



## **PATHWAYS TO SUSTAINABLE COOLING**

### **Implementation of Low Carbon Intensive District Cooling in Developing Countries: Learnings from India Cooling Action Plan**

**Date: - 5<sup>th</sup> July 2023, Wednesday**

**Timing: - 18:00-20:00**

**Location: Room Asia Pacific Foyer, UN-ESCAP, Bangkok, Thailand**

#### **Introduction**

Cooling has been a neglected issue in global energy discussions, despite the clear impacts that have been reported from countries with high air conditioning demands for decades. This is despite the fact that there has been a long-standing effort to transition to refrigerants that protect the ozone layer and, more recently, that do not warm the planet. The Indian Cooling Action Plan (ICAP) is one of the first unique policy documents globally that links climate, refrigerants, and access to cooling in one comprehensive plan. One learning from the ICAP and other countries' experience is that even with strong building codes and standards, India will still have huge energy and refrigerant demand for space cooling.

This demand is likely to be larger than in any other country in the world. This is one reason why the ICAP advocates for a shift to not-in-kind technologies in the medium and long term. These technologies include district cooling, trigeneration, and thermal storage. District cooling systems use a central plant to cool multiple buildings. Trigeneration systems generate electricity, heat, and cooling from a single source. Thermal storage systems store heat or cold during off-peak hours and release it during peak hours.

Cooling has been a neglected issue in global energy discussions, despite the clear impacts that have been reported from countries with high air conditioning demands for decades. ICAP believes these not-in-kind technologies can help countries to meet their cooling needs in a more sustainable way. These technologies can reduce energy consumption, greenhouse gas emissions, and air pollution. They can also improve air quality and public health.

## Benefits of District Cooling

**1. Increasing Demand:** - The global demand for cooling is increasing due to a number of factors, including climate change, population growth, and urbanization. This is driving the development of district cooling systems, which provide a more efficient and sustainable way to meet this demand.

**2. District cooling as a public service:** Some cities and countries are beginning to view district cooling as a public service, alongside water, gas, and electricity. This is because district cooling can provide several benefits, such as reduced energy consumption, improved air quality, and reduced greenhouse gas emissions.

**3. Outsourcing operations to specialist companies:** District cooling systems can be complex and expensive to operate. As a result, some building owners and developers are choosing to outsource the operation of their district cooling systems to specialist companies. This can save them money and time, and it can also ensure that the system is operated in a safe and efficient manner.

**4. Economical/commercial benefits to the end users:** District cooling can provide several economic and commercial benefits to end users, such as:

- Reduced energy costs
- Improved reliability
- Reduced environmental impact.
- Increased space for other uses

**4. Reduction in peak electricity demand:** District cooling can help to reduce peak electricity demand by shifting cooling demand away from peak hours. This can help to improve the reliability of the power grid and reduce the cost of electricity.

**5. Environmental policies to reduce emissions of CO<sub>2</sub> and refrigerants and use of potable water in cooling:** District cooling can help to reduce emissions of greenhouse gases, such as carbon dioxide and refrigerants. It can also help to reduce the use of potable water for cooling.

**6. Customer value provided by district cooling service:** District cooling can provide a number of benefits to customers such as no noise at the building which increases the comfort for users, no need to consider cooling fans, chillers and other auxiliary systems.

## Challenges

Here are some of the specific challenges that need to be addressed in order to make district cooling more widespread in India:

1. **The pace of real estate development:** India is a rapidly urbanizing country, and new buildings are being constructed all the time. This makes it difficult to plan and implement district cooling systems, as they require a coordinated approach between developers, municipalities, and district cooling providers.

2. **The novelty of the technology:** District cooling is a relatively new technology in India, and many people are not familiar with it. This can make it difficult to get people to adopt this technology, as they may be hesitant to try something new.
3. **The various barriers that exist:** There are a number of other barriers that can make it difficult to implement district cooling systems in India. These include:
  - Lack of government support
  - High upfront costs
  - Lack of awareness among consumers
  - Regulatory challenges

## Discussion Points of the Side Event

1. Enabler: How to enable all stakeholders such as government, manufacturers, urban local bodies, and city planners together for developing a comprehensive road map plan for effective implementation of the District cooling action plan in India?
2. Implementation of District cooling in both residential and commercial sectors in India by identifying the technological, financial and policy barriers
3. Integration with city development plans, making the District cooling action plan mandatory in upcoming smart cities master plan.
4. Financing Mechanisms for fast-track implementation.
5. How capacity and knowledge-sharing mechanism for sustainable and energy-efficient district cooling meeting the goal of the Montreal Protocol and Kigali amendment to Montreal Protocol.