

Semiconductor

- The Semiconductor Laboratory (SCL) was set up in Mohali in 1983.
- Transfer of SCL back to the Ministry of Electronics and Information Technology (MeITy).
- Leverage human and capital assets at the SCL to build on what exists in a targeted manner, to jumpstart the semiconductor mission by taking advantage of recent technological breakthroughs in a class of semiconductors that do not need advanced lithography equipment.
- In this scenario, an investment of \$50-\$100 million may result in the development of Indian solutions for automotive electronics (EV traction inverters/onboard chargers), PV-Inverters, 5G infra-power amplifiers, railway electronics (traction inverters), creating the Indian equivalent of Bosch, Siemens, ABB, Mitsubishi Electric, Thales and ELTA.
- However, the upgrade has to be backed by subsidies aimed at fabless design houses with proven design (sales of >\$100 million per year) willing to fabricate at the SCL in the 180nm+ node (and possibly transfer

process intellectual patents if they have any).

- The subsidies have to be aimed at global design companies with products aimed at India-specific markets.

What more to moore world??

- In the year 1965, Gordon E. Moore, the co-founder of Intel described his theory called Moore's Law.
- The law has been the guiding principle of chip design for almost 50 years.
- The law states that "The complexity for minimum component costs has increased at a rate of roughly a factor of two per year. Certainly, over the short term, this rate can be expected to continue, if not increase.
- Moore is adamant that he did not predict a doubling "every 18 months." Rather, David House, an Intel colleague, had factored in the increasing performance of transistors to conclude that integrated circuits would double in performance every 18 months.
- But my professor taught me about doubling every 18 months and most of the people consider this into account.
- Over the longer term, the rate of increase is a bit more uncertain, although there is no reason to

believe it will remain nearly constant for at least 10 years."

- This is what Moore quoted in the year 1965 but there is a misconception that it holds that the number of transistors on an integrated circuit, and hence its processing power, doubles every 18 months.
- So regardless of this issue, Moore said that the number of components that can be incorporated into an Integrated Circuit would increase exponentially over time.
- Now that the physical limitations to further transistor scaling are reached, Moore's law may have reached its match. We are entering a "more than Moore" world. Research is taking place.

THE HINDU

CERT –IN

- The Indian Computer Emergency Response Team (CERT-in) may soon be exempt from responding to queries under the Right to Information Act, the government informed Parliament",
- The Department of Personnel and Training has reviewed a proposal from the Ministry of Electronics and Information Technology to include

CERT-in in the Second Schedule to the RTI Act, which deals with exempted organizations like the Central Bureau of Investigation (CBI) and the Border Security Force.

- The exemption would allow CERT-in to reject any application for information, even on policy related matters.
- This is significant as the body had issued directions in April 2022 that required Virtual Private Network (VPN) providers and cryptocurrency firms to preserve data on all users.
- CERT-in coordinates with public and private organizations in India when cyber incidents like data breaches and ransomware attacks are reported. It also issues advisories for software vulnerabilities as guidance for organizations.

CERT-In

- CERT-In is an organization of the Ministry of Electronics and Information Technology, Government of India, with the objective of securing Indian cyberspace.
- CERT-In provides Proactive services such as Advisories, Security Alerts, Vulnerability Notes, sharing of Indicators of Compromise, Situational awareness of existing & potential cyber security threats, and

Security Guidelines to help organizations secure their systems and networks.

- Reactive services when security incidents occur so as to minimize damage
- Security Quality management services in the form of cyber security audits, promotion of best practices, and cyber security exercises/drills.

Objectives

- Preventing cyber-attacks against the country's cyberspace.
- Responding to cyber-attacks and minimizing damage and recovery time reducing national vulnerability to cyber-attacks.
- Enhancing security awareness among common citizens.

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Lithium reserve

- How much lithium does the world need?
- The global market for the alkali metal lithium is growing rapidly. Between 2008 and 2018 alone, annual production in the major producing countries rose from 25,400 to 85,000 tons. An important growth driver is its use in the batteries of electric vehicles. However, lithium is also used in the

batteries of laptops and cell phones, as well as in the glass and ceramics industry.

Where is lithium available?

- With 8 million tons, Chile has the world's largest known lithium reserves.
- This puts the South American country ahead of Australia (2.7 million tons), Argentina (2 million tons), and China (1 million tons).
- Within Europe, Portugal has smaller quantities of valuable raw materials.
- The total global reserves are estimated at 14 million tons. This corresponds to 165 times the production volume in 2018.

Where is the most lithium mined?

- With 51,000 tons, Australia was by far the most important supplier of lithium in 2018 – ahead of Chile (16,000 tons), China (8,000 tons), and Argentina (6,200 tons).
- This is shown by figures from the USGS (United States Geological Survey). The four countries mentioned have long dominated the picture, with Australia only gaining a clear lead over Chile in recent years.

How do the mining methods differ?

- Put simply, lithium from Australia comes from ore mining, while in

Chile and Argentina, lithium comes from salt deserts, so-called salars.

- The extraction of raw materials from salars functions as follows: lithium-containing saltwater from underground lakes is brought to the surface and evaporates in large basins. The remaining saline solution is further processed in several stages until the lithium is suitable for use in batteries.

Why is lithium mining under criticism?

- There are always critical reports on the extraction of lithium from salars: In some areas, locals complain about increasing droughts, which for example threatens livestock farming or leads to vegetation drying out.

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CPTPP

- U.K. acceded to the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), with Prime Minister Rishi Sunak describing the outcome as an example of “post-Brexit freedoms”.
- “The Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) is a free trade agreement (FTA) between Australia, Brunei Darussalam, Canada, Chile, Japan, Malaysia,

Mexico, Peru, New Zealand, Singapore, and Vietnam.

- The CPTPP was signed by the 11 countries on 8 March 2018 in Santiago, Chile.
- The CPTPP entered into force on 30 December 2018 for:
 - Australia
 - Canada
 - Japan
 - Mexico
 - New Zealand
 - Singapore

On 14 January 2019 for:

- Vietnam

On 19 September 2021 for:

- Peru

On 29 November 2022 for:

- Malaysia

And on 21 February 2023 for:

Chile

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Core sector

- The combined Index of Eight Core Industries (ICI) increased by 6.0 percent (provisional) in February 2023 as compared to the Index of February 2022.
- The production of Fertilizers, Coal, Electricity, Cement, Steel, Refinery

Products, and Natural Gas increased in February 2023 over the corresponding month of last year. (IIP).

- ICI measures combined and individual performance of the production of eight core industries viz. Coal, Crude Oil, Natural Gas, Refinery Products, Fertilizers, Steel, Cement, and Electricity.
- The Eight Core Industries comprise 40.27 percent of the weight of items included in the Index of Industrial Production IIP.



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