



C.A Dated On 24-04-2019

GS-1

Heat & Cold Wave

Why in News?

Heat waves and cold waves in the country have increased manifold in the past two years, according to data put out by the Ministry of Statistics and Program Implementation.

Detailed Observation:

- While the number of reported casualties declined in the case of heat waves, they have increased in the case of cold waves.
- Rajasthan experienced the highest number of heat and cold waves from 1970 to 2018.

Extremes of temperature

- While the number of heat waves increased 14 times in 2017 compared to 2016, the number of cold waves spiked 34 times in the same period. The numbers for 2018 dropped marginally.

Punishing heat and cold

- The number of heat-related deaths has come down despite an increase in heat waves since 2015. However, the number of deaths due to cold waves has risen in this period.
- Over 3,000 people died due to heat waves in 2015 and 2016.

Mapping hotspots and cold pockets



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- Rajasthan and Andhra Pradesh & Telangana (considered a single entity) have been hit by the most number of heat waves.
- Rajasthan, Uttar Pradesh and Bihar have had the highest number of cold waves from 1970 to 2018. South India has not been hit much by cold waves.

How is it Defined?

- According to the [Indian Meteorological Department](#) (IMD), a heat wave is qualified when air temperatures of at least 40 °C (104 °F) in the plains or greater than 30 °C (86 °F) in the hilly regions.
- For the IMD classification of heat waves, temperatures greater than 46 °C (114.8 °F) are considered and classified as severe heat waves.
- When normal minimum temperature is equal to 10°C or more. Cold Wave Departure from normal is -5°C to -6°C.
- Severe Cold Wave Departure from normal is -7°C or less.
- When normal minimum temperature is less than 10°C. Cold Wave Departure from normal is -4°C to -5°C. Severe Cold Wave Departure from normal is -6°C or less

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VVPAT

Why in News?

Andhra Pradesh Chief Minister N. Chandrababu Naidu on Tuesday asserted that Indian democracy could not be left to the mercy of EVM programmers, adding Opposition parties had filed a review petition in the Supreme Court pressing for the counting of at least 50% VVPAT slips.

About VVPAT:

- **Voter verifiable paper audit trail (VVPAT) or verifiable paper record (VPR)** is a method of providing feedback to voters using a ballotless voting system.



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- A VVPAT is intended as an independent verification system for [voting machines](#) designed to allow voters to verify that their vote was cast correctly, to detect possible [election fraud](#) or malfunction, and to provide a means to audit the stored electronic results.
- It contains the name of the candidate (for whom vote has been cast) and symbol of the party/individual candidate. The VVPAT must be destroyed by the voter before leaving the room.
- The VVPAT offers some fundamental differences as a paper, rather than [electronic recording medium](#) when storing votes.
- A paper VVPAT is readable by the human eye and voters can directly interpret their vote.

Iran-US Relation:

Why in News?

Iranian lawmakers on Tuesday overwhelmingly approved a Bill that labels all U.S. military forces as terrorist, state TV reported, a day after Washington ratcheted up pressure on Tehran by announcing that no country would any longer be exempt from U.S. sanctions if it continues to buy Iranian oil.

About the Proposal:

- The Bill is a step further from the one last week, when lawmakers approved labelling just U.S. troops in West Asia as terrorist, in response to the U.S. terrorism designation for Iran's Revolutionary Guards earlier this month.
- On Tuesday, 173 out of 215 lawmakers at the Parliament session in Tehran voted for the new Bill. Only four voted against while the rest abstained; the chamber has 290 seats. The Bill confirms Iran's earlier label of the U.S. Central Command and all its forces as terrorist.
- The Bill also demands the Iranian government take unspecified action against other governments that formally back the U.S. designation. Saudi Arabia, Bahrain and Israel have all supported the Trump administration's designation.

Background:

- On Monday, President Donald Trump decided to do away with waivers as part of the administration's "maximum pressure" campaign on [Iran.](#)



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- Iran's Foreign Ministry promptly brushed off Mr. Trump's move to stop the oil waivers, saying the Islamic Republic "basically has not seen and does not see any worth and validity for the waivers."

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IEPF Authority:

In a major success, the IEPF Authority has been able to enforce The Peerless General Finance and Investment Company Limited to transfer deposits worth about Rs 1514 Cr to IEPF.

About IEPF Authority:

- IEPF Authority has been set up under the Ministry of Corporate Affairs, Government of India as a statutory body under Companies Act 2013 to administer the Investor Education and Protection Fund **with the objective of promoting Investor's Education, Awareness and Protection.**
- The Authority takes various initiatives to fulfil its objectives through Investor Awareness Programmes and various other mediums like Print, Electronic, Social Media, and Community Radio etc.
- The size of IEPF Fund has almost doubled within one year with accumulated corpus of about Rs 4138 Cr. The companies have also transferred about 65.02 Cr valuing Rs 21,232.15 Cr.
- Secretary Ministry of the Corporate Affairs is the Chairperson of the Authority. Joint Secretary Ministry of the Corporate Affairs is the Chief Executive Officer of the Authority.

New Bird Species in A&N Island:

Context:



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- Distinguished by the green and brown plumage on its back, the diminutive Horsfield's Bronze Cuckoo (*Chalcites basalis*) is a native of Australia and New Guinea.
- However, researcher G. Gokulkrishnan had an unexpected encounter with the tiny bird — roughly about 15 cm and weighing 22 g and known for its repeated, loud and piercing whistle — early on July 7, 2017 in a tsunami ravaged coastal forest in the Great Nicobar Island of the Andaman and Nicobar island chain.
- The sighting was the first recorded instance of the bird in India.

Other visitors:

- Two other first time visitors were also recorded on the islands over 2017-18.
- The Zappey's Flycatcher (*Cyanoptila cumatilis*) a song bird that breeds in China and spends the winters in the Malay peninsula, Sumatra and Java, was spotted six times in different areas of Andaman and Nicobar Islands.
- Later that year researchers recorded the presence of the Javan Pond Heron (*Ardeola speciosa*), usually found in Thailand and Cambodia.
- "During their migration from north to south, these birds make a stop over at the Andaman and Nicobar islands.

East Asian Flyway

- In the past few years a few other birds of southeast Asian origin have been recorded in the Andaman and Nicobar Islands during migration.
- Researchers are intrigued by the fact that number of new sightings has increased post the tsunami.
- These birds also use Andaman and Nicobar Islands for a few week rest before they can fly along the East Asian-Australasian Flyway (EAAF).
- The EAAF extends from Arctic Russia and North America to the south Australian boundaries and includes the most of the east Asian regions including Andaman and Nicobar Islands.
- Andaman and Nicobar Islands, with just about 0.25 % the country's landmass, is home to about 350 species of exotic birds, according to an official estimate.



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Bio-electricity from Plants and Microbes

Can we at all have a pollution-free and nature-friendly power plant?

[Biology](#) appears to suggest a way.

A group of researchers at the Wageningen University in the Netherlands, led by Dr. Marjolein Helder, has hit upon a method that generates electricity from living plants and the microbes that live beneath them in the soil, where the plants drop their roots.

How does it Work?

- The plant of course does photosynthesis, using sunlight, water and atmospheric carbon dioxide, generating food in the form of carbohydrates and oxygen for our breathing.
- The microbes in the soil use some of this organic material coming out of the plants into the ground, metabolise them and, in the process, generate carbon dioxide and hydrogen ions and electrons.
- While the plant above the ground does photochemistry, the bacteria beneath do electrochemistry, generating positive and negative ions.
- What Dr. Helder and colleagues have done is to place positive and negative electrodes in appropriate positions and obtain an electric current, just as we do with batteries.
- This method of producing electricity is through what is termed as plant microbial fuel cells (PMFC).

How feasible is It?

- Theory suggests that one should be able to generate 3.2 watts of electric power per square meter (3.2W/m²), using PMFCs.
- The best level obtained so far in practice is but a sixteenth of it, namely, 220 mW/m².
- Thus, improvement in efficiency needs to be done, both by adding such microbes in the soil which perform better, and by enhancing the area by miles and miles of grass lawns, farm lands and focus on paddy fields and similar acreages.



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- These will also bring the cost–benefit ratio to acceptable proportions.