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Legislative council

Why in news?

The Madhya Pradesh government has indicated that it plans to initiate steps towards creation of a Legislative Council. Not all states have two Houses. Which are the ones that do, and why is a second House needed?

Why a second House

- Just as Parliament has two Houses, so can the states, if they choose to. Article 71 of the Constitution provides for the option of a state to have a Legislative Council in addition to its Legislative Assembly.
- As in Rajya Sabha, members of a Legislative Council are not directly elected by voters.
- Opinion in the Constituent Assembly was divided on the idea.
- Among the arguments in its favour, a second House can help check hasty actions by the directly elected House, and also enable non-elected individuals to contribute to the legislative process.
- The arguments against the idea: a Legislative Council can be used to delay legislation, and to park leaders who have not been able to win an election.
- Under Article 169, a Legislative Council can be formed “if the Legislative Assembly of the State passes a resolution to that effect by a majority of the total membership of the Assembly and by a majority of not less than two-thirds of the members of the Assembly present and voting”. Parliament can then pass a law to this effect.

States with LCs

- Currently, six states have Legislative Councils.
- Jammu and Kashmir too had one, until the state was bifurcated into the Union Territories of J&K and Ladakh.
- Tamil Nadu’s then DMK government had passed a law to set up a Council but the subsequent AIADMK government withdrew it after coming to power in 2010.



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- Andhra Pradesh's Legislative Council, set up in 1958, was abolished in 1985, then reconstituted in 2007.
- The Odisha Assembly recently passed a resolution for a Legislative Council.
- Proposals to create Councils in Rajasthan and Assam are pending in Parliament; the PRS Legislative Research website lists the status of both Bill as pending.

Members

- Under Article 171 of the Constitution, the Legislative Council of a state shall not have more than one-third of the number of MLAs of the state, and not less than 40 members.
- In Madhya Pradesh, which has 230 MLAs, the proposed Legislative Council can have at most 76 members.
- As with Rajya Sabha MPs, the tenure of a Member of the Legislative Council (MLC) is six years, with one-third of members retiring every two years.
- One-third of the MLCs are elected by the state's MLAs, another one-third by a special electorate comprising sitting members of local governments such as municipalities and district boards, 1/12th by an electorate of teachers and another 1/12th by registered graduates. The remaining members are appointed by the Governor for distinguished services in various fields.

LC vis-à-vis Rajya Sabha

- The legislative power of the Councils is limited.
- Unlike Rajya Sabha which has substantial powers to shape non-financial legislation, Legislative Councils lack a constitutional mandate to do so; Assemblies can override suggestions/amendments made to a legislation by the Council.
- Again, unlike Rajya Sabha MPs, MLCs cannot vote in elections for the President and Vice President.
- The Vice President is the Rajya Sabha Chairperson; an MLC is the Council Chairperson.

What next in MP

- Having promised a Legislative Council for Madhya Pradesh in its election manifesto, the ruling Congress is working on a resolution that will be presented in the next Assembly session.



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Rajendra Singh, chairman of the Congress manifesto committee in 2018, said the party has discussed the issue and is serious about constituting a second House.

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Bond yield and curve

Why in news?

Bond yields have featured in news reports both globally and within India in recent months. In India, government bond yields fell sharply in the wake of the Union Budget, although they have come off the lows in the past few weeks. Internationally, US treasury bond yields plummeted last week, but they too have moderated after it became clear that governments almost everywhere have shown the desire to boost economic growth.

What are bonds?

- A bond is an instrument to borrow money.
- It is like an IOU.
- A bond could be floated/issued by a country's government or by a company to raise funds.
- Since government bonds (referred to as G-secs in India, Treasury in the US, and Gilts in the UK) come with the sovereign's guarantee, they are considered one of the safest investments.
- As a result, they also give the lowest returns on investment (or yield). Investments in corporate bonds tend to be riskier because the chances of failure (and, therefore, the chances of the company not repaying the loan) are higher.

What are bonds yields?

- Simply put, the yield of a bond is the effective rate of return that it earns.
- But the rate of return is not fixed — it changes with the price of the bond. But to understand that, one must first understand how bonds are structured.
- Every bond has a face value and a coupon payment.
- There is also the price of the bond, which may or may not be equal to the face value of the bond.



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- Suppose the face value of a 10-year G-sec is Rs 100, and its coupon payment is Rs 5. Buyers of this bond will give the government Rs 100 (the face value); in return, the government will pay them Rs 5 (the coupon payment) every year for the next 10 years, and will pay back their Rs 100 at the end of the tenure. In this case, the bond's yield, or effective rate of interest, is 5%.
- The yield is the investor's reward for parting with Rs 100 today, but for staying without it for 10 years.

Why and how do yields go up and down?

- Imagine a situation in which there is just one bond, and two buyers (or people willing to lend to the government).
- In such a scenario, the selling price of the bond may go from Rs 100 to Rs 105 or Rs 110 because of competitive bidding by the two buyers.
- Importantly, even if the bond is sold at Rs 110, the coupon payment of Rs 5 will not change.
- Thus, as the price of the bond increases from Rs 100 to Rs 110, the yield falls to 4.5%.
- Similarly, if the interest rate in the broader economy is different from the initial coupon payment promised by a bond, market forces quickly ensure that the yield aligns itself with the economy's interest rate.
- In that sense, G-sec yields are in close sync with the prevailing interest rate in an economy.
- With reference to the above example, if the prevailing interest rate is 4% and the government announces a bond with a yield of 5% (that is, a face value of Rs 100 and a coupon of Rs 5) then a lot of people will rush to buy such a bond to earn a higher interest rate.
- This increased demand will start pushing up bond prices, even as the yields fall. This will carry on until the time the bond price reaches Rs 125 — at that point, a Rs-5 coupon payment would be equivalent to a yield of 4%, the same as in the rest of the economy.
- This process of bringing yields in line with the prevailing interest rate in the economy works in the reverse manner when interest rates are higher than the initially promised yields.



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What is happening to US govt bond yields at present? What does it signify?

- The global economy has been slowing down for the better part of the last two years.
- Some of the biggest economies are either growing at a slower rate (such as the US and China) or actually contracting (such as Germany).
- As a result, last week, US Treasury bond yields fell sharply as there was confirmation of slowdown in Germany and China.
- Reason: investors, both inside the US and outside, figured that if growth prospects are plummeting, it makes little sense to invest in stocks or even riskier assets.
- It made more sense rather, to invest in something that was both safe and liquid (that is, something that can be converted in to cash quickly).
- US Treasury bonds are the safest bet in this regard. So, many investors lined up to buy US Treasury bonds, which led to their prices going up, and their yields falling sharply.

And what is a yield curve, and what does it signify?

- A yield curve is a graphical representation of yields for bonds (with an equal credit rating) over different time horizons.
- Typically, the term is used for government bonds — which come with the same sovereign guarantee.
- So the yield curve for US treasuries shows how yields change when the tenure (or the time for which one lends to the government) changes.
- If bond investors expect the US economy to grow normally, then they would expect to be rewarded more (that is, get more yield) when they lend for a longer period. This gives rise to a normal — upward sloping — yield curve (see chart).
- The steepness of this yield curve is determined by how fast an economy is expected to grow.
- The faster it is expected to grow the more the yield for longer tenures.



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- When the economy is expected to grow only marginally, the yield curve is “flat”.

What then is yield inversion, and what does it mean?

- Yield inversion happens when the yield on a longer tenure bond becomes less than the yield for a shorter tenure bond.
- This, too, happened last week when the 10-year Treasury yield fell below the 2-year Treasury yield.
- A yield inversion typically portends a recession.
- An inverted yield curve shows that investors expect the future growth to fall sharply; in other words, the demand for money would be much lower than what it is today and hence the yields are also lower.

How good is yield inversion at predicting a recession?

- Although US Commerce Secretary Wilbur Ross was quoted as saying Monday that “eventually there’ll be a recession but this inversion is not as reliable, in my view, as people think”, yet US data show historically that barring one episode in the mid-1960s, a yield inversion has always been followed by a recession.

Sulphur dioxide pollution

Why in news?

A new report by Greenpeace India shows the country is the largest emitter of sulphur dioxide in the world, with more than 15% of all the anthropogenic sulphur dioxide hotspots detected by the NASA OMI (Ozone Monitoring Instrument) satellite. Almost all of these emissions in India are because of coal-burning, the report says.



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Sources

- The vast majority of coal-based power plants in India lack flue-gas desulphurisation technology to reduce air pollution.
- The Singrauli, Neyveli, Talcher, Jharsuguda, Korba, Kutch, Chennai, Ramagundam, Chandrapur and Koradi thermal power plants or clusters are the major emission hotspots in India, the report says.
- In a first step to combat pollution levels, the Ministry of Environment, Forest and Climate Change introduced, for the first time, sulphur dioxide emission limits for coal-fired power plants in December 2015.
- But the deadline for the installation of flue-gas desulphurisation (FGD) in power plants has been extended from 2017 to 2022.

Other global sources

- The report also includes NASA data on the largest point sources of sulphur dioxide.
- The largest sulphur dioxide emission hotspots have been found in Russia, South Africa, Iran, Saudi Arabia, India, Mexico, United Arab Emirates, Turkey and Serbia.
- Air pollutant emissions from power plants and other industries continue to increase in India, Saudi Arabia and Iran, the report says.
- In Russia, South Africa, Mexico and Turkey, emissions are currently not increasing — however, there is not a lot of progress in tackling them either.

Emission trends

- Of the world's major emitters, China and the United States have been able to reduce emissions rapidly.
- They have achieved this feat by switching to clean energy sources;
- China, in particular, has achieved success by dramatically improving emission standards and enforcement for sulphur dioxide control.

Solid fuel burning

Context

Firewood, animal dung, and agricultural waste are some of the fuels commonly used in households across India as a means of generating energy for cooking, light, and heating, among other things.

According to a summary of seven research papers published in Ideas for India on August 19, the burning of such solid fuels, like firewood, impacts the health of household members and accounts for somewhere between 22% to 52% of all ambient air pollution in India.



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The study postulates that, based on this evidence, switching to cleaner fuels such as LPG for household use will have a dramatic impact on pollution levels and health problems due to pollution.

Why should solid fuels be avoided?

- Firewood, animal dung, and agricultural waste are some of the fuels commonly used in households across India as a means of generating energy for cooking, light, and heating, among other things.
- One of the many pollutants produced on the burning of such solid fuels is fine particulate matter.
- Fine particulate matter refers to particles or droplets with a diameter of 2.5 micrometres (0.000001 metres) or less, and is also known as PM2.5.
- Such particles can travel deep into the respiratory system, and exposure to them can cause several adverse health effects, both short-term and long-term, including respiratory problems and heart disease.

What is Household Air Pollution and how dangerous is it?

- The emissions of PM2.5 generated by the burning of solid fuels in households is termed Household Air Pollution (HAP).
- The study claims that approximately 800,000 premature deaths occur in India every year as a result of exposure to HAP indoors.
- Moreover, the HAP produced indoors travels outdoors, and becomes a contributor to ambient air pollution, with around 300,000 more premature deaths per year attributable to exposure to outdoor HAP.
- The median estimate for the contribution of HAP is, according to the study, around 30%, far greater than that of industries (2%-10%), power plants (8%-15%), and transportation (8%-11%).
- The contribution of HAP to premature mortality is, as per the median across all studies, 58% higher than premature mortality due to coal use, 303% higher than that due to open burning, and 1,056% higher than that due to transportation.



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How many people use solid fuels in India?

- In states such as Bihar, Uttar Pradesh, Madhya Pradesh, Orissa, Jharkhand, Rajasthan, Chattisgarh and Assam, around 72.1% of the population regularly uses solid fuels, and the median annual ambient is $125.3\mu\text{g}/\text{m}^3$, a level that is rated “unhealthy” as per the Air Quality Index, and can lead to serious health concerns with prolonged exposure.

What are the study's recommendations?

- The study asserts that immediate action is required to rectify the harm caused by HAP.
- It points to initiatives undertaken by the government of India to promote LPG for use in households as opposed to the traditionally used solid fuels, such as the Pradhan Mantri Ujjwala Yojana.
- However, the study claims that more effort is required, in particular, increasing the use of electricity as a substitute in these scenarios, and ensuring that the use of LPG is sustained.

Tardigrades

Why in news?

On April 11, the Israeli spacecraft Beresheet attempted to land on the Moon, but crashed on the surface.

It was carrying a number of items — including thousands of specimens of a living organism called tardigrade.

What are tardigrade?

- The tardigrade, also known as water bear, is among the toughest and most resilient creatures on Earth.
- The question is: did the thousands of dehydrated tardigrades on Beresheet survive the crash? And if they did, are they now living on the Moon?
- The tardigrade can only be seen under a microscope.
- Half a millimetre long, it is essentially a water-dweller but also inhabits land and, a 2008 study found, can survive in the cold vacuum of outer space.



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- In 2017, another study found that if all other life were to be wiped out by a cataclysmic event — a large asteroid impact, a supernova or a gamma-ray bursts — the tardigrade would be the likeliest to survive.
- The tardigrade can endure extreme hot and cold temperature levels.

How do they survive?

- Although the tardigrades on the spacecraft were dehydrated, the organism is known to “come back to life” on rehydration.
- In fact, they themselves expel water from their bodies and set off a mechanism to protect their cells, and can still revive if placed in water later.
- However, there is no evidence of liquid water on the Moon, although there is ice.
- Without liquid water, it is possible that the tardigrades will remain in their current state, unless future astronauts find them and revive them in water.
- The tardigrade derives its name from the fact that it looks like an eight-legged bear, with a mouth that can project out like a tongue.
- Its body has four segments supported by four pairs of clawed legs.
- A tardigrade typically eats fluids, using its claws and mouth to tear open plant and animal cells, so that it can suck nutrients out of them. It is also known to feast on bacteria and, in some cases, to kill and eat other tardigrades.
- Although they are famed for their resilience, they are destructible too. Should a human being swallow a tardigrade with her food, her stomach acid will cause the flesh of the tardigrade to disintegrate.

On the Moon, should they find liquid water and revive, the tardigrades might not last very long in the absence of food and air, according to Live Science magazine, which quoted Kazuharu Arakawa, a tardigrade researcher at Keio University in Tokyo.