Presented by

Team Titans

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Tesla’s Brand

- Leadership - CEO: Elon Musk
- Customers - Brand believers
- Musk is sending a satellite to Ukraine to help them during this crisis
- We can look at Tesla’s brand with a more concrete method of analysis

Porter's Generic Competitive Strategies

1. Bargaining power of suppliers
   - High, Tesla Struggles due to non-diverse suppliers

2. Threat of new entrants
   - Low, as car manufacturing requires heavy funding

3. Threat of substitute products
   - Low, Natural gas/ Hydrogen / Biofuel powered vehicles

4. Bargaining power of customers
   - Low, since Tesla is widely accepted as a trend setter

SWOT Analysis

Internal

Strengths

- Most reliable electric vehicles on the market
- Strong financial position
- Highly innovative company

Weaknesses

- Increased production cost of vehicles
- Manufacturing constrains
- Fell behind in deliveries

External

Opportunities

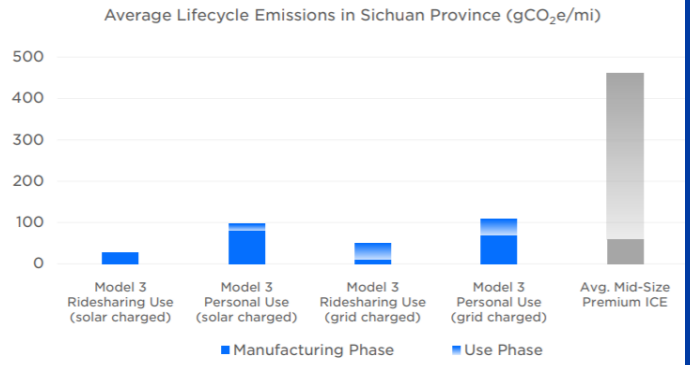
- New solar panel products
- Alternative energy batteries
- Making less expensive models

Threats

- Other companies developing electric vehicles
- Supply chain shortages
- Reactivity and shortage of Lithium batteries

Tesla’s Limitations and Shortcoming

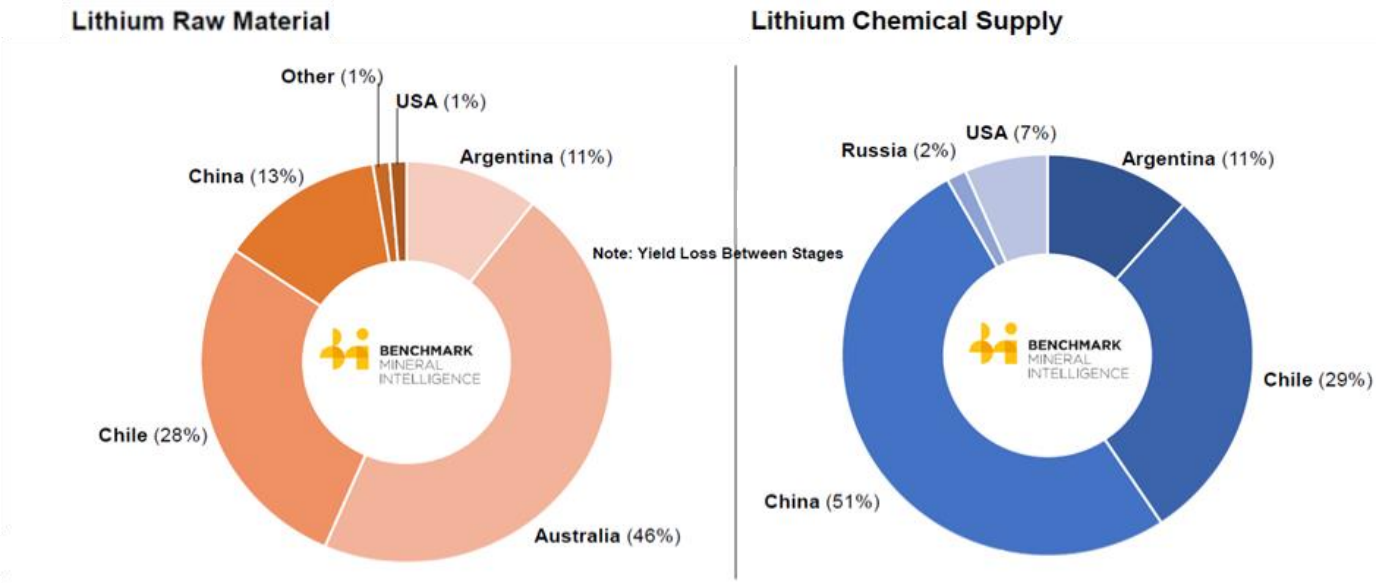
- GHG(Green House Gasses) emissions in production: manufacturing a Model 3 results in a higher emission than an equivalent combustion engine vehicle
- Electricity production to charge EVs is not completely green
- Tesla's influence on the market (important to head in the right direction)



Tesla's Future: Production and Suppliers

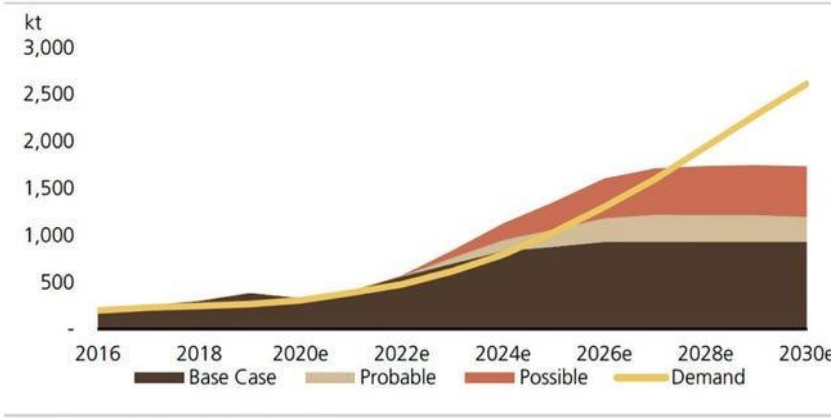
- Tesla has a goal to manufacture 20 million cars per year.
- GM sold 6.8 million vehicles in 2020 while Tesla: 1/2 million cars.
- Tesla must diversify its imports. Currently it imports Lithium (LFP) batteries from its main supplier in China.

Lithium Mining



Lithium Mining

Figure 11: Lithium Supply – Demand Balance



Source: WoodMac, Company Filings, UBSe.

- Lithium demand is growing rapidly, with an expected 80% price increase from December 2021 to June 2022
- Demand for lithium is expected to increase by 10-fold in the next ten years with supply only tripling
- With the current low prices, it is possible that this will contribute to an even more drastic lack of supply and price increase

Sources: https://www.reuters.com/technology/world-faces-shortage-lithium-electric-vehicle-batteries-2022-01-21/

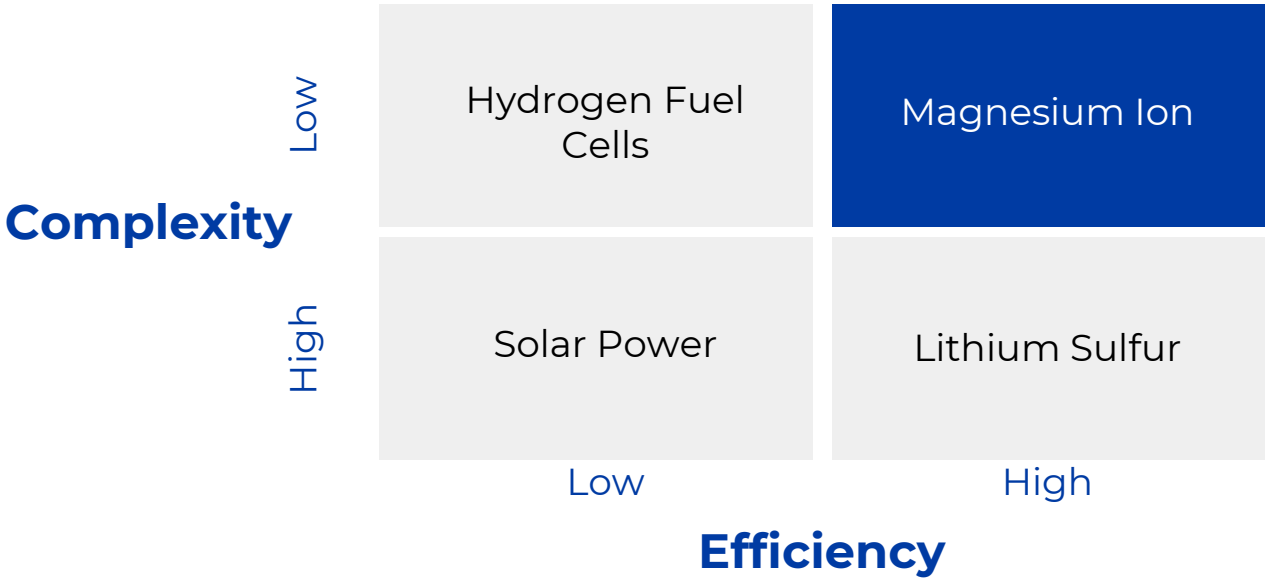
https://www.spglobal.com/en/research-insights/articles/lithium-supply-is-set-to-triple-by-2025-will-it-be-enough

https://www.forbes.com/sites/danrunkevicius/2020/12/07/as-tesla-booms-lithium-is-running-out/?sh=3403c79c1a44

Is there a substitute for the typical Lithium-ion batteries?

Let’s think about this in terms of energy efficiency and complexity

Decision Matrix

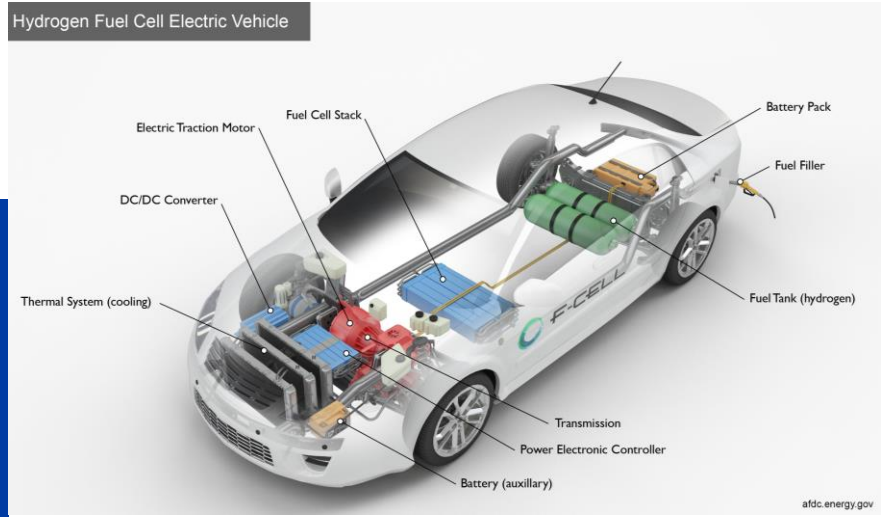


Solar Power

- Solar panels are currently extremely inefficient. The Fisker Karma model had a solar roof, but it only added one mile of range.

- Elon Musk is working on a solar roof, and nanotechnology could provide a quantum leap on its own, as solar panels will become much more efficient in the future.

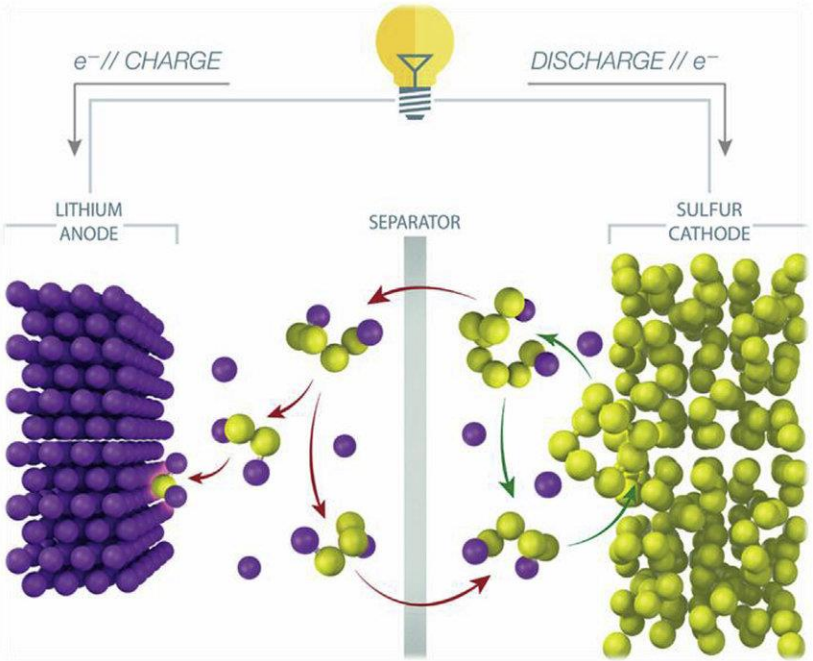
Hydrogen Fuel Cells



- Researchers from all over the world are currently experimenting with genetically modified algae in order to discover new methods of converting water into hydrogen.
- Currently, a hydrogen fuel cell is not cost-effective to produce

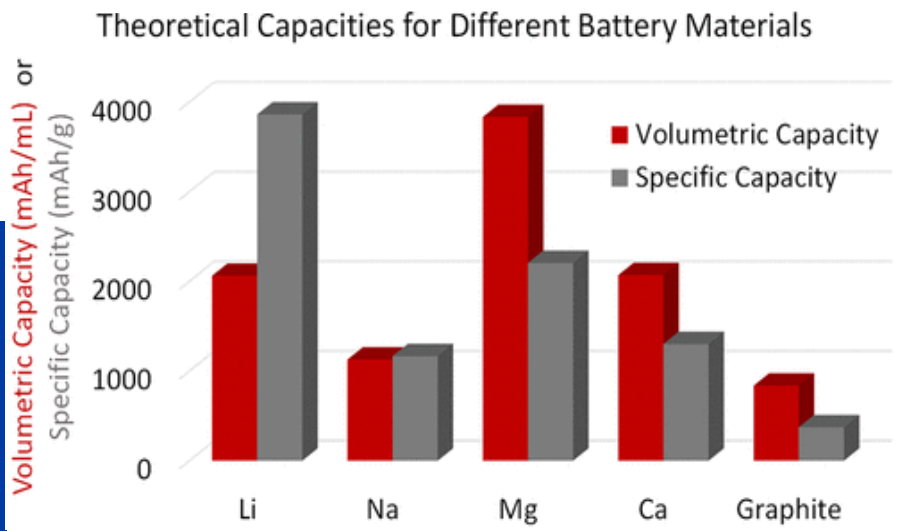
Source: https://afdc.energy.gov/vehicles/how-do-fuel-cell-electric-cars-work

Lithium Sulfur



- Sony is currently developing this technology and "claims" that the new lithium-sulfur batteries will have a 40% higher energy density and lower production costs than existing lithium-ion batteries.
- This battery is still being developed to work on a large scale.

Magnesium-ion Batteries



- Magnesium is 8 times more abundant than Lithium
- Based on this study, Magnesium batteries can provide more energy per gram
- Solid-state batteries are easier and more cost-effective to recycle

Source: https://journals.sagepub.com/doi/full/10.1177/16878140211003398
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8004101/

Short-term Solutions

Preservation

- Preserve existing batteries through proper maintenance

Research and Development

- Look at existing Research and Development to construct a magnesium-ion battery that would be a suitable alternative to lithium-ion batteries

Diversification

- Find other countries to supply lithium and nickel so China would not have complete market control of those minerals

Long-term Solutions

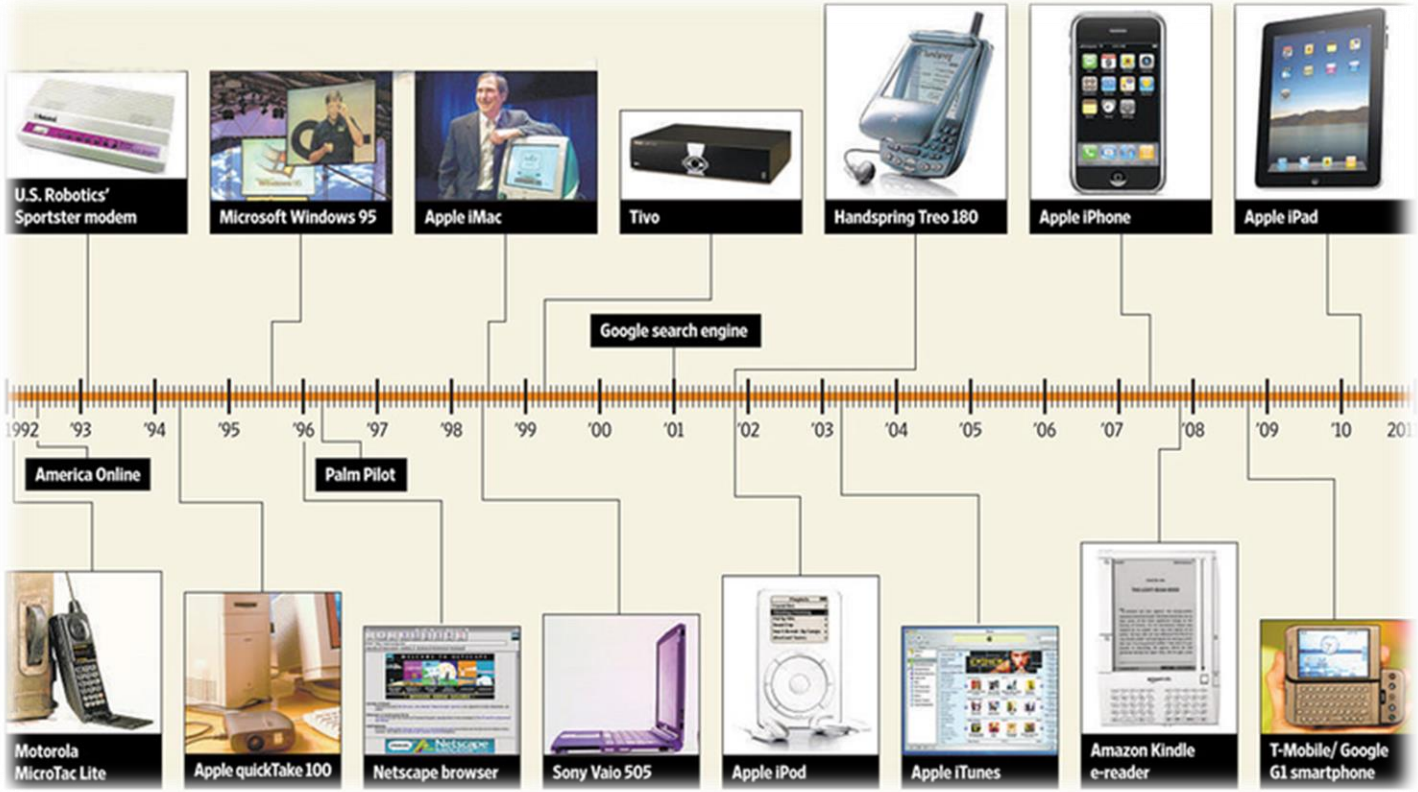
New Innovations

- Follow up with better technology and research dedicated to a more energy dense battery
- Other applications of this new technology could cause Tesla to open new branches, similar to their solar power products
- Improvements to the efficiency of the vehicle would allow Tesla to lower production costs

Alternative Battery

- Transition to a better source of energy, such as Magnesium-ion batteries

Looking back 20 years



Thank You

The world if Tesla transitions to a better battery

TESLA