GREENPEACE

2023 Toyota
Investor Briefing

Ahead of Toyota's 119th annual general meeting of shareholders, due to be held on Wednesday June 14, 2023, Greenpeace East Asia has released the following analysis of Toyota's current business strategy and position with regards to their rollout of electric vehicles and decarbonisation.

We believe that Toyota's current strategy poses substantial risk to investors over the long term as it fails to adequately account for changes in the global market, and more significantly is not in line with the Paris Agreement to keep global warming below 1.5C. There is a significant chance of stranded assets in the Chinese market as domestic competitors specialising in EVs, like BYD, are set to take larger market shares away from foreign manufacturers. Additionally in the European market and American markets, competitors like VW, GM, and Ford, are better positioned to capitalise on regulatory and market conditions, minimising their exposure to transition and climate risks.

We strongly encourage investors to engage with Toyota in the following ways:

- Communicate to Toyota your support for this analysis
- Engage with Toyota on the need to improve its electrification and decarbonisation strategies, and other activities that reduce its risk cause by climate change
- Vote in favour of the shareholder resolution proposed by Kapitalforeningen MP Invest and others, requiring Toyota to disclose their climate lobbying activities

Contents

1. Introduction

1.1 Current environmental situation

Transport represents approximately a quarter of global emissions[1], and is one of the key sectors flagged for decarbonisation. This need was highlighted in the G7 Ministers Communique in

[1] https://www.un.org/sites/un2.un.org/files/media_gstc/FACT_SHEET_Climate_Change.pdf

April 2023, pointing out the need for a high degree of decarbonisation by 2030, net-zero emissions by 2050, and that this would in part be achieved by the rollout of zero-emission vehicles (ZEVs)[2]. Analysis by the International Energy Agency (IEA) has similarly pointed out that in order to achieve net zero by 2050, the sale of new internal combustion engine (ICE) vehicles should end by 2035[3].

However the window for action is rapidly closing. The AR6 Synthesis Report by the IPCC notes that:

> *In the near term, every region in the world is projected to face further increases in climate hazards, increasing multiple risks to ecosystems and humans...Risks and projected adverse impacts and related losses and damages from climate change will escalate with every increment of global warming. They are higher for global warming of 1.5°C than at present, and even higher at 2°C*[4]

In this context, the actions of Toyota as the world's largest automaker by unit volume are extremely important, and their strategy with regards to decarbonisation will have considerable impact and consequences across the world.

1.2 Climate risk and financial risk

There is also an increased understanding of the ties between climate risk and financial risk. In 2020, former Bank of England governor and UN climate envoy Mark Carney argued that climate-related risks must be considered and disclosed as part of the risk profile for any given company[5]. The impact of physical risks posed by climate change in turn have a major effect on asset valuations, and in some cases can lead to significant stranded assets.

Some reports estimate that electrification of the auto industry could add up to 30% additional revenue by 2030[6], or $2.5 trillion[7], and yet as early as 2009 research also showed that up to 80% of fossil fuels would be stranded even under a 2C global warming scenario (higher again under 1.5C)[8]. When calculated again in 2022, it was found that this risk overwhelmingly falls upon private investors[9].

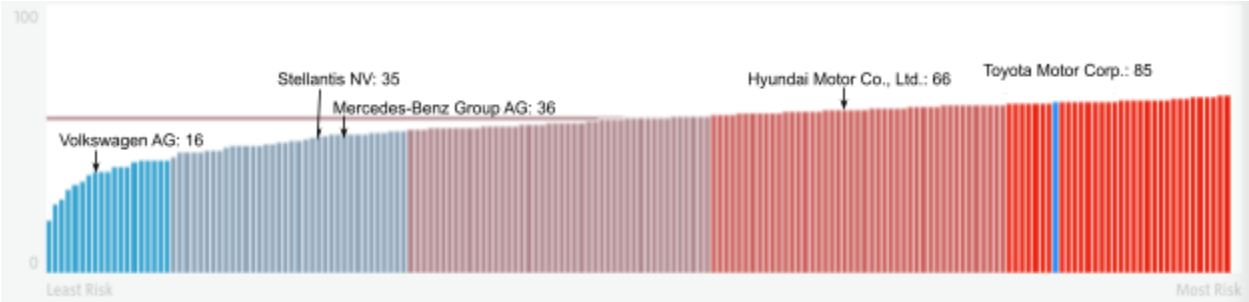
Greenpeace research released in 2022 found that of the 4 major automakers, all were set to overshoot the number of vehicles that can potentially be sold whilst remaining under the 1.5C of global warming, leading to millions of vehicles unable to be sold[10].

	VW	Toyota	Hyundai-Kia	GM
Overshoot (%)	118%	164%	142%	57%
Overshoot ('000,000)	43	63	39	13

Expected ICE sales overshoot by key manufacturers under 1.5C Scenario (Source: Greenpeace)

[2] https://www.env.go.jp/en/earth/g7/2023_sapporo_emm/
[3] https://iea.blob.core.windows.net/assets/deebef5d-0c34-4539-9d0c-10b13d840027/NetZeroby2050-ARoadmapfortheGlobalEnergySector_CORR.pdf
[4] https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf
[5] https://www.reuters.com/article/uk-climate-change-companies-accounts-idUKKCN26F2X9
[6] https://www.oecd.org/finance/Financial-Markets-and-Climate-Transition-Opportunities-Challenges-and-Policy-Implications.pdf
[7] https://www.mckinsey.com/capabilities/sustainability/our-insights/playing-offense-to-create-value-in-the-net-zero-transition#/
[8] https://www.ubs.com/content/dam/ubs/global/asset_management/pdf/our-research/sustainable-investing-stranded-en.PDF
[9] https://www.nature.com/articles/s41558-022-01356-y
[10] https://www.greenpeace.de/publikationen/ICE-Bubble_2.pdf

The rapid decarbonisation of traditionally carbon-intensive industries is increasingly a leading priority for governments and businesses alike, due to both the financial and physical risks they are exposed to. A 2022 study by Greenpeace of Moody's ESG Solutions data found that Toyota had extremely high risk of physical damage as a result of climate change, with 90% of Toyota facilities at risk for at least one type of climate-related damage[11].



Assessment of physical risk to automakers posed by climate change (Source: Moody's ESG Solutions)

This analysis was almost immediately validated when heatwaves in China in August 2022 caused widespread blackouts, in turn leading the provincial government to order major manufacturers in the area, including Toyota, to halt operations[12]. Unsurprisingly expectations around Chinese GDP growth were subsequently revised down[13].

Beyond physical and financial risks, legal risks associated with inaction on climate change are also rapidly increasing. Of the more than 2000 climate-related legal cases filed since 1986, approximately 500 have been filed in the three year period of 2020-2022 alone[14]. These cases have varied in consequences from the cancellation of projects[15] to small investment fund Engine No. 1 famously replacing three members of the Exxon-Mobil board[16].

Despite this, as of December 2022 Toyota's disclosures under the Task Force on Climate-related Financial Disclosures (TCFD) remains light, with only brief acknowledgement of the potential for loss of electricity as a result of natural disasters and "continuous improvement of the business continuity plan based on past experience" as the sum total of mitigation plans[17].

1.3 Greenpeace's position

As Greenpeace, we do not consider Toyota's current business strategy to be viable either financially or environmentally over the long term. Although imperfect, ZEVs like battery-electric vehicles and hydrogen fuel-cell vehicles using green hydrogen represent the only powertrain types capable of achieving the kind of deep decarbonisation mentioned in the G7 communique that is required to achieve net zero by 2050. Whilst hybrid and plug-in hybrid vehicle types do have lower life-cycle emissions when compared to traditional gasoline ICE vehicles, these reductions are minimal compared to emissions reductions that ZEVs are able to

[11] https://www.bloomberg.com/news/articles/2022-08-25/toyota-honda-top-list-of-carmakers-facing-climate-change-risks
[12] https://asia.nikkei.com/Spotlight/Supply-Chain/Chongqing-orders-factories-to-shut-to-save-power-during-heat-wave
[13] https://edition.cnn.com/2022/08/18/economy/china-economy-gdp-heatwave-intl-hnk/index.html
[14] https://www.lse.ac.uk/granthaminstitute/wp-content/uploads/2022/08/Global-trends-in-climate-change-litigation-2022-snapshot.pdf
[15] https://www.cnnindonesia.com/nasional/20221014055250-12-860359/ptun-bandung-batalkan-izin-lingkungan-pltu-tanjung-jati-a-cirebon?ref=The+Wave-newsletter
[16] https://www.reuters.com/business/little-engine-no-1-beat-exxon-with-just-125-mln-sources-2021-06-29/
[17] https://global.toyota/pages/global_toyota/sustainability/report/sdb/sdb22_jp.pdf

achieve[18,19]. These reductions in life-cycle emissions remain true across different energy grid compositions, so although there is an ongoing need for the decarbonisation of the energy sector, electric vehicles charged on carbon-intensive energy grids still have lower total emissions than fuel-efficient hybrids[20].

More broadly we also acknowledge the need for an increase in resource circularity and decarbonisation of the auto supply chain as a whole. The current system of mineral extraction and processing, particularly with regards to rare-earth metals, is extremely destructive, and as the industry shifts towards an EV-centric approach, it is crucial that we move towards a closed-loop system that minimizes the use of virgin materials, and increases the percentage of recycled materials used in manufacturing.

This shift towards EVs must also go in tandem with improvements in public transport, more walkable cities, and an overall decrease in the number of cars on the road in order to achieve the necessary emissions reduction. That being said, the cars that will remain on the road need to be ZEVs, and nearly all forecasts of the market point to the same conclusion that EVs, set to make up 18% of all new vehicle sales in 2023[21], will take over global sales.

2. Problems with Toyota's current strategy in major markets

Aside from clear trends in the global automotive market, there are specific concerns we have about Toyota's core markets, all of which indicate a lack of long-term viability in their current strategy. Credit rating agency Fitch Ratings places Toyota alongside Nissan as having higher transition risk, in comparison to many European makers with lower levels of risk[22].

[18] https://theicct.org/wp-content/uploads/2021/07/Global-Vehicle-LCA-White-Paper-A4-revised-v2.pdf
[19] https://www.iea.org/data-and-statistics/charts/well-to-wheels-greenhouse-gas-emissions-for-cars-by-powertrains
[20] https://criepi.denken.or.jp/jp/serc/source/pdf/Y21503.pdf
[21] https://www.iea.org/reports/global-ev-outlook-2023/executive-summary
[22] https://www.fitchratings.com/research/corporate-finance/asian-auto-makers-have-higher-electric-vehicle-transition-risk-21-03-2023

OEM	Country	Overall Score	Readiness	Exposure
Toyota	Japan	Higher	Laggard	Phased
Honda	Japan	Medium	Follower	Phased
Nissan	Japan	Higher	Laggard	Phased
Ford	U.S.	Medium	Follower	Phased
GM	U.S.	Lower	Leader	Phased
HMC	Korea	Lower	Leader	Phased
FAW	China	Medium	Follower	Aggressive
DFG	China	Medium	Follower	Aggressive
BAIC	China	Medium	Follower	Aggressive
VW	Germany	Medium	Leader	Aggressive
MB	Germany	Lower	Leader	Phased
BMW	Germany	Medium	Leader	Aggressive
Renault	France	Lower	Leader	Phased
Stellantis	Netherlands	Lower	Leader	Phased
Volvo Cars	Sweden	Medium	Leader	Aggressive

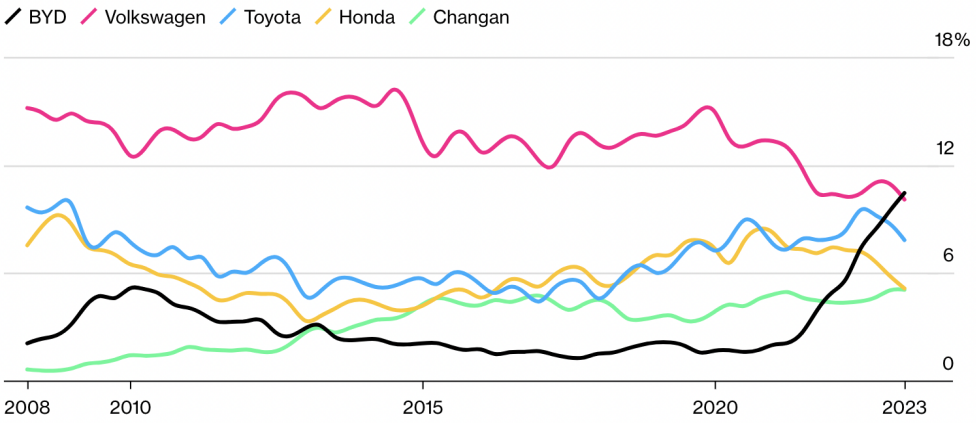
Global auto manufacturers aggregate EV transition risk (Source: Fitch Ratings)

The below section focuses on key issues in China, the US, and European markets.

2.1 China

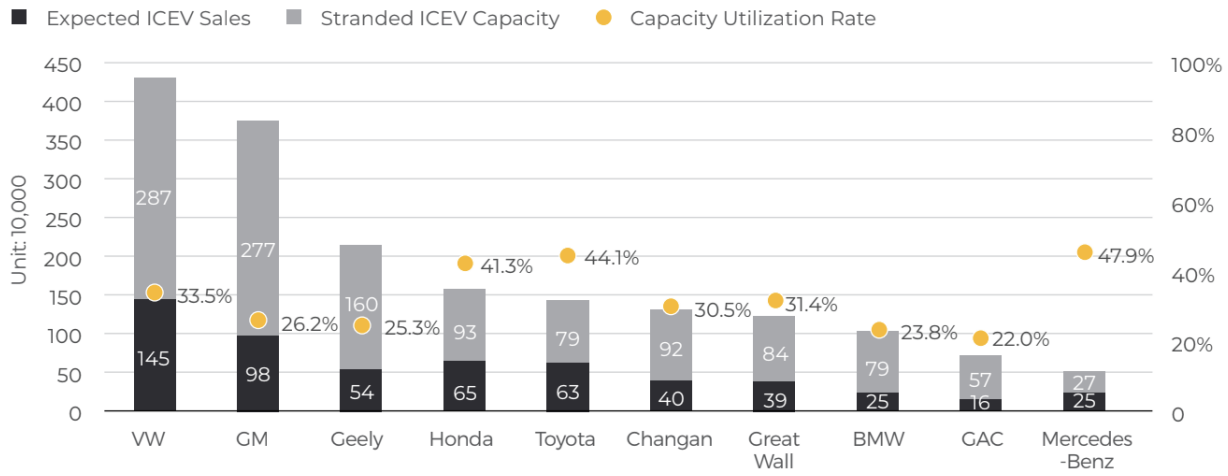
As the world's largest single car market, approximately 26m passenger vehicles were sold in China in 2022, of which 25.6% were EVs[23], showing some tenfold growth since 2017[24]. Unsurprisingly local companies specialising in EVs are set to benefit the most from this, with Greenpeace research[25] showing most foreign manufacturers losing anywhere between 1-6% market share (between 3-6% for Toyota) by 2030, with BYD set to gain 5% over the same period. As of March 31, 2023, BYD has taken position as the most popular carmaker of any type in China with a 10.4% market share, overtaking Volkswagen, Toyota, Honda, and Changan[26].

[23] https://www.marklines.com/en/statistics/flash_sales/automotive-sales-in-china-by-month-2022
[24] https://www.iea.org/data-and-statistics/data-tools/global-ev-data-explorer
[25] https://www.greenpeace.org/eastasia/press/7968/foreign-automakers-on-track-to-lose-market-share-in-china-due-to-slow-shift-to-evs-study/
[26] https://www.bloomberg.co.jp/news/articles/2023-04-26/RTP04QDWLU6901



Chinese market share by major automakers (Source: Bloomberg)

This rapid rate of electrification in turn highlights the possibility of stranded assets through under-utilization of their capacity. The shrinking demand for ICE vehicles and rising demand for EVs means that operational and capital expenditure dedicated towards combustion engine infrastructure will increasingly go to waste. By 2030, if 70% of vehicles are "new energy vehicles" [27] (NEVs), Toyota is estimated to have only a 44.1% utilization rate, meaning that more than half of their ICE capacity would go unused as stranded assets.



2030 Chinese market sales forecast and capacity utilization rate under 70% NEV market scenario (Source: Greenpeace)

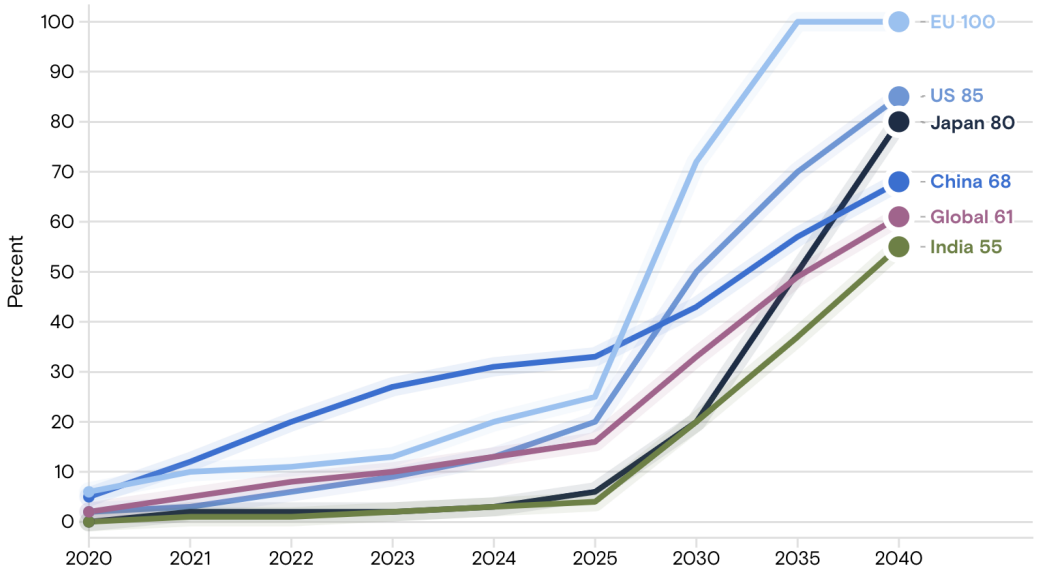
It should be noted that with some local and regional exceptions, officially no national policy currently exists in China pushing auto-electrification.

The 2023 Shanghai Auto Show displayed the comparative downward trend of foreign makers and simultaneous ascendancy of Chinese makers[28,29], highlighting how the Chinese domestic market is set to continue to grow and Toyota (along with most ICE-centric foreign manufacturers) are on track to miss the opportunity to capitalise on this, leaving themselves in turn trapped with assets they are unable to use.

[27] NEV includes plug-in hybrids, battery electrics, and fuel cell vehicles.
[28] https://www.nytimes.com/2023/04/14/business/china-shanghai-auto-show.html
[29] https://www.scmp.com/business/china-business/article/3217629/shanghai-auto-show-chinese-carmakers-confident-overtaking-japan-worlds-no-1-exporter-year-shipments

2.2 United States

Whilst the United States isn't experiencing the same kind of explosive growth as China, the trajectory is still much the same. Having passed the so-called "tipping point" of 5% EV sales in July 2022[30], by the following January 7.1% of new vehicles registered in the US were EVs, up from 4.3% only 12 months prior[31]. In the longer term, some forecasts see 85% of new vehicle sales in the US as EVs by 2040[32]. These forecasts notwithstanding, Toyota's market share in the US has been decreasing over the last 8 years, peaking with 2.8m units in 2015, falling to 2.4m units in 2022[33].



EV sales ratio forecast (Source: Goldman Sachs Research, IHS Global Insight)

The shift towards electrification is, in part, driven by policy with the Biden administration setting a 50% EV sales target by 2030[34], a move which was further strengthened by the introduction of the Inflation Reduction Act (IRA) in August 2022 which offered significant tax incentives to domestically manufactured or assembled electric vehicles. As of April 19 2023 Ford and Volkswagen both had 8 models eligible for the $7,500USD tax credit, and GM had 6. Toyota however, had none[35]. At the same time, other manufacturers are stepping up their EV and battery production investments in the US to take advantage of this. In 2022 alone, there was approximately $73bn of investment in battery facilities, of which Hyundai made up $18.2bn, GM $7.8bn, and Toyota just $4.6bn[36].

[30] https://www.bloomberg.com/news/articles/2022-07-09/us-electric-car-sales-reach-key-milestone
[31] https://insideevs.com/news/657660/us-electric-car-sales-january2023/
[32] https://www.goldmansachs.com/insights/pages/electric-vehicles-are-forecast-to-be-half-of-global-car-sales-by-2035.html
[33] https://global.toyota/jp/company/profile/production-sales-figures/
[34] https://www.whitehouse.gov/briefing-room/statements-releases/2021/08/05/fact-sheet-president-biden-announces-steps-to-drive-american-leadership-forward-on-clean-cars-and-trucks/
[35] https://www.scmp.com/comment/opinion/article/3217590/new-toyota-ceo-must-speed-transition-ev-first-mindset
[36] https://www.energymonitor.ai/sectors/transport/weekly-data-ev-battery-investment-us-outpaces-eu/

At the same time, Hyundai set a new sales record for Q1 for the US market in 2023, the fifth consecutive month to set such a record[37]. This was also true for most major automakers in the US market with the exception of Toyota, who was replaced by GM as the top US automaker[38].

Environmental regulations are also set to tighten with the Environmental Protection Agency similarly signaling that they intend to strengthen emissions standards, proposing to set required average standard of 82 grams per mile, a standard which as of April 2023, only Tesla can meet[39].

Data released by the California New Car Dealers Association (CNCDA) showed that in 2022 Toyota still held the largest market share (by a considerable margin) in California of 17.4%, followed by Tesla at 10.7%[40]. However, considering that every manufacturer other than Tesla and Genesis is showing negative growth, combined with increasingly tighter environmental regulations, stronger investment by competitors, and overall growth of the EV market, all of this indicates a grim outlook for Toyota in the US market.

2.3 Europe

For years Europe led the way with EV sales, with 436,085 EV registrations between 2010 and 2017[41], before reaching 1.4m and 2.3m registrations in 2020 and 2021 respectively[42], with Norway reaching 5% EV sales as early as 2013[43]. This sales track record has been similarly accompanied by progressive regulations, notably with the UK and the EU pledging to phase out the sale of new ICE vehicles by 2035, however with sizeable last minute caveats in the EU allowing the use of synthetic e-fuels[44,45].

Despite protesting the introduction of regulations like Euro VII[46], even industry bodies like the European Automobile Manufacturers Association (ACEA) recognise this shift, pointing out that petrol and diesel vehicles only made up 52.8% of new vehicle registrations in 2022, and that whilst hybrid and plug-in hybrid growth had slowed to 8.5% and -2.7% respectively, battery electrics were up by 29.3%[47].

	BEV	PHEV	HEV
EU	+28.0%	+1.2%	+8.6%
EFTA	+23.4%	-39.7%	+7.8%
UK	+40.1%	-11.5%	+8.1%
Total	+29.3%	-2.7%	+8.5%

Percentage change in registration 2021/2022 (Source: ACEA)

[37] https://www.prnewswire.com/news-releases/hyundai-motor-america-reports-record-breaking-march-and-q1-2023-sales-301787605.html
[38] https://www.reuters.com/markets/us/us-first-quarter-auto-sales-set-rise-better-inventory-2023-04-03/
[39] https://www.npr.org/2023/04/12/1169269936/electric-vehicles-emission-standards-tailpipes-fuel-economy
[40] https://www.cncda.org/wp-content/uploads/California-Covering-3Q-22_FINAL.pdf
[41] https://publications.jrc.ec.europa.eu/repository/bitstream/JRC112745/jrc112745_kjna29401enn.pdf
[42] https://www.iea.org/data-and-statistics/charts/global-sales-and-sales-market-share-of-electric-cars-2010-2021
[43] https://www.bloomberg.com/news/articles/2022-07-09/us-electric-car-sales-reach-key-milestone
[44] https://www.gov.uk/government/news/government-takes-historic-step-towards-net-zero-with-end-of-sale-of-new-petrol-and-diesel-cars-by-2030
[45] https://www.europarl.europa.eu/news/en/headlines/economy/20221019STO44572/eu-ban-on-sale-of-new-petrol-and-diesel-cars-from-2035-explained
[46] https://www.acea.auto/news/euro-vii-and-co2-regulations-for-heavy-duty-vehicles/
[47] https://www.acea.auto/files/20230201_PRPC-fuel_Q4-2022_FINAL-1.pdf

In a report funded by the European Union analysing transition risks in the automotive sector, Daimler was found to have strong growth projections in all markets, due in large part to their EV-centric approach built around a 2C global warming scenario[48]. The same report also notes that Volkswagen's approach of prioritising BEVs over PHEVs is, under a market-driven e-mobility transition scenario (as compared to regulation-led e-mobility transition), means they have strong financial prospects with "realistic chances of being the leader in e-mobility".

In contrast, Toyota has said that it will have 10 BEV models on offer in the European market by 2025[49], and yet as it stands, currently has only one BEV model available, the bZ4X, which globally sold 1,744 units in 2022.

At the same time, EVs are selling at all time highs around Europe, making up larger and larger sections of the auto market. In 2022, EVs represented 79.3% of sales in Norway (21.6% year-on-year growth[50]), 16.5% (40.1% YoY) in the UK[51], and 17.7% (32.2% YoY) in Germany[52].

These conditions combine to create an extremely difficult environment for Toyota in Europe. Since 2002, new vehicle registrations have generally hovered around 15m annually[53], and with both a hard stop put in place in 2035 for ICE sales as well as increasingly stringent emissions standards, this means that EVs are set to make up an increasingly large section of the total market.

3. Regarding the shareholder resolution proposed by Kapitalforeningen MP Invest and others

For the 119th annual general meeting of shareholders, a resolution was jointly filed by Kapitalforeningen MP Invest, Storebrand Asset Management AS, and APG Asset Management N.V.. The resolution proposes a change to Toyota's articles of incorporation, requiring Toyota to disclose their climate change-related lobbying activities.

The details of the resolution are listed as follows:

> *[Toyota] should prepare a report that comprehensively assesses and summarizes, on a business-year basis, how its climate change-related external activities, including [their] external communications, both directly and through industry associations, contribute to reducing the risks to Toyota posed by climate change and are consistent with the the goals of the Paris Agreement as well as Toyota's goal of achieving carbon neutrality by 2050 (confidential information may be omitted). The report shall include a summary of the results of such assessment at a reasonable cost. The report shall include a summary of activities and corrective actions [for the activities] that are inconsistent with the goals of the Paris Agreement and Toyota's goal of achieving carbon neutrality by 2050*[54].

[48] http://et-risk.eu/wp-content/uploads/2018/07/Transition-risks-for-autos.pdf
[49] https://www.toyota-europe.com/electrification/bev
[50] https://ofv.no/bilsalget/bilsalget-i-desember_2022
[51] https://www.smmt.co.uk/2023/01/chip-crisis-subdues-new-car-market-but-evs-now-second-only-to-petrol/
[52] https://www.kba.de/DE/Presse/Pressemitteilungen/Fahrzeugzulassungen/2023/pm01_2023_n_12_22_pm_komplett.html?snn=3662144
[53] https://www.best-selling-cars.com/europe/2021-full-year-europe-new-car-sales-and-market-analysis/
[54] Translation provided by Greenpeace based on the original Japanese-language filing

We agree with this resolution, and believe that the full disclosure of Toyota's engagement with climate-related policies and regulations around the world are necessary to fully understand and mitigate Toyota's climate risk, and by extension the risk for shareholders.

As the text of the resolution points out, under the Climate Action 100+ Net Zero Company Benchmark for Climate Policy Engagement, Toyota's engagement score was only 36 out of 100 in both 2021 and 2022[55]. Previously, accusations have been made that Toyota pushed the Japanese government to water down their commitments under the 2022 G7 Leaders Communique[56], as well as allegedly threatening to remove manufacturing from the UK if the British government were to go ahead with their proposed ICE sales ban[57].

Whilst this does not obviate the necessity of a change in Toyota's current strategy as outlined above, this is also an important and necessary step.

As climate change presents an ever-growing physical, financial, and legal risk to shareholders, their assets, and the world more broadly, it is crucial then to fully grasp the extent to which Toyota is engaging with climate change policy. The resolution correctly points out that such a disclosure would decrease the risk of a loss of trust amongst customers, suppliers, investors, and employees.

Conclusion

We do recognise that Toyota will continue to reassess its risk and consider its alignment with the Paris Agreement, including by conducting further scenario analyses. However, as mentioned above, in observing Toyota's current strategies and trends of the world market more broadly, unless there is a significant strengthening of measures, we believe Toyota's financial risk will remain extremely high.

Greenpeace asks investors to vote for the proposal put forward by Kapitalforeningen and others at the 2023 annual general shareholders meeting, and advise Toyota and the broader public of this intention. At this time, we urge investors to engage with Toyota on its policies and request the publication of concrete measures to reduce the risks from their current strategies that are not aligned with the Paris Agreement.

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[55] https://ca100.influencemap.org/site/data/000/037/Toyota-Review-Scorecard-Jan23.pdf
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