PATCELL HAREDA ऊर्जा पत्रिका

JUNE 2024

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Save Energy, Save Money, Save Nation, Save the Planet.

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An Overview Of The Energy Conservation (Amendment) Act, 2022

Perform Achieve & Trade [PAT] Scheme

a partner in Achieving

Nationa

l Mission for Enhanced Energy Efficiency (NMEEE)

The Energy Conservation Amendment Act, 2022 ("Act") received the assent of the President on 19th December, 2022 and came into force on January 1, 2023.

The Energy Conservation Amendment Act, 2022 ("Act") received the assent of the President on 19th December, 2022 and came into force on January 1, 2023. The Act mandates the use of renewable energy and carbon-neutral technologies, as well as the implementation of sustainability features across industries. In addition, the Act aspires to establish a domestic carbon market and implement a carbon trading mechanism to assist India in meeting its climate mitigation obligations.

KEY AMENDMENTS

1. Introduction of a Carbon Credit Scheme: The Act empowers the Union Government to introduce a carbon credit trading scheme ("Scheme") to encourage the reduction of carbon emissions in the economy. While the amendment does not define carbon credit, it is commonly understood to be a tradable permit to emit a certain amount of carbon dioxide or other greenhouse gases. The central government or any authorized agency may award carbon credit certificates to entities that have registered and are in compliance with the Scheme. The certificates will be tradable by the entities. Any other person may purchase a carbon credit certificate voluntarily.
2. Notification of Energy Consumption Standards for Vehicles: According to the Act, the government of India can now notify energy consumption norms for more entities, including automobiles, vessels, industrial units, buildings, and institutions.
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HOW TO USE HOUSEHOLD APPLIANCES EFFICIENTLY?

Refrigerator

Be smart with your fridge

The best thing is to start saving energy with the fridge. You can turn it down a few degrees. Indeed, it is often set at too low a temperature, which increases electricity consumption. Temperatures between 5 and 7 degrees are sufficient to keep food fresh. For every degree that you save in refrigeration, you consume almost 10% less energy.

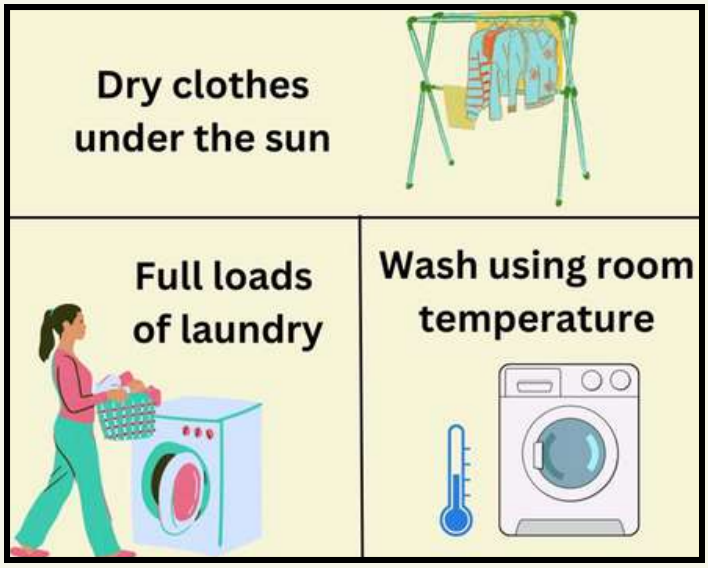
• Dust can be a problem and can affect the efficiency of your appliance. Check the back of your refrigerator. Vacuuming the area 2 or more times in a year is recommended. This activity will reduce energy consumption by 6%.

- **Place the refrigerator where direct sunlight does not reach. It is recommended to leave a 5cm of space from wall to have a proper air circulation**

• If you are planning to go outside for 15 days then disconnect it. Clean it properly and leave the door open.

- **Raising the refrigerator temperature to 6 °C reduces energy consumption by approximately 6 %.**
- **Ensure that frozen foods are kept cold when you are bringing them home from the shop.**
- **To defrost frozen food, take it out of the freezer well ahead of time and allow it to thaw out gently in the refrigerator**

Washing Machine



Let's talk laundry and how we can turn our wash routine into a sustainability powerhouse!

Here are 3 simple hacks to save energy and reduce our carbon footprint.

- **Choose Room-temperature Water: Choose the room-temperature water option when setting up your washing machine. Your clothes will still come out brilliantly clean, and you will be slashing your energy usage. Moreover, room-temperature water can preserve the colours and keep your clothes looking vibrant and fresh.**
- **Full Loads Only: Wait until you have a full load before running the machine. It maximises efficiency and minimises the number of wash cycles, saving both water and energy.**
- **Sunshine Fresh: When possible, hang your clothes to dry in the sun. It is the ultimate energy-free drying solution that leaves your clothes fresh and Mother Nature happy.**

Small actions have a big impact! Let's show some love to our planet with every laundry load. Together, we can make a difference.

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An Overview Of The Energy Conservation (Amendment) Act, 2022

5. Changes in the composition of Bureau of Energy Efficiency (BEE): The Principal Act calls for the establishment of the Bureau of Energy Efficiency ("BEE"). The Act brings amendment to the original composition of the BEE, it increases the membership from 20-26 members to 31-37 members. It brings the total number of secretaries to 12 and a total of 7 representatives from industries and consumers.

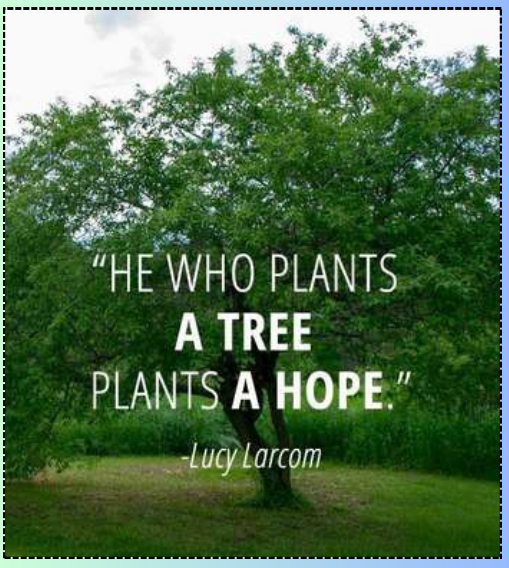
6. State Governments to establish State Energy Conservation Funds: The amendment mandates that state governments establish energy conservation funds to promote energy efficiency and conservation initiatives. This fund will receive contributions from the central government's loans and grants, as well as all fees collected by the state government under its primary statute.

7. Increased Penalties: The Act increases the existing monetary penalties and includes specific references to vehicle manufacturers and vessels, with additional penalties imposed on these classes for failing to meet energy consumption norms.

- Apart from the maximum penalty of Rs. 10,00,000, the Act further imposes a minimum of Rs. 2000 and a maximum of Rs. 5000 for every in violation of the standards specified by the central government.
- The Act imposes penalties on vessels and vehicles in case of non-compliance to prescribed norms.

In the case of non-compliance for vessels, an individual shall be responsible to pay an additional penalty of up to double the price of each metric tonne of oil equivalent consumed in excess of the stipulated norms, in addition to a penalty of up to Rs. 10,00,000.

- Vehicle manufacturers who violate the fuel consumption norms will face a penalty of Rs. 25,000 per vehicle for non-compliance with norms up to 0.2 litres per 100 km and a penalty of Rs. 50,000 per vehicle for non-compliance with norms above 0.2 litres per 100 km, in addition to the penalty of Rs. 10,00,000.
- Failure to comply with the limits issued for the minimum share of consumption of non-fossil sources by designated consumers shall attract a fine of up to Rs. 10,00,000. It will also incur a penalty of up to twice the price of oil equivalent of energy utilised in excess of the stipulated limit.
- Failure to give information to the BEE as prescribed, has been rendered punishable by a penalty of up to Rs. 50,000 for the first such failure and an additional penalty of up to Rs.10,000 for each successive failure.
- The Act adds a new clause to Section 28 of the Principal Act under which the adjudicating authority will now pay due regard to the loss caused to a consumer in addition to the two factors under the Act, namely (a) the amount of disproportionate gain or unfair advantage made as a result of the default, wherever quantifiable, and (b) the repetitive nature of the default.



COMMENTS

Significant amendments were made to the Principal Act to facilitate the attainment of the 26th UN Climate Change Conference of the Parties (COP-26) goals. The Act adds new concepts such as carbon trading and requires designated users to use non-fossil sources to facilitate swifter decarbonization and accomplishment of sustainable development goals. The Act is a welcome step that aims to address the country's growing demands and reduce its reliance on fossil fuels; thus, it has the potential to have a significant impact on the country's energy consumption patterns, promoting the use of renewable energy sources.

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HOW TO USE HOUSEHOLD APPLIANCES EFFICIENTLY?

THE HUMBLE CEILING FAN
save money and emissions

I am a Ceiling Fan high and above,
Watch me spin as my fan blades curve.
Cooling you day and night, useful I prove,
Just clean me up and show me some love."
– An Anonymous Ceiling Fan

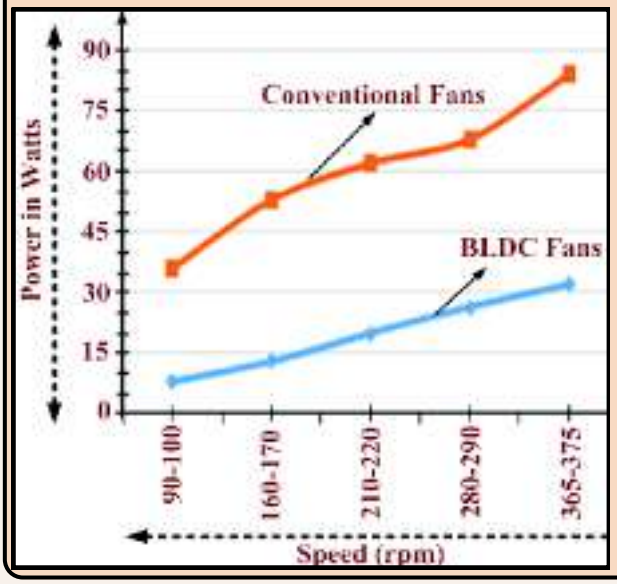
• Given how widespread ceiling fans are in India, experts say the fan is a hidden catalyst in India's energy transition that's going unnoticed. They are confident that sales of energy efficient fans will go up in the years to come

Nearly 60 million units of ceiling fans are sold every year, make it one of the most sold cooling appliances

Ceiling fans alone accounted for ~40% of India's residential electricity consumption in 2021, and this number is expected to remain significant at 32% in 2030.

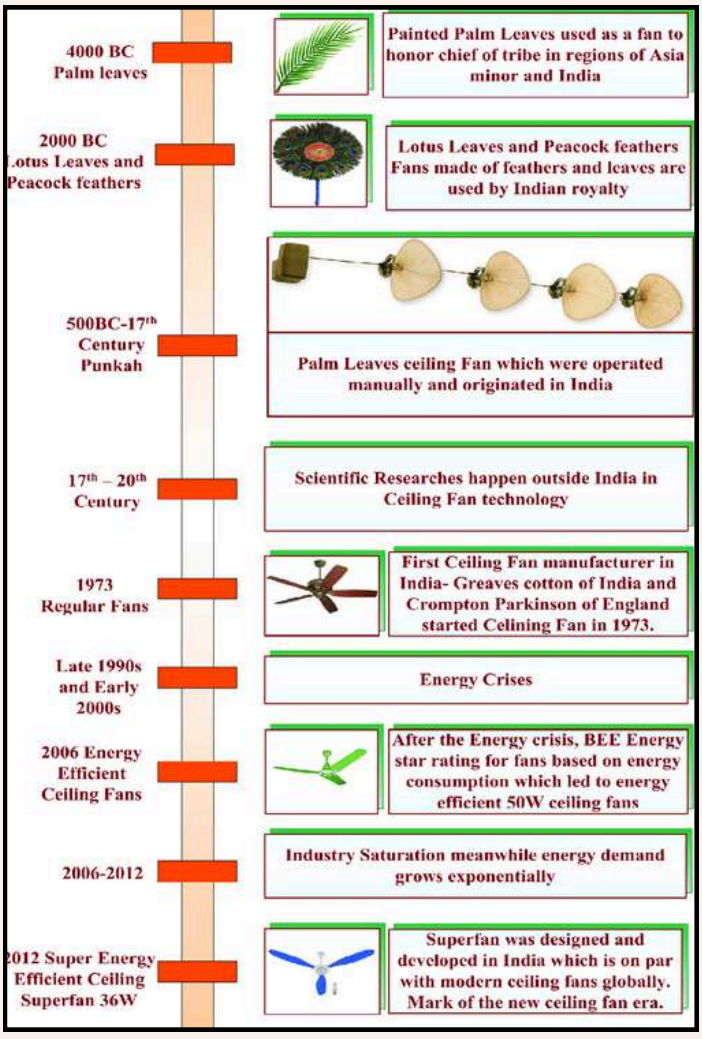
- **Ceiling fans have the potential to save India's electricity consumption by 10-15% in the next few years, but sales of energy efficient fans are at just 3% of the total fans sold.**

BLDC V/S CONVENTIONAL FANS



अगर आप अपने सीलिंग फैन की सफाई नहीं करते हैं तो क्या होता है? गंदे पंखे के ब्लेड हवा को उतनी कुशलता से स्थानांतरित नहीं करते हैं, क्योंकि अतिरिक्त वजन पंखे की गति को धीमा कर सकता है।

Turn your fan off.
No, that's not a typo. Fans cools people — not rooms — by pushing cool air down and leaving you feeling naturally cool and refreshed. If nobody is in the room, remember to turn off your fan.



For optimal fan efficiency, it is important to keep the fan clean. Because dirt accumulating on the impeller reduces both performance and efficiency. In addition, dust on the impeller can cause an imbalance, which ultimately has a negative effect on the lifespan of a fan.

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RECYCLING THE WAY FORWORD

The earth needs a makeover – and fast

How does recycling reduce our carbon footprint?

Our daily actions leave behind an invisible 'footprint'. This carbon footprint can be big or small depending on the action, but one thing is for sure: we're all contributing to carbon emissions.

Recycling limits the amount of virgin materials required to make our everyday products. This in turn lowers energy consumption during manufacturing. When we use less energy to make our products, we emit less carbon emissions.

How does recycling minimise the effects of climate change?

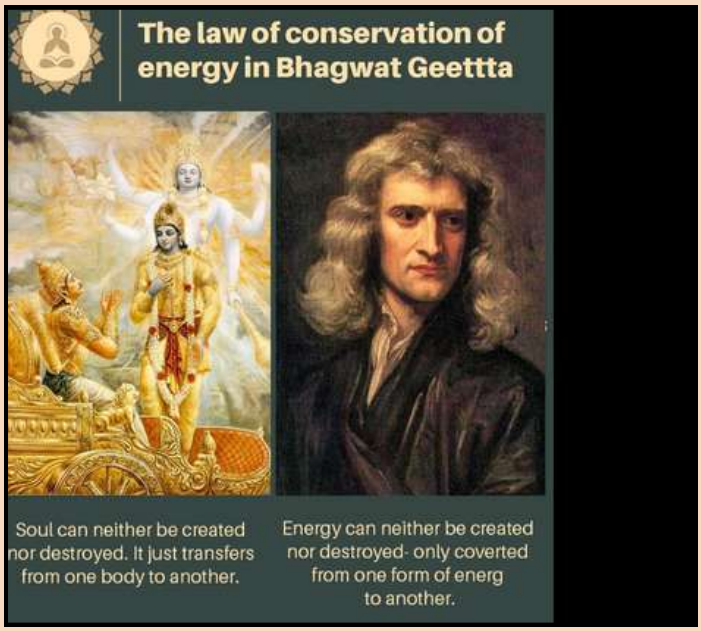
Climate change is defined as long term shifts in temperature and weather patterns. While these patterns occur naturally, climate change has accelerated rapidly since the 1800s due to human activity, in particular the release of GHG.

When solid waste heads to landfill it is broken down by bacteria into GHG such as methane and carbon dioxide.

Methane accounts for 25% of GHG worldwide. When averaged over 20 years, methane's global warming potential is 86 times higher than carbon dioxide.

The same happens to the food we throw away. According to the World Wide Fund for Nature (WWF) we can reduce anywhere from 6% to 8% of all human caused GHG emissions by preventing food waste.

Smiling senior women holding paper with green recycling sign



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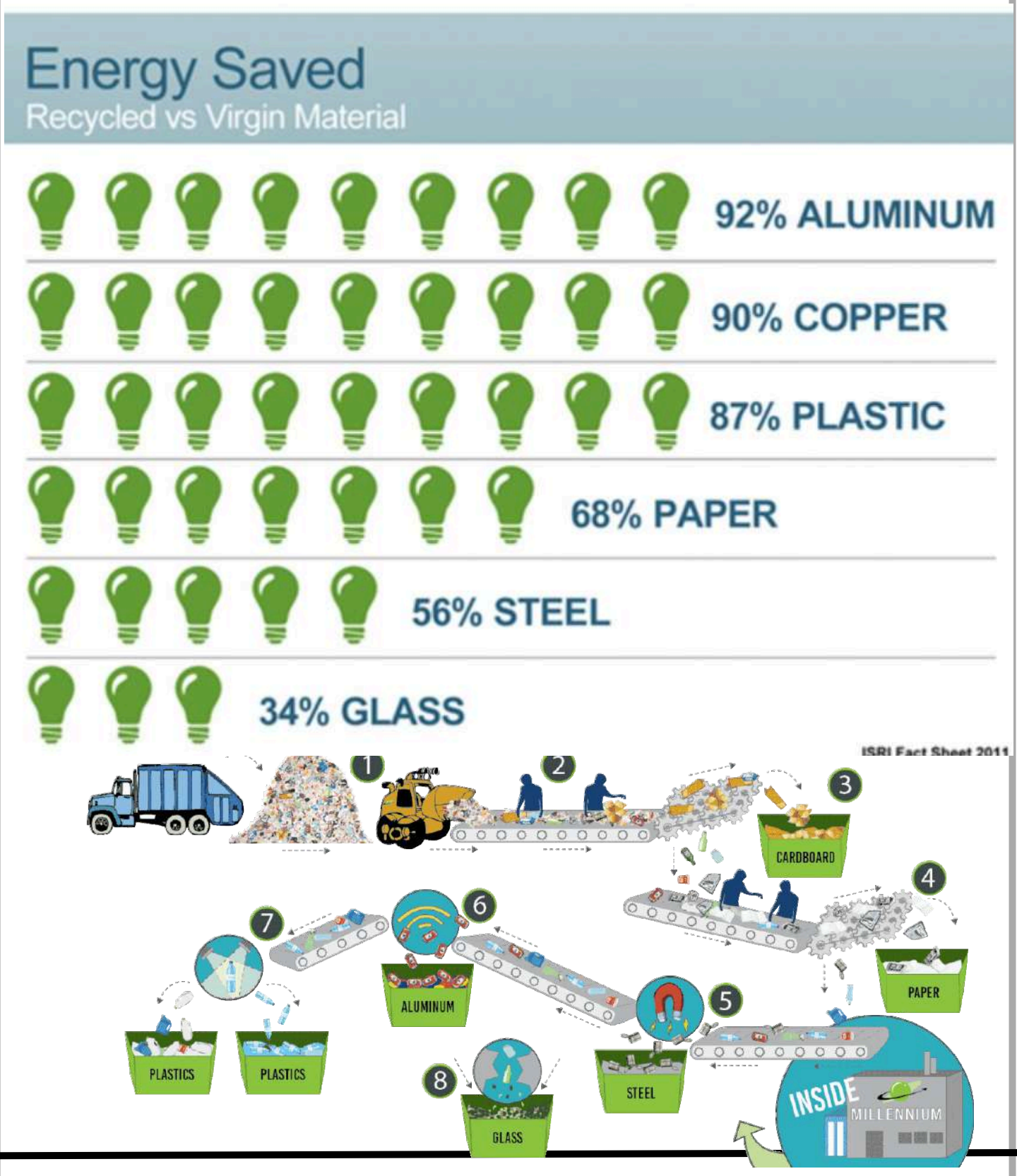
RECYCLING THE WAY FORWORD



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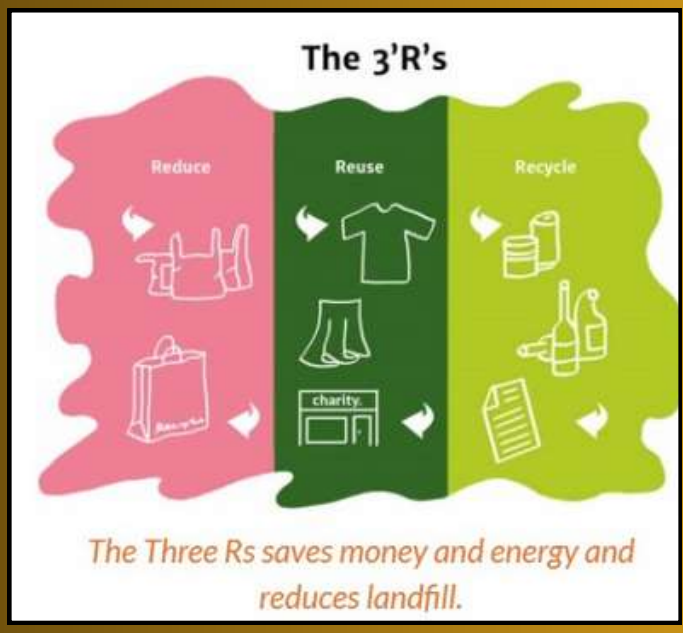
RECYCLING THE WAY FORWORD

Global Recycling Day

Is celebrated annually on 18 March and was created in 2018 to help recognise, and celebrate, the importance recycling plays in preserving our precious primary resources and securing the future of our planet



Th e 3 'R's

Reduce, Reuse, Recycle – these three 'R' words are an important part of sustainable living, as they help to cut down on the amount of waste we have to throw away.

It's Really simple!

- **Reduce the amount of waste you produce.**
- **Reuse items as much as you can before replacing them.**
- **Recycle items wherever possible.**

Using the 3 'R's also helps to minimise the amount of space needed for landfill sites, where waste materials are disposed of.

Protects Biodiversity

Although biodiversity is critical, it is inadequately managed. People do not care about their communities' birds, reptiles, or animals. They do not recycle, and their garbage ends up in landfills, where it pollutes the earth, water, and air. Changes occur in local species, with animals and birds being displaced by rubbish eaters like rats and crows.

Recycling is critical for halting global biodiversity loss. Recycling may reduce pollution. So, birds and animals still have a place to live, proving that garbage does not destroy biodiversity. Recycling helps to relieve some of the pressure on landfill space

Conclusion

In conclusion, recycling is among the easiest and most effective ways to prevent global warming. We can make a positive impact on the environment by recycling materials that would otherwise end up in landfills. It can be a useful method of slowing global temperature rises. In a nutshell, it is therefore crucial to reduce, reuse, and recycle. We all need to do our part to keep the earth clean and green, so be sure to do your part.

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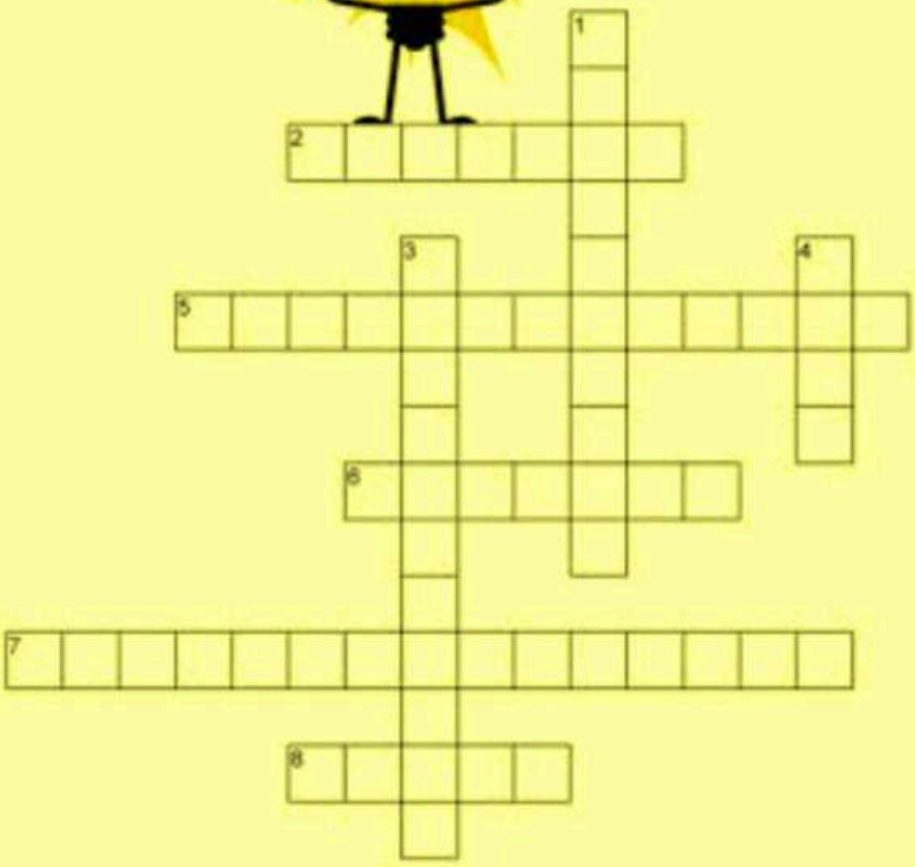
Renewable Energy Crossword



Across

2. A biofuel produced from corn or sugar cane that burns cleaner than regular gasoline.
5. A renewable energy source that uses the force of water to generate electricity.
6. A renewable energy source that comes from plant or animal materials, including waste and sewage.
7. Gases like carbon dioxide, methane, and nitrous oxide that remain in the earth's atmosphere, causing a warming effect on the earth's surface. (2 words)
8. A renewable energy source that uses the light from the sun to generate electricity

Down

1. A renewable energy source that uses the heat from within the earth to produce steam and hot water.
3. Types of combustible material that were formed in the earth long ago from plant and animal materials. Examples are oil, coal, and natural gas. (2 words)
4. A renewable energy source that uses the movement of air, often using turbines with propellers, to generate electricity.

Locate Answes in this news letter

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Wireless Transmission

History of Wireless Transmission Power

Wireless Power

- Transmission of energy through the air.
- Process of transferring electric energy or power over distance without wires.
- Also known as "WiTricity" and "Wireless Power Transmission".
- Power source (transmitter) provides power to the devices where as capture device (receiver) captures it.
- Eliminates the use of cables for transmission of power
- Transmission by induction through resonators.

The development history of wireless power transfer

- Wireless power transmission has undergone three stages from generation to development.

STAGE 1:

- The end of the 19th Century ,Nikola Tesla proposed the method of wireless transmission of electric power.
- One of the greatest breakthroughs of science at that time.
- Tesla was able to transfer energy from one coil to another coil.
- He managed to light 200 lamps from a distance of 40km.
- Tesla began construction of a large high-voltage coil facility, the Wardenclyffe Tower.
- Built the Wardenclyffe tower which could broadcast power wirelessly using far-field techniques.
- A prototype transmitter for a "World Wireless System".

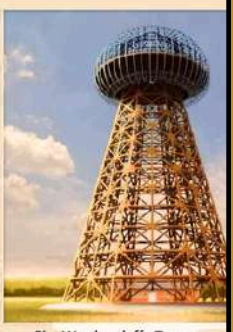


Fig: Wardenclyffe Tower

STAGE 2:

- In 1975, the first MPT experiment was launched in Venus laboratory. The radio frequency 2.388GHz of 450kW can be transmitted to a distance of 1.6km and its wireless transmission efficiency is 8.1%.
- He fed 300 Kw power to the Tesla coil resonated at 150 kHz. The RF potential at the top sphere reached 100 MV. Unfortunately, he failed because the transmitted power was diffused to all directions with 150 kHz radio waves whose wave length was 21 km.

Fig: First Ground-to-Ground MPT experiment in 1975

STAGE 3:

- The idea of Tesla is taken in to research after 100 years in 2007 by a team led by Marin Sorgasik from MIT.
- A group of engineers at MIT came up with the idea to use resonant induction to transmit power wirelessly.
- The project is named as 'WiTricity'.

Experiment demonstrated at MIT. A 60W light bulb lit from source at a distance of 2m from load.

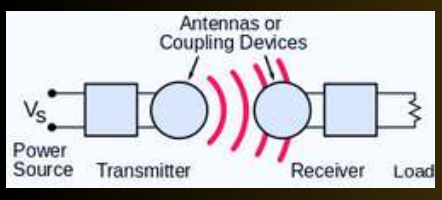
NEED FOR WIRELESS TRANSMISSION

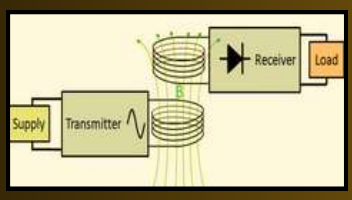
- Zero transmission losses.
- The ever increasing power demand.
- The demand of eco-friendly power.
- Requirement of efficient and reliable power.
- To reduce dependence on wires and batteries.
- It is fast in operation.
- Low maintenance cost.
- Can be used for short-range or long range.

Why Not Wire ?

- As per studies, most electrical energy transfer is through wires.
- Most of the energy loss is during transmission.
- On an average, Transmission and Distribution losses are more than 30%. In India it exceeds 40%.

HOW IT WORKS ?





Electricity sector in India

- Third largest electricity producer globally
- Total electricity generation (FY 2022-23) 1,844 TWh
- Per capita electricity consumption (FY 2023) 1,327 kWh
- Installed capacity (As of 31 March 2023) 416.0 GW.

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Wireless PowerTransmission

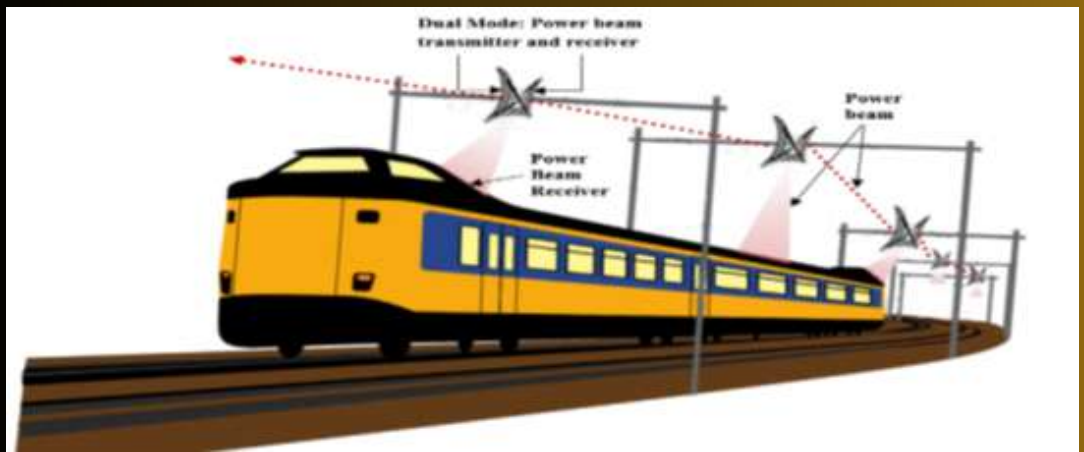
What are the Benefits of Wireless Power Transmiision

- · Convenience.
- Reduced wear and tear :
- Cost effectiveness:.
- ·Reduced transmission and distribution losses:
- Environmental friendliness: .
- Flexibility in design: Mobility and portability:
- Increased Safety
- Potential for long distance transmission

Potential applications of Wireless Power Transmission

1.Charging Electronic Devices: smartphones, tablets, and wearables without the need for physical cables, offering convenience to users.
2.Medical Devices: In the medical field, wireless power transfer can power implanted medical devices, eliminating the need for invasive battery replacements and reducing risks to patients' health.
3.Electric Vehicles:
4.Industrial Applications: For Automated Guided Vehicles (AGVs), Autonomous Mobile Robots (AMRs), and industrial trucks.
5.Sustainable E-Mobility: research institutions, particularly in Asia, aiming to enhance the efficiency and convenience of recharging electric vehicles.

Train with Wireless Power



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FUTURE OF WIRELESS POWER TRANSMISSION

Wireless power transfer has the potential to change this planet on so many different levels.

Whether it is charging a handheld device, to changing the effect of global warming on this planet, wireless power transfer has an answer.

The most commercially viable application arising to counter the effects of global warming and the increasing demand for electricity is WPT through microwave transmission from space.

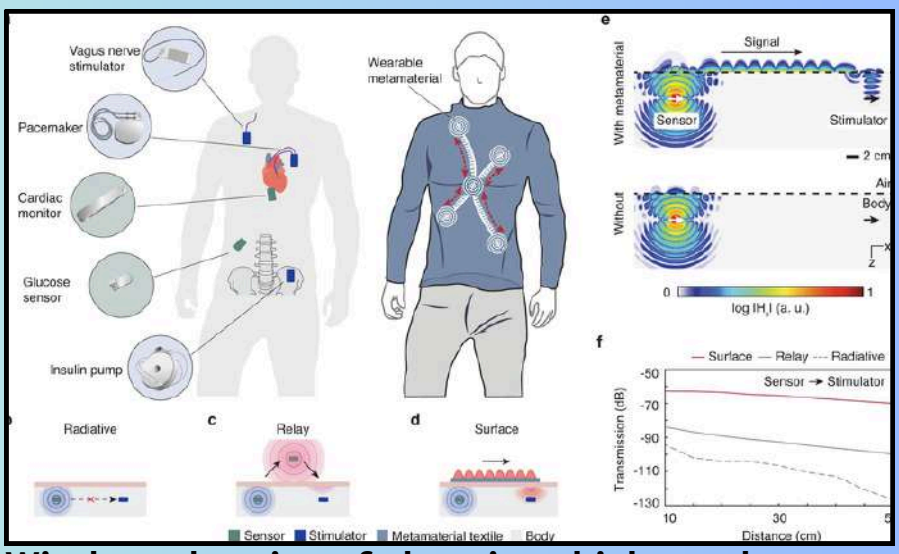
This application will supply limitless power to earth and also open up many new opportunities for space exploration.

With WPT through resonance and inductive coupling, emerging technology companies are able to broaden the capabilities of most small electronics including cell phones, PDAs, and mp3 players.

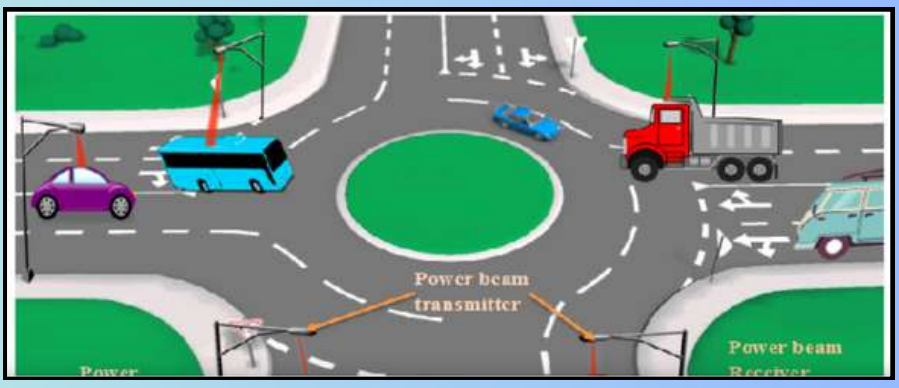
By forecast, Wireless Power Transfer will be the most marketable and sustainable alternative to fossil fuel power plants.

With advancements in the field happening all the time, a worldwide wireless power transfer system is a possibility in the near future.

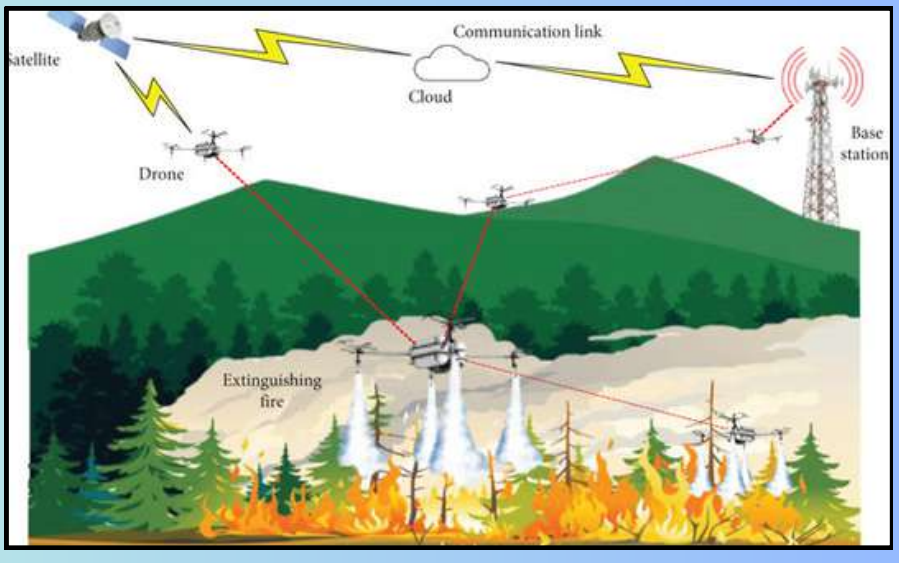
Use in Human Body in Hospital



Wireless charging of electric vehicle on the way



For Fire Extinguishing



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How Can Hotel Management Encourage Hotel Guests to Save Energy?

Hotels need to optimize energy efficiency by encouraging guests to be more aware of conservation.

Extended stay hotels in the planning stages should consider adopting a real-time energy consumption meter in guest rooms because their suite-type room with full kitchens carries more energy costs than that of a transient hotel. Such energy conservation techniques offer guests a unique experience in learning their real-time energy use.

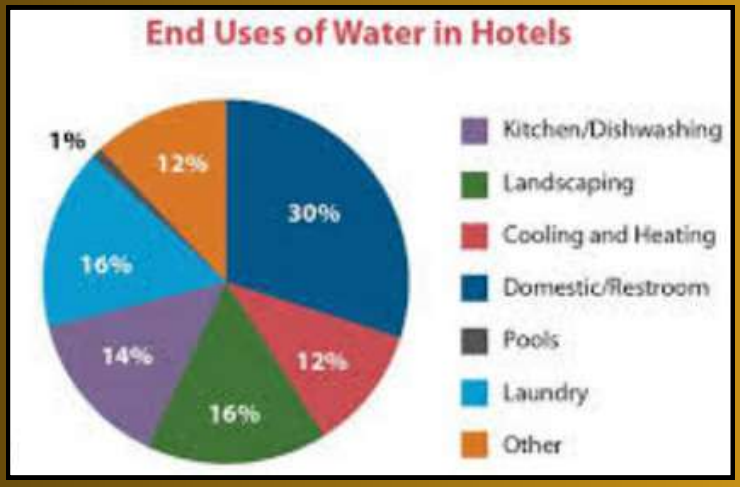
Moreover, hotel operators should consider using the science of choice to nudge hotel guests toward energy conservation and sustainability. For example, with a wastewater drain that displays the amount of water that has passed through it, hotel operators can provide guests with information on the number of gallons of water used with a comparison to other guests instead of installing water-efficient showerheads that hotel guests might find unsatisfactory.

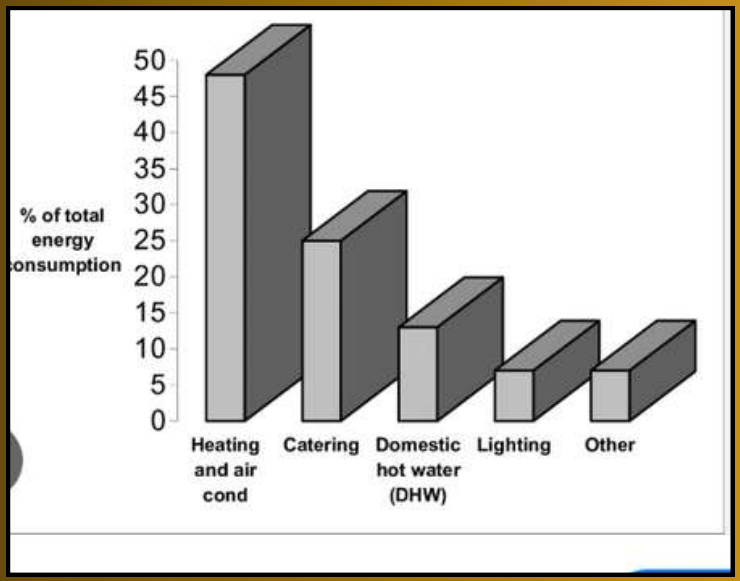
This water conservation nudge would also offer guests an opportunity to learn how much water they use and make a choice toward water conservation. In essence, the water conservation nudge would help educate guests about their subconscious behavior when using water. In the end, hotels can be a place where guests learn how to conserve and do the same thing at home

Currently, some hotels offer a financial reward for declined maid service, but few reward guests for towel reuse or any other environmental campaigns in which guests participate. When the nudges are implemented, ***hotels can award their frequent guests a status from greenest, greener, green, and light green based on guests' actual energy usage per stay***

in this way, hotels can continuously promote energy conservation behavior.

Ultimately, once the system is developed, hotel brands could provide guests with descriptive energy usage information on each of their stays within the same brand hotels.?





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INDUSTRIAL DECARBONISATION

Options and Challenges for India

At the COP26 UN climate change conference in Glasgow, many countries reaffirmed commitments they made to limit global warming at COP21 in Paris in 2015. India's COP26 commitments were described as "ambitious" and "path-breaking". This included commitments to achieve net zero emissions by 2070; increase non-fossil energy capacity to 500GW by 2030; bring the economy's carbon intensity down to 45% by 2030; fulfil 50% of its energy requirement through renewable energy by 2030 and reduce total projected carbon emissions by 1bn tonnes by 2030.

These commitments to significantly reduce carbon intensity are a tall order and would not be possible without a significant contribution from industry. Industrial processes alone account for around 29-30% of global greenhouse gas emissions – decarbonising industrial processes is a top priority.

Potential Industry Sectors for Decarbonization

Industry sectors that are critical in terms of climate impact include cement, fertilisers (including ammonia for urea production), ferrous and non-ferrous metals, refineries, and downstream, as these are the sectors having a relatively high share of emissions from feedstocks and require high temperatures compared to other sectors

Potential Industrial Sectors for Decarbonisation

Cement

- **Estimated CO_2 emissions:** 180 mmt (2018) & 390 mmt (2030)
- Major sources of CO_2 emissions are calcination process (60%) & combustion of fuels in the kiln, as well as from power generation (40%)

Metals

- **Estimated CO_2 emissions**: 130 mmt (2018) & 230 mmt (2030)
- Major CO2 sources are Blast Furnace, Coke plant, EAF & Sinter Plant.

Oil / Gas Refinery

- Estimated CO_2 emissions: 55 mmt (2018) & 80 mmt (2030)
- Major CO2 sources are large utility boilers & process furnaces, the catalytic reformer & FCCU regenerator.

Fertilizers

- **Estimated CO_2 emissions:** : 20 mmt (2018) & 42 mmt by 2030 (urea)
- Major CO2 sources in Urea manufacture are ammonia synthesis (Feedstock) and fossil fuels used for steam and power generation.

Chemicals

- Chemical processes using fossil fuel feedstock (e.g. hydro-carbons like methanol) or high energy intensive processes (e.g. Chlor-alkali) all together contributes significantly in carbon emissions.

Cement, metals (ferrous and non-ferrous) and oil/gas refinery has been accorded importance mainly because of their sheer size and emission intensity. Similarly, in the fertiliser sector, decarbonising urea production is a priority because of the predominant use of fossil fuels as feedstock, although there is also good potential for decarbonising other phosphatic fertilisers.

Challenges in industry decarbonisation

Industry decarbonisation is feasible but reducing carbon dioxide (CO2) emissions in these sectors is relatively difficult for several reasons – some technical and some economic.

If the bulk of the emissions is from irreplaceable feedstocks, it is not easy to reduce them through process changes as it also entails changes in the dependent processes. Secondly, replacing fossil fuels with the generation of high-temperature, high- pressure steam using green sources of electricity or energy also involves considerable changes in furnaces and burners.

Investment levels are also economically prohibitive when technology transition is involved. Typically, projects in these sectors are high scale and have a long lifespan (over 30 years with maintenance). Process changes and retrofits in the existing units are therefore complicated, costly and require advanced and careful planning.

PATCELL HAREDA ऊर्जा पत्रिका JUNE 2024

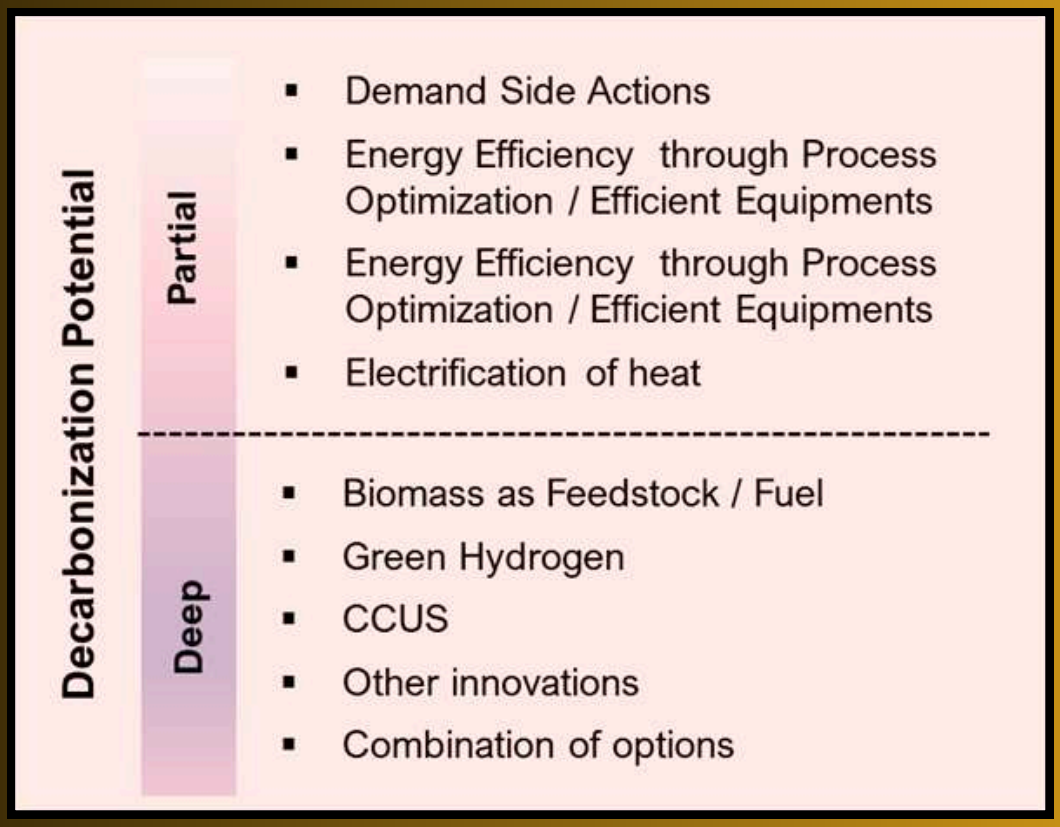
INDUSTRIAL DECARBONISATION

These changes would also have an impact on the marketability of the final products as a substantial increase in capital and operating expenses would push the final product price upwards. These products –cement, fertilisers, petrochemicals and steel –are commodity products traded globally. The price sensitivity of these product markets deters producers from adopting low-carbon processes and technologies

.

Decarbonisation options

There are several options for decarbonisation. (1) Demand-side actions: reducing demand for resources by reuse, recycling, or replacement with green alternatives; (2) Energy efficiency: improvements in efficiency through process debottlenecking and optimisation or by using better energy-efficient equipment; (3) Electrification of heat: substituting fossil fuels for heating with renewable electricity; (4) Biomass as feedstock or fuel: replacing hydrocarbon feedstock or fossil fuels with sustainably produced biomass; (5) Green hydrogen as fuel or feedstock: replacing feedstock or fuel with green hydrogen; (6) Carbon capture, use and storage (CCUS): using a suite of technologies to capture CO2 emissions from large industry outputs and either using it in processes requiring CO2 or storing it; (7) Other innovations: using innovative processes, such as electrochemical production processes.



The selection of a specific decarbonisation option, or a combination of options, depends on the goal (partial or deep decarbonisation) of the industry. The optimum mix of decarbonisation options should be selected based on the local context and the most pragmatic solution in the long run. Important local factors include (1) the availability and cost of low-carbon energy sources – specifically, zero-carbon renewable electricity and sustainably produced biomass; (2) access to storage capacity for captured CO2, along with public and regulatory support for carbon storage. The other factor that could affect the choice of options is the project stage (greenfield or brownfield).

Industry Complexity Index for Decarbonisation

Each industry sector has different decarbonisation challenges. These factors are captured in the Industry Decarbonisation Complexity Index, including (1) availability of technology options for deep decarbonisation; (2) cost and effort involved in acquiring and adopting new technology options; (3) industry willingness. which depends on global competitiveness; (4) maturity of new technologies – high levels of complexity are associated with CCU and CCUS and the replacement of feedstock with green feedstocks, which are costly and not readily available.

The optimum mix of decarbonisation options depends on the availability of technologies and the economic feasibility of implementing them in the local context.

Each industry should prepare a practical roadmap setting out how to achieve the best possible level of decarbonisation. This transition should be aligned with technical advances in renewables, green hydrogen, ammonia production and CCUS.

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INDUSTRIAL DECARBONISATION

How to accelerate the pace of decarbonisation

The pace of decarbonisation hinges on a dual transformation of energy and industrial sectors and support from all stakeholders.

All key stakeholders must come together to harness opportunities for collaboration, which are mutually beneficial. For example, industrial companies might need to co-invest in large renewables parks, CCS infrastructure, and R&D initiatives in emerging decarbonisation technologies. The role of the public sector and government is also crucial in setting the pace of decarbonisation. Government can accelerate change by pushing state and regional governments to adjust regulations and incentives to support decarbonisation.

Industry Specific Complexities for Decarbonisation

Cement	▪ Emissions from limestone calcination-hard to abate for the want of feasible alternative to limestone. CCU may not be cost efficient ▪ Electrification of very-high-temperature heat (>1,600 °C) are difficult to in electric furnaces
Metals (Steel)	▪ Combination of options for achieving deep carbonization. This includes BF/BOF efficiency improvements, Biomass reductants, CCU, Shifting to EAF using scrap, DRI and Green Hydrogen could be viable option
Oil / Gas Refinery	▪ Combination of options – use of CCUS in refining, renewables in operations, methane reductions, reducing flaring and venting of CO2, Oil to gas shift, Efficiency improvements, using biomass as feedstock for gasoline, bio-diesel, etc
Fertilizers	▪ Typically, Urea production is unsuitable for sequestering CO2. Capturing and using atmospheric CO2 is theoretically an option, but it implies a prohibitive cost increase on top of expected high green ammonia costs. Using Green Ammonia directly as a fertilizer or using carbon free nitrogenous fertilizers (like AN / CAN) could be other option.
Chemicals	▪ Few chemicals like Ammonia & its derivatives, methanol can be produced using green hydrogen or some derived from bio-mass or agri-mass like Furfural, etc

Now is the time for industries to begin the transition, but it will be a long journey. Joint planning and support from government and other stakeholders will help India's industries to set important decarbonisation milestones and overcome barriers along the way.

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Miscellanous

The International Renewable Energy Agency (IRENA) which provides a comparative analysis of key indicators related to energy access, renewable energy consumption and energy efficiency between the year 2015 and the latest available year in order to achieve goal.

Here's a detailed summary of the content:

Key Indicators:

- *Access to Electricity*
- **2015: 957.5 million people without access.**
- **2022: 685 million people without access.**
- **Change: Significant reduction.**
- *Access to Clean Cooking*
- **2015: 2.7 billion people without access.**
- **2022: 2.1 billion people without access.**
- **Change: Improvement.**

Renewable Energy Share

- **2015: 16.7%.**
- **2021: 18.7%.**
- **Change: Increase.**

Energy Intensity

- **2015: 4.9 MJ/USD.**
- **2021: 4.6 MJ/USD.**
- **Change: Improved efficiency.**

Financial Flows for Clean Energy

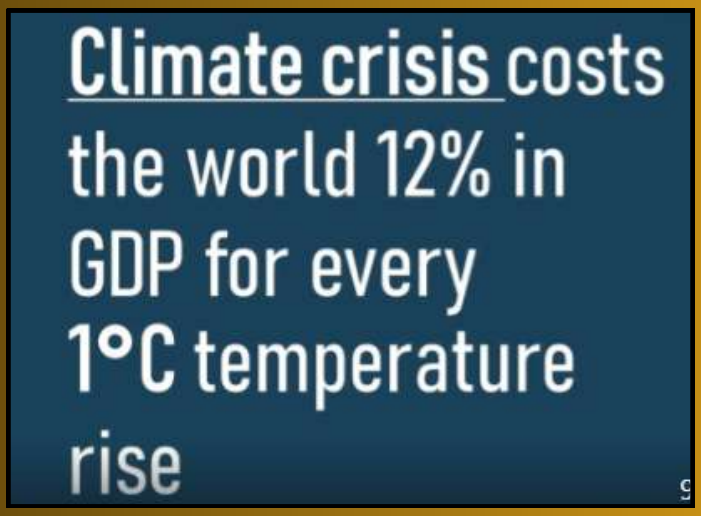
- **2015: 12.3 billion USD.**
- **2022: 15.4 billion USD.**
- **Change: Increase.**

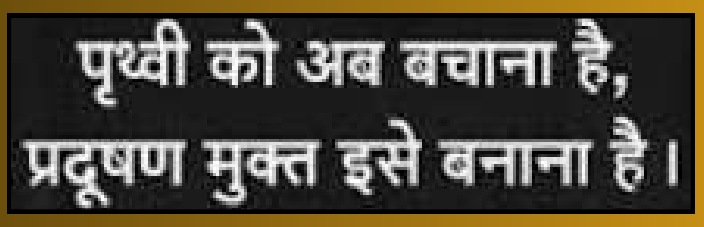
Installed Renewable Capacity

- **2015: 250 watts per capita.**
- **2022: 424 watts per capita.**
- **Change: Significant increase.**

Summary:

There have been notable improvements in access to electricity and clean cooking technologies, increased renewable energy consumption, enhanced energy efficiency, greater financial support for clean energy, and a significant rise in installed renewable energy capacity.





Answers to Renewable Energy Crossword

Across: 2. Ethanol 5. Hydroelectric 6. Biomass 7. GreenhouseGases 8. Solar

Down: 1. Geothermal 3. FossilFuels 4. Wind

PATCELL HAREDA ऊर्जा पत्रिका JUNE 2024

PATCELL HARYANA

Webinar on : "Leveraging Heat Recovery and Thermal Solutions to lower carbon emissions and heating costs"

Speaker: Ajay Balachandran
Organization: PROMETHEAN ENERGY, Mumbai

MAJOR LEARNINS FROM THE WEBINAR

Ina2-stage air compressor

- **~50%ofinput power rejected in intercooler**
- **~50%of input power rejected in after cooler**
- **Heat can be recovered from these stages to generate hot water for AHU applications**
- **Apart from savings in heating consumption,**
- **It will lower load on after cooler,**
- **Reduce air temperatures,**
- **Lower load on dryer and**
- **Higher quality air. (intangible savings)**
- **90% of compressor power is rejected as heat**
- **~65-75% is rejected in oil in oil injected air compressors**
- **This is heat available in the oil at 80-100 ^{0}C**
- **Heat can be recovered from oil for generating hot water at zero cost**
- **For every 100 kW of power consumption, ~65 kW can be recovered as heat energy**

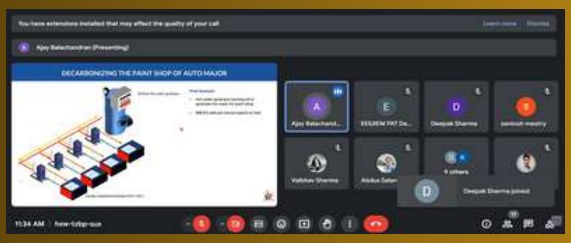
BENEFITS

- **60-70% of electrical input to compressor can be recovered for generating hot water**
- **Heat rejection in radiators and cooling towers is significantly reduced leading to a cooler factory environment**
- **The heat recovery system also acts as an oil pre-cooler, and helps in keeping oil temperature under control during summer months**
- **Compressed air temperatures are lower even in hot summer months leading to better plant air quality**

"Different Products and Potentials Heat Recovery

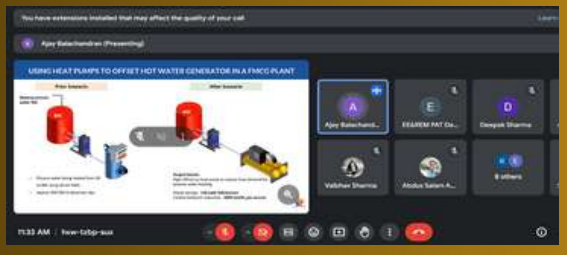
Benefits of heat recovery system

Internal working of Heat Pump

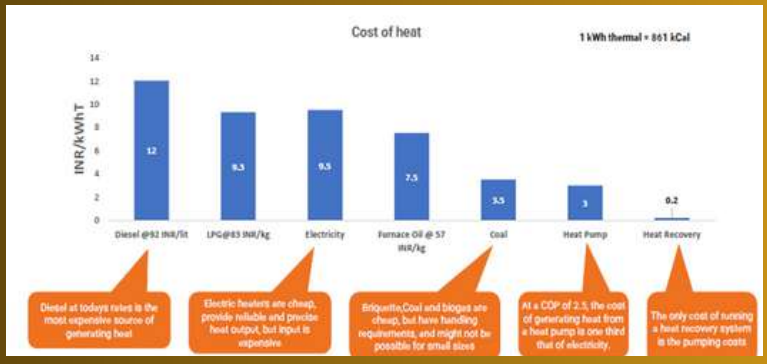


Fuel Consumption in Paint Shop before Decarbonisation

Benefits after Decarbonizing the Paint shop



Using Heat Pump of Offset Hot water generation in FMCG Plant



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CASE STUDY ON HEAT RECOVERY FROM COMPRESSOR
How much energy can be saved?:
Example:
160 kW air compressor running 24 hours per day
Energy that can be Recovered:

160x65%= 104kW
87000 kCal/hour of heat energy = 2200 liter per hour heated from 30 to 70C
Savings equivalent to 150 kg per hour of steam
Assuming steam cost at 2 INR/kg
Approximately INR 300/hour of savings
Approximately INR 10-20 Lakh/year of savings
ROI : < 1-1.5 years

CASE STUDY OF RECOVERING WASTE HEAT FOR CHILLERS
>47% of compressor power is rejected as heat

Each TR releases 4.5kW of heat energy.
✓The system is custom designed as per the capacity of the chiller.
✓With the installation of the waste heat recovery system, the condenser area heat rejection increases upto 25% and 5 to 20% increase in cooling capacity of the chiller.
✓The system is also equipped with Live Data monitoring which allows you to monitor the total energy saved.

HOW MUCH ENERGY CAN BE SAVED?

Refrigeration side: 2 x KC-6 equivalent reciprocating compressors
Heating side: Biomass briquette used in boiler
Application of heat Recovery: Recover heat from ammonia compressors to heat boiler feed water
Installation: One unit installed on common discharge of 2 compressors.
Quantum of heat Recovery Achieved: 50 kW per compressor(100 kW when both running at full load)
1500 litter/hour water heated by 30C per compressor.

ROI: 18 months

PATCELL HAREDA ऊर्जा पत्रिका JUNE 2024

PATCELL HARYANA

Two days Capacity Building Program- Implementation of provisions of Energy Conservation Act

Venue: Chandigarh

Date: 21 & 22 March, 2024

Organised By: NPTI in Association with BEE GoI

Attendies: HAREDA, PEDA, SERC,NTPC,DISCOMs

Few Snippets

दो दिवसीय क्षमता निर्माण कार्यक्रम का सफलतापूर्वक हुआ समापन

ऊर्जा संरक्षण, जलवायु और भारत का नेट-जीरो लक्ष्य विषयों पर हुए सत्र

तहलका जज्बा/दीपा राणा

चंडीगढ़। चंडीगढ़ के सेक्टर 17 स्थित होटल शिवालिक व्यू में उत्तरी क्षेत्र के लिए ऊर्जा संरक्षण अधिनियम के प्रावधानों का कार्यान्वयन विषय पर आयोजित दो दिवसीय क्षमता निर्माण कार्यक्रम का सफलता पूर्वक समापन किया गया। यह कार्यक्रम विद्युत मंत्रालय भारत सरकार के ऊर्जा दक्षता ब्यूरो (बीईई) दिल्ली द्वारा राष्ट्रीय विद्युत प्रशिक्षण संस्थान (एनपीटीआई) कॉर्पोरेट कार्यालय फरीदाबाद के सहयोग से किया गया। कार्यक्रम में इंजीनियर हीरा लाल गोयल, मुख्य अभियंता/प्रवर्तन एवं ऊर्जा लेखा परीक्षा, पीएसपीसीएल, पटियाला मुख्य अतिथि के रूप में मौजूद रहे। दो दिन तक चले क्षमता निर्माण कार्यक्रम में में विशेषज्ञ प्रस्तुतियां, इंटरैक्टिव सत्र और केस स्टडीज की एक पूरी श्रृंखला चली। कार्यक्रम के पहले दिन पांच सत्र हुए जिसमें ट्रांस इंडिया लॉ एसोसिएट्स, दिल्ली के प्रबंध भागीदार राज सिंह निरंजन ने ऊर्जा का परिचय देते हुए संरक्षण अधिनियम, 2022 के संशोधन पर सत्र लिया। सीपीआई, दिल्ली के कार्यक्रम प्रबंधक अरुण कृष्णन ने ऊर्जा संरक्षण - सस्टेनेबल बिल्डिंग कोड (ईसीएसबीसी) पर प्रकाश डाला। सीपीआई, दिल्ली के वरिष्ठ प्रबंधक सार्थक खुराना ने ऊर्जा का कार्यान्वयन संरक्षण अधिनियम के लिए आगामी कार्बन तटस्थता और भारत का नेट-जीरो लक्ष्य क्या है इसके बारे में जानकारी दी। सत्रों के सिलेसिले में फिर से ट्रांस इंडिया लॉ एसोसिएट्स, दिल्ली के प्रबंध भागीदार राज सिंह निरंजन ने ऊर्जा का प्रवर्तन संरक्षण अधिनियम के माध्यम से निरीक्षण, निर्णय, पूछताछ और अधिरोपण दंड क्या होता है और काम करता है इसके बारे में विस्तार से बताया है। एनटीपीसी, दिल्ली की पूर्व डीजीएम डॉ. बीएस मीना ने अपने सत्र के दौरान बताया कि (पीएटी) योजना में अपना बेहतरीन प्रदर्शन कैसे करें, व्यापार कैसे करें जिससे आपको उपलब्धि हासिल कैसे होगी। दूसरे दिन में भी इंटरैक्टिव सत्रों का सिलसिला जारी रहा, हरियाणा (हरेडा) के एसडीए शुकचैन सिंह ने ऊर्जा संरक्षण अधिनियम के अंतर्गत नामित उपभोक्ता की क्या भूमिका रहती है इसके उपर अपना सत्र लिया। चंडीगढ़ के पीईडीए शरद शर्मा ने (एस एंड एल) योजना के मानक और लेबलिंग के बारे में विस्तार से बताया। एनटीपीसी, दिल्ली की पूर्व डीजीएम डॉ. बी.एस. मीना ने ऊर्जा के लिए अपीलीय न्यायाधिकरण संरक्षण के विषय पर जानकारी दी तो वहीं डॉ. बी.एस. मीना ने जलवायु को लक्ष्य मानते हुए ईएसजी बीआरएसआर का कार्यान्वयन परिवर्तन/संकट और वहनीयता जैसे गंभीर विषय पर भी प्रकाश डाला। खनऊ में ऊर्जा संरक्षण अधिनियम के प्रावधानों के कार्यान्वयन हेतु क्षमता निर्माण कार्यक्रम से हितधारकों के लिए ऊर्जा संरक्षण और टिकाऊ ऊर्जा स्रोतों की ओर क्षेत्र के बदलाव के बारे में चर्चा, सीखने और रणनीति बनाने के लिए एक गतिशील मंच के रूप में काम करने की उम्मीद है। उत्तर भारत में अद्वितीय चुनौतियों और अवसरों पर ध्यान केंद्रित करते हुए इस कार्यक्रम का उद्देश्य ऊर्जा संरक्षण अधिनियम की व्यापक समझ को बढ़ावा रहा। प्रतिभागी क्षेत्र के ऊर्जा संरक्षण लक्ष्यों के लिए प्रासंगिक नवीन प्रौद्योगिकियों, नीति ढांचे और सामुदायिक सहभागिता मॉडल पर भी चर्चा की गई।

ऊर्जा संरक्षण अधिनियम के प्रावधानों का कार्यान्वयन विषय पर होगा दो दिवसीय क्षमता निर्माण कार्यक्रम

कार्यक्रम में विशेषज्ञ प्रस्तुतियां, इंटरैक्टिव सत्र और केस स्टडीज की रहेगी श्रृंखला

तहलका जज्बा/दीपा राणा

चंडीगढ़। विद्युत मंत्रालय भारत सरकार के ऊर्जा दक्षता ब्यूरो (बीईई) दिल्ली द्वारा राष्ट्रीय विद्युत प्रशिक्षण संस्थान (एनपीटीआई) कॉर्पोरेट कार्यालय फरीदाबाद के सहयोग से उत्तरी क्षेत्र के लिए ऊर्जा संरक्षण अधिनियम के प्रावधानों का कार्यान्वयन विषय पर दो दिवसीय क्षमता निर्माण कार्यक्रम सेक्टर-17 चंडीगढ़ के होटल शिवालिक व्यू में 21-22 मार्च 2024 को आयोजित किया जाएगा। कार्यक्रम में इंजीनियर हीरा लाल गोयल, मुख्य अभियंता/प्रवर्तन एवं ऊर्जा लेखा परीक्षा, पीएसपीसीएल, पटियाला मुख्य अतिथि के रूप में मौजूद रहेंगे। इसमें विशेषज्ञ प्रस्तुतियां, इंटरैक्टिव सत्र और केस स्टडीज की एक श्रृंखला होगी।

बता दें कि लखनऊ में ऊर्जा संरक्षण अधिनियम के प्रावधानों के कार्यान्वयन हेतु क्षमता निर्माण कार्यक्रम से हितधारकों के लिए ऊर्जा संरक्षण और टिकाऊ ऊर्जा स्रोतों की ओर क्षेत्र के बदलाव के बारे में चर्चा, सीखने और रणनीति बनाने के लिए एक गतिशील मंच के रूप में काम करने की उम्मीद है। उत्तर भारत में अद्वितीय चुनौतियों और अवसरों पर ध्यान केंद्रित करते हुए इस कार्यक्रम का उद्देश्य ऊर्जा संरक्षण अधिनियम की व्यापक समझ को बढ़ावा देना है। प्रतिभागी क्षेत्र के ऊर्जा संरक्षण लक्ष्यों के लिए प्रासंगिक नवीन प्रौद्योगिकियों, नीति ढांचे और सामुदायिक सहभागिता मॉडल का पता लगाएंगे।

● ऊर्जा दक्षता ब्यूरो (बीईई) क्या है ?

ऊर्जा दक्षता ब्यूरो (बीईई) एक बहु-विषयक निकाय है, जिसे ऊर्जा संरक्षण अधिनियम, 2001 के प्रावधानों के तहत स्थापित किया गया है। ऊर्जा दक्षता ब्यूरो की स्थापना 1 मार्च, 2002 से पूर्ववर्ती ऊर्जा प्रबंधन केंद्र में विलय करके की गई है। विद्युत मंत्रालय के तहत सोसायटी पंजीकरण अधिनियम, 1860 के तहत पंजीकृत एक सोसायटी होने के नाते बीईई का विशन भारतीय अर्थव्यवस्था की ऊर्जा तीव्रता को कम करने के प्राथमिक उद्देश्य के साथ ऊर्जा संरक्षण अधिनियम (ईसी अधिनियम), 2001 के समग्र ढांचे के भीतर स्व-नियमन और बाजार सिद्धांतों पर जोर देने के साथ नीति और रणनीतियों को विकसित करना है। इसे सभी हितधारकों की सक्रिय भागीदारी से हासिल किया जाएगा, जिसके परिणामस्वरूप सभी क्षेत्रों में ऊर्जा दक्षता को त्वरित और निरंतर अपनाया जाएगा।

● राष्ट्रीय विद्युत प्रशिक्षण संस्थान (एनपीटीआई) क्या है ?

राष्ट्रीय विद्युत प्रशिक्षण संस्थान (एनपीटीआई) विद्युत मंत्रालय, सरकार के अधीन एक आईएसओ 9001 और आईएसओ 14001 संगठन है। भारत का, विद्युत क्षेत्र में प्रशिक्षण और मानव संसाधन विकास के लिए एक राष्ट्रीय सर्वोच्च निकाय है जिसका कॉर्पोरेट कार्यालय फरीदाबाद में है। एनपीटीआई दुनिया का अग्रणी एकीकृत विद्युत प्रशिक्षण संस्थान है और यह नई दिल्ली, नागल, बेंगलुरु, नेवेली, दुर्गापुर, गुवाहाटी, अलाप्पुझा शिवपुरी और नागपुर में अपने क्षेत्रीय रूप से स्थित 11 संस्थानों के माध्यम से अखिल भारतीय आधार पर काम कर रहा है। एनपीटीआई के पास उद्योग विशिष्ट इंटरफेस के साथ विद्युत क्षेत्र में प्रशिक्षण और मानव संसाधन विकास के क्षेत्र में 50 वर्षों से अधिक की प्रोफेशनल विशेषज्ञता है। इस कार्यक्रम में वक्ता केंद्रीय और राज्य उपयोगिताओं, नीति निर्माताओं और नियामकों के प्रख्यात प्रौद्योगिकीविद् प्रतिभागियों को संबोधित करेंगे। कार्यक्रम को संवादात्मक वातावरण में आयोजित किया जाएगा जिससे चर्चा के लिए अधिक अवसर उपलब्ध होंगे।

PATCELL HAREDA ऊर्जा पत्रिका JUNE 2024

PATCELL HARYANA

Two days Capacity Building Program- Implementation of provisions of Energy Conservation Act

Few Snippets

We believe that you liked the contents. For any suggestions/valuable comments contact:

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