



on the basis of a decision
by the German Bundestag

DISTRICT COOLING

DRIVING URBAN ENERGY EFFICIENCY

As global temperatures rise and energy consumption soars to record levels, the need for sustainable cooling solutions has become more urgent than ever. Conventional air-conditioning systems not only consume large amounts of electricity but also rely on high-global-warming-potential (GWP) refrigerants that significantly contribute to greenhouse gas emissions. The combined impact of energy-intensive cooling and harmful refrigerants is further intensifying the climate crisis, underscoring the urgent need for low-carbon, energy-efficient, and climate-friendly cooling alternatives.

In this context, District Cooling Systems (DCS) have emerged as a viable alternative—delivering higher energy efficiency and a significantly lower environmental impact. DCS can Deliver:

More than 30% energy savings compared to standalone water-cooled chillers and up to 50% compared to conventional air conditioning systems.

CO₂ emissions reductions of 30–40% have been documented, and GHG reductions scale as more renewable or waste energy is integrated into the system.

Up to 65% refrigerant savings over a 20-year lifecycle.

Yet, the key question persists: **can district cooling truly serve as a sustainable pathway for energy conservation amid escalating environmental challenges?**

Before moving on to solution let's understand District Cooling Systems

District Cooling is a transformative approach to urban cooling, redefining how cities manage thermal comfort. By centralizing the production of chilled water at a single plant and distributing it through insulated underground pipelines, it replaces the need for individual air-conditioning systems.

“.....
Cool together, save together.....”

HOW DISTRICT COOLING WORKS

District cooling aggregates the cooling loads of multiple buildings, allowing plants to operate at higher load factors and improve efficiency. Insulated pipes transport chilled water, from a central plant to buildings, circulating it back for re-chilling after use. Water sources may include chilled seawater, river water, or conventional electric chillers, potentially integrated with waste heat from industrial processes.

UNTAPPED BENEFITS

Climate & urban impact:

District cooling drastically reduces greenhouse gas emissions. It enables large-scale use of renewable energy in cooling. Helps optimize energy use through storage and sector coupling. Reduces urban heat islands by lowering waste heat from AC units. No hazardous refrigerant leaks at the individual building level and systematic adoption of natural refrigerant.

Industry & grid benefits:

Supports cities and companies in meeting climate goals. Aligns with ESG reporting, CSRD, and Science-Based Targets. Enhances grid stability by shifting demand to green energy availability. Provides flexibility to manage peak loads and overall energy efficiency.

“
Smart cooling today keeps the carbon away
 ”

THE INDIA COOLING ACTION PLAN ENTAILS

1. Driving Sustainable Urban Cooling: Under the India Cooling Action Plan (ICAP), district cooling systems are recognized as a key energy-efficient and low-emission solution to meet rising urban cooling demand. They can reduce electricity consumption by up to 50% compared to conventional cooling, aligning with ICAP’s target of cutting cooling demand by 20–25% by 2037–38.

2. Integrating Policy and Innovation: ICAP promotes clean refrigerant transitions and large-scale deployment of efficient cooling infrastructure like DCS in cities. This approach not only supports India’s net-zero and energy security goals but also enables climate-resilient urban planning.

To achieve genuine sustainability in cooling and energy use, district cooling systems must be integrated with complementary strategies. This involves incorporating energy-efficient building designs, optimizing demand-side management, and shifting toward renewable energy sources. By taking a holistic approach that combines multiple sustainable practices, policymakers, urban planners, and developers can craft a comprehensive energy strategy. Such an approach not only minimizes environmental impact but also improves the overall quality of urban life.

Urban Energy District Cooling System



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