

Camptothecin (CPT)

Researchers at the Indian Institutes of Technology Madras and Mandi have metabolically engineered plant cells to increase production of anti-cancer drug camptothecin (CPT). The allopathic medicine is produced using *Nathapodytes nimmoniana*, a native, endangered plant. It requires nearly 1,000 tonnes of plant material to extract 1 tonne of CPT.



Camptothecin is a molecule procured from nature and then (in a) onestep derivative it is produced as a drug.

We have provided a more sustainable way of producing camptothecin as it is majorly procured from plants. We have isolated the plant cell of *Nothapodytes nimmoniana*, which is native to India."

Camptothecin is majorly produced in Southeast Asian region, with the plant being largely found only in China and India. The Chinese variety

of the plant used to extract the cell is listed as critically endangered.

Mapping-South China



Disputed claims in the South China Sea

Claims

- China
- Philippines
- Malaysia
- Brunei
- Vietnam

Area: South China Sea covers more than 3 million sq km

Trade: Over \$5 trillion in ship-borne trade passes through the sea annually

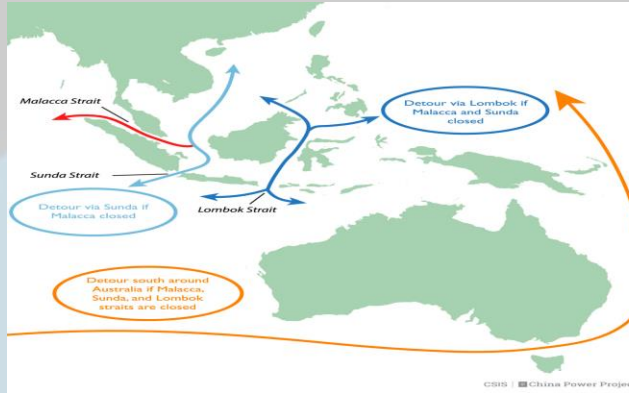
Oil and gas: Major unexploited oil and gas deposits are believed to lie under the seabed

Sources: CSIS/AMTI/D. Rosenberg/Middlebury College/Harvard Asia Quarterly/Phil govt./China Maritime Safety Administration

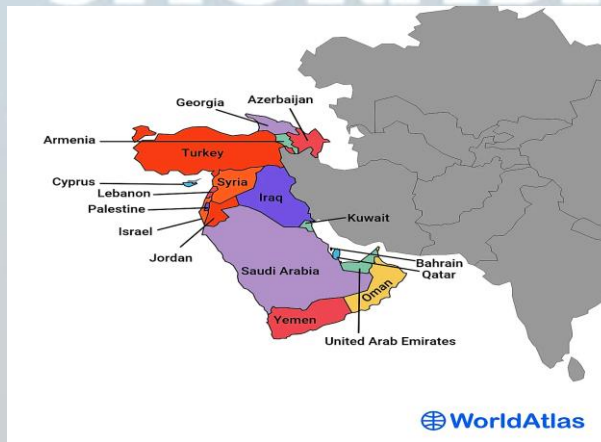
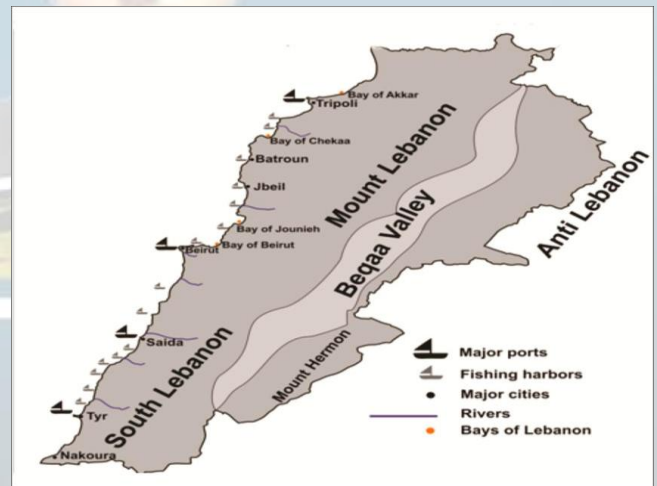


AFP

Current Affairs 5th January 2024 By Saurabh Pandey CSE



Mapping -west Asia

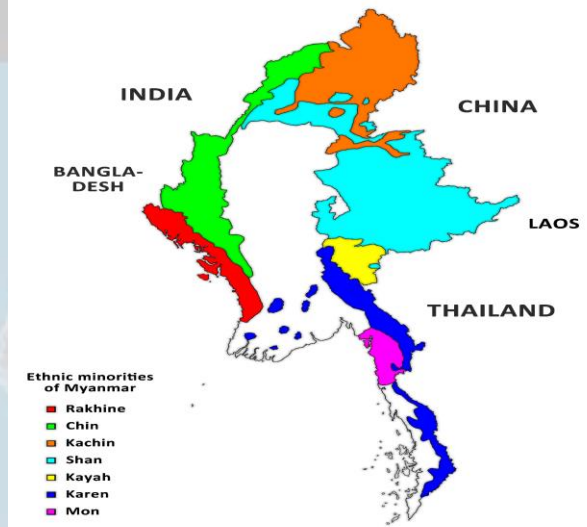


Current Affairs 5th January 2024 By Saurabh Pandey CSE



Distribution of Ethnic Minorities in Myanmar

"Myanmar has 135 ethnic groups which are grouped into eight major national ethnic races. This map shows 7 national ethnic races excluding Bamar (who form the majority)"



Combat-ready



Fiery trial: A South Korean Army tank takes part in a joint combat firing drill between South Korean and U.S. troops, near a demilitarised zone bordering North Korea, in Pocheon, South Korea on Tuesday. REUTERS

The Hindu

Mapping - ethnic groups

Major ethnic groups in Myanmar

Myanmar officially recognises 135 ethnic groups but Rohingya have been rendered stateless and stripped of their citizenship.

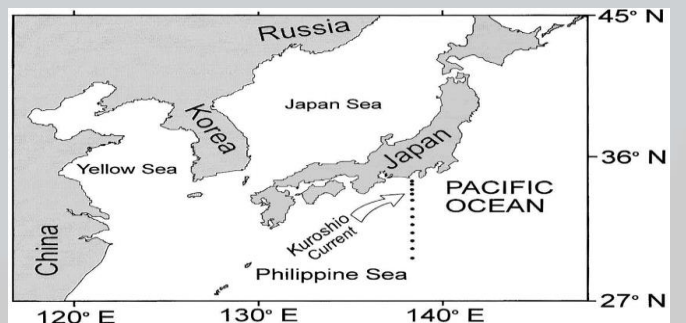
Ethnic Groups

- | | |
|----------|----------------|
| Bamar | Kachin |
| Shan | Chin |
| Karen | Karenni |
| Rakhine* | Mon |
| Rohingya | Wa |
| | Kokang Chinese |

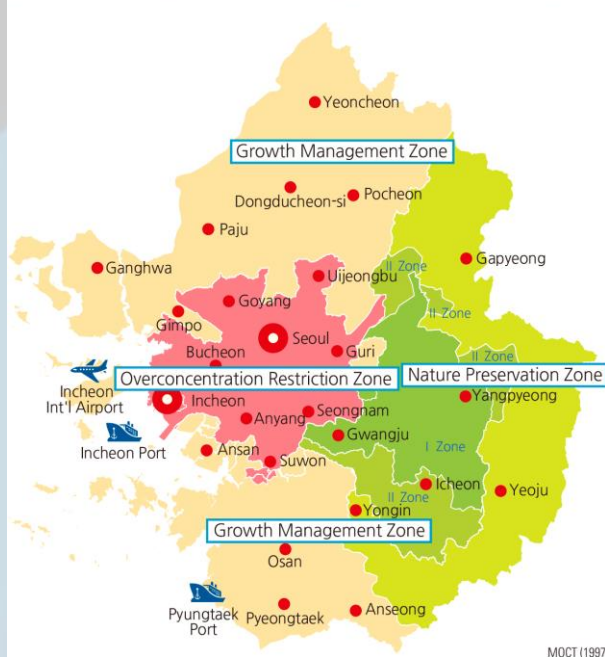
Ethnic minority states

* Includes other Rakhine Muslim minorities

Sources: Al Jazeera, agencies, Free Burma Rangers, Burma - Insurgency and the Politics of Ethnicity (Martin Smith)



2nd Seoul Metropolitan Area Readjustment Plan (1997-2011)



ECGC schemes

The ECGC Ltd. (formerly known as Export Credit Guarantee Corporation of India Ltd.) wholly owned by the government of India, was set up in 1957 with the objective of promoting exports from the country by providing credit risk insurance and related services for exports.

Over the years it has designed different export credit risk insurance products to suit the requirements of Indian exporters.

ECGC is essentially an export promotion organisation, seeking to improve the competitiveness of Indian exports by providing them with credit insurance covers.

ECGC Ltd. also administers the National Export Insurance Account (NEIA) Trust which caters to project exports of strategic and national importance.

ECGC provides

(i) A range of insurance covers to Indian exporters against the risk of non-realization of export proceeds due to commercial or political risks

(ii) different types of credit insurance cover to banks and other financial institutions to enable them to extend credit facilities to exporters and

(iii) Export Factoring facility for MSME sector which is a package of financial products consisting of working capital financing, credit risk protection, maintenance of sales ledger, and collection of export receivables from the buyer located in an overseas country.

The ECGC Limited (Formerly Export Credit Guarantee Corporation of India Ltd) is a government owned export credit provider. It is under the ownership of Ministry of Commerce and Industry, Government of India based in Mumbai, Maharashtra.^[1] It provides export credit insurance support to Indian exporters. Its topmost official is designated as **Chairman and Managing Director** who is a central government civil servant under ITS cadre.

ART

Assisted Reproductive Technology (ART)

With its growing use, ART has helped **millions of infertile couples around the world** achieve pregnancy when all other options have failed.

WHO IS IT FOR?

ART might be an option for women who:

- Cannot conceive naturally
- Cannot carry pregnancy to term
- Have genetic disorders
- Have partners with abnormal sperm

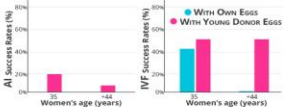
TYPES

There are **two main types** of ART:

- Artificial Insemination (AI)
- In vitro fertilization (IVF)

SUCCESS RATES

Success rates are high but depend on **many factors**:



RISKS

Although generally safe, ART procedures carry **extra risks**:

- Multiple gestations
- Preterm birth
- Preeclampsia
- Emotional distress

www.shecares.com

Regulating ART



Illustration of in vitro fertilisation

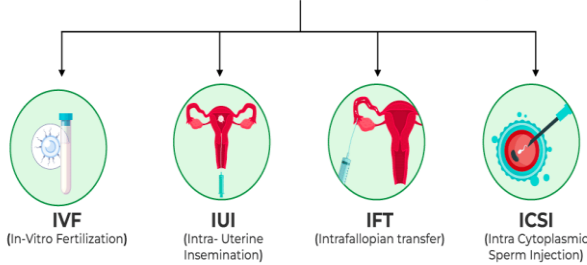
- The Bill establishes the **National Board, the State Boards, and the National Registry** to

regulate and supervise **Assisted Reproductive Technology (ART)** clinics. It establishes **ART banks** to promote **ethical practices**

- It proposes **stringent punishment** for those who attempt to control the offspring's sex, sell embryos or gametes

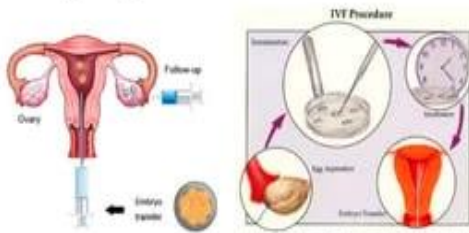
- As of Feb. 20, there are **517 ART clinics** under the **National Registry of ART clinics** and banks in India, according to the **ICMR**

Types of Assisted Reproductive Technology



1. in vitro fertilization (IVF)

3. Obtain sperm from father (or donor) and assess quality
4. Sperm and oocyte are mixed in Petri dish (D0).
5. Nurture embryo growth by incubating in medium containing various nutrients
6. Transfer embryos (usually 3-6 Days) to uterus, artificially removing zona pellucida if necessary ("hatching").



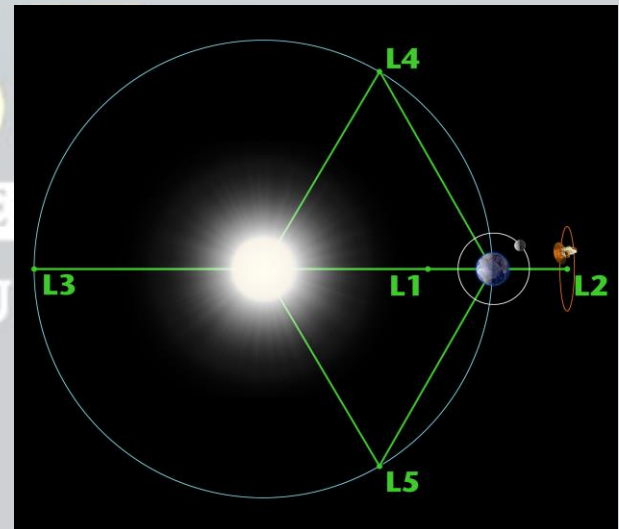
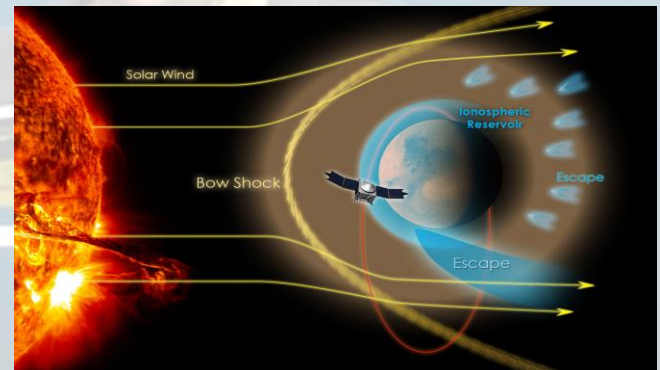
ARTIFICIAL INSEMINATIONS

- It is the deliberate introduction of sperm into the female's uterus or cervix for the purpose of achieving pregnancy through in vivo fertilization by means other than sexual intercourse.



The Hindu

Aditya L1 - what is L1?

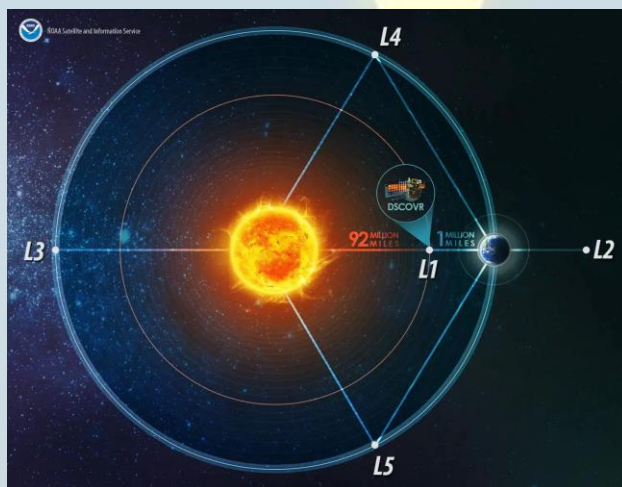


What is Lagrange points?

- Lagrange Points are positions in space where the gravitational forces

of a two body system like the Sun and the Earth produce enhanced regions of attraction and repulsion.

- These can be used by spacecraft to reduce fuel consumption needed to remain in position.
- Lagrange points are named in honor of Italian-French mathematician Joseph-Louis Lagrange.



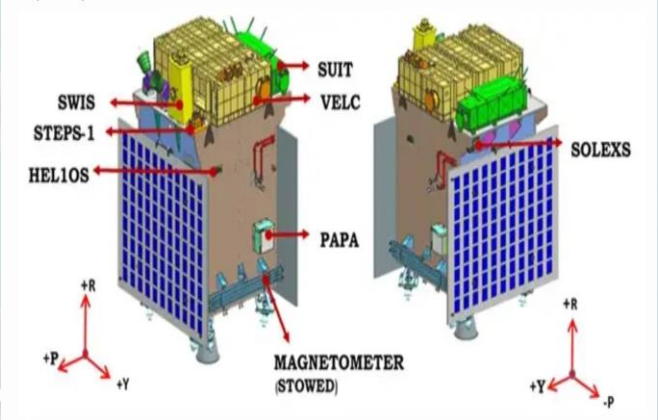
Aditya L1 will be ISRO's 2nd space-based astronomy mission after AstroSat, which was launched in 2015.

Aditya 1 was renamed as Aditya-L1. The Aditya 1 was meant to observe only the solar corona. Aditya L1 is the first space-based Indian mission to study the Sun from a halo orbit around the Lagrangian point 1 (L1) of the Sun-Earth system.

- This mission with seven payloads on board to observe the photosphere, chromosphere and the outermost

layers of the Sun (the corona) will provide greater advantage of observing the solar activities and its effect on space weather, according to officials of Indian Space Research Organisation (ISRO).

Aditya-L1 Payloads:



Type	Sl. No.	Payload	Capability
Remote Sensing Payloads	1	Visible Emission Line Coronagraph(VELC)	Corona/Imaging & Spectroscopy
	2	Solar Ultraviolet Imaging Telescope (SUIT)	Photosphere and Chromosphere Imaging- Narrow & Broadband
	3	Solar Low Energy X-ray Spectrometer (SoLEXS)	Soft X-ray spectrometer: Sun-as-a-star observation
	4	High Energy L1 Orbiting X-ray Spectrometer(HELIOS)	Hard X-ray spectrometer: Sun-as-a-star observation
In-situ Payloads	5	Aditya Solar wind Particle Experiment(ASPEX)	Solar wind/Particle Analyzer Protons & Heavier Ions with directions
	6	Plasma Analyser Package For Aditya (PAPA)	Solar wind/Particle Analyzer Electrons & Heavier Ions with directions
	7	Advanced Tri-axial High Resolution Digital Magnetometers	In-situ magnetic field (Bx, By and Bz).

The Hindu