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POLICY BRIEF

ACCELERATING DISTRICT COOLING IN INDIA – Establishing a central intermediary for demand aggregation and risk mitigation

India's cooling demand is expected to grow eight-fold by 2037, driving a surge in peak electricity load and urban emissions¹. District cooling enables shared cooling for multiple buildings, achieving economies of scale to integrate large-scale renewables or waste heat, cutting electricity use by up to 50% while also reducing and shifting demand away from peak periods². Yet, DCS adoption remains negligible due to barriers, such as fragmented demand, high capital costs, a lack of payment security, and weak contractual frameworks.

District Cooling uptake faces challenges like those that renewables faced a decade ago. The Solar Energy Corporation of India (SECI) overcame exactly these barriers in renewable energy (RE) by aggregating demand, creating bankable contracts, and providing sovereign-backed payment security. Establishing a government-backed District Cooling Corporation of India (DCCI), modelled on the successful SECI, can replicate this success for cooling. By replicating SECI's robust contractual and financial mechanisms – specifically its role in demand aggregation, payment security, and tripartite agreements – this new body can de-risk projects, attract private investment, and accelerate the deployment of district cooling infrastructure, much like SECI has done for the renewable energy sector.

THE CHALLENGE

Individual cooling units are highly inefficient and place an immense strain on the power grid, contributing to peak-hour electricity demand and grid instability. District cooling, which uses a centralised plant to distribute chilled water to multiple buildings, offers a far more efficient alternative, reducing energy consumption and cutting peak load demand. Despite these benefits, the sector remains underdeveloped.

Key barriers include:



High Capital Costs

Initial investment for centralised plants and distribution networks is substantial, making projects difficult to finance.



Fragmented Demand

Unlike a single utility, a DCS must secure long-term offtake commitments from a diverse group of customers (commercial buildings, residential societies, industries), creating high demand aggregation risk.



Payment and Offtake Risk

Private developers are hesitant to invest due to the risk of customer default or insufficient offtake over the 20–30 year project lifecycle. There is no central authority to guarantee payments.



Uncertain Offtake

Users may default on contracts or prefer independent cooling solutions, leaving projects stranded.



Lack of Standard Contracts

No model Cooling Service Agreements exist; each project negotiates bespoke, risky contracts.



Financing Challenges

Banks perceive DCS as experimental; limited access to concessional or blended finance raises the cost of capital.

¹ Ministry of Environment, Forest & Climate Change, India Cooling Action Plan, 2019

² Chen, Z., Riahi, L., & Hickman, B. (2020). High Energy-Efficient District Cooling System and Its Engineering Applications in India. In Proceedings of the 11th International Symposium on Heating, Ventilation and Air Conditioning (pp. 1419–1428). Springer. https://doi.org/10.1007/978-981-13-9528-4_143

TRANSLATING LESSONS FROM SECI TO DISTRICT COOLING – A PATH TO SUCCESS

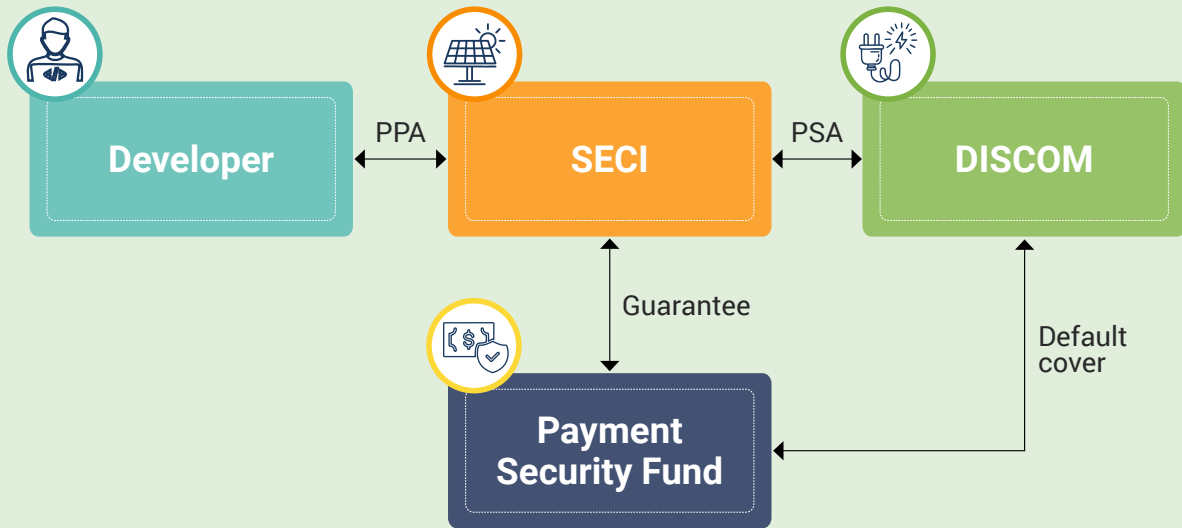
The success of India’s renewable energy sector, particularly solar power, provides a clear roadmap. The Solar Energy Corporation of India (SECI) was established as a Central Public Sector Enterprise (CPSE) to address very similar challenges of risk and fragmented demand. By end of 2024, SECI has cumulatively awarded 73 GW of renewable capacity across various schemes³. By acting as an intermediary, SECI has successfully connected solar power developers with state-owned Distribution Companies (DISCOMs), creating a market where

none existed. In 2022, SECI and the Government of India secured a combined US\$200 million financing package (IBRD + CTF loans/grants) in partnership with the World Bank to scale renewable energy projects⁴. This demonstrates how a nodal implementing agency (SECI) was able to mobilize a blended financing structure (debt + concessional + grant) to derisk projects and crowd in private capital. The country needs a similar entity, such as the District Cooling Corporation of India (DCCI), to serve as the nodal agency for the district cooling sector. The DCCI would not be a developer itself but a facilitator, creating the conditions for private players to thrive.

How SECI Addressed Barriers in Renewable Energy – Lessons for District Cooling

Barrier	Challenge in Renewable Energy	SECI's Intervention	Result
Fragmented demand	Individual DISCOMs procured small volumes, leading to unviable projects	Aggregated demand from multiple DISCOMs and issued large tenders	Achieved economies of scale, reduced tariffs, made projects bankable
High upfront capital cost	Developers faced high risk premiums due to uncertainty and small project sizes	Introduced competitive bidding and bundled projects at scale	Brought down cost of capital, attracted global investors
Revenue/ offtake risk	DISCOMs often delayed or defaulted on payments to developers	Tri-partite arrangement: Developer ↔ SECI (PPA) SECI ↔ DISCOM (PSA)	Revenue certainty for developers, stronger investor confidence
Weak buyer creditworthiness	Many DISCOMs had poor financial health, increasing the risk of default	Created Payment Security Mechanism with RBI/sov. guarantee	Developers assured of timely payment, sector de-risked
Lack of standardized contracts	Early PPAs were inconsistent, creating legal/financing hurdles	Developed model PPAs adopted nationally	Legal clarity, faster financial closure, sector-wide trust

The image below illustrates the Tripartite Agreement (TPA), a key mechanism in the Indian renewable energy sector that guarantees payment security.



This arrangement involves three primary parties: the Renewable Energy Developer, the Solar Energy Corporation of India (SECI), and the State Distribution Company (DISCOM), with the Central Government and the Reserve Bank of India (RBI) providing the ultimate risk guarantee. If a State DISCOM defaults on its payment to SECI, the Central Government can instruct the RBI to directly debit the overdue amount from the defaulting State Government’s account. This debited amount is then credited to SECI. This sovereign guarantee ensures that SECI always receives its payment, allowing it to fulfil its payment obligations to the renewable energy developers. This removes counterparty credit risk for the developers, making projects more attractive to investors and lenders and significantly lowering the cost of capital.

REPLICATING THE SECI MODEL TO DISTRICT COOLING

The DCCI would replicate three core functions of SECI that have been instrumental in driving renewable energy growth:

DEMAND AGGREGATION AND RISK MITIGATION

- **SECI’s Role:** SECI conducts large-scale, pan-India competitive bidding processes, aggregating demand for solar power across multiple states and DISCOMs. This moves the market from fragmented, small-scale tenders to large, bankable projects, attracting major domestic and international developers.
- **Analogy for District Cooling:** The DCCI would be tasked with aggregating cooling demand from various entities, such as business parks, special economic zones (SEZs), residential townships, and smart cities. Instead of each building developer signing a separate contract, the IDCC would consolidate demand by signing

Chilled Water Sale Agreements (CWSAs) with all entities within a defined zone. This aggregated demand would then be used to bid out a large, single-source project to a private developer of DCS through a master Chilled Water Purchase Agreement (CWPA). This immediately removes the developer’s burden of individually aggregating demand and de-risks the project.

PAYMENT SECURITY AND CREDIT ENHANCEMENT

- **SECI’s Role:** SECI provides crucial payment security through a back-to-back Power Sale Agreement (PSA) with DISCOMs. This ensures developers receive payment on time, as SECI is a more creditworthy counterparty than many state DISCOMs. A Payment Security Fund (PSF), funded by budgetary support and penalties, provides an additional layer of assurance.
- **Analogy for District Cooling:** The DCCI would act as the single-point buyer of chilled water from the DCS developer under a CWPA

³ <https://energy.economictimes.indiatimes.com/news/renewable/secis-cumulative-awarded-renewable-energy-capacity-exceeds-73-gw/117113783?utm>
⁴ <https://www.worldbank.org/en/news/press-release/2022/12/16/world-bank-signs-project-to-scale-up-innovative-renewable-energy-technologies-in-india?utm>

analogous to PPA in the SECI model, providing a secure and reliable payment stream. The IDCC would then on-sell this cooling service to individual customers (buildings, malls, etc.) through the CWSA, similar to the PSA under the SECI model. The DCCI's status as a central government entity, backed by a strong balance sheet, would be a superior counterparty for private developers, ensuring timely payments and making the project "bankable." An independent Payment Security Fund could be established to cover any potential defaults by end-users.

THE TRIPARTITE ARRANGEMENT AND SOVEREIGN GUARANTEE

- SECI's Role:** The success of SECI's model is fundamentally supported by a Tripartite Agreement (TPA) among the Central Government, State Governments, and the Reserve Bank of India (RBI). If a state DISCOM defaults on its payment to SECI, SECI can ask the Central Government to instruct the RBI to directly debit the amount from the state government's account. This ultimate sovereign guarantee provides unparalleled security.
- Analogy for District Cooling:** A similar tripartite agreement would be critical for district cooling. The DCCI's CWPAs would be backed by a sovereign guarantee. If a major customer (e.g., a state government building, a public sector enterprise) fails to pay for its chilled water consumption, the IDCC would have the authority to invoke this guarantee. This mechanism would provide the highest level of payment assurance to private developers and lenders, reducing the cost of capital and attracting investment.

POLICY RECOMMENDATIONS

To effectively promote District Cooling Systems in India and replicate the success of the renewable energy sector, we recommend the following policy actions:



Establish the District Cooling Corporation of India (DCCI)

A dedicated, government-backed entity with a mandate to act as an intermediary, aggregating demand and guaranteeing payment for large-scale DCS projects.



Develop a Model Contractual Framework

The DCCI should create a standardised Chilled Water Purchase Agreement (CWPA) and a Tripartite Agreement model that provides legal and financial security for all parties involved.



Create a Payment Security Fund (PSF)

A PSF, capitalised by the government and potentially by a small fee on consumption, would act as a contingency fund to cover short-term payment delays and enhance investor confidence.



Enable Favourable Financing

With the risk mitigated by the DCCI's involvement, the government can work with financial institutions to create specific, low-interest financing products for district cooling projects, further accelerating deployment.

By implementing these recommendations, India can overcome the market barriers for district cooling and unlock its vast potential. A focused, SECI-like approach will not only reduce the national cooling load and energy consumption but also create a new, sustainable industry, contributing significantly to India's climate goals and energy security.

Imprint

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