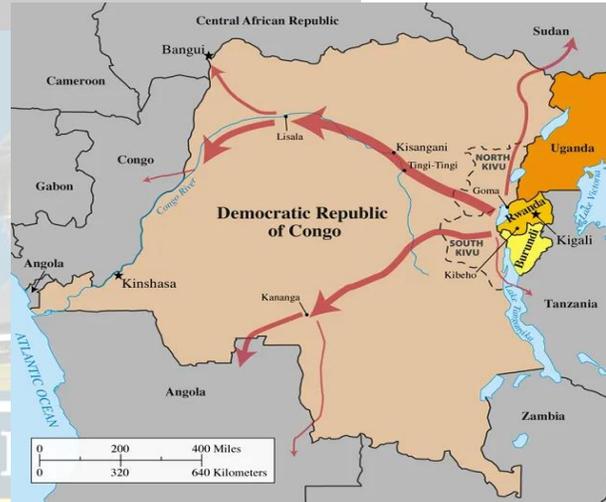


Displacement in DRC



On October 30, the UN International Organization of Migration (IOM) reported that the

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- number of people who have been internally displaced in the Democratic Republic of Congo (DRC) has risen to 6.9 million.
- In the eastern province of North Kivu, nearly a million people have been displaced due to the ongoing conflict with the rebel group, Mouvement du 23 Mars (M23)
- What is the conflict in the DRC?**
- The conflict erupted in the wake of the Rwandan genocide in 1994 where ethnic Hutu extremists killed nearly one million minority ethnic Tutsis and non-extremist Hutus.
- Since then, the eastern DRC, bordering Rwanda, has been facing insurgency perpetrated by several rebel militant groups.
- According to the UN, besides M23, more than 120 insurgent groups are active in the eastern provinces of North Kivu, South Kivu, Ituri and Tanganyika.
- Violence by several militant groups over territory and natural resources, extrajudicial killings by security forces and rising tensions with neighbouring countries have killed thousands.
- Tensions between the DRC and neighbouring Rwanda continue to increase as both countries accuse each other of supporting ethnic Tutsi and Hutu led rebel groups respectively.
- The resurfacing of the Tutsi led M23 rebel campaign in November 2021 worsened the security situation in the eastern provinces of DRC.
- The group carries out frequent attacks and has taken control of several towns
- Why has there been displacement?**
- First, ethnic intolerance and insurgency.
- Following the Rwandan genocide, around two million Hutu refugees crossed Rwanda into North Kivu and South Kivu provinces of DRC.
- They organised ethnic militias in DRC fearing prosecution.
- Second, is the political uncertainty and lack of inclusive governance
- Third are regional tensions.
- The armed groups have been supported by the governments of Rwanda, Uganda, and Burundi at various points, acting as proxies for

each country's interests in the region.

The Hindu

MIG 21 Replacement

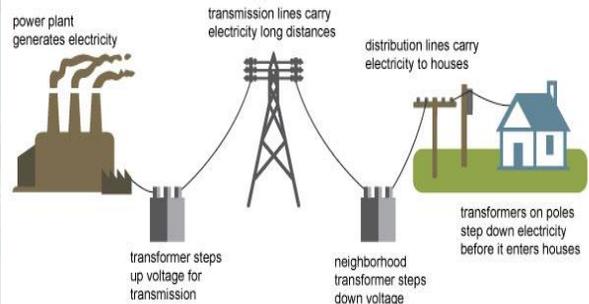
- On October 31, 2023 MiG21 fighter jets of the No. 4 squadron 'OORIALS' of the Indian Air Force (IAF) flew one last time over Uttarlai in Rajasthan.
- Last year, the No. 51 squadron 'swordarms' based in Srinagar was phased out.
- It was the same squadron of which Gp Capt (then Wg Cdr) Abhinandan Varthaman was part of and saw action in February 2019, a day after the Balakot air strike.
- The MiG21 was the first supersonic fighter in service of the IAF and was inducted in 1963 and has participated in all major conflicts since.
- will replace the MiG21 squadron with the indigenous Light Combat Aircraft (LCA)Mk1A. The induction of the LCA Mark1A will fill the gap of these MiG21s
- In the last few years, the IAF has inducted two squadrons of the

indigenous LCA Tejas and two squadrons of Rafale fighter jets procured from France which pushed the squadron strength to over 30.

The Hindu

AC & DC and Transformer

Electricity generation, transmission, and distribution

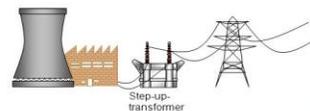


Source: Adapted from National Energy Education Development Project (public domain)

Transmission of Electricity

When energy is transferred at a high voltage, it uses a lower current, which results in less energy being lost as heat in the cables.

The National Grid has to transmit electricity over large distances.



If the National Grid was to transmit at 25,000kV from the power station, about 40% of the electrical energy would be lost as heat – the electricity would be expensive as a result.

But at 400kV, only 1% of the energy will be lost as heat.

This would also mean that the tall pylons could carry thinner, lighter wires, thus making them cheaper.

What is Transformer?

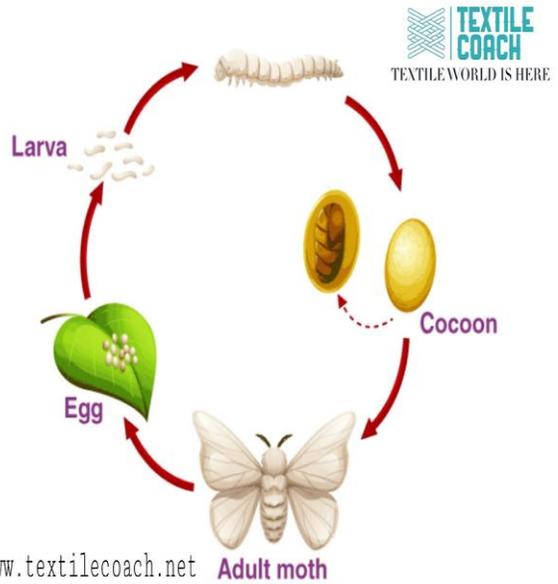
The transformer is a static device which changes the voltage level and current level without changing the frequency. The transformer is used to increase or decrease the voltage and current level.

www.electricaldesks.com

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Alternating Current	Direct Current
AC is safe to transfer longer distance even between two cities, and maintain the electric power.	DC cannot travel for a very long distance. It loses electric power.
The rotating magnets cause the change in direction of electric flow.	The steady magnetism makes DC flow in a single direction.
The frequency of AC is depended upon the country. But, generally, the frequency is 50 Hz or 60 Hz.	DC has no frequency of zero frequency.
In AC the flow of current changes its direction backwards periodically.	It flows in a single direction steadily.
Electrons in AC keep changing its directions – backward and forward	Electrons only move in one direction – that is forward.



The Hindu

Silkworm cocoon different colours



Caterpillars, also known as silkworms, of both these species feed exclusively on leaves of mulberry plants (genus *Morus*).

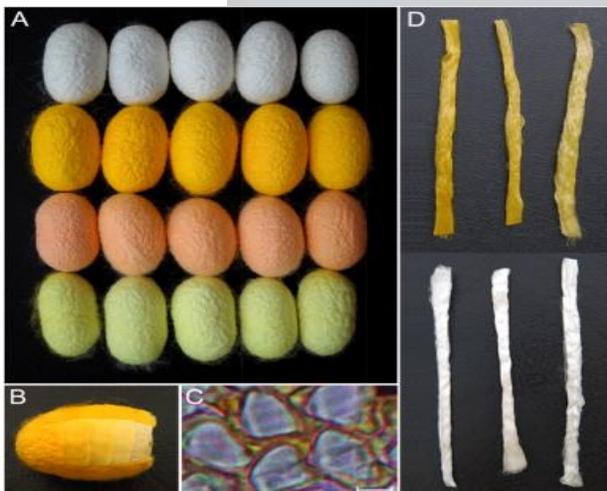
The Hindu

Carotenoids and flavonoids

‘Wild’ silks which include the muga, tasar, and eri silks are obtained from other moth species: namely, *Antheraea assama*, *Antheraea mylitta*, and *Samia cynthia ricini*.

These moths survive relatively independently of human care, and their caterpillars forage on a wider variety of trees.

Nonmulberry silks comprise about 30% of all silk produced in India



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- The ancestral mulberry moth makes (boringly uniform) brown yellow cocoons.
 - In contrast, domesticated silk moth cocoons come in an eye-catching palette of yellow red, gold, flesh, pink, pale green, deep green or white.
 - Cocoon's pigments are derived from chemical compounds called carotenoids and flavonoids, which are made by the mulberry leaves.
 - Silkworms feed voraciously on the leaves, absorb the chemicals in their midgut, transport them via the hemolymph arthropods' analogue of blood to the silk glands, where they are taken up and bound to the silk protein.
 - Mature caterpillars then spin out the silk proteins and associated pigment into a single fibre. The caterpillar wraps the fibre around itself to build the cocoon
 - Differently coloured cocoons arise from mutations in genes responsible for uptake, transport, and modification of carotenoids and flavonoids.
 - The mutant strains have become a valuable resource for scientists to
- study the molecular basis of how, in a relatively short span of 5,000 years, artificial selection generated such spectacular diversity
- A yellow red cocoon requires the Y gene, which encodes a protein that transports carotenoids from midgut to the silk glands.
 - Other genes encode proteins that selectively absorb specific carotenoids.
 - Mutations in one or more of these genes produce the yellow, flesh - coloured, rusty, and pink cocoons
 - The gene called aponticlike Domesticated and ancestral mulberry silk moths can be interbred to produce hybrid offspring.
 - Last year, researchers in the University of Tokyo and Columbia University in New York created such hybrid moths and then specifically mutated either their B. mori or B. mandarina derived copy of a gene called apontic like.

The Hindu

Colours in tube light

- **Why are fluorescent lamps marked 6500 K (tube light)?**

- **A:** The value 6,500K marked on fluorescent lamps represents a parameter called correlated colour temperature.
- It means that the spectral, or light, colour distribution from that lamp is similar to that of a black body at that temperature.
- Any black body when heated emits different colours at different temperatures: at 2,000K it emits red light; at 4,000K it is yellowish white; at 2,700K, it provides warm light; and at 6,500K, it gives the impression of cool daylight, according to illumination engineers.
- Based on colour appearance, fluorescent tubes are classified into three types: daylight white (above 5,000K), neutral white (4,000K), and warm white (below 3,300K).
- The colour of light depends on the fluorescent coating inside the tube.
- Three types of coatings are generally given: triphosphor, standard phosphor, and multi phosphor.

- Standard phosphor is used in ordinary tube lights. Triphosphor coated lamps, like incandescent lamps, emit yellow light similar to sunlight. Standard tube lights render a colour similar to daylight.
- The Hindu

The Klyuchevskoy volcanos

BIG SHOT



The Klyuchevskoy volcano, one of the highest active volcanoes in the world, erupts in Russia's northern Kamchatka Peninsula on October 28, 2023. Huge ash columns erupted from Eurasia's tallest active volcano on November 1, forcing authorities to close schools in two towns in the region. AP

- **The Klyuchevskoy volcano, one of the highest active volcanoes in the world, erupts in Russia's northern Kamchatka Peninsula on October 28, 2023.**
- **Klyuchevskaya Sopka is a stratovolcano, the highest mountain of Siberia and the highest active volcano of Eurasia. Its steep, symmetrical cone towers about 100 kilometres from the Bering Sea.**

- The volcano is part of the natural Volcanoes of Kamchatka UNESCO World Heritage Site

Domestic law vs international laws- MFN vs Income tax

- One of the foremost challenges foreign investors face in India is the uncertainty in taxation measures.
- Taxation related improbabilities arise not just due to the actions of the executive but also the judiciary.
- This makes doing business in India difficult for foreign players.
- The Supreme Court of India's recent judgment in the Assessing Officer Circle (International Taxation) New Delhi vs M/s Nestle SA case, which disposed of 11 petitions involving corporations such as Nestle (a Swiss multinational company) and Steria (a European company) deserves to be seen in this light.
- The critical question in the case was whether the most favoured nation (MFN) clause in tax treaties such as the Double Taxation Avoidance Agreements (DTAAs) that India has signed, could be given effect in India without notification for the same

under Section 90 of the Income Tax Act.

- This provision allows India to sign tax treaties with other countries to avoid an income being taxed twice
- On Most Favoured Nation status India's bilateral DTAAs with the Netherlands, France, and Switzerland all three countries are members of the Organization for Economic Cooperation and Development (OECD) require imposing a 10% withholding tax (tax on dividends paid by Indian entities of foreign companies to the residents of Netherlands, France, and Switzerland).
- These DTAAs also contain an MFN provision.
- Thus, if India extends a preferential tax treatment to any third country "which is a member of the OECD", the same treatment should be accorded to the Netherlands, France, and Switzerland under their respective DTAAs.
- The Supreme Court held that to give effect to the MFN provision in the DTAA, notification under Section 90(1) of the Income Tax Act is necessary and mandatory.

- Thus, the Court advocated the doctrine of dualism wherein international law is not enforceable domestically till it is transformed into municipal law through enabling legislation.
- While it is true that the Indian Constitution provides for such formal dualism, the Supreme Court has moved away from this principle toward the monist tradition of incorporating international law in the domestic legal regime, even if it is not explicitly incorporated, provided the international law is not inconsistent with domestic law.
- This principle has been laid down in cases such as PUCI vs India, Vishakha vs State of Rajasthan, and Puttaswamy vs Union of India.
- The premise in these cases was the ‘presumption of compatibility’ or ‘presumption of consistency’ between domestic and international law.
- This presumption can be rebutted only if a domestic law explicitly contravenes international law.
- In other words, wherever possible, domestic law should be interpreted in a manner that does not contradict

India’s obligations under international law.

- The Hindu

India and Bhutan

- The decision by India and Bhutan to focus on infrastructure and connectivity.
- A joint statement speaks of completing surveys for the Kokrajhar Gelephu rail link that connects Bhutan to Assam, and beginning discussions on another Bhutan to West Bengal rail link, while also facilitating Bhutan Bangladesh trade, with yet another rail link, and upgrading checkpoints along the India Bhutan border.
- These plans foretell a future that could well change the development story of the region, including West Bengal and the northeast, Bhutan’s south and east dzongkhags (districts), as well as Northern Bangladesh.
- Bhutan’s economy has been dependent on hydropower and tourism revenues, and has been particularly hit by the COVID19 pandemic as well as worries over global warming.

- A lack of opportunities has also led to emigration by educated youth and professionals.
- The new project proposed by the king, to build a Special Economic Zone at Bhutan's southern border with Assam, and an airport at Gelephu, are expected to drive growth and investment to the kingdom.
- In addition, Bangladesh's signing of a Preferential Trade Agreement with Bhutan in 2020 could increase Bhutanese export of local produce and build more markets for Indian and Bangladeshi producers in the subregion.
- India's "energy exchange", which is bringing more Bhutanese and Nepali hydropower suppliers online, while planning to distribute energy to Bangladesh and Sri Lanka, will drive intra regional growth and revenues.
- This would also power New Delhi's attempt at bridging the economic gap with the northeast, while drawing development partners like the World Bank and donor countries like Japan into the creation of a "sub regional hub"
- Given India's problems with Pakistan and sanctions on Myanmar for the 2021 coup blocking the path for trade and land connectivity to the East, working with other countries on India's periphery to build connectivity, markets and energy links is the most sustainable way forward.
- In the longer term, geopolitical conflicts and anti globalization trends are forcing regional groupings to be more cohesive, something South Asia has not been able to achieve as yet.
- As India worries about China's push into South Asian trade, infrastructure projects and strategic ties, including concerns over a Bhutan China boundary agreement's overhang over Doklam and India's "Chicken Neck" (Siliguri Corridor) route, these are ideas which will offer more security and prosperity for the countries involved, with particular benefits for Bhutan, India's traditionally trusted partner in the region.

[The Hindu](#)
