TAMIL NADU

The Tamil Nadu government - will open a new law college in Salem district this year
✓ This was announced by the state’s Chief Minister, Edappadi K Palaniswami during a government function organized by the Tamil Nadu Grama Bank (TNGB) near Omalur on July 22

Animal Husbandry Minister Udumalai K. Radhakrishnan - was named as chairman of the Tamil Nadu Arasu Cable TV Corporation (TACTV)
✓ He replaces IAS officer Santhosh Babu.
✓ Mr. Radhakrishnan had earlier held the same post.

STATES

Andhra Pradesh - has become the first state in the country to reserve jobs for locals in all private industrial units and factories

3-YR WINDOW
75% private jobs to be reserved across all categories in industrial units, factories, joint ventures as well as PPP projects.

➢ If locals with necessary skills are not available, companies will have to train them in association with state govt and then hire them
➢ Companies will have to fulfil norms within 3 years and provide quarterly reports
On July 22, the Andhra assembly passed the Andhra Pradesh Employment of Local Candidates in Industries/Factories Act, 2019

The act reserves 75% private jobs across all categories in industrial units, factories, joint ventures as well as projects that are in public-private partnership mode to the local candidates.

The act also says that only those units that are listed in the first schedule of the Factories Act will be exempted from the act.

These are mostly hazardous industries like petroleum, pharmaceuticals, coal, fertilisers and cement, among others.

The Madhya Pradesh government - will impose NSA against those accused of adulteration of milk and milk products

The tough stand of the government follows days after the unearthing of a well-organised operation that manufactured synthetic ‘milk’ and supplied it to Delhi, Bhopal and six states.

NATIONAL

The Protection of Human Rights (Amendment) Bill, 2019, passed last week by Lok Sabha - was approved by Rajya Sabha on July 22

The Bill seeks to amend the Protection of Human Rights Act, 1993

The bill sought to reduce the term of office of the chairperson and members of National Human Rights Commission and State Human Rights Commissions from five years to three years.

It also stipulates that besides a former Chief Justice of India, as is the current requirement, a former Supreme Court judge can also become NHRC chairperson.

The Lok Sabha - passed the Right to Information (Amendment) Bill, 2019 three days after it was introduced on July 22

It seeks to bring in changes involving the salaries and tenures of Information Commissioners (ICs) at the States and the Centre.

As per the amendment, the ICs — who currently have five-year tenures — will have “terms as may be prescribed by the Central government” and salaries, instead of being on a par with those of Election Commissioners, will be decided by the Centre.

The Bill was passed with 218 ‘yes’ votes as against 79 ‘no’ votes.

The Bill states that the functions being carried out by the Election Commission and the Central and State Information Commissions are totally different.

The Election Commission is a Constitutional body.

On the other hand, the Central Information Commission and the State Information Commissions are statutory bodies established under the Right to Information Act, 2005.
Union Agriculture Ministry - has set up an Agri Business Incubation Centre in Chhattisgarh
✓ It has been set up by Agriculture Ministry in Indira Gandhi Agriculture University of Raipur, Chhattisgarh
✓ It is set up under National Agriculture Development Scheme- RAFTAAR (Remunerative Approaches for Agriculture and Allied sector Rejuvenation)
✓ It will focus on innovations, skill building and entrepreneurs development in agriculture and allied sectors
✓ Rashtriya Krishi Vikas Yojana- Remunerative Approaches for Agriculture and Allied sector Rejuvenation (RKVY-RAFTAAR) is the extension of Rashtriya Krishi Vikas Yojana (or National Agriculture Development Scheme) for a period of 3 years i.e. 2017-18 to 2019-20
✓ The extension has been approved by Cabinet Committee on Economic Affairs (CCEA) chaired by Prime Minister Narendra Modi in November 2017
✓ The scheme intends to provide guidance to youth for start-ups in the field of agriculture

India - is home to 1,256 species of orchid, as per the first comprehensive census of orchids of India titled ‘Orchids of India: A Pictorial Guide’
✓ 388 species of orchids are endemic to India, out of which around one-third (128) endemic species are found in Western Ghats alone
✓ Among 10 Bio Geographic Zones of India, Himalayan zone is richest in terms of orchid species followed by Northeast India, Western Ghats, Deccan plateau and Andaman & Nicobar (A&N) Islands
✓ Arunachal Pradesh has the maximum number of orchid species with 612, followed by Sikkim with 560 species and West Bengal
✓ Western Ghats have high endemism of orchids
✓ The trade of orchid has been banned in general, as they are listed under Appendix II of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora)

Google India and Tata Trusts - are set to expand their ‘Internet Saathi’ digital literacy programme for rural women to villages in Punjab and Odisha
✓ Currently, the programme has reach of 2.6 lakh villages across 18 states
✓ In Punjab, program will cover around 5,000 villages, while in Odisha around 16,000 villages will be covered
 ✓ The programme was launched in July 2015 and was started as a pilot in Rajasthan
 ✓ It has also contributed towards bridging digital gender divide in rural India
 ✓ In 2015 digital gender divide in rural India (i.e. female to male ratio) was 1 in 10 and in 2018 it has increased to 4 in 10

COMMITTÉS

◆ An inter-ministerial panel - has recommended banning private cryptocurrencies due to the risks linked to them and volatility in their prices

 ✓ Signalling the end of the road for cryptocurrencies, the committee has also called for stringent fines and penalties for those carrying out any activity connected to cryptocurrencies in India.
 ✓ The draft bill ‘Banning of Cryptocurrency & Regulation of Official Digital Currency Bill, 2019,’ proposes stringent fines of up to ₹25 crore and jail terms of up to 10 years for anyone who “directly or indirectly mines, generates, holds, sells, deals in, transfers, dispose of or issues cryptocurrency”.
 ✓ The panel also recommended that a specific group may be set up by the department of economic affairs for examining and developing an appropriate model of digital currency in India.
 ✓ The group will have participation from Reserve Bank of India, ministry of electronics and information technology and department of financial services

HOW OTHER COUNTRIES TREAT CRYPTOCURRENCIES

- The high-level inter-ministerial committee was constituted on November 2, 2017, headed by secretary, department of economic affairs Subhash Chandra Garg, to study issues related to virtual currencies and propose specific action to be taken in this matter.
- Other panel members included Sebi chairman Ajay Tyagi, Reserve Bank of India deputy governor B P Kanungo and MeitY secretary Ajay Prakash Sawhney.
CONFERENCES & SUMMITS

The Golden Jubilee Edition of International Film Festival of India (IFFI) - will be held from 20-28 November 2019 in Panaji, Goa

- For the 50th edition, Russia will be IFFI’s partner
- The IFFI has been organised in Goa since 2004 under the leadership of then chief minister of Goa Late Manohar Parrikar
- The 2019 IFFI edition would also pay tribute to Parrikar considering his contribution towards the event and making Goa the permanent venue for the festival
- A separate exhibition depicting the life of the Father of the Nation will be also held to mark 150th birth anniversary of Mahatma Gandhi in 2019

SCIENCE, TECHNOLOGY & ENVIRONMENT

Nasa – to send first woman and next man to Moon by 2024 with its Artemis programme
- Artemis is named after the twin sister of Apollo, who is also the goddess of the moon and the hunt
- With the mission, Nasa plans to explore regions of the Moon never visited before, unlock mysteries of the universe and test the technology farther into the solar system

Russia - launched a powerful X-ray space telescope called Spektr-RG from cosmodrome in Baikonur, Kazakhstan, in a joint project with Germany

- It is launched through Proton-M rocket to observe black holes, neutron stars and magnetic fields
- It is basically a space observatory that intends to replace Spektr-R, known as the Russian Hubble, which was launched by Roskosmos (Russian space agency) in 2011 and lost control of in January 2019

DEFENCE

Chief of Naval Staff Admiral Karambir Singh - commissioned the fifth Dornier aircraft squadron of the Indian Navy- INAS 313 (Indian Naval Air Squadron 313) at the Naval Air Enclave in Meenambakkam on July 22
The squadron named Sea Eagles, will operate two aircraft from Chennai airport and is commanded by commander Vivek Koman, an experienced Dornier pilot. The crew consists of 11 other officers and 44 sailors. It will strengthen the coastal security in the country’s east coast in conjunction with the Indian Coast Guard and augment Navy’s surveillance capabilities in the Bay of Bengal region.

**ECONOMY**

- **Apartment owners** - will have to pay 18% GST if their maintenance charges paid to the resident welfare association (RWA) exceed ₹7,500 per month, as per a notification of Finance ministry.
  - Prior to January 25, 2018, the exemption was available if the charges or share of contribution did not exceed ₹5,000 per month per member.
  - The limit was increased to ₹7,500 per month per member with effect from January 25.
  - It said in case the charges exceed ₹7,500 per month per member, the entire amount is taxable.
  - The ministry also clarified the ceiling of ₹7,500 per month per member shall be applicable separately for those who own two or more flats in a housing society or residential complex.

**APPOINTMENTS**

- **Eastern Command chief Lt-General Manoj Mukund Naravane** - has been named as the next vice chief of the Army.
  - The other top appointments include Lt-Gen Anil Chauhan as the new chief of the Eastern Command (Kolkata), while Lt-Gens A S Kler, I S Ghuman and R P Singh will head the South-Western (Jaipur), Central (Lucknow) and Western (Chandimandir) Commands respectively.
  - Lt-Gen Naravane (Sikh Light Infantry) will replace Lt-Gen Devraj Anbu as the vice chief on August 31.
  - The appointment indicates that he is likely to succeed General Bipin Rawat when he retires on December 31 this year.
  - Lt-Gen Naravane was appointed as the Eastern Command chief in October 2018.

- **Justice A K Sikri, former Supreme Court judge** - has been appointed as an International Judge of Singapore International Commercial Court (SICC).
✓ His appointment commences on August 1, 2019 and will remain in the post till January 4, 2021
✓ Justice Sikri retired from Supreme Court of India on 6 March 2019
✓ On 14 May 2019 he was appointed as Chairman of News Broadcasting Standards Authority (NBSA)
✓ SICC, launched on January 5, 2015, deals with international commercial disputes and has 16 international judges in its panel
✓ It has been established in line with vision to promote Singapore as a leading dispute resolution hub

SPORTS

Harmeet Desai - defeated compatriot G Sathiyan (World No 24) to win gold in men’s singles final at the 21st Commonwealth Table Tennis Championships at Cuttack
✓ India’s Ayhika Mukherjee - won over compatriot Madhurika Patkar to clinch gold in the women’s singles final

✓ The men’s doubles final was another all-India affair, with Anthony Amalraj and Manav Thakkar getting the better of top seeds Achanta Sharath Kamal and Sathiyan

REPORT

✓ India’s second Moon mission Chandrayaan-2 - lifts off onboard GSLV Mk III-M1 launch vehicle from the second launch pad at Satish Dhawan Space Center at Sriharikota in Andhra Pradesh on July 22
✓ It was successfully injected into a geostationary transfer orbit, 17 minutes later, at a perigee of 169.7km and apogee of 45,475 km, the apogee more than what was targeted
✓ The lunarcraft comprising an orbiter, a lander and a rover, is expected to make a soft-landing on Moon at 2.58am on September 7, making India only the fourth nation – after the US, Russia and China – to achieve such a feat.
✓ Chandrayaan-2 is three satellite missions stacked in a single launch.
✓ Out of the three, two systems – Vikram (lander) and Pragyan (rover) – are completely new to Isro.
✓ Chandrayaan-2 has on board 14 scientific instruments including Nasa’s ‘laser retroreflector array attached to Vikram.
This payload will calculate the distance between Earth and Moon and help detect the exact location of the Moon lander.

After eight days, project director M Vanitha and mission director Ritu Karidhal will oversee the lunar orbit insertion.

THE ABC OF CRYOGENIC UPPER STAGE

It took ISRO two decades to develop the cryogenic upper stage of GSLV MkIII. The cryo engine gives enormous thrust needed to propel the rocket with 4-tonne payload to geosynchronous transfer orbit.

- The cryo stage carries 28 tonnes of propellants in two tanks that provide a thrust of 20 tonnes.
- Two small steering engines provide for control of stage during its thrusting phase.
- Thrust control and mixture ratio control are achieved by two independent regulators.
- Main engine and two steering engines together develop a nominal thrust of 73.55 kN in vacuum.
- Due to large temperature difference, heat transfer is very high. Therefore, lot of insulation needed.
- Boiling causes sudden pressure rise in tanks. So proper venting is required.
- Material properties vary at low temperatures. Most materials become brittle. So if valve seats or seals become brittle and break, it causes leaks.

Text: Surendra Singh | Graphic: S Franklin
A successful landing of Vikram will make India the fourth nation to achieve this feat. After revised calculations following a glitch on July 15, Isro is hoping to land Chandrayaan-2 on September 6 or 7.

**THE JOURNEY**

- Mission team to perform 15 “very crucial” manoeuvres to take Chandrayaan-2 towards Moon.
- It will be in Earth’s orbit for 23 days and five orbit-raising manoeuvres will be carried out to move it away from Earth’s gravitational pull.
- On 23rd day, scientists will perform ‘trans-lunar injection’.
- After lander separates, orbiter will circle Moon for a year clicking images.

**HISTORIC:** Isro chairman K Sivan addresses scientists after the successful launch of GSLV-MkIII carrying Chandrayaan-2.

**KEY INSTRUMENTS**

Chandrayaan-2 has carried 14 payloads to Moon. Here are 6 key instruments:

- **ON ORBITER** | Terrain mapping camera-2 will prepare detailed 3D map of lunar surface.
- Imaging infrared spectrometer to identify minerals & signatures of hydroxyl and water molecules.
- **ON LANDER** | Radio Anatomy of Moon Bound Hypersensitive ionosphere and atmosphere (RAMBHA) Langmuir Probe (LP) to measure TEC of lunar ionosphere and its morphology.
- Chandra’s Surface Thermo-physical experiment (ChaSTE) will measure thermal properties of lunar regolith and polar region.
- **ON ROVER** | Laser-Induced Breakdown Spectroscope (LIBS) to derive chemical composition and infer mineralogical composition of lunar surface.
- Alpha Particle X-Ray Spectrometer (APXS) to find out elemental composition of lunar rocks and soil.

**OBJECTIVES**

- Map lunar surface to trace origin and evolution of Moon.
- Study extent of water on and below lunar surface.
- Payloads to study lunar topography, seismography, minerals, surface chemical composition.

We have bounced back with flying colours. A success on the back of a failure is doubly sweet.

K Sivan | CHAIRMAN, ISRO
Among the experiments the Chandrayaan-2 will carry out include tests to understand the extent of water distribution under the lunar surface.

The orbiter will continue revolving around the Moon for a year, performing experiments to study the satellite's outer atmosphere.

Unlike Chandrayaan-1, Chandrayaan-2 will attempt to soft land its Vikram module on the lunar surface and deploy a six-wheeled Rover, Pragyaan on the Moon to carry out several scientific experiments.

The softlanding will be done in a high plain between two craters, Manzinus C and Simpelius N, at a latitude of about 70 degrees south.

Pragyaan will then carry out surface and sub-surface experiments for one lunar day, which is equal to around 14 Earth days.

The average distance between the Earth and Moon is 3,84,000 km.

The lift-off mass of Chandrayaan-1 was 1,380 kg while Chandrayaan-2 weighs 3,850 kg.

Chandrayaan-1 was launched by India's Polar Satellite launch Vehicle -- PSLV-C11 -- on October 22, 2008 from the Satish Dhawan Space Centre, Sriharikota.

It was operational for 312 days till August 29, 2009.

There were 11 scientific instruments onboard the Chandrayaan-1 spacecraft.

Five of them were Indian while the others were from European Space Agency (ESA), National Aeronautics and Space Administration (Nasa) and Bulgarian Academy of Sciences.

Chandrayaan-1, with an orbiter and an impactor, cost only ₹386 crore.

Unlike other moon missions, the Chandrayaan-2 weighing 3.8 tonnes is extremely cost-effective, with a total estimated cost of ₹978 crore— ₹603 crore for the space segment and ₹375 crore for the launch.