# The Geopolitics of Innovation and the US-China Rivalry

*Veritas Course on Innovation*

# Human geography and innovation

- What is the **impact of geopolitics** on innovation trends and on innovation capabilities in Asian countries?
- What are the relationships between brain drain and innovation capabilities in the Global South? And does it make sense to facilitate international **brain circulation** in order to catch-up to innovation hubs like Shenzhen, Bangalore, and Silicon Valley?
- (By 2040 there could be around 9 billion people. How could innovation contribute to **improved food security** in the Global South amidst climate change, persistent inequality, and other challenges?)

# This lecture

- China and the US are competing over high-tech sectors
- This battle for supremacy is already affecting trends in various high-tech industries and has the potential to significantly change global supply chains and the global geography of innovation.
- This lecture discusses the current trends, emerging changes, and challenges for Asian countries that need to balance the interests of China and the US.

# This lecture

- Geopolitical studies
- The US – China rivalry
- The “chip war”
- Electric vehicles
- Challenges for other Asian countries
- Conclusion
- Debate positions

# Geopolitical questions

- Who and where are our friends and enemies?
- How to expand friendships and deal with enemies? (countries, terrorist groups, NGOs, lobby groups, NATO, BRICSs, other alliances)
- https://www.tandfonline.com/doi/full/10.1080/14650045.2026.2626266#abstract
- How does geography shape international relations and economic opportunities? (relative location, borders, oceans, resources, environmental factors, migration flows)
- How to represent and justify geopolitical actions to the wider public (e.g. voters)?

# Geopolitical questions

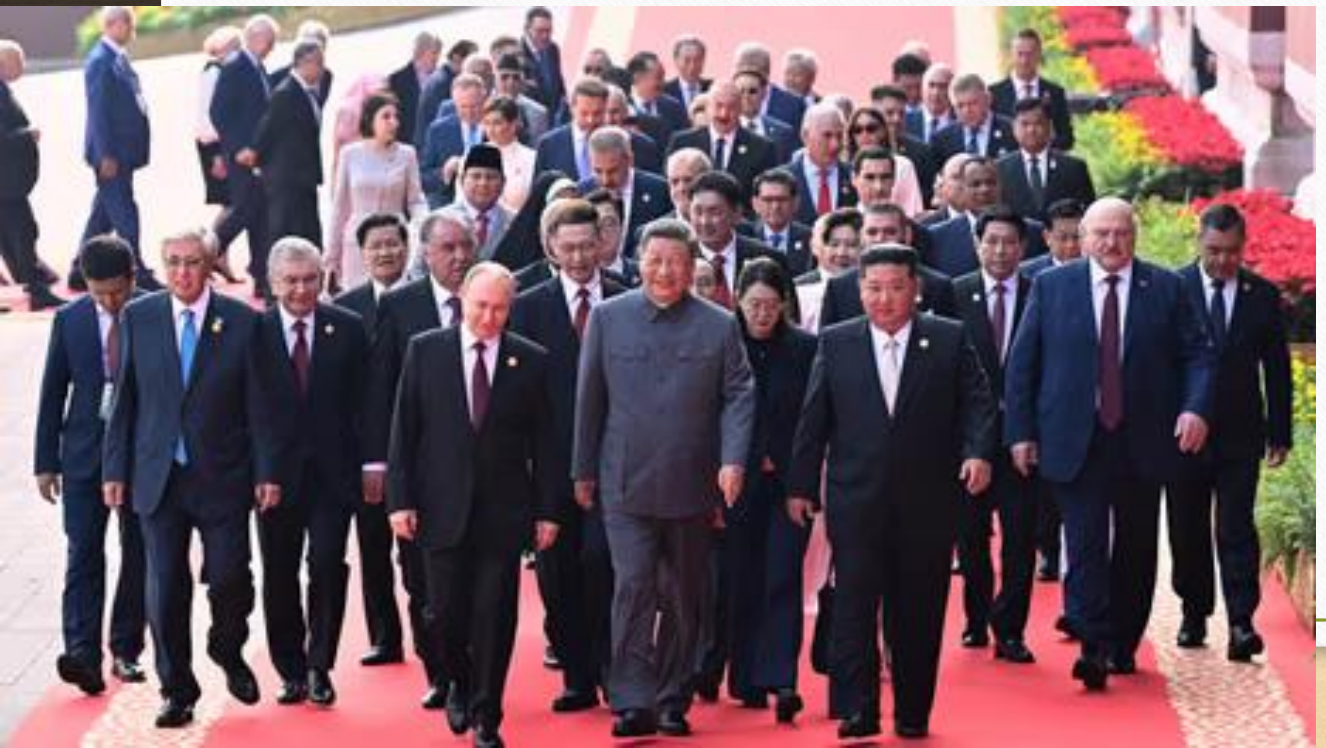
- South Korea is located nearby China, yet has been a US ally since 1953.
- How should countries like Nepal, Bhutan, and Myanmar balance the interests of China and India?
- How do geopolitical calculations change over time? (Importing Russian oil, rare earth from China?)

# The US – China Rivalry






# The US – China Rivalry





# The US – China Rivalry

- For some history: https://www.cfr.org/timeline/us-china-relations
- 2007/2008: Financial crisis in the Western world: Start of a multipolar world?
- China as the leader of the BRICSs and non/anti-Western alliances?

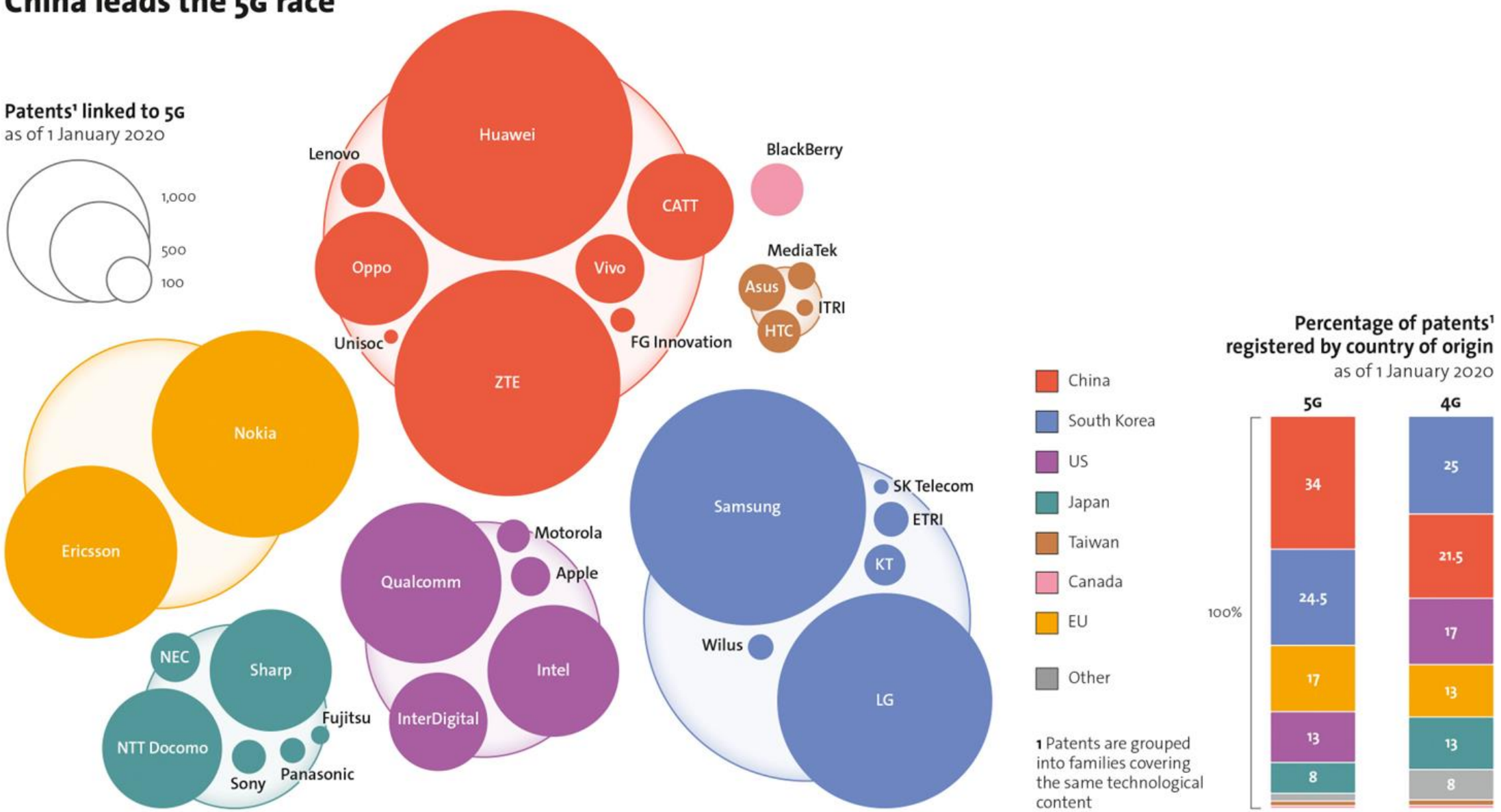
# The South China Sea issue



# The rivalry and innovation

- The USA wants to maintain its superiority in tech industries and radical innovation. So, it aims to limit China's access to the latest technologies
- China is knocking on the door and catching up fast. Does it want to be the next superpower?
- https://www.aljazeera.com/news/2025/10/10/china-tightens-export-controls-on-rare-earth-metals-why-this-matters
- The EU and the green and digital transformation: climate neutrality, economic security, and technology competition (Prof. Patrik Stroem)
- What about other countries and economic blocs?

# China leads the 5G race

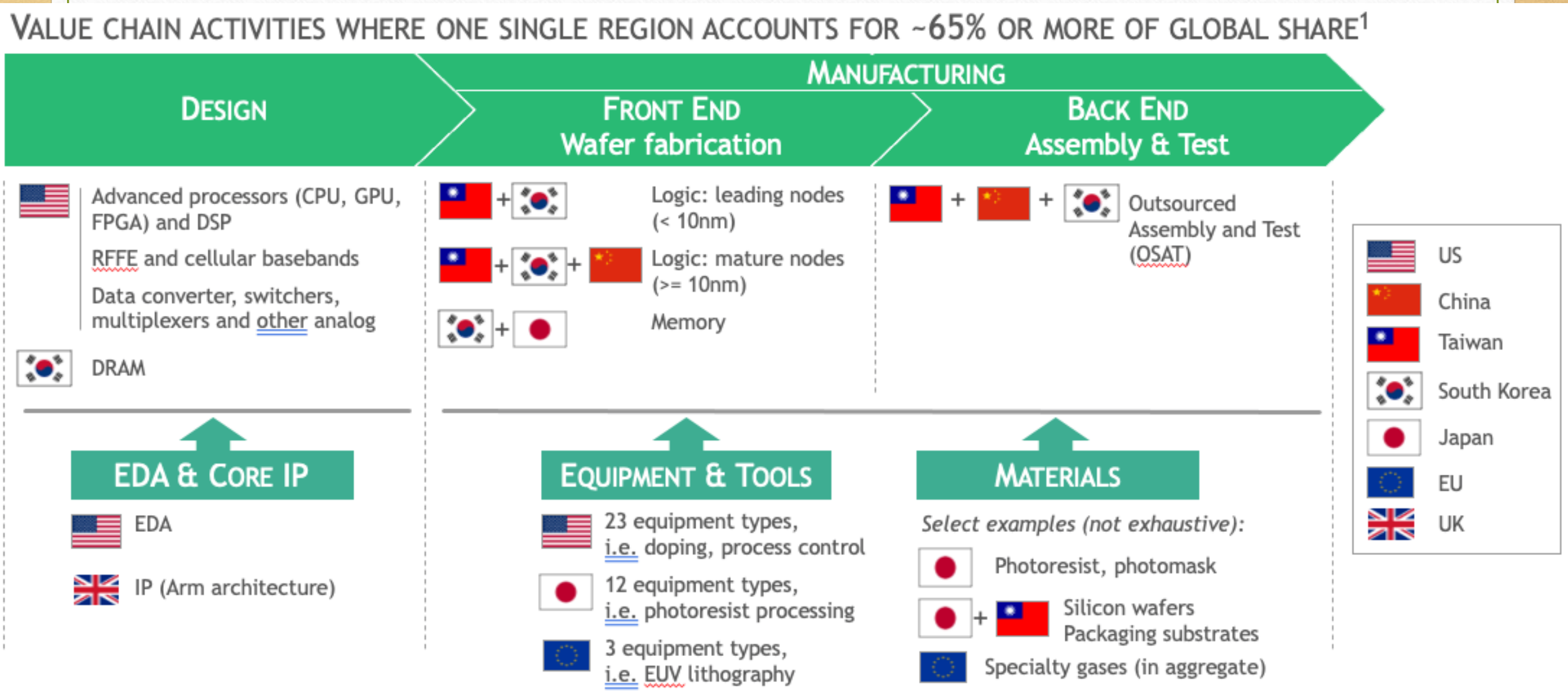



https://cepa.org/article/china-won-the-5g-battle-will-it-win-the-6g-war/?utm_source=gemini#:~:text=Will%20It%20Win%20the%206G%20War%3F%20US,for%20similar%20restrictions%20in%20future%206G%20systems.

# The “Chip War”

- “Semiconductors represent the linchpin for U.S. and China’s mutually dependent technological ambitions. Semiconductors are a critical technological vulnerability for both China and the United States, which rely on each other as well as Taiwan for cutting-edge semiconductor devices.”
- https://foreignpolicy.com/2021/02/16/semiconductors-us-china-taiwan-technology-innovation-competition/

# Geographical concentration




1. For Design, EDA & Core IP, Equipment & Tools and Raw Materials: global share measured as % of revenues, based on company headquarter location. For Manufacturing (both Front End and Back End) measured as % of installed capacity, based on location of the facility

**Sources**: BCG analysis with data from Gartner, SEMI, UBS; SPEEDA

# Extra-territoriality

- "…US structural power in semiconductors relies on passive and active extraterritorial enforcement of US technology ownership. It showed that this extra-territoriality is exercised through various geo-economic tools, including export restrictions, formal diplomacy within the US-based network of alliances, and indirectly through US centrality in semiconductor GVCs." Malkin and He (2024)
- But for how long?



July 26, 2026; from left, Naver Chairman Lee Hae-jin, SK Group Chairman Chey Tae-won, Microsoft Azure Hardware President Rani Borkar, Nvidia CEO Jensen Huang, President Lee, Broadcom CEO, Samsung Electronics Chairman Lee Jae-yong and Hyundai Motor Group Chairman Chung Eui-sun. News 1. https://www.mk.co.kr/en/it/12107733

# Taiwan and the Chip War

- "Taiwan is set to become the center of U.S.-China tensions. Given the country's central role in semiconductor manufacturing and technology supply chains, China will likely leverage its economic influence through trade restrictions, talent recruitment, and cyber to attack key companies in order to obtain core semiconductor intellectual property needed to bolster its domestic industry."
- https://foreignpolicy.com/2021/02/16/semiconductors-us-china-taiwan-technology-innovation-competition/

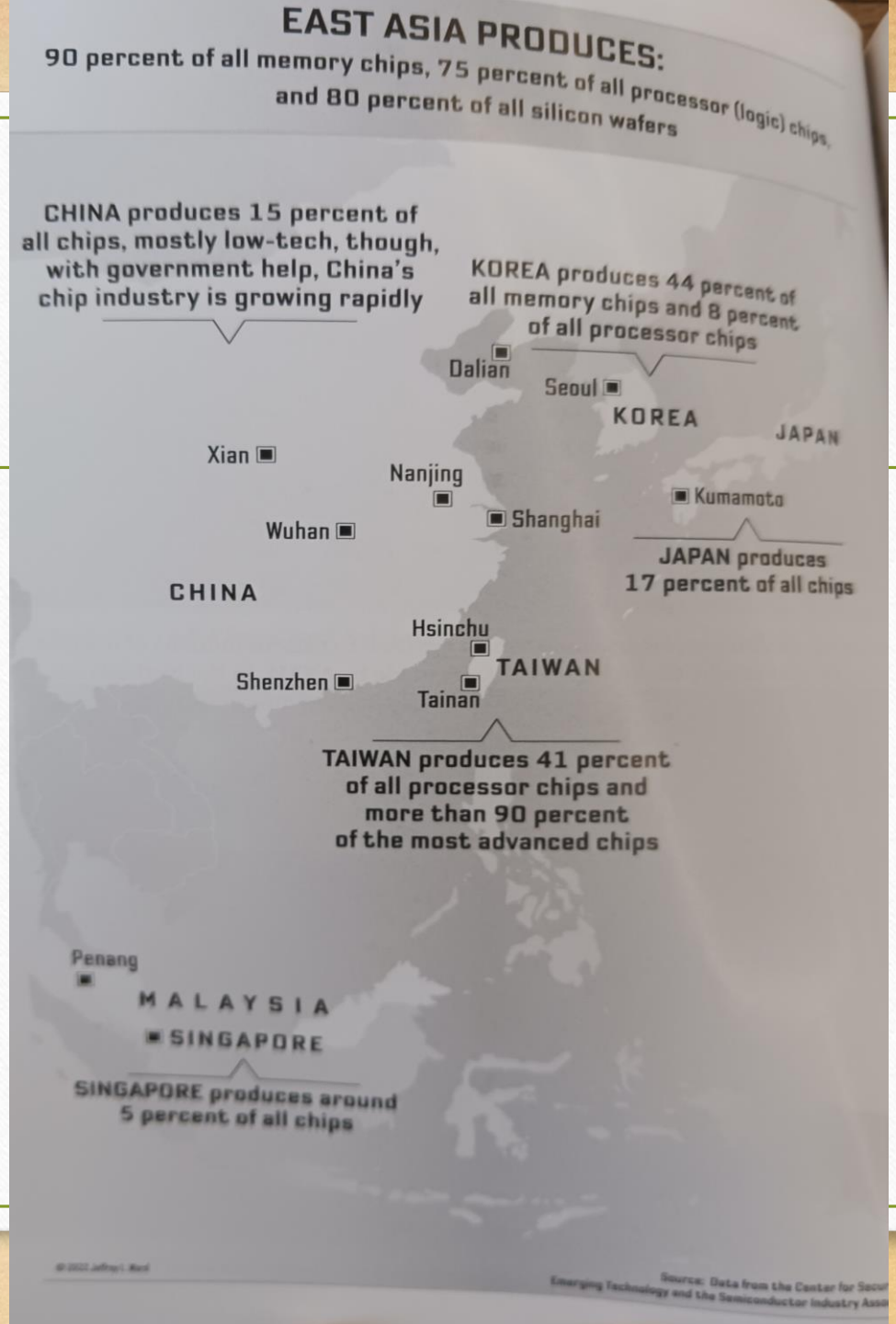
# Taiwan and the Chip War

- Taiwan has been an ally of the West, yet its history and location make it one of the *hottest* geopolitical places in the world.
- Will China try to "take" Taiwan before October 2049?
- Is the *Silicon Shield* argument valid? Would it prevent China to start fighting?



# Other countries?

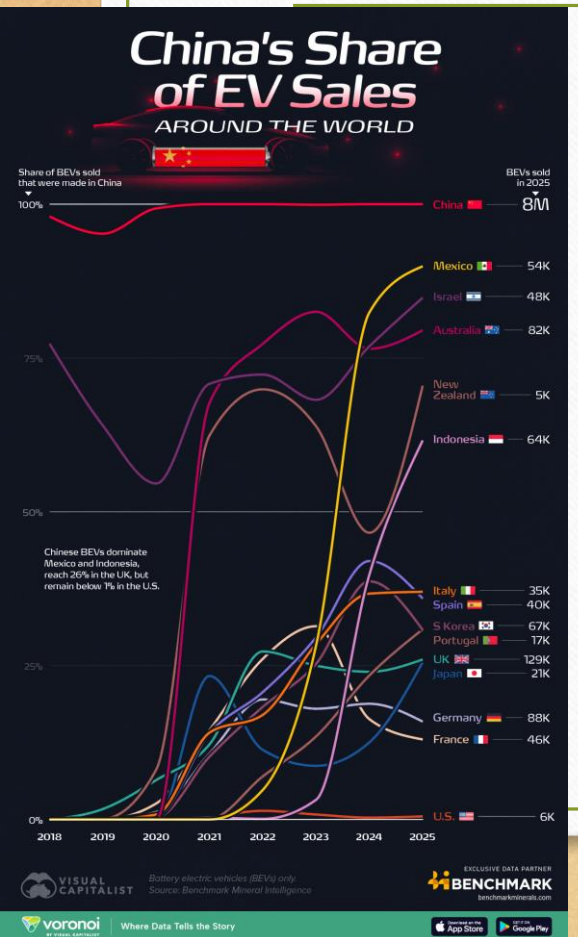
- What does this mean for countries in the Global South?
- They are so dependent on East Asia and a few countries in the Global North.
- What happens if they are forced to choose either China or the US?



# The evolving Chip War

- *"White House announces chipmaker Intel to give US government 10% stake": Is government intervention necessary?*
- https://www.bbc.com/news/articles/cvg3zpdl3xdo
- Export restrictions (Nvidia, ASML): https://www.bbc.com/news/articles/cgmz2vm3yv8o
- How will the geography of chip innovation change in the coming years? Is there a need to build more factories in the US?
- https://www.koreaherald.com/article/10885260

# Electric vehicles and geopolitics

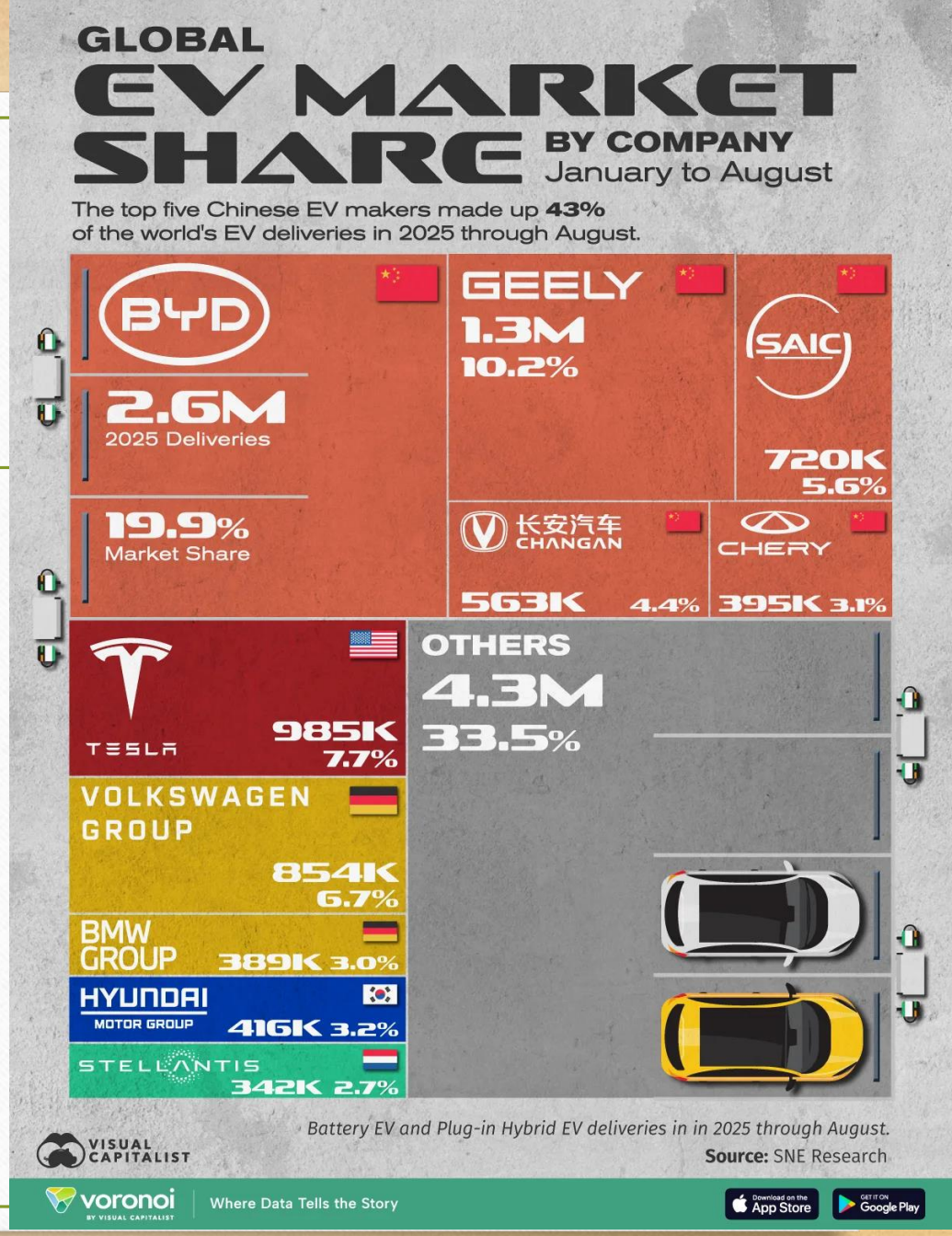







# EVs




https://www.bbc.com/news/articles/cx2z0kvy4n4o

https://asia.nikkei.com/business/automobiles/chinese-evs-will-come-to-us-despite-no-summit-deal-analysts-say

# The geopolitics of petrol cars

Access to oil (more important than promoting democracy and freedom):

- Saudi Arabia
- Kuwait
- Iraq
- Iran
- Venezuela

BY-NC-SA

# Saudi Arabia's East-West pipeline

The 1,200km (745-mile) East-West pipeline, built in 1981, carries crude oil from the kingdom's eastern oilfields near Abqaiq across the Arabian Peninsula to the Red Sea port of Yanbu, bypassing the Strait of Hormuz.



# The geopolitics of electric vehicles

1. Geographic hotspots
2. China as a producer
3. EV batteries

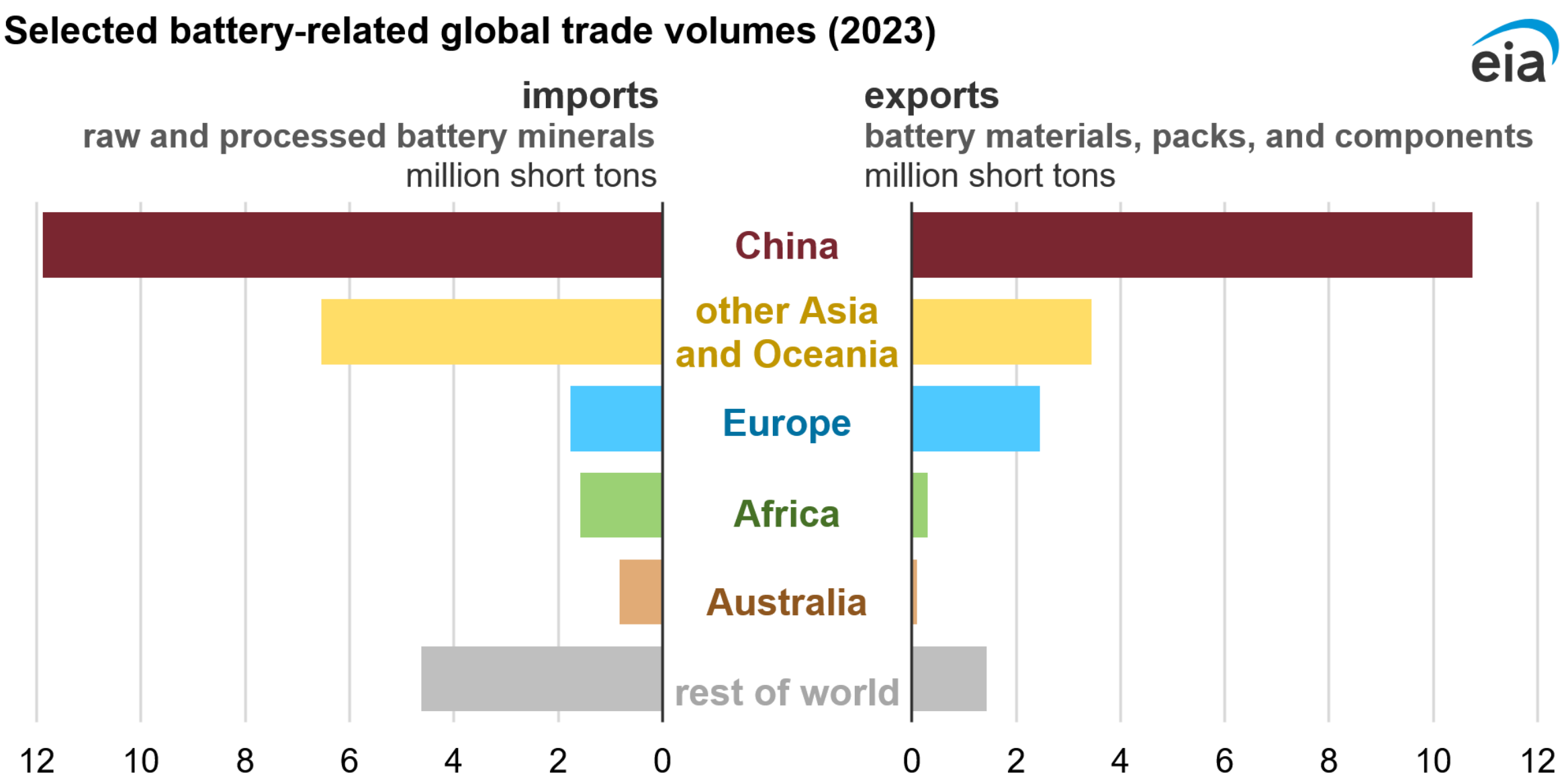


# Geographic hotspots

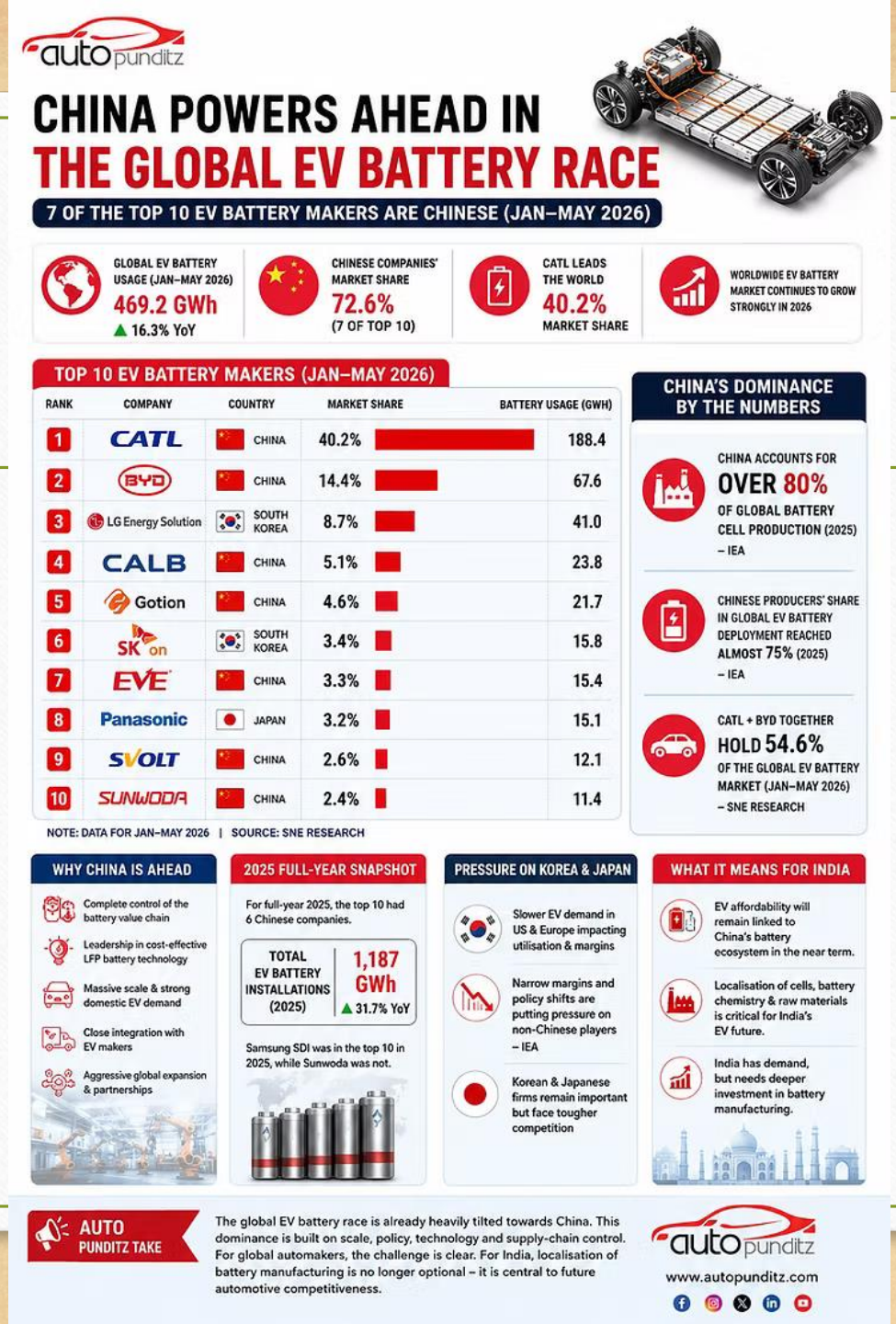
- Cobalt: Democratic Republic of Congo
- Lithium: Argentina, Bolivia, Chile, Australia
- Nickel: Philippines, Russia, Australia, others
- Resource nationalism (export bans, nationalization, value adding requirements)
- Control over resources (China, USA)

# China and battery minerals

https://www.eia.gov/todayinenergy/detail.php?id=65305



- https://www.autopunditz.com/post/china-now-controls-the-global-ev-battery-race-but-the-story-is-bigger-than-a-top-10-list



# Innovation in other countries?

| Global Innovation Index 2025 | | | |
|---|---|---|---|
| *Country* | *Rank* | *Country* | *Rank* |
| Switzerland | 1 | Chile | 51 |
| South Korea | 4 | Brazil | 52 |
| Singapore | 5 | Indonesia | 55 |
| China | 10 | Mexico | 58 |
| Japan | 12 | South Africa | 61 |
| Malaysia | 34 | Argentina | 77 |
| **India** | **38** | Peru | 80 |
| Türkiye | 43 | Egypt | 86 |
| Viet Nam | 44 | Pakistan | 99 |
| Thailand | 45 | Cambodia | 100 |
| Philippines | 50 | Bangladesh | 106 |
| Source: WIPO 2025 | | | |

# Innovation in other countries?

- India; an independent geopolitical direction?

  -Tech self-sufficiency?

  -Strategic autonomy?

- https://news.samsung.com/in/samsung-launches-samsung-innovation-campus-2026-in-karnataka-to-build-an-ai-ready-future-to-train-2000-students

- Nepal, Bhutan, Myanmar, and Sri Lanka: Follow India or China?



# Top innovation clusters

1. Shenzhen – Hong Kong – Guangzhou
2. Tokyo – Yokohama
3. San Jose  - San Francisco (Silicon Valley)
4. Beijing
5. Seoul
6. Shanghai – Suzhou
7. New York City
8. London
9. Boston – Cambridge
10. Osaka – Kobe – Kyoto

https://www.wipo.int/en/web/global-innovation-index/2026/innovation-clusters

# Innovation in other Asian countries?

- Southeast Asian countries: Follow China, India, the USA, the EU, strategic autonomy?
- https://sdgs.un.org/goals/goal8#targets_and_indicators



# Conclusion and the future

***Not only technology and innovation capabilities, but also geopolitics:***

- Shifting relative locations, borders, friends, enemies, *frenemies*, and new forms of online propaganda
- How will innovation evolve amidst rising nationalism?
- Geopolitics of AI-driven arms races:
- https://www.tandfonline.com/doi/epdf/10.1080/14650045.2025.2572695?needAccess=true

# Debate topic 1

- *Pro:* Due to the current geopolitics of innovation, South Korea and Taiwan will experience serious difficulties and lose some of their competitiveness in high- tech industries.
- *Contra:* South Korea and Taiwan will find creative ways to deal with the China – US rivalry. There is no need to worry.

Possible considerations: geopolitical, geoeconomic, education and skills, government policies, big firms – SMEs relations

# Debate topic 2

- *Pro:* Southeast Asian countries like Malaysia, Thailand, and Indonesia are doomed. They are not innovative enough, high-tech industries do not generate enough jobs (*jobless* growth), and consequently, poverty, inequality, and unemployment will rise in the coming years.
- *Contra:* Southeast Asian countries like Malaysia, Thailand, and Indonesia will find a way to benefit meaningfully from innovation (e.g. AI) and continue to generate enough jobs.

Possible considerations: geopolitical, geoeconomic, education and skills, government policies, big firms – SMEs relations