



CURRENT NEWS

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WHY COOLING CITIES IS AS IMPORTANT AS COOLING HOMES: UNDERSTANDING THE URBAN HEAT ISLAND EFFECT

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How Well Do You Know Your City's Heat?

Across history, cities have attracted people as centres of culture, knowledge, and economic opportunity, expanding quickly to accommodate rising populations and activities. However, this fast-paced transformation comes at a cost. As towns grow into cities and cities into megacities, land use patterns change dramatically: residential areas become denser, open spaces shrink, and development increasingly prioritises speed and cost.

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In Indian cities such as Chennai, growth has taken place both vertically and horizontally, alongside noticeable changes in buildings, land use, and the availability of shaded and open spaces. Since the 1990s, Chennai's population has more than doubled, from about 4.3 million in 1991 to nearly 11-12 million in the metropolitan region by 2025, while its built-up area has expanded by over 50%, reducing open and green spaces across the city. One of the most noted and questioned consequences of this transformation is rising heat, reshaping daily life, high electricity consumption, public health, and overall urban well-being.

The heat we experience is not just about hot weather or summer temperatures. It is the heat we feel when roads stay warm even after sunset, when modern buildings retain and radiate heat for long after the sun has set and when stepping outside feels hotter than what the weather report suggests. In cities, heat builds up through the day as sunlight falls on roads, rooftops, and walls, and instead of cooling down quickly, these surfaces hold on to the warmth.

Over time, this built-up warmth makes cities hotter than nearby green or open areas. Scientists call this the Urban Heat Island effect. As temperatures rise, people depend more on fans and air-conditioners, increasing electricity use. What was once seasonal heat has become a daily challenge, linking urban design, rising energy demand, and the urgent need to cool cities, not just homes.

People may not know this term, but they experience its effects every day. As cities grow hotter, the need for cooling increases, leading to higher electricity use and making heat a daily concern rather than a seasonal one.. This article explores how urban heat is created, how it is closely linked to energy and electricity use, and why cooling cities, not just individual homes, is becoming increasingly important.

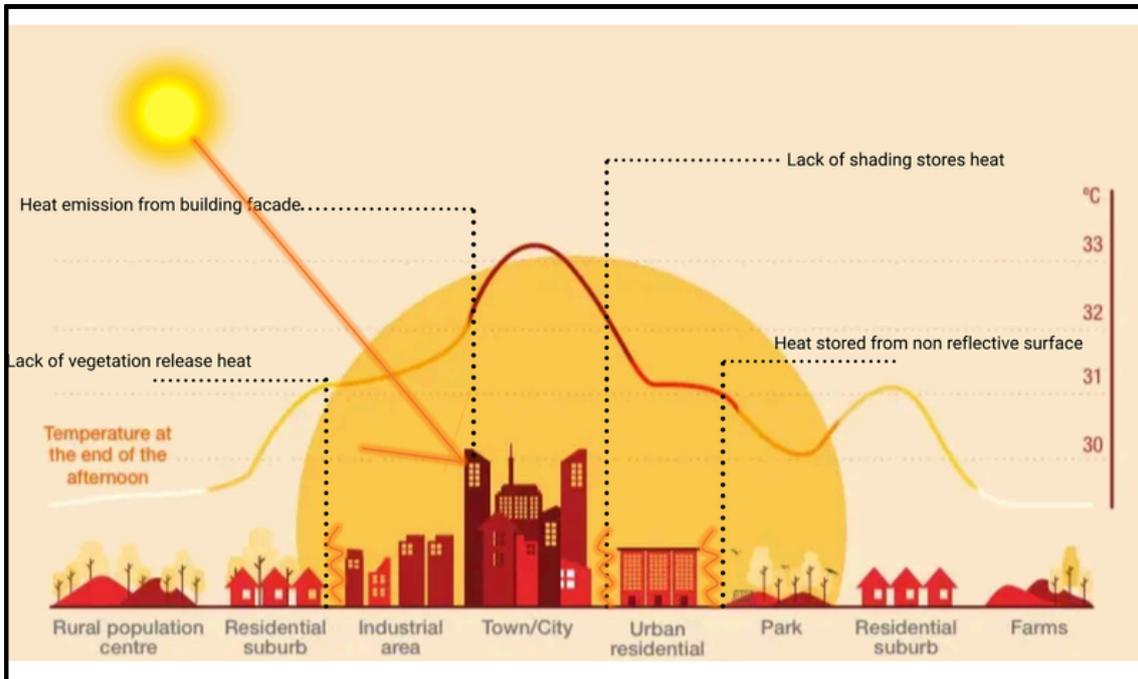


Figure 1: Urban Heat Island schematic showing heat accumulation in urban centres. Concept adapted from Urban Heat Island literature (Source:[Iberdrola](#))

Urban Heat Islands and Rising Electricity Use

Buildings are among the largest consumers of energy globally, accounting for roughly 30% of total final energy use. As cities grow denser and more populated, homes, offices, shops, and other buildings consume increasing amounts of electricity. This growth is driven by rapid urbanisation, rising temperatures, and a growing dependence on cooling. Compared to a few decades ago, buildings today use significantly more energy, mainly for air-conditioning, fans, lighting, and appliances.

In many Indian cities, electricity demand is increasing by about 4-6% annually, with summer peak demand rising during heatwaves. In hotter urban areas, cooling can account for 45% of peak electricity demand, placing pressure on power supply systems and contributing to higher emissions and pollution.

This growing electricity use creates several challenges. It puts pressure on power supply systems, increases pollution, and adds to climate-change effects. In UHI-affected cities, increased heat intensifies cooling demand and raises peak electricity use. Understanding how buildings use energy, and why this demand keeps increasing, is important for managing electricity use, reducing heat, and making cities more comfortable and sustainable in the long run.

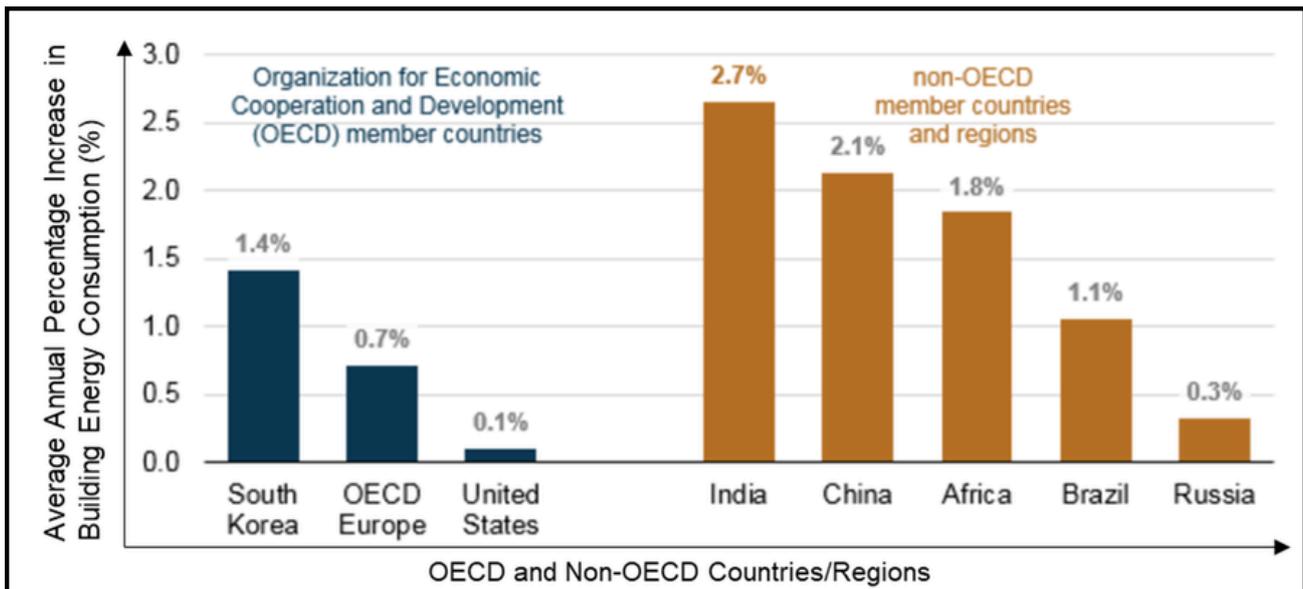


Figure 2: Average Annual Percentage Change in Building Energy Consumption (2015-2040), IEA

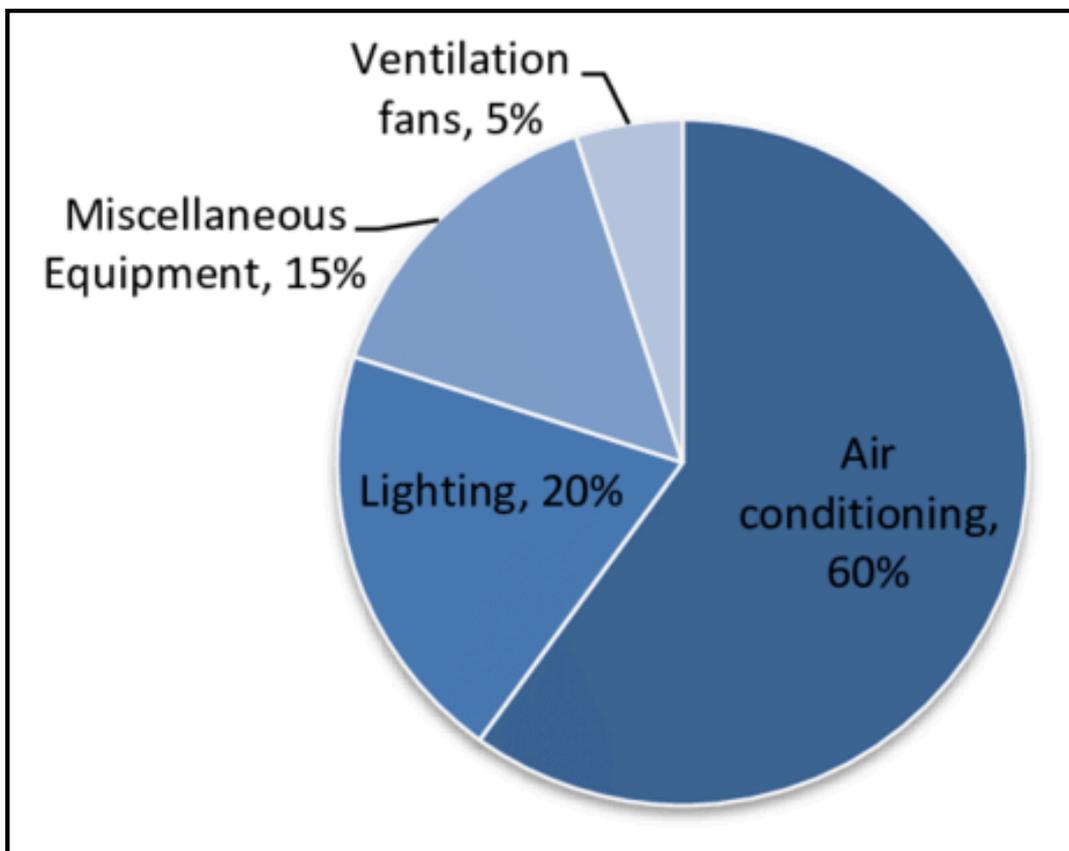


Figure 3: Energy consumption pattern of buildings in India, CII, 2009

What Quick Actions Can Help Cool Our Cities

Urban heat can be reduced through immediate, low-cost actions taken at multiple scales, from individual buildings to city-wide systems. While cooling strategies traditionally focus on shade, reflective surfaces, and greenery, solutions like solar-based interventions can also play a supporting role when thoughtfully integrated.

1. Building-Level Actions: Cooling Individual Buildings

At the building level, the priority is to limit heat absorption and reduce indoor temperatures.

Key actions include:

- Applying cool roofs and reflective coatings to reduce heat gain.
- Using green roofs, terrace gardens, and vertical greenery for insulation and evaporative cooling.
- Installing rooftop solar or building-integrated photovoltaics (BIPV) that act as shading elements while generating clean electricity for daytime cooling needs.

2. Neighbourhood-Level Actions: Cooling Shared Spaces

At the neighborhood scale, actions focus on reducing surface temperatures and improving outdoor comfort.

Key actions include:

- Integrating **solar panels into parking structures, and public infrastructure** (urban photovoltaics) to provide shade and generate clean energy.
- **Creating green corridors, pocket parks, and community gardens** to break up dense built areas and improve airflow.
- **Planting and protecting street trees** to provide continuous shade over roads, sidewalks, and public spaces. Trees can reduce surface temperatures significantly and lower surrounding air temperatures through evapotranspiration.

These combined interventions help cool neighbourhood microclimates while supporting energy resilience.

3. City-Level Actions: Systemic Cooling and Energy Resilience

At the city scale, cooling requires coordinated planning across land use, infrastructure, and energy systems.

Key actions include:

- Implementing **city-wide cool roof, cool pavement, and urban greening programmes**, especially in heat-vulnerable areas.
- Embedding cooling measures within **Heat Action Plans and urban development regulations**.
- Promoting **solar integration across existing infrastructure**, including rooftops, transport corridors, roads, and rail networks, to meet daytime energy demand without adding new heat-intensive systems.

Reducing dependence on fossil-fuel-based power generation, which contributes significantly to urban heat and air pollution.

A Combined Approach to Urban Cooling

Solar energy when integrated with passive cooling measures, becomes a powerful enabler. By combining shade, reflective materials, greenery, water-sensitive design, and decentralized solar energy, cities can reduce heat stress, lower energy demand, and build long-term climate resilience.

CONSUMER FOCUS

The appellant, a domestic consumer, lives in a rented house. He received an unusually high electricity bill of Rs. 11,399 for the billing period of July and August 2024. Another bill of Rs.6,135 for the consumption period between September and October 2024 was also similarly high compared to his previous bills. He noticed that the charges were excessive and inconsistent with his usage, so he approached the electricity section office and submitted a formal complaint to the Assistant Engineer. Based on the complaint, the Assistant Engineer inspected the appellant's premises and mentioned that the high bill might be due to internal issues such as neutral faults or electrical leakage. Upon accepting the AE's inspection, he independently examined the wiring and neutral connection with an electrician and was informed that there were no leakages or internal defects.

The appellant also noticed that the bills for subsequent months dropped significantly (to Rs.564 for November to December 2024 and Rs.846 for January to February 2025). Therefore, the appellant believed that the previous high bills to be a clerical mistake by the respondent, submitting a written complaint to the Assistant Engineer to check the figures.

Upon receiving the complaint, the meter data was downloaded and analysed by the Meter Relay Testing (MRT) wing. The MRT report indicated that the meter was in proper working condition and that the recorded consumption matched the data stored within the meter. Based on the report, AE asserted that the readings were accurately captured and entered into the consumer ledger. In their view, the high consumption reflected actual usage rather than any fault or error.

Dissatisfied with AE's explanation, the appellant approached the Consumer Grievance Redressal Forum (CGRF) to request a refund/adjustment of the excess amount collected. The Forum, after hearing both the contentions, examined the downloaded meter data and the MRT report. The Forum ordered that there was no excess billing and instead directed the appellant to check the internal wiring to avoid possible leakage. With this, they closed the appellant's complaint.

Aggrieved by CGRF's order, the appellant filed a complaint with the Tamil Nadu Electricity Ombudsman.

During the Ombudsman's hearing, the following were observed:

The appellant argued that the significant reduction in subsequent bills clearly demonstrated that the earlier bills were abnormal. He maintained that he had paid the disputed amounts under compulsion and sought a refund or adjustment. The respondent, however, contended that the appellant had occupied the premises only from June or July 2024, and that consumption had increased after his occupation. The 90-day load survey data downloaded from the meter showed an average daily consumption of approximately 20-25 units during the disputed period. According to the respondent, the increase was attributable to actual usage patterns and not to any defect in the meter.

The respondent highlighted Section 35 of the Indian Evidence Act, 1872, which “recognises entries in official records made in the discharge of public duty as relevant evidence”. The MRT download data constituted a scientific record generated and maintained in the ordinary course of official functioning. Such technical data carries evidentiary value unless rebutted by credible contrary evidence. In this case, there was no independent technical report demonstrating meter malfunction.

On the basis of the submissions of the parties, the Ombudsman determined the following:

Ombudsman’s Findings are:

- The Ombudsman noted that the same meter continued to remain in service and was functioning normally even after the dispute. During the hearing, the appellant reportedly admitted that upon monitoring the meter after filing the complaint, he found it to be performing well.
- The Ombudsman noted that the load survey data indicated a significant increase in daily usage during the relevant period. Additionally, he pointed out that there was no evidence of sudden spikes that would be inconsistent with typical electrical behaviour. Furthermore, the appellant failed to present any expert testimony that could counter this finding.

The Ombudsman concluded that the claim of excess billing was not supported by technical evidence produced by the appellant. Since the downloaded meter report confirmed proper functioning and accurate recording, and the consumption data aligned with ledger entries, the billing for the disputed period was valid. Therefore, the appellant’s plea for adjusting the excessive amount was rejected.

SOURCE: [OMBUDSMAN CASE](#)



NEWS FROM **TAMIL NADU**

TN's green schools cut power bills by nearly half, add cool roofs to beat classroom heat

Tamil Nadu's Green School Scheme is delivering measurable reductions in electricity consumption while the State expands passive cooling solutions such as cool roofs and shaded classrooms to reduce heat stress among students, an impact study has found. Designed to turn campuses into "living laboratories" for climate literacy, the programme is implemented by the Department of Environment and Climate Change under the Tamil Nadu Climate Change Mission. An impact study submitted by the Indian Institute for Human Settlements (IIHS) said the scheme is now being rolled out in 297 schools across multiple phases, supported by the UNEP Cool Coalition under the Swiss Agency for Development and Cooperation-funded BeCool Project. The study evaluated implementation in 97 schools under Phase 1 and Phase 2. The scheme integrates rooftop solar panels, rainwater harvesting, drip irrigation, waste segregation and composting, along with green spaces such as kitchen, medicinal and fruit gardens. While its core aim is climate learning and behavioural change, the programme is also delivering "tangible resource efficiency gains", the study found. A quantitative analysis of electricity bills from 49 schools showed an average 46% reduction in grid electricity use after rooftop solar installation, with monthly consumption dropping from 607.7 kWh to 328 kWh per school. Balakrishna Pisupati, Country Head, UNEP India, said the initiative "enhances students' ability to concentrate and learn by keeping classrooms safe". He said extreme heat, worsened by the climate crisis, "particularly impacts children", and added that Tamil Nadu's effort shows "simple, scalable solutions can significantly improve children's daily lives and serve as a meaningful investment in the future". Supriya Sahu, Additional Chief Secretary, Department of Environment, Climate Change and Forests, said Tamil Nadu's districts face varying heatwave risks, intensified by urbanisation and the Urban Heat Island Effect, with 13% moderately to highly vulnerable. Under the initiative, "we are retrofitting schools with passive cooling solutions to protect students and strengthen resilience. The programme fosters environmental stewardship and ensures classrooms remain cool and healthy.

SOURCE: [TNIE](#), 12 JANUARY 2026

NEWS FROM **ACROSS THE COUNTRY**

India's Power Transmission Network Crosses 5 Lakh Circuit Km

India's national power transmission network has achieved a significant milestone, crossing over 5 lakh circuit kilometres (ckm) of transmission lines (220 kV and above) along with 1,407 GVA of transformation capacity (220 kV and above). The world's largest synchronous national grid achieved this feat on 14th January 2026, with the commissioning of 628 ckm Transmission Line of 765 kV from Bhadla II to Sikar II substation for evacuation of RE power from Rajasthan Renewable Energy Zone. With commissioning of this transmission line additional 1100 MW of power can be evacuated from RE zone of Bhadla, Ramgarh & Fatehgarh Solar Power Complex. Since April 2014, the country's transmission network has grown by 71.6% with the addition of 2.09lakh ckm of transmission lines (220 kV and above), boosting transformation capacity (220 kV and above) by 876 GVA. The inter-regional power transfer capacity, which now stands at 1,20,340 MW, has enabled seamless transfer of electricity across regions, successfully realizing the vision of "One Nation - One Grid - One Frequency." The Inter State Transmission projects presently under implementation, will add approximately 40,000 ckm of transmission lines and 399 GVA of transformation capacity, In addition to these, the Intra State Transmission projects under implementation are expected to add another 27,500 ckm of transmission lines and 134 GVA of transformation capacity, which will further enhance grid reliability and power evacuation capability. The addition to the transmission capacity will help to evacuate the increasing non-fossil power generation which is targeted at 500 GW by 2030.

SOURCE: [PIB](#), 22 JANUARY 2026

WORLD NEWS

Solar to anchor U.S. load growth as data center demand surges

The solar industry is entering 2026 as the foundational technology for new power demand growth even as the sector navigates a volatile federal policy landscape. According to a new report from Wood Mackenzie, cumulative global solar capacity is on track to nearly triple, growing from almost 3 TW today to nearly 8 TW by 2034. While the 2025 market was defined by structural changes in China and executive actions in the U.S., the fundamentals for 2026 remain driven by a massive acceleration in electricity demand. In the United States, annual power demand growth is projected at 2.9% through 2035. The surge is primarily fueled by data centers, manufacturing facilities, and transport electrification. Wood Mackenzie currently tracks 160 GW of committed and under-construction large load requests, a figure representing 22% of the total 2024 peak demand. The report notes that while the Trump administration has favored fossil fuels and created a “volatile environment” leading to project cancellations, solar will be a primary source of new generation. Between 2026 and 2030, annual solar generation in the U.S. is forecast to grow by 232 GWh, a 65% increase. For comparison, annual gas generation is expected to grow by 340 GWh, or 21%, in that same period. While balcony solar offers short payback periods of less than five years, the report identifies several hurdles for the U.S. market. These include more fragmented electrical standards compared to Europe, lower standard voltage of 120 V and a higher proportion of single-family homes that may find the systems less aesthetically attractive. Despite these challenges and the first expected market contraction in China in 2026, Wood Mackenzie concludes that solar remains one of the primary sources of electricity generation capable of supplying global load growth over the next five years.

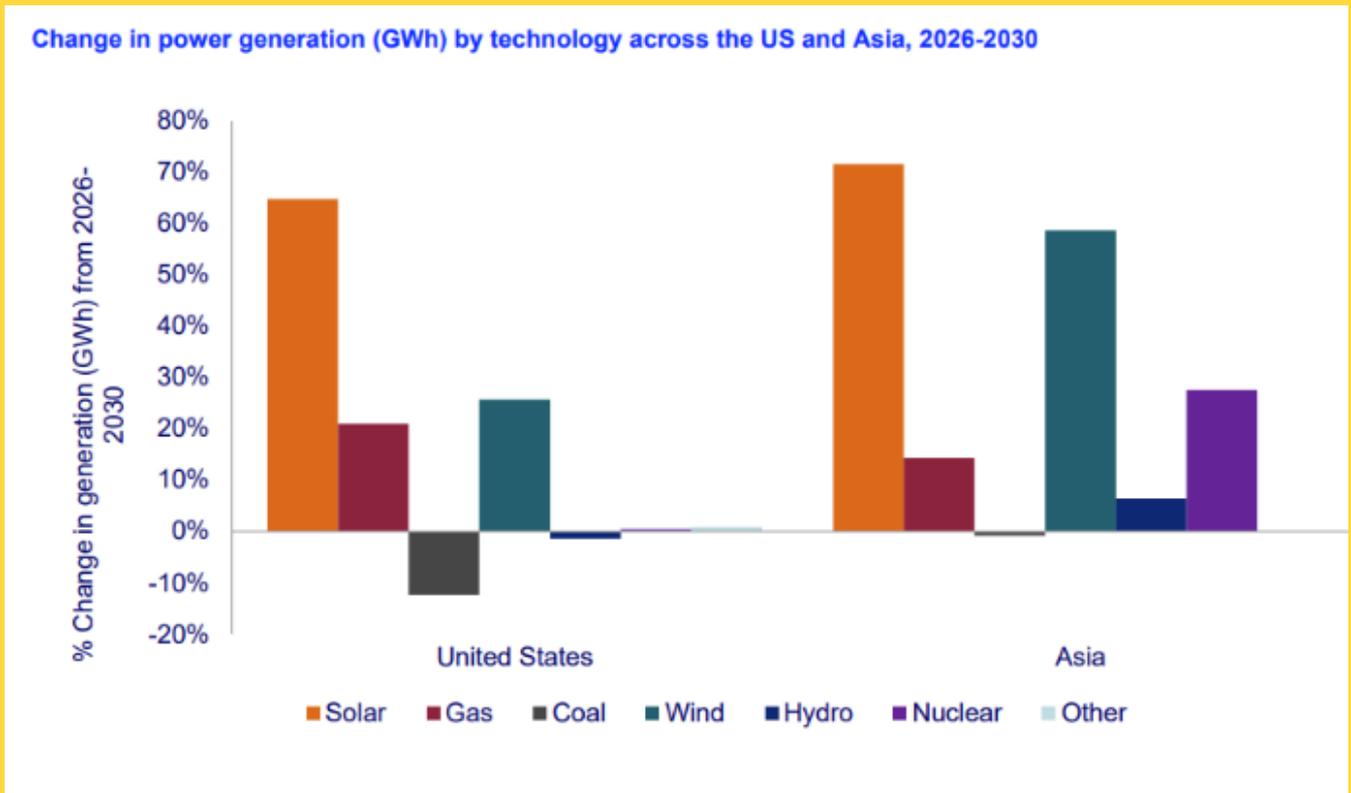
SOURCE: [PVMAGAZINE](#), 22 JANUARY 2026



PUBLICATIONS

- **Comments on Draft National Electricity Policy - 2026, [MoP](#)**
- **Tamil Nadu Electricity Grid Code, 2026, [TNERC](#)**
- **Tapping the Potential of Agriphotovoltaics in India, Climate Policy Initiative, [PFI](#)**
- **India's Expanding Role in the Global Energy Transition, [PIB](#)**

CHANGE IN POWER GENERATION (GWH) BY TECHNOLOGY AROUND US AND ASIA (2026-2030)



SOURCE: [PVMAGAZINE](#)

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