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Cold Thermal Energy Storage Systems: A Viable Alternative for Energy Conservation in Israel

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ABSTRACT

This article offers a comprehensive analysis of Cold Thermal Energy Storage (CTES) systems as a realistic and cost-effective alternative to conventional renewable energy investments in the context of Israel's energy strategy. The study begins by assessing the global progress of green technologies—such as solar, wind, and battery storage—and highlights their fundamental limitations, including intermittency, high disposal costs, and dependency on subsidies. Against this backdrop, the article evaluates the technical maturity and operational benefits of CTES systems, especially those utilizing liquid and pumpable ice. These systems enable demand-side energy shifting, reduce peak loads, and enhance grid resilience. Drawing on international data and case studies from Israel's commercial and high-tech infrastructure, the paper proposes integrating CTES as a key component in achieving energy efficiency, climate adaptation, and national energy security.

Keywords: Cold thermal energy storage, Green technology limitations, Liquid ice, Energy transition, Israel energy policy, Peak demand reduction, Energy resilience, Climate adaptation, Smart cooling, Infrastructure decarbonization

INTRODUCTION

In the 21st century, the challenge of sustainable development in energy systems has acquired global significance. The growth of global energy consumption, climate change, rising concentrations of greenhouse gases in the atmosphere, and mounting geopolitical pressures have compelled governments to seek effective solutions in energy conservation, power supply optimization, and reduction of anthropogenic environmental impact. In response, many countries have launched ambitious programs to promote "green" technologies—ranging from renewable energy development to energy efficiency measures and carbon capture solutions (Global Ice Technology Market Report, 2024).

The European Union has declared its transition to a low-carbon economy as one of its core strategic objectives. Within the framework of the European Green Deal, substantial funds have been allocated to the expansion of solar, wind, hydro, and bioenergy sectors, the enhancement of building energy performance, and the deployment of carbon capture and storage (CCS) technologies (Fortune Business Insights, 2024). However, the implementation of these initiatives has encountered growing obstacles. The escalating security crisis in Europe has prompted many governments to redirect public funds: billions of euros from sovereign wealth funds are now being allocated to defense budgets (Ministry of Energy (Israel), 2023). Public-private investment mechanisms that once prioritized green infrastructure are increasingly being repurposed to strengthen military capabilities—particularly as the United States distances itself from the war in Ukraine.

At the same time, the internal limitations of green technologies have become more apparent: high generation costs, dependency on weather conditions, challenges in recycling equipment, and long payback periods (Tel Aviv University Sustainability Division, 2023). These limitations underscore the urgency of identifying alternative solutions that can deliver measurable energy savings while minimizing investment risks and shortening the return-on-investment horizon.

Israel, with its hot climate, high solar radiation, and pronounced seasonal temperature variation, faces unique energy challenges. The country's energy system experiences peak loads during the summer months, driven by widespread use of air conditioning. Under such conditions, conventional approaches—such as scaling up solar and wind power generation—do not always deliver sufficient efficiency or grid stability.

This paper advocates for a more systematic adoption of Cold Thermal Energy Storage (CTES) systems in Israel as a cost-effective and operationally reliable alternative to large-scale renewable projects. CTES technologies enable electricity demand optimization by shifting cooling loads to off-peak hours through nighttime cold accumulation, which is then used during the day without additional strain on the grid. Investments in cold storage infrastructure and high-efficiency cooling technologies offer significantly faster payback periods compared to investments in solar panels and wind turbines (MedOne Data Centers, 2024).

This article provides a comprehensive analysis of the role of CTES systems within Israel's energy transition strategy. The first part reviews global green technologies, assessing their capabilities and limitations. The second part focuses on the economic rationale for CTES deployment, comparing the performance and viability of different solutions both within Israel and internationally.

Thus, Cold Thermal Energy Storage emerges as a realistic and pragmatic element of the energy transition, capable of mitigating peak loads, enhancing grid resilience, and accelerating the return on investment.

GREEN TECHNOLOGIES: BETWEEN EXPECTATIONS AND REALITY

Global Trends and Achievements

At the beginning of the 21st century, humanity came to recognize the pressing need for a transition toward sustainable energy systems. The growing impacts of climate change, the rise in greenhouse gas emissions, and the depletion of natural resources have led to the formulation of long-term strategies for sustainable development. Green technologies have emerged as a critical tool for achieving the objectives outlined in the Paris Agreement and the United Nations Sustainable Development Goals.

Green technologies encompass a range of technological solutions aimed at minimizing environmental harm, improving energy efficiency, utilizing renewable energy sources, and establishing closed-loop resource cycles. However, the large-scale deployment of green technologies has revealed systemic challenges that are becoming increasingly apparent as these systems scale in practice.

The development of renewable energy sources—particularly solar and wind power—has been one of the most notable achievements of the past two decades. In the early 2000s, the contribution of these sources to the global energy mix was marginal. Yet due to rapid technological progress and significant reductions in the production costs of photovoltaic panels and wind turbines, the share of renewables has steadily grown. According to the International Renewable Energy Agency (IRENA), the global weighted-average cost of electricity generated from solar photovoltaic systems decreased to USD 0.044 per kilowatt-hour in 2023.

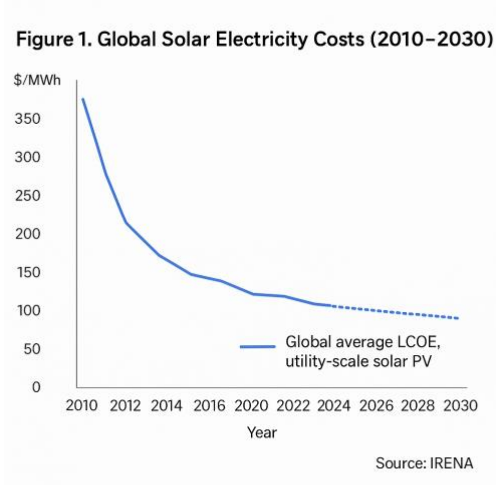

Figure 1: Solar electricity cost dynamics in the world (2010–2023)
Source: IRENA

As the deployment of solar and wind power plants accelerated, so did the advancement of energy storage technologies. Lithium-ion batteries, hydrogen storage systems, and solid-state batteries have received substantial investments. According to BloombergNEF, global investment in the energy transition reached a record $2.1 trillion in 2024—an 11% increase over the previous year (European Commission, 2024).

The electrification of transportation has become another marker of the green transition. According to the International Energy Agency (IEA), sales of new electric vehicles will reach 14 million units by 2024, accounting for about 18% of the global automotive market (Tesseract Academy, 2024). China, Europe, and the United States continue to lead the field. The expansion of charging infrastructure, model diversification, and government support are pushing the trend upward.

Limitations and Challenges

Despite notable progress, green technologies face a number of systemic constraints. One of the key issues is the inherent intermittency of electricity generation from renewable sources. Solar and wind output is subject to daily and seasonal fluctuations, requiring either substantial backup from conventional generation or the development of large-scale energy storage systems. As reported by the International Energy Agency (IEA), global installed energy storage capacity reached 240 GW in 2024, which remains insufficient to guarantee the stable operation of power systems entirely reliant on renewables (Global Cold Chain Alliance, 2024).

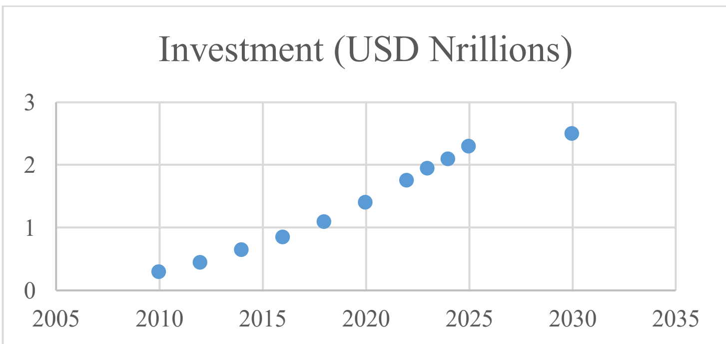

Figure 2: Global Green Energy Investment Growth (2010–2030)
Source: BloombergNEF, Energy Transition Investment Trends 2024.
https://about.bnef.com/energy-transition-investment/

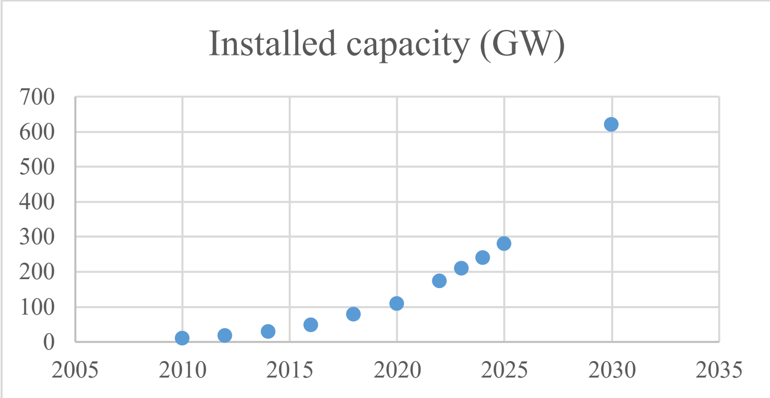

Figure 3: Global Energy Storage Capacity Growth (2010–2030)
Source: IEA, World Energy Outlook 2024.
https://www.iea.org/reports/world-energy-outlook-2024

In this context, Cold Thermal Energy Storage (CTES) technologies—based on accumulating and later utilizing cold for building and industrial cooling—can play a critical role in addressing peak demand without necessitating large investments in electrochemical storage. CTES systems enable a temporal shift in electricity consumption for cooling from peak daytime hours to off-peak nighttime hours, a particularly valuable strategy in hot climates such as Israel's.

Beyond energy system challenges, the development of a circular economy remains a significant hurdle. Despite advances in waste recycling in some countries, the global recycling rate remains low. The disposal of solar panels, wind turbine blades, and EV batteries has become an increasingly urgent issue. According to IRENA, by 2050, waste from decommissioned solar panels could exceed 78 million tons (IRENA, 2016).

Financial barriers also hinder the broader deployment of green technologies. The COVID-19 pandemic, the energy crisis of 2022–2023, and rising global inflation have driven up the construction costs of green energy infrastructure by 15–20%. As a result, the return on investment for solar and wind projects in several countries has become increasingly uncertain, particularly in developing economies.

Political and regulatory instability presents an additional challenge. Examples such as the rollback of renewable energy subsidies in the UK and Spain, as well as changing tax incentives in the United States, illustrate how green projects remain vulnerable to shifts in political priorities.

In addition, criticism of the economic promises of green energy is growing (van Onselen, 2025). The claim that renewable sources are cheaper than conventional generation is far from accurate. An electricity system that relies on intermittent sources will be very expensive and will cause a significant increase in electricity tariffs. The data around the world is clear: the higher the share of renewable energies in the electricity system, the higher the cost of electricity for the end user.

There is also a more critical view of the economics of renewable energy. According to van Onselen (2025), the claim that renewables are cheaper than baseload power is a myth. Constructing an intermittent renewable power system will be prohibitively expensive and will inevitably raise electricity bills. Empirical data worldwide confirm a clear correlation: the higher the share of renewables in a country's energy mix, the higher the retail price of electricity.

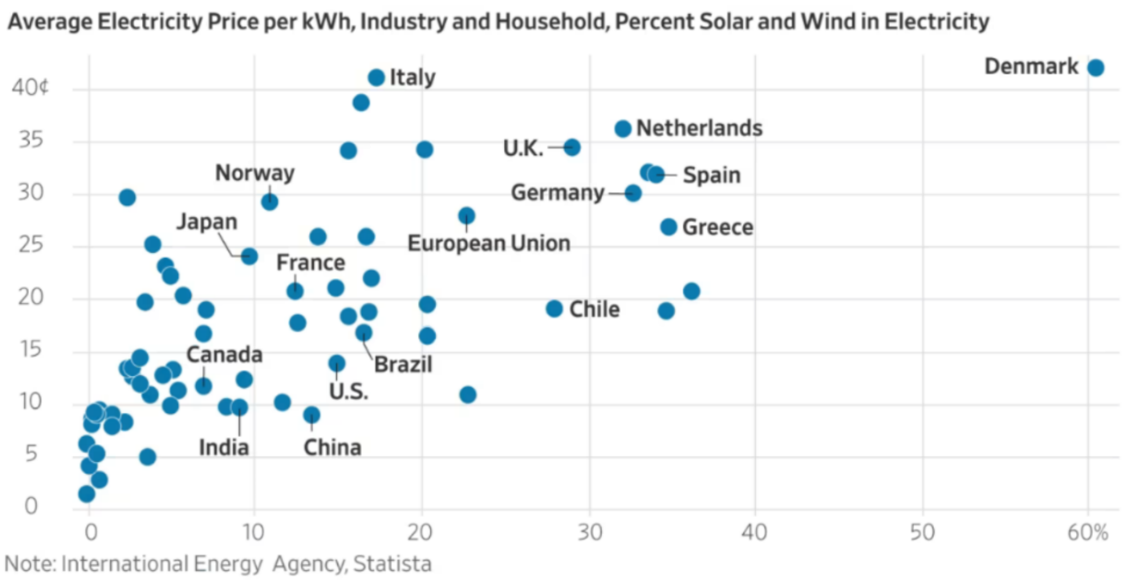

Figure 4: Average electricity price per kWh, industry and households, percentage of solar and wind electricity

Source: https://www.macrobusiness.com.au/2025/05/why-renewables-will-increase-energy-costs/

Recent modeling by Moody's has shown that retail electricity prices are expected to rise by 20–35% in real terms over the next decade, even under conservative assumptions for renewable energy investment. As the saying goes, there's no such thing as a free lunch.

Another trend worthy of discussion is the changing attitude of European countries towards nuclear energy. Following the energy crisis and the urgent need to reduce emissions, many countries – which previously announced a gradual cessation of the use of reactors – have returned to investing in new nuclear projects and extending the life of existing plants (IEA, 2024). Nuclear energy, characterized by high energy density, stable production and negligible carbon emissions, is once again considered a strategic component of Europe's energy security.

Nevertheless, nuclear power faces its own set of challenges: the high capital cost of new reactors, lengthy construction timelines (often exceeding a decade), and unresolved issues regarding the safe disposal of radioactive waste.

Conclusions

Despite the remarkable achievements of the past two decades, green technologies are not a one-size-fits-all solution to the world's energy and environmental challenges. Their successful integration into the global economy requires a comprehensive strategy, including:

1. Continued development of advanced energy storage technologies;
2. Innovations in energy efficiency;
3. Lifecycle management of green infrastructure;
4. Strong governmental participation in building sustainable financial mechanisms.
5. Cold Thermal Energy Storage (CTES) technologies can play a particularly important role in this process. In the short term, they offer a viable path to reduce peak electricity demand without requiring large-scale capital investments.
6. A realistic assessment of the achievements and limitations of green technologies is essential for developing an effective energy transition strategy—one grounded not in slogans, but in a clear-eyed analysis of technological, economic, and social realities.

COLD THERMAL ENERGY STORAGE AS INFRASTRUCTURE FOR SUSTAINABLE COOLING

In the context of the global energy transition and the growing demand for cooling across diverse sectors—from urban development to high-tech industries—Cold Thermal Energy Storage (CTES) systems are evolving from an auxiliary technology into a critical infrastructure component. Unlike electrical batteries, which are primarily used to smooth short-term imbalances in power grids, CTES systems enable the redistribution of daily peak energy loads by leveraging phase-change processes of the cooling medium—primarily water. This makes them particularly effective in climatic regions with pronounced diurnal temperature fluctuations and time-of-use electricity pricing, such as Israel.

The classical operational model of CTES relies on the accumulation of cooling energy at night, when grid demand is low and electricity is cheaper. This cooling energy is stored in tanks using chillers or ice generators and then used during daytime hours to cool buildings or industrial processes without activating the main cooling equipment. Such a strategy reduces peak energy consumption, optimizes compressor operation, lowers amortization costs, and decreases the need for additional power generation capacity. According to the International Energy Agency (IEA), building cooling consumed over 2,000 TWh globally in 2023—approximately 10% of total energy use—with projections indicating a 40% increase by 2030 (IEA, 2023).

Modern CTES systems can employ a variety of thermal storage media—from chilled water to ice slurry and pumpable ice. The most promising solutions in terms of energy efficiency and operational flexibility are those based on liquid and pumpable ice. These media consist of microcrystalline suspensions at approximately −1.5°C, featuring high specific heat capacity and the ability to circulate through pipe networks. Such systems reduce storage volume requirements, minimize installation footprint, and deliver more uniform heat exchange—an especially valuable advantage in densely built urban environments.

According to the Global Ice Technology Market Report (2024), a comparison of energy consumption for producing one ton of cooling—equivalent to the phase transition of water into ice—reveals that traditional ice generators (such as cube and flake ice systems) require between 95 and 110 kWh per ton. In contrast, liquid ice systems consume only 65–70 kWh per ton (Global Ice Technology Market Report, 2024). This substantial difference results in significantly lower operating costs, especially for industrial and infrastructure-scale projects. Furthermore, liquid ice enables more flexible architectural solutions—cooling can be distributed hundreds of meters away from the generation source without substantial thermal losses, making it well-suited for decentralized delivery across multifunctional buildings.

The global CTES market continues to demonstrate steady growth.

According to Fortune Business Insights, in 2023 the global cold thermal energy storage market surpassed USD 293 billion and is projected to grow to USD 862 billion by 2032, reflecting a compound annual growth rate (CAGR) of 13.4% (Fortune Business Insights, 2025).

The highest concentration of CTES installations is observed in Asia, where both climatic conditions and demographic density drive the demand for cooling. In countries like China and India, CTES is widely applied in residential developments and educational campuses. In contrast, Europe emphasizes CTES implementation in office-commercial buildings and sustainable districts aligned with nearly Zero Energy Building (nZEB) standards.

Israel, characterized by three distinct climatic zones and intense summer solar radiation, has seen a sharp increase in interest toward CTES technologies over the past decade. According to Israel's Ministry of Energy, in 2023 air conditioning in the commercial sector accounted for up to 40% of the nation's electricity consumption during summer months. In certain districts of Tel Aviv and Haifa, peak loads increased by as much as 70% compared to winter minimums (Ministry of Energy (Israel), 2023). Under these conditions, CTES systems not only help flatten peak demand but also reduce technical losses in the grid, extend transformer lifespan, and lower maintenance costs across the electricity infrastructure.

Practical examples support the efficacy of such solutions. At the Tel Aviv University campus, a chilled water storage system with a volume of 3,000 m³ provides more than 5 MWh of peak-hour savings daily (Tel Aviv University Sustainability Division, 2023). Similarly, the Azrieli Mall employs a 2,500 m³ chilled water storage system, integrated into the building management system (BMS) and optimized based on weather-driven consumption forecasts. These projects demonstrate that even without cutting-edge materials, strategic load shifting and nighttime cooling accumulation can yield up to 30% savings in cooling costs.

CTES also plays a crucial role in the data center segment, where round-the-clock and highly reliable server hall cooling is essential. The Israeli data center market is growing at a rate of 10–12% annually, and Tier III–IV projects increasingly require backup solutions, including autonomous thermal reserves. The MedOne data center in Petah Tikva features a hybrid system combining chilled water tanks and ice generators, providing up to eight hours of autonomous cooling in the event of a total power outage and effectively preventing overheating in critical zones (MedOne Data Centers, 2024).

MARKET DYNAMICS, EFFICIENCY, AND SECTORAL APPLICATIONS OF CTES

The application of CTES at sectoral levels presents differences in technical solutions and implementation strategies. In the commercial sector, which includes offices, hotels and shopping malls, MCCs are most often implemented as chilled water systems, due to the simplicity of installation, low capital costs and predictable load forecasts. In contrast, in the pharmaceutical industry, logistics and data centers, factors such as cold density per unit volume, autonomous operation capability and precision in temperature control are critical, leading to a preference for liquid and transported ice.

According to the International Energy Agency (IEA), by 2024, liquid and pumpable ice will account for 60.1% of the installed supply of CTESs, while classic ice and chilled water systems will account for 21.4% and 18.5% respectively (International Energy Agency, 2023). This figure highlights the technical advantages of ice technologies and the growing demand for flexible and scalable solutions. In Southeast Asia, especially in China and India, liquid ice is common due to the population density and climatic conditions that require compact and efficient systems.

Analysis of the distribution of CTESs by region shows that 43.2% of installations are in Asia, with China and India dominating, thanks to government subsidy programs for TES (thermal energy storage) that enable central solutions in urban planning. Europe shows moderate but steady growth (24.5% of all systems), with a focus on buildings with a zero energy balance and combining data centers with solar collectors (European Commission, 2024). Israel, despite being a niche player on a global scale, shows one of the highest growth rates in the data center segment, with a growth rate of 12–15% per year, according to an estimate by Tesseract Academy Tesseract Academy (2024).

The size of the system significantly affects its efficiency. Small systems (up to 100 tons of cooling per day) account for 35.1% of installations but only 15.1% of total consumption, while large systems (over 500 tons of cooling) account for 24.7% of installations but more than 44% of installed capacity. This figure highlights the economies of scale: reduced losses, higher distribution efficiency and better management of forecasted consumption.

At the sectoral level, CTESs are most common in commercial construction (45.6% of installations), but industrial plants, logistics terminals and data centers show the highest return on investment (Global Cold Chain Alliance, 2024). For example, in the food industry, the implementation of CTESs with transported ice allows for a 20–25% reduction in cooling costs and an extension of the shelf life of products. In the biotechnology sector, liquid ice ensures a stable temperature within ±0.3°C, critical for vaccines, reagents and cultures.

The economic efficiency of a CTES system depends on the technology chosen, the climate conditions, and the tariff model. In total cost of ownership (TCO) calculations, key variables include: capital costs, operating expenses, equipment lifetime, electricity costs at different times, and the level of automation of the system. According to ASHRAE (2023), using liquid ice leads to a total cost of $0.045–0.052/kWh over a 15-year period, while chillers operating during peak hours cost over $0.070/kWh (ASHRAE Handbook, 2023).

In Israel, the situation is further complicated by a three-tiered tariff model, where daytime electricity consumption can be 3–4 times more expensive than nighttime rates. In conditions where most air conditioning systems operate in the morning and afternoon, switching to a peak-peak mode allows for significant reductions in cooling costs – without compromising thermal comfort. In several projects, including Sheba Central Hospital and Ministry of Defense campuses, peak consumption savings have enabled a return on investment in less than 4 years (Ministry of Energy (Israel), 2024).

In addition to economic considerations, aspects of resilience and climate adaptation are also important. Starting in 2023, new requirements for Tier IV data centers have been introduced in Israeli standards, requiring autonomous cooling in the event of a double power failure. This means that an independent cooling supply must be ensured for at least 4–6 hours, without relying on external energy sources. This type of CTES is not optional – it is an essential component of the architecture of critical facilities (Uptime Institute, 2023).

Innovation in CTES also extends to materials and control systems. Advanced ice generators use adaptive algorithms based on artificial intelligence to predict cooling requirements, relying on weather data, occupancy sensors and historical trends. These systems allow for the optimization of charging and discharging cycles, the prevention of energy waste and the dynamic adjustment of system operation in real time (Schneider Electric, 2024).

Research shows that in projects that combine intelligent SCADA-based control and IoT sensors, additional savings of up to 12% can be achieved compared to manual or semi-automatic operating modes. This figure is especially significant in medium-sized and large buildings, where temperature loads vary throughout the day and depend on many factors – from the time of day to the number of people present and solar radiation levels.

International standards also contribute to the implementation of AC. The ISO 50001 standard for energy management, the EN 14825 standard for seasonal efficiency of air-conditioning systems, and the IEC (International Electrotechnical Commission) recommendations recognize cold storage as an energy-saving technology and allow it to be included in the assessment of the energy rating of the building. As a result, an opening has been opened for integration into international certification schemes such as BREEAM and LEED – leading to an increase in the value of the properties (ISO 50001:2018, 2018).

THE STRATEGIC ROLE OF COLD THERMAL ENERGY STORAGE IN ISRAEL'S ENERGY TRANSITION

Long-term projections for the development of Cold Thermal Energy Storage (CTES) systems are shaped by a convergence of factors, including climate change, increasing urban population density, infrastructure digitalization, and the growing share of intermittent renewable energy sources. Leading international agencies, including the International Energy

Agency (IEA) and Bloomberg New Energy Finance, consider CTES to be a structural component of the global energy transition—not only for mitigating peak loads, but also as a building block of adaptive, decentralized, and resilient energy architectures. By 2030, it is expected that over 20% of new buildings certified under LEED, BREEAM, and WELL standards will incorporate thermal or cold storage technologies (BloombergNEF, 2024).

In Israel, the transition toward smart buildings and green architecture is becoming a central driver for CTES implementation, particularly in light of local climate realities and infrastructure limitations. Average daytime temperatures in many regions of the country exceed 30 °C during summer months, with peak values reaching 40–45 °C, causing critical stress on power grids. Under such conditions, CTES systems offer not just economic rationality but also serve as essential components of national energy security. According to projections by the Israel Energy Authority, by 2030, over 30% of commercial buildings and 20% of institutional facilities may be equipped with integrated CTES solutions (Israel Energy Authority, 2024).

The technological maturity of liquid and pumpable ice systems makes them suitable for a wide range of applications—from centralized cooling hubs in hyperscale data centers to decentralized systems in agri-industrial complexes. Their key advantages include a cold storage density up to five times higher than chilled water, the ability to be distributed via pipelines, rapid response to fluctuating loads, lower capital expenditure on chillers, and reliable operation even in unstable grid environments. Compared to lithium-ion battery systems, CTES offers longer service life (20–25 years), minimal storage requirements, and significantly lower sensitivity to overheating and short circuits (U.S. Department of Energy, 2023).

Globally, a new class of “active buildings” is emerging, where CTES systems are integrated with photovoltaic panels, energy recovery ventilation, and smart building management systems. These buildings can achieve near-zero reliance on grid electricity during nighttime by preloading cooling energy into thermal tanks. According to the European Heat Pump Association (EHPA), buildings combining CTES with heat pumps and connected to smart grids can reduce daily energy consumption by 15–20% (Israel Energy Authority, 2024).

On an urban planning level, CTES creates opportunities for developing energy-balanced districts. In such models, centralized nighttime cooling generation (e.g., in TES hubs) supplies multiple buildings during the day without requiring individual compressors. This leads to reduced noise, improved environmental metrics, and enhanced infrastructure reliability. In Singapore, Qatar, Canada, and the UAE, such district cooling systems have already become standard. A prominent example is Toronto’s Deep Lake Water Cooling system, which uses lake water to cool over 100 buildings and achieves annual energy savings of approximately 75,000 MWh (U.S. Department of Energy, 2023).

In the context of Israel’s energy future—where resilience, autonomy, and backup capabilities are increasingly prioritized—CTES holds strategic potential. In scenarios involving geopolitical instability and potential constraints on energy imports, cold storage systems powered by renewables and independent of complex supply chains could become essential components of the national energy plan. Designating CTES as a priority technology for industrial and municipal infrastructure should become an integral part of the state’s decarbonization and energy independence strategy.

Moreover, CTES has strong export potential. As global temperatures rise and demand increases for cost-effective cooling, Israel can leverage its R&D capabilities in thermal energy storage to develop internationally competitive solutions. Currently, major players in ice generation and cooling automation—such as GEA Group, Stulz, and Evapco—are collaborating with Israeli startups at the intersection of thermophysics and artificial intelligence. Government support for pilot projects in military, medical, and academic facilities could lay the groundwork for large-scale deployment and elevate Israel's international standing in the domain of smart cooling technologies.

In conclusion, Cold Thermal Energy Storage is more than just an energy-saving solution. It is a mature engineering tool capable of enhancing resilience, flexibility, and economic viability in the face of the climatic, infrastructural, and geopolitical challenges of the 21st century. For Israel—a country facing high thermal risks, dense urbanization, and limited access to conventional energy sources—CTES must become a cornerstone of the future energy architecture.

CONCLUSIONS

1. Despite large-scale investments, green technologies such as solar and wind power generation and electrochemical energy storage face fundamental limitations: output intermittency, high recycling costs, long payback periods, and reliance on subsidies. As a result, in the coming years, their implementation will be most viable only when combined with flexible energy efficiency solutions.
2. Cold Thermal Energy Storage (CTES) systems represent a mature, energy-efficient, and economically justified technology that enables the redistribution of peak loads on power grids without compromising user comfort—particularly under the hot climatic conditions of Israel.
3. Unlike traditional solutions such as chillers and battery storage, CTES systems based on liquid and pumpable ice demonstrate the lowest energy consumption, highest cold density, and broad adaptability—from buildings to industrial facilities and data centers.
4. The global CTES market is growing steadily at an annual rate exceeding 13%, with liquid ice accounting for over 60% of new installations. Israel is still in the early stages but shows promising development, particularly in logistics, pharmaceuticals, data centers, and large campus complexes.
5. The economic feasibility of CTES is supported by real-life examples in Israel, where the payback period ranges from 2.5 to 4 years, and peak consumption savings reach 25–35%, especially under multi-tiered electricity tariff structures.
6. CTES is not only a tool for improving energy efficiency but also a critical component of energy security, enabling cooling backup during outages, emergencies, or overloads.
7. Government support, inclusion of CTES in national energy and construction strategies, the development of technical standards, and pilot projects are essential to the broad deployment of this technology in Israel.
8. Considering rising temperatures, the expanding footprint of digital infrastructure, and limited energy resources, CTES must become an integral part of Israel's climate and energy strategy through at least 2035.

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