indicator. This refers to the share of installed production capacity that **Nissan** has in each technology.

Market: The market referred to in this report is global and therefore includes all automotive companies globally.

Aligned with a scenario: To be aligned with a scenario implies that the future production capacity of the company matches what is expected based on the roadmaps developed by the IEA.

Scenarios: Four IEA scenarios are included in this report's analysis: three are sourced from the World Energy Outlook 2018 (WEO 2018) and one from the Energy Technology Perspectives 2017 (ETP 2017) and are detailed in Table 1. These have been chosen due to their regional and technological granularity. The SDS is used as the benchmark scenario. The scenarios consist of technology roadmaps that outline the technological changes required in each designated region globally. These roadmaps have been applied to each asset to calculate the change that would be required by asset. This is aggregated to the region and then the company to determine the overall expected change required.

Table 1: Overview of the IEA scenarios used in the analysis.

Scenario Full Name	Abbreviation	Estimated temperature increase by 2100*	Source
Beyond 2° Scenario	B2DS	1.75°C	ETP 2017
Sustainable Development Scenario	SDS	1.7-1.8°C	ETP 2017
New Policy Scenario	NPS	2.7°C	ETP 2017

*The temperature rise estimates for the B2DS, SDS and NPS are specified by the IEA. The CPS estimate is taken from Climate Action Tracker's 2018 Warming Projections Global Update.

Company Profile

This section outlines the current and future production mix of **Nissan**. Figure 1.1 shows the changes in production capacity in each technology between 2019 and 2024. From this, one may be able to extrapolate whether the company's transition risks increase or decrease. Figure 1.2 and 1.3 show the geographical distribution of automotive generation assets by production capacity and production mix.

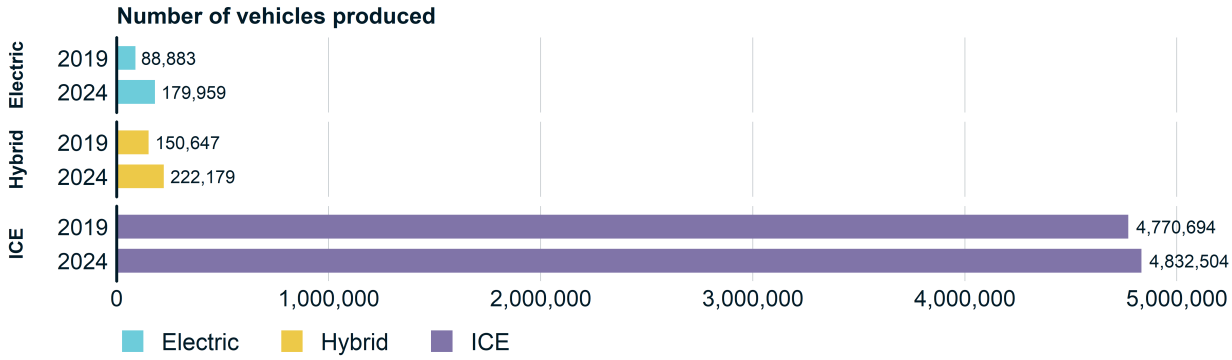


Figure 1.1: Company production mix in 2019 and 2024.

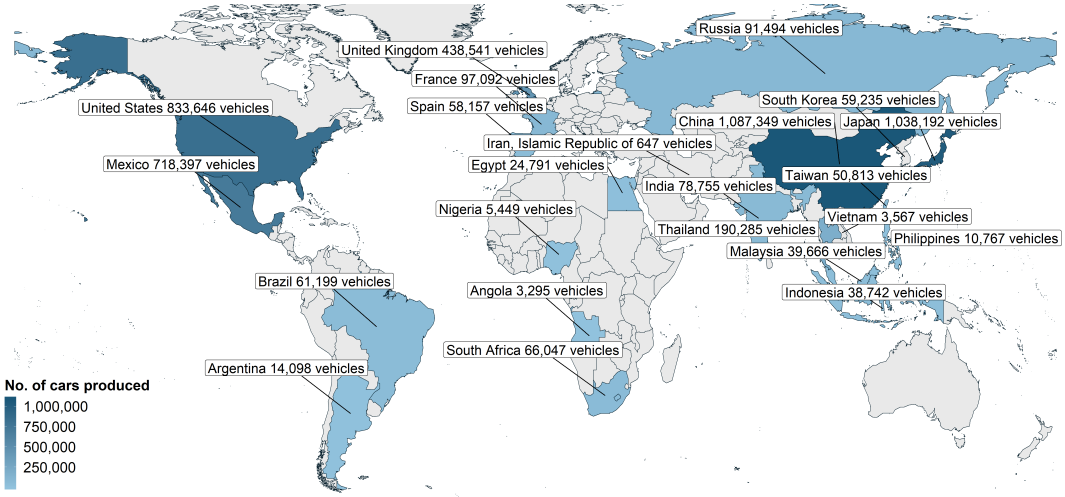


Figure 1.2: Geographical distribution of the company's automotive generating assets in 2019.

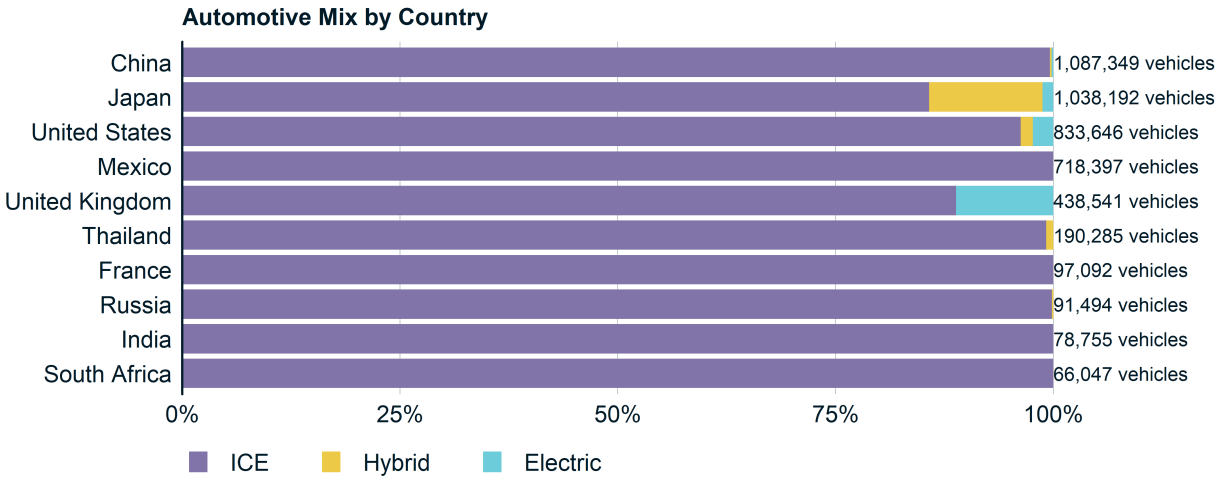


Figure 1.3: Overview of the company's production mix and total production capacity in the largest countries by total production capacity in 2019.

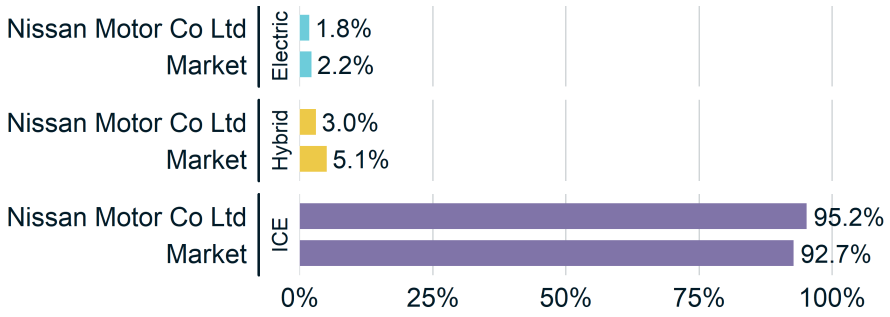
Current Alignment

How does the current production mix of Nissan compare to the market?

This section provides an overview of the diversification of **Nissan**'s production capacity across high and low carbon technologies. In order to meet the goals of the Paris Agreement, the IEA broadly signals that the share of "low carbon technologies" must increase while the share of "high carbon technologies" must decrease.

As such, the company's production mix is presented both in terms of the share of low carbon technologies of its total production capacity, and the breakdown of its production capacity by technology specifically. The market is representative of all automotive companies in the global automotive market.

A) Low and high carbon production mix percentage



B) production mix by technology percentage

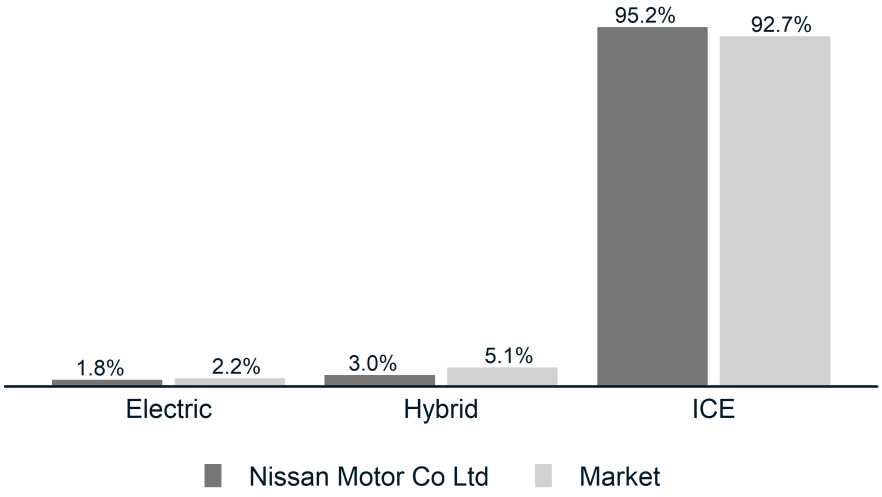


Figure 2.1: Comparison of the company's production mix to the market's production mix in 2019 by A) low carbon vs high carbon spilt and B) by technology.

Nissan has 0% of its automotive production capacity in low carbon technologies compared to 9.5% in the market. Nissan has a higher share of ICE capacity than the market; it has a lower share of Hybrid than the market.

Trajectory

How do the capital expenditure plans for different technologies compare to the climate scenarios?

Plans to build or retire production capacity over the next 5 years can be used to compare **Nissan**'s planned changes in production capacity to different International Energy Agency (IEA) scenarios. These scenarios present possible transition pathways and the changes in production capacity required if each company in the world were to align its production capacity accordingly.

The expected change in production capacity by technology as per the IEA scenarios has been applied to the automotive production capacity of **Nissan** to calculate the changes required under each scenario. This report benchmarks the company against the Sustainable Development Scenario (SDS), though the following charts also show the Beyond 2 Degree Scenario (B2DS), the New Policy Scenario (NPS) and the Current Policy Scenario (CPS).

Alignment with climate scenarios may vary by technology. For each technology, figure 3.1 summarises the different IEA scenarios that **Nissan**'s investment plan aligns with. It is important to note that these charts are independent of the current exposure to each technology (except by determining the starting point in terms of production capacity). The initial (2019) weighting of a technology within the company's production mix is not reflected in these charts.

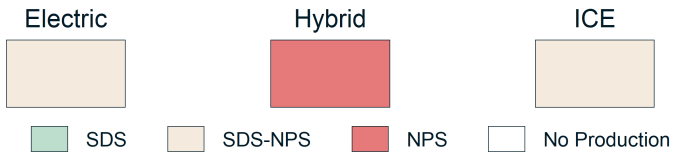
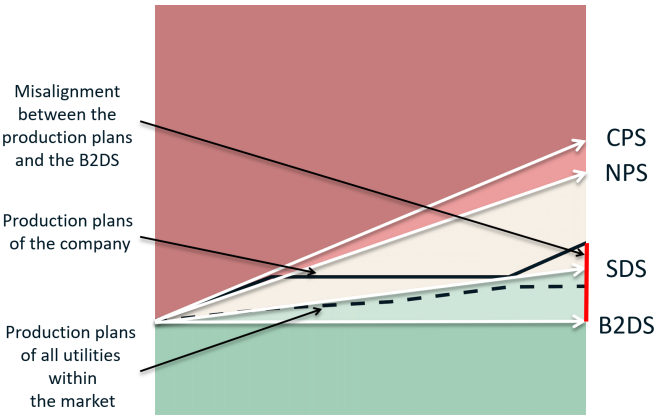


Figure 3.1: Scenario outcome of the build out plans for each technology by 2024. This summarises the results of the trajectory charts in 2024.

The additional production capacity planned by Nissan aligns it .

The charts on the following page (figure 3.2) provide additional details on how **Nissan**'s investment plans for each technology align with four IEA scenarios over the next five years. They also show the market's trajectory for context.

The background colours represent how the trajectory of a technology should progress under the relevant scenario based on the geographical exposure of the company's automotive production capacity. The solid and dashed lines represent the production plans of the company and those of the utility market scaled to the starting point of the company. In the chart to the right, the company's investment plans for this technology lie between the SDS and NPS trajectories. The difference in 2024 between the company's production plan and the end point for a specific scenario indicates the change in production capacity that would be required for alignment. The market production capacity can be compared to the company plans as a relative indicator only, as the scenarios are specific to the company. In this case, the company is building out more of this technology than the market.



Trajectory

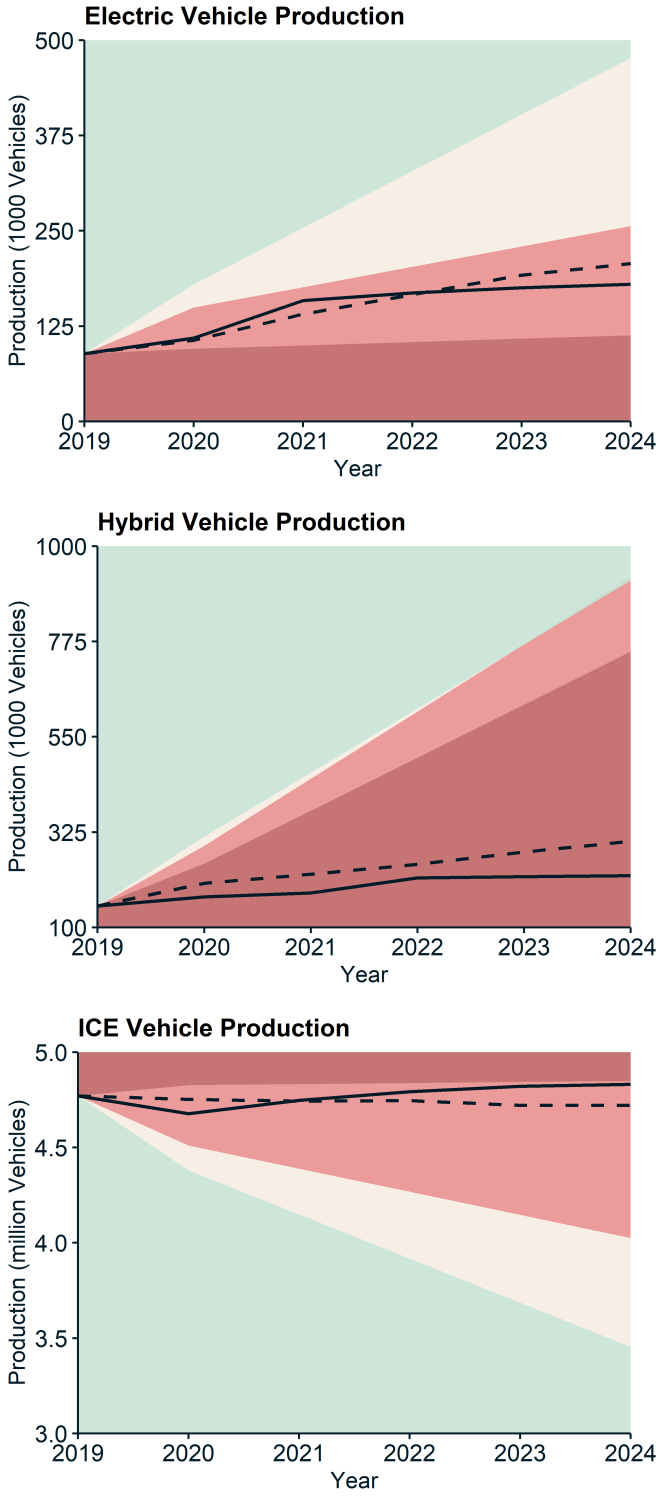


Figure 3.2: illustrates how **Nissan**'s planned production capacity changes in each technology compare to different IEA transition pathways and the market.

Future Alignment

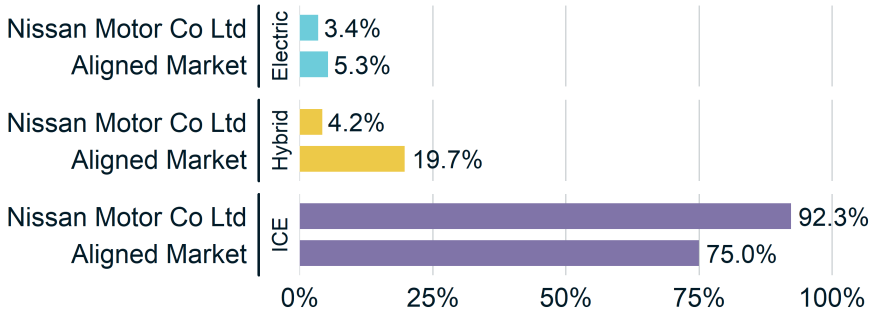
How will the planned production mix of Nissan compare to a global market aligned with the SDS in 2024?

The production mix of **Nissan** in 2024 is based on its production mix in 2019 plus planned production capacity changes between 2019 and 2024. The aligned market production mix shows what would be expected if the current global automotive market were to develop over the next five years in accordance with the SDS.

If the company has a lower amount of low carbon technologies than the theoretical aligned market, it may be exposed to higher transition risks based on the technological trajectories outlined by the IEA.

Figure 4 shows that **Nissan** has an production mix in 2024 which has 27.1% percentage points or 100% less low carbon production capacity than an aligned market.

A) Low and high carbon production mix percentage



B) production mix by technology percentage

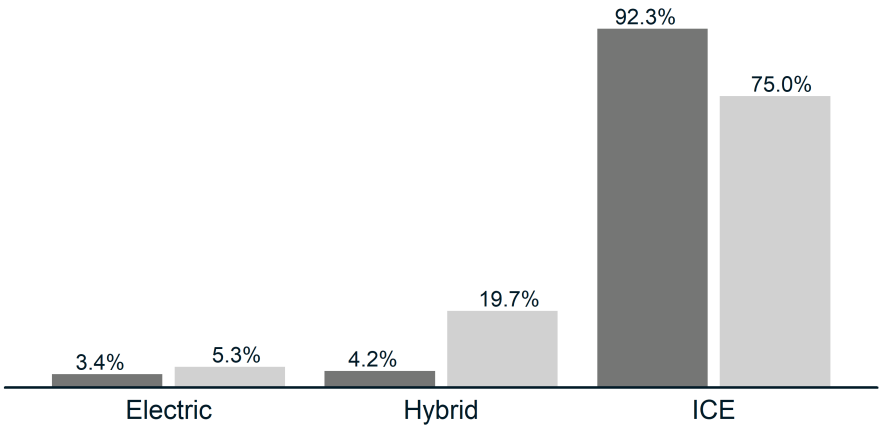


Figure 4.1: Comparison of the company production mix to the market production mix in 2024.

By 2024 Nissan has a higher share of ICE production than the market aligned to the SDS; it has a lower share of Electric and Hybrid production than the market aligned to the SDS.

Achieving Alignment

What changes in production capacity are required by Nissan to align itself with the SDS?

For **Nissan** to align itself with the SDS by 2024 based on the company's current production capacity, the following production capacity changes by technology are required.

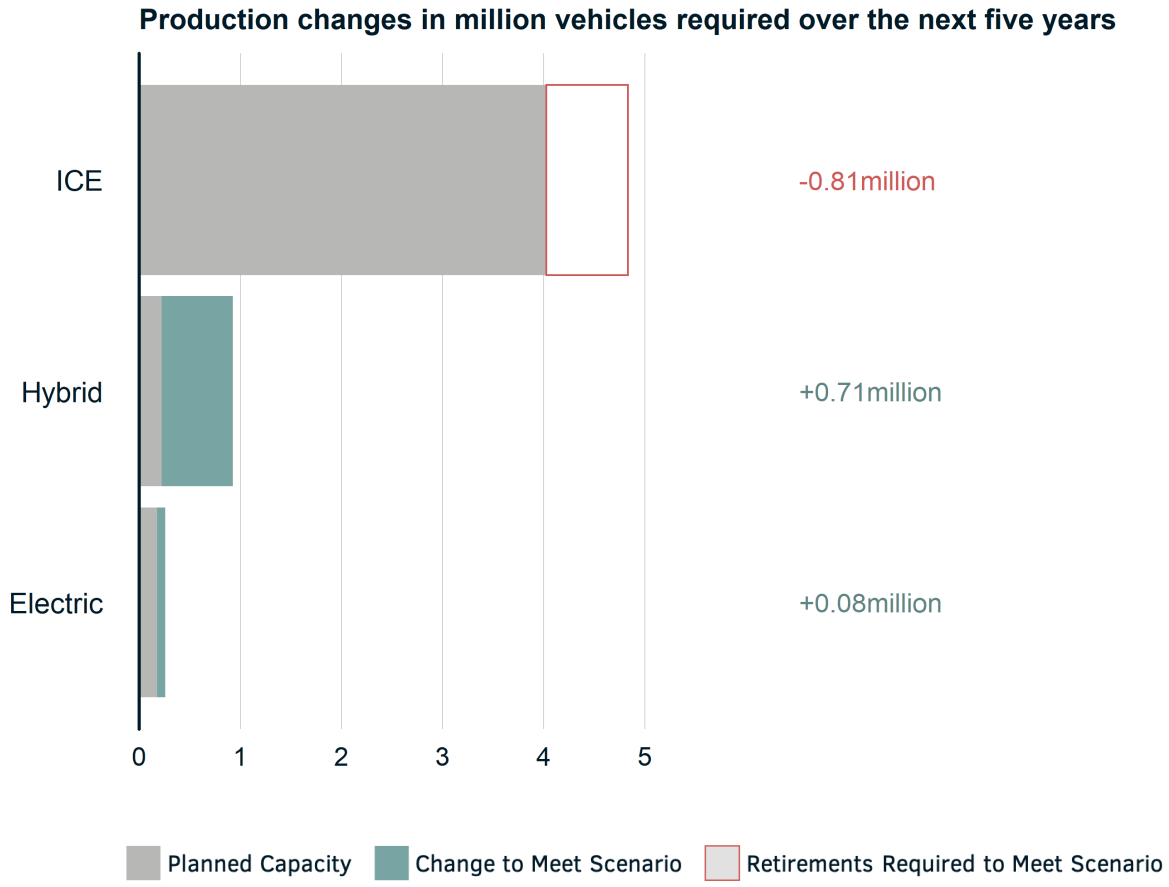


Figure 5: Changes in production capacity required to align with the SDS.

By 2024, Nissan requires additional production of Electric and Hybrid vehicles to be aligned with the SDS, as well as a reduction in the production of ICE vehicles.

In some cases, the company's investment plans may outperform the production capacity required to align with the SDS. If the company's investment plan for low carbon technologies exceeds scenario targets, no retirements are specified. Similarly, no additions are specified if the company's plans already meet the transition pathways for high carbon technologies.

Comparison Between automotive companies

How does the current production capacity and future planned production capacity of Nissan for low carbon technologies compare to other automotive companies in the global market?

In this section, we represent the current production mix of **Nissan** relative to the other automotive companies in the global market, as well as its investment plans. Figure 6 highlights:

- On the x-axis, the percentage of low carbon technologies within the production mix in 2019.
- On the y-axis, the percentage of planned additions by 2024 which are low carbon.
- The 2019 total automotive production capacity of each company via the size of the circles. Each circle represents a separate utility.

Nissan is highlighted in black.

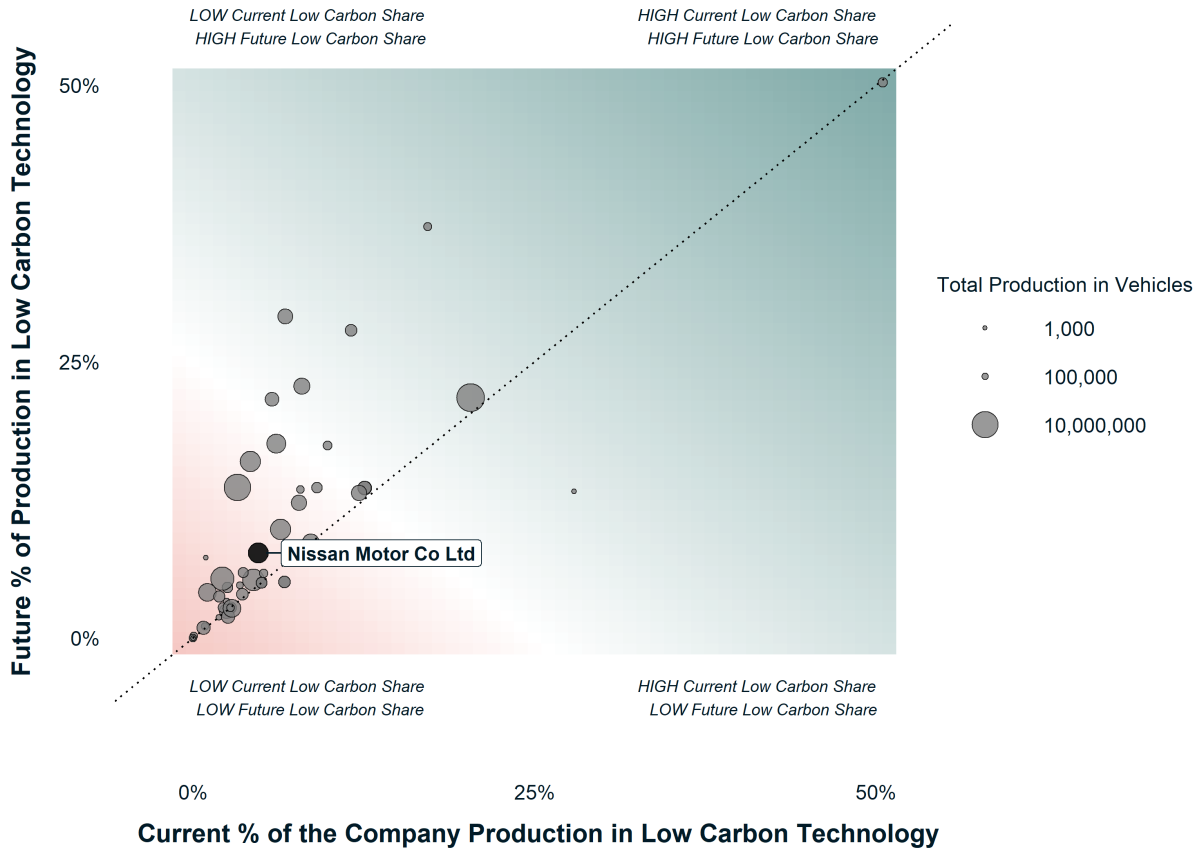


Figure 6: % planned future production capacity in low carbon technologies vs % current production capacity in low carbon technologies.

Companies fall into one of four categories:

1. Upper Right: These companies are currently heavily invested in low carbon technologies as a share of the production mix, and have plans to expand investment in these technologies even further.
2. Lower Right: These companies are currently heavily invested in low carbon technologies as a share of the production mix. However, their planned production capacity is either primarily high carbon, or they have no planned production capacity additions.
3. Upper Left: These companies are not currently heavily invested in low carbon technologies, as a share of the production mix. However, their planned production capacity additions are primarily low carbon.
4. Lower Left: These companies are neither currently heavily invested in low carbon technologies as a share of the production mix, nor have plans to build these out in the future.

Market Share

How does Nissan's market share of each automotive technology evolve between 2019 and 2024?

This section shows how **Nissan**'s market share in low carbon technologies is expected to develop between 2019 and 2024 and what the company's future positioning relative to the market will be.

Figure 8 shows changes in the company's electric and total automotive production capacity market share, defined as the % of total production capacity in each technology over the entire global automotive production capacity.

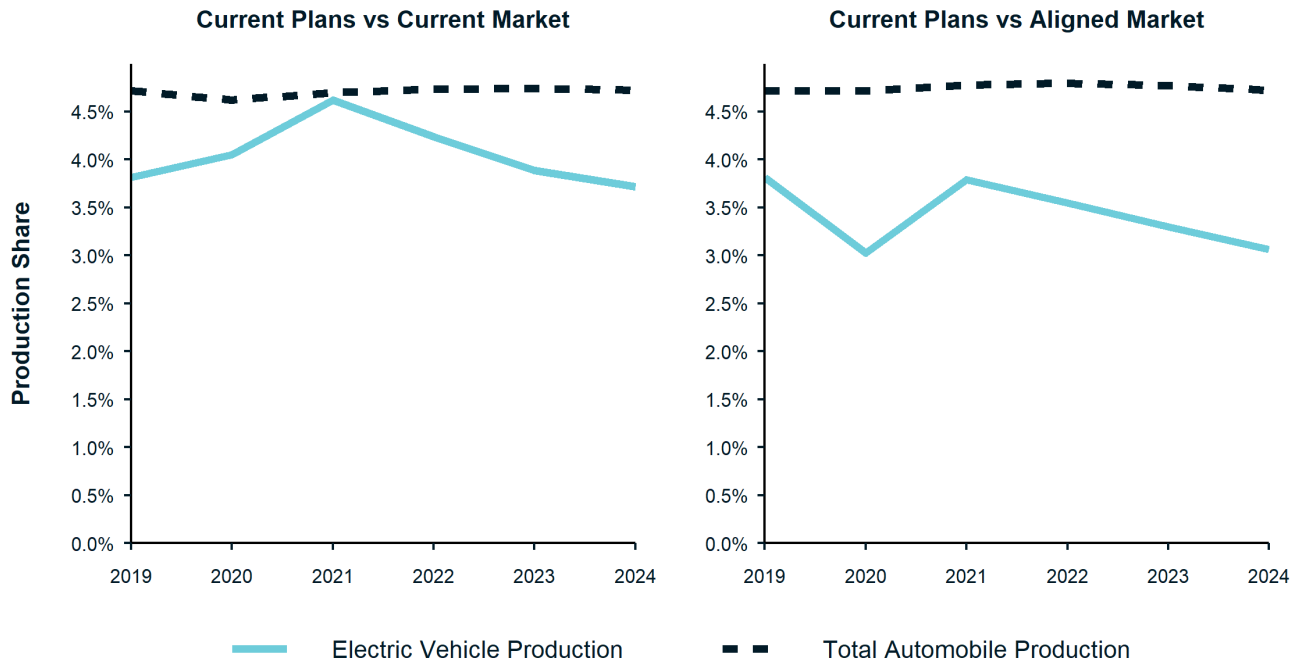


Figure 8: The above charts show how **Nissan**'s share of the global market develops for electric and total automotive production capacity. The chart on the left provides a comparison to the global market given current plans, and the chart on the right shows how this would develop if the market were aligned with the SDS.

The total market share of Nissan is set to increase given the actual plans of the market as well as the market under the SDS by 2024. Its market share of electric production capacity is set to decrease given the actual plans of the market and the market under the SDS by 2024.

The market share for each technology represents the company's production capacity as a percentage of the production capacity of all automotive companies (actual and aligned) including current announced plans. If the company's electric vehicle market share is decreasing over the next 5 years, this suggests that **Nissan** plans to build out electric vehicle production capacity at a lower rate than the automotive companies market as a whole.

Data Sources

2dii scenario analysis is based on forward-looking automotive data from Wards Automotive paired with company ownership information from Bloomberg. Wards Automotive provides granular information on the make, model, drive train technology, and location of production currently and modelled for the upcoming five years. The company's current production mix was calculated by aggregating production where the company is listed as owner, weighted by an ownership stake. 5-year investment plans were calculated by aggregating production for the years between 2019 and 2024. The result is a forward-looking production mix for **Nissan** that serves as starting point and basis for comparison for scenario analysis.

Wards Automotive use a model to predict future production values for plants and therefore countries at a company level. Backtesting of this model, has shown the model production estimates have a varience of up to 5% of total global production with a 5 year time frame. Nevertheless there may be discrepancies at a company level. Reasons for variation from company reported production may fall into the following categories:

1. We take asset data and ownership information from two major data providers: Wards Automotive and Bloomberg. While the production data at a global level has a low error margin, this may be more for any given company.
2. We allocate production capacity from subsidiaries to parent companies according to the following rules: If a subsidiary company is private/unlisted, 100% of its production capacity is allocated to the parent company holding the controlling stake. If a subsidiary is public/listed, the non-free float portion of its production capacity is allocated to the parent company holding the controlling stake. No automotive production is allocated to parent companies holding non-controlling stakes.

Please review the legal disclaimer for further information about the limitations of the data.