Federal Ministry
for Economic Affairs
and Climate Action

on the basis of a decision
by the German Bundestag

INTERNATIONAL
CLIMATE
INITIATIVE

Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

POLICY BRIEF

ESTABLISHING A REGULATORY AUTHORITY FOR DISTRICT COOLING SYSTEMS IN INDIA

CONTENTS

1. INTRODUCTION

India faces a **transformative rise in cooling demand:** the India Cooling Action Plan (ICAP) projects an eight-fold increase in space cooling needs by 2037–38, largely driven by buildings[1]. This surge has profound implications for power demand and greenhouse-gas emissions. Shared cooling infrastructure known as District Cooling Systems (DCS)—centralized chilled-water utilities serving clusters of buildings—offer essential efficiency and environmental benefits. Studies estimate a national DCS potential of **12.57 million refrigeration tons (TR)** by 2037–38, yielding about **7,855 GWh/yr of energy savings and 6.6 million tonnes of CO_2 reduction[2].** DCS can also reduce summer peak power demand (by 25–80%) and free up roof space, making them strategically valuable for India's climate and energy goals[3]. Yet despite these advantages, DCS uptake in India remains limited due to fragmented policies, unclear standards, high tariffs, and financing risks. Despite being a popular and default option for space cooling in several countries, DCS remains an emerging concept in India, and it requires a clear legal, institutional, and market framework for its uptake. DCS also sits at the intersection of energy, climate, buildings, and urban planning—requiring inter-agency coordination. A regulatory authority can help address these issues, however, the key question is how to establish it. This concept note aims to evaluate this question in depth. It outlines the current barriers to scaling DCS, examines international regulatory models, and explores pathways to institutionalize DCS as a utility service. Specifically, it assesses three potential approaches to establishing a regulatory authority:

- Extending the mandate of an existing national regulator (e.g. Petroleum and Natural Gas Regulatory Board [PNGRB] or Central Electricity Regulatory Commission [CERC]);
- Establishing a dedicated national DCS regulatory commission;
- Developing a hybrid central-state regulatory model.

2. CONTEXT: RISING COOLING DEMAND AND NATIONAL POLICY

A study by India Energy and Climate Centre estimates that between 2025 and 2035, India will add an additional 130–150 million new room ACs, and without targeted interventions, room ACs alone could contribute over 180 GW to India's peak load by 2035, straining the power system and necessitating costly investments in new capacity[4]. This demand spike is driven by urbanisation and rising incomes, and places heavy strain on peak power infrastructure. Meanwhile, India's climate and energy commitments (Paris NDCs, ratification of the Kigali Amendment, net-zero by 2070) require reducing emissions and embracing efficiency.

The India Cooling Action Plan (ICAP, 2019) explicitly calls for "not-in-kind" cooling solutions such as DCS to meet urban cooling needs. DCS is highlighted as a promising approach to meet ICAP goals of efficiency and HFC reduction. Several government initiatives support sustainable cooling. The BEE, under MoP had launched the "EE-Cool" programme (implemented by GIZ and PMU led by AEEE), under the Indo-German bilateral partnership, to promote district cooling, under which the District Cooling guidelines were launched.

The Smart City Mission and urban planning regulations also increasingly recognise the need for integrated infrastructure.

Despite this policy backdrop, no single national agency is currently responsible for driving DCS adoption. This institutional gap has resulted in sporadic actions by a handful of stakeholders, without any concerted efforts of market creation. The few DCS projects predominantly operate on a captive basis (serving one developer or customer) or by mandate (e.g. GIFT City requires DCS). The real benefits lie in DCS operating like a regulated utility, regardless of public or private ownership, serving multiple customers, similar to the electricity, water, or natural gas supply in India. To scale DCS, India must align national policies (ICAP, Urban Development programmes like Smart City, it's sub-schemes like CITIIS, or Infrastructure Pipeline) with a regulatory mechanism that treats DCS as an essential urban utility and integrates into urban infrastructure.

[1]ICAP, 2019
[2]EESL, UNEP, 2019
[3]DC Guidelines, 2023
[4]India Energy & Climate Center. (2025). India can avert power shortages with stronger AC efficiency standards: Study [Working paper]. University of California, Berkeley. https://iecc.gspp.berkeley.edu/resources/reports/ac-efficency-standards-report2025/

3. BARRIERS TO DCS DEPLOYMENT IN INDIA

Several barriers have hindered DCS investment and growth:

Fragmented policies and a lack of regulatory clarity.

No regulator currently has a defined mandate over DCS as a utility. Cooling projects fall between jurisdictions (power, gas, water, urban planning). This fragmentation creates uncertainty for investors and developers. For example, in many Indian cities, the municipal corporation acts as both owner and implicit regulator of utilities, thereby blurring accountability. In sum, "policy and institutional barriers" are significant, and DCS lacks the official status of a public utility[5].

Technical and financing challenges.

DCS projects are capital-intensive and require robust metering and billing systems. Risks like faulty metering can lead to revenue shortfalls or disputes. Costs of pipes and chillers are high upfront, deterring private investment without strong guarantees or subsidies. Some projects have raised safety and cost issues (e.g. DLF Cyber City's cogeneration plant in the basement raised fire-safety concerns and could be affected by rising gas prices[7]). In general, lack of dedicated financial incentives or viability gap funding has limited private-sector participation.

Lack of demand aggregation and awareness.

DCS works best at a large scale, but building owners and real estate developers have little familiarity with it. Many opt for conventional individual chillers. For DCS to be feasible, aggregation of demand across customer types is critical to optimize the plant capacity, design, and operation, reducing costs over time. Studies note that awareness is low and promotion of DCS benefits is critical.[6]This may reduce anchor loads for DCS plants and could lead to underutilization of networks.

Lack of infrastructure recognition and urban planning integration.

DCS is not yet recognised as core urban infrastructure in India, limiting its inclusion in master plans, zoning, or utility coordination. This will hamper the allocation of space for cooling corridors and early integration into urban projects, making retrofits costly and limiting scale. In contrast, cities such as Singapore have embedded DCS into their urban planning frameworks, enabling systematic rollout. Similar recognition is essential in India to unlock DCS potential in both greenfield and brownfield developments.

In contrast, leading jurisdictions have addressed these gaps. Singapore requires DCS for new developments in designated areas and enacted the District Cooling Act (2001). This law tasks the Energy Market Authority (EMA) with licensing all DCS providers, regulating prices/quality, and revising the codes time to time[8]. Abu Dhabi (UAE) introduced district cooling regulations in 2019 that mirror utility-style oversight: The Department of Energy now issues licenses, enforces consumer rights, and prescribes technical and metering codes for DCS[9]. Denmark has treated district cooling as part of public infrastructure: a special District Cooling Act (2008) gives municipalities the legal basis to participate in DCS and requires projects to operate on "commercial terms" integrating DCS planning with city heat plans/energy planning[10]. These examples show how clear regulation (mandating service areas, ensuring competition and standards) can overcome the uncertainty and monopolisation risks that India currently faces.

[5]https://thetradecouncil.dk/-/media/websites/trade-council/publikationer/sektoranalyser/district-cooling-in-india-1.ashx#:~:text=technology%20must%20be%20taken%20into,unaware%20of%20its%20benefits%2C%20awareness
[6]https://thetradecouncil.dk/-/media/websites/trade-council/publikationer/sektoranalyser/district-cooling-in-india-1.ashx#:~:text=technology%20must%20be%20taken%20into,unaware%20of%20its%20benefits%2C%20awareness
[7]https://thetradecouncil.dk/-/media/websites/trade-council/publikationer/sektoranalyser/district-cooling-in-india-1.ashx#:~:text=technology%20must%20be%20taken%20into,unaware%20of%20its%20benefits%2C%20awareness
[8]District Cooling Act, 2001, Singapore
[9]District Cooling Regulation, 2019, Department of Energy, Abu Dhabi, UAE
[10]Mortensen, B.O.G. (2014). Legal framework as a core element of district cooling success—The case of Denmark. Scientific Research.

4. WHY DOES INDIA NEED A DEDICATED REGULATORY AUTHORITY FOR DCS?

A dedicated regulatory authority is critical for DCS to transition from scattered pilots to a structured utility service in India. Without regulation, the risks of DCS remaining a niche or captive solution are highly likely, failing to achieve the scale necessary to impact national cooling demand or climate goals.

First, regulation is essential for market creation. DCS requires aggregation of demand across multiple consumers, such as commercial buildings, institutions, and residential complexes, which is unlikely to occur without coordinated planning and regulatory clarity. In the absence of licensing rules or mandatory service areas, developers often default to individual cooling systems. A regulator can formalize "DCS zones" in urban plans, mandate connections where feasible, and ensure fair access to infrastructure, actions that have proven successful in Singapore and the UAE. These steps create predictable markets where cooling demand is concentrated and served efficiently.

Second, regulation unlocks investment. District cooling infrastructure is capital-intensive, with high upfront costs for centralized chillers, underground piping, and smart metering. In the absence of a clear regulatory regime, covering tariffs, service obligations, and dispute resolution, private investors face high risk and revenue uncertainty. Regulatory oversight ensures transparency in pricing and performance, enabling long-term contracts and de-risking project cash flows. As seen in the case of city gas distribution in India, regulatory bidding frameworks (like those used by PNGRB) can stimulate large-scale private participation when coupled with clear licensing terms and accountability mechanisms.

Third, regulation ensures efficient and equitable service delivery. As a utility service, DCS must be reliable, affordable, and energy-efficient. Regulation can define technical codes, performance standards, and consumer protections to ensure that users receive quality service without overcharging. It also prevents monopolistic practices by setting transparent tariff norms and enabling competitive access where feasible. Experience from one of the largest DCS markets globally, the Middle East, shows that lack of regulation initially led to consumer and planning issues, prompting countries like the UAE to adopt utility-style regulatory frameworks.[11] Beyond service quality, regulation also plays a critical role in reducing long-term risks for both public authorities and private developers by offering policy stability, predictable returns, and a clear institutional framework, conditions essential for large-scale infrastructure investment.

In sum, a dedicated regulatory authority for DCS is not only desirable but necessary to guide the sector's growth in alignment with India's energy, environmental, and urban development priorities. It will create a structured market, reduce investor risk, and guarantee that DCS evolves as a modern utility delivering equitable, efficient, and sustainable service delivery.

5. INTERNATIONAL CASE STUDIES: HOW HAVE REGULATIONS SUPPORTED THE DCS MARKET GLOBALLY

Policy lessons from abroad highlight both the promise of DCS and the role of regulation:

- **Singapore**: The District Cooling Act, 2001 mandates licensing and consumer protections for DCS. Singapore's Energy Market Authority (EMA) issues licenses to all district cooling providers, regulates their pricing (allowing fixed/maximum tariffs) and enforces reliability standards. Crucially, Singapore designates "service areas" (e.g. parts of the Marina Bay district) where all air-conditioning demand must be met by DCS. Occupiers refusing connection face fines or jail . This "mandated hook-up" approach guarantees the anchor load and prevents wasteful parallel systems. The Singapore model demonstrates how a clear law and an empowered regulator can rapidly scale DCS in a densely populated city.

- **United Arab Emirates**: Abu Dhabi implemented district cooling regulations in 2021. Its Department of Energy now issues licenses for

[11] Framework of National-Local Policies and Regulatory Frameworks for District Cooling, Singapore Study Trip, 2023, retrieved from- https://niua.in/c-cube/sites/all/themes/zap/pdf/cool_city/UNEP_policy_presentation.pdf

DCS providers and is charged with consumer protection and investment stability. The Abu Dhabi regulations explicitly require technical "District Cooling" and "Metering" codes, reviewed by a technical panel, to ensure reliability and accuracy[13]. Dubai's Regulatory and Supervisory Bureau (RSB) similarly governs district cooling under Executive Council Resolutions. In both the emirates nations, utility-style oversight was introduced only after identifying problems in an unregulated market (e.g. monopolies, billing disputes). The takeaway is that proactive regulation (licensing, codes) can correct market failures and protect customers.

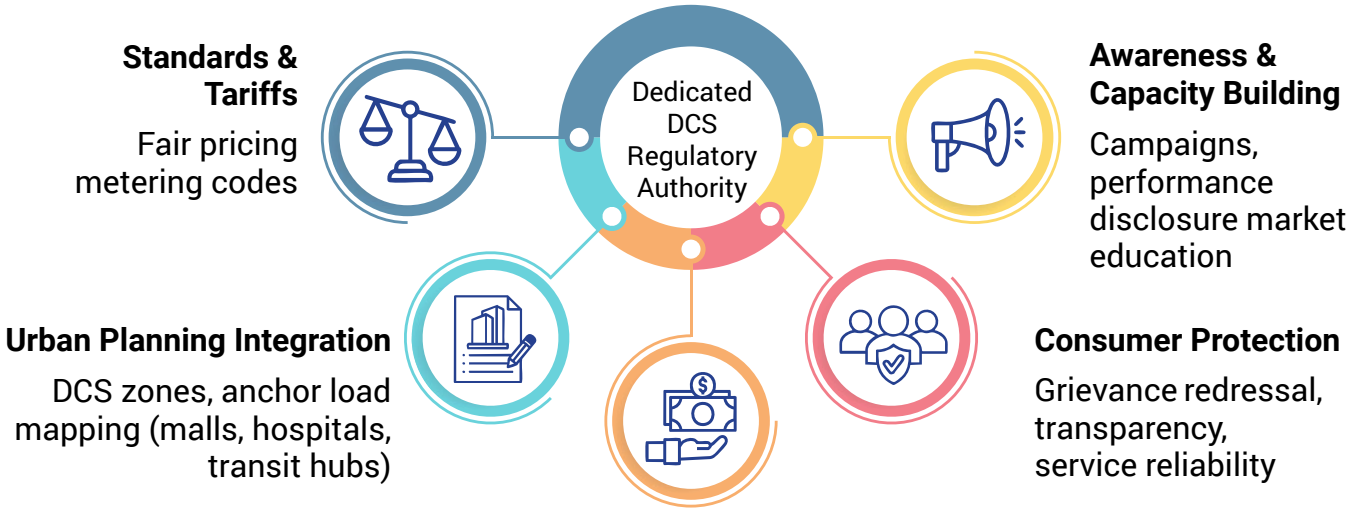
- **Denmark**: Denmark treats district cooling in the same manner as district heating. Under the District Cooling Act (2008), municipalities (which own most Danish DH companies) are legally permitted to operate DCS as a public utility. The law requires DCS companies to operate on "commercial terms" and forbids cross-subsidies from municipal funds. Danish municipalities are mandated to plan heat/cool infrastructure at local level (Heat Supply Act, 1979), ensuring DCS is considered in zoning and grid development.[14] Pricing in Denmark is non-profit and transparent by law[15]. While DCS is still nascent in Denmark, the regulatory framework provides clarity on ownership, planning responsibilities, and consumer pricing.

These case studies illustrate that dedicated regulation (specific laws, codes, licensing) is common in leading DCS markets. The Singapore and UAE models mandate connection and license providers, directly addressing issues India faces (fragmentation and lack of standards). Denmark's example shows the importance of integrating DCS into municipal planning. India can draw from all of these: requiring DCS in new zones (like Singapore), establishing national technical codes (like UAE), and empowering cities to plan for cooling (like Denmark).

6. REGULATORY ROLE IN SCALING UP DCS

Whichever agency is chosen, regulators can catalyse DCS expansion in several ways:

Five Functions of a Future DCS Regulator



[13]District Cooling Regulations, Department of Energy, retrieved from- https://www.doe.gov.ae/-/media/Project/DOE/Department-Of-Energy/Media-Center-Publications/English-Files/Decision-44---District-Cooling-Regulation.pdf
[14]Mortensen, B. O. G. (2014). Legal framework as a core element of district cooling success—The case of Denmark. Scientific Research.
[15]https://stateofgreen.com/en/news/consistent-regulation-a-prerequisite-for-district-heating/#:~:text=Regulation%20of%20consumer%20prices%20The,overseen%20by%20the%20Utility%20Regulator

- **Technical standards and codes.** A regulator or standards-setting body can develop a formal District Cooling Code covering design, installation, and operation of DCS infrastructure. For example, Singapore's EMA issues Codes of Practice for DCS systems. In India, the Bureau of Energy Efficiency (BEE) has already taken a lead role by launching the District Cooling Guidelines and could also spearhead the development of the DCS Code. While BEE is not a regulator, its ownership and leadership on this front are significant, and it is well-positioned to collaborate with technical bodies, whether through its existing mandate or in alignment with a future regulatory framework. Formalising these into binding standards (with specifications for pipe insulation, water quality, refrigerants, etc.) will reduce project risk, ensure seamless-coordination, and build trust among stakeholders. Standards can also mandate accurate smart metering and remote monitoring to address the revenue-metering concerns noted earlier[16].

- **Tariff regulation and fair access.** Regulators can set principles for pricing "cooling as a service" to protect consumers. Options include approving maximum price formulas, monitoring fuel surcharges (for gas or electricity used), or requiring transparent cost and pricing[17]. For instance, fairness in "Cooling-as-a-Service" tariffs—ensuring end-users, developers, and DCS providers all see reasonable rates—can be guided by a regulator. Regulations can also require open access to DCS networks (as the Singapore Act allows) so that multiple providers can share infrastructure under transparent rules.

- **Integration with urban planning.** Cooling regulation must be linked to city development. As recommended in GIFT City, regulators or city planners can designate "DCS zones" (townships, campuses, SEZs) where new construction must connect to a district cooling plant. Building codes or master plans could require DCS for large floor-area projects. Regulators should coordinate with the Smart City Mission and local urban bodies to embed cooling in land-use policies. For example, local heat/cooling planning should map anchor loads (hospitals, malls, transit hubs) and lay out corridors for chilled-water networks. The Danish model of municipal planning (Heat Supply Act) could inform this approach.

- **Green financing and incentives.** Since DCS reduces emissions and peak power needs, regulators and finance ministries can help match projects with green funds. Mechanisms might include: mandating that electricity tariffs for DCS producers be at favourable rates, demand response incentives for use of thermal storage, enabling DCS projects to earn carbon credits, or providing viability gap funding to cover initial capital costs. The EESL and UNEP have highlighted billions of dollars in investment savings from DCS[18], so regulators could channel a portion of these value-streams into incentives. For instance, adopting DCS could be recognised in energy efficiency obligations or renewable mandates. A regulator could also facilitate public-private partnerships, ensuring investors have confidence (through guaranteed offtake agreements or road-fee mechanisms) and by mobilising development bank financing.

- **Consumer protection and awareness.** Finally, regulators can help **build the market** by educating stakeholders. They can require disclosure of energy savings, publish performance data for DCS plants, and fund awareness campaigns, and capacity building programmes. In the early years, a regulator might offer grievance resolution for end-users or penalties for service interruption, as is done for power utilities. This consumer-centric focus will make cooling-as-a-service a trusted proposition.

By addressing these areas—standards, tariffs, planning, finance, and outreach—a regulatory body (new or existing) can transform DCS from pilot projects into a mainstream utility, aligned with India's energy and climate objectives.

[16]https://thetradecouncil.dk/-/media/websites/trade-council/publikationer/sektoranalyser/district-cooling-in-india-1.ashx#:~:text=financial%20standpoint,depends%20on%20the%20rate%20structure
[17]DC Guidelines, 2023
[18]EESL. UNEP, 2021

7. STRATEGIC OPTIONS FOR ESTABLISHING A REGULATORY BODY

We outline three broad options for institutionalizing DCS regulation:

i. Expand an existing regulator's mandate. For example, PNGRB or CERC (or a combined Energy Regulator) could be given additional authority over Shared Cooling services/DCS sector.

- ***Advantages:*** Leverages established bodies and processes; faster start-up (no need to create a new entity); can build on gas/power regulatory expertise and the established processes.
- ***Potential Challenge:*** While regulators like CERC or PNGRB have strong expertise in energy infrastructure, they may initially lack the legal mandate, sectoral credibility or institutional readiness to address the service-side nuances of cooling. However, since cooling is primarily an end-use application, much of the required technical credibility lies in understanding the upstream energy and infrastructure systems, an area where these regulators already have significant experience. As noted by the World Bank[19], adding new sectors to a multi-utility regulator can be effective if managed through well-defined internal divisions, though it requires legal amendments and careful coordination to avoid jurisdictional overlaps and turf conflicts.
- ***Global Learnings:*** The Energy Market Authority (EMA) of Singapore began regulating district cooling services in 2001, alongside power and gas, with the introduction of the District Cooling Act. This act, along with the Energy Market Authority of Singapore Act 2001, gave EMA the authority to regulate the district cooling industry in Singapore, particularly within a mandated zone for the pilot project.

ii. Create a dedicated DCS Regulatory Commission. Establish a new national regulator specifically for district cooling (or more broadly for urban thermal utilities).

- ***Advantages:*** Offers focused attention on cooling and its integration with urban infrastructure. However, like modifying the existing regulators in the previous option, this option also requires legal changes or a new Act in the Parliament, similar to other utilities
- ***Potential Challenges:*** Time and cost to establish (staff, governance); potential duplication if an overarching regulator already exists; risk of isolation from other energy sectors. In theory, a separate commission could also be multi-utility (covering cooling, heating, waste heat, etc.), but would need broad legal support. The World Bank[20] cautions that creating many small regulators can slow down the learning across sectors.
- ***Global Learnings:*** Qatar General Electricity & Water cooperation "KAHRAMAA" has established a District Cooling Services department (CD) with the intent to regulate and promote district cooling services in Qatar by utilizing best-in class operational efficiencies in a more sustainable way. The department came into existence with the resolution from council of ministry vide reference 825 dated 2 May 2012.[21]

iii. Establish a Hybrid central-state model. In this option, central government (via a national regulator or ministry) sets guidelines and frameworks, while State Electricity Regulatory Commissions or urban agencies implement them at the local level. For example, PNGRB or MoP or MoHUA could designate DCS service areas and issue broad licenses, while State Electricity Regulatory Commissions (SERCs) approve local tariffs and standards within those areas.

- ***Advantages:*** Combines national consistency with state flexibility; leverages existing local infrastructure (e.g. SERCs familiar with their city's power/water networks).
- ***Potential Challenges:*** Requires strong coordination (to avoid overlapping jurisdiction); could create complexity (multiple permits per project). This resembles federal multi-tier

[19] https://documents.worldbank.org/curated/en/794941468782385745/pdf/multi-page.pdf#:~:text=Offsetting%20disadvantages%3F%20Proponents%20of%20industry,sectoral%20departments%20for%20pooling
[20] https://documents.worldbank.org/curated/en/794941468782385745/pdf/multi-page.pdf#:~:text=Offsetting%20disadvantages%3F%20Proponents%20of%20industry,sectoral%20departments%20for%20pooling
[21] https://c2e2.unepccc.org/wp-content/uploads/sites/3/2023/08/kahramaa-district-cooling-services-department.pdf

regulation used in the Indian electricity sector, and would require clear delineation of roles.

- ***Global Learnings:*** The case of the UAE is similar to this model. Some of the insights from their DCS market are shown below:
  - In Abu Dhabi, the Department of Energy licenses and regulates DCS providers.
  - In Dubai, Dubai Supreme Council of Energy (DSCE) and Regulation and Supervision Bureau (RSB) provide oversight.

Abu Dhabi's regulatory framework explicitly states that the rights and duties under the DCS regulation are governed by both the laws of the emirate and the federal laws of the UAE, as applied by emirate-level courts. This dual legal structure underscores how regulation can be anchored at the state level while remaining aligned with national laws and objectives—a model that holds relevance for India's federal structure.

Each option has trade-offs in cost, complexity, and speed. A neutral evaluation should consider factors such as legal feasibility, stakeholder acceptability, and international precedents.

8. EXISTING REGULATORS AND DCS

India's institutional framework offers some parallels but no ready-made home for DCS:

- **Central Electricity Regulatory Commission (CERC) and State Electricity Regulatory Commissions (SERCs)** regulate power generation and distribution tariffs. While they could, in principle, set tariffs for electricity used by DCS plants or require grid interconnection rules, they have no explicit authority over the distribution of chilled water or the cooling services. Electricity regulators focus on power flow and do not license non-electric utilities. Adapting CERC/SERC to DCS would require a new mandate to treat cooling services akin to utility alongside electricity, gas, water, etc. However, their experience in creating and overseeing regulated monopolies, such as assigning exclusive electricity distribution zones, could be valuable for DCS, where similar zonal exclusivity may be needed to ensure infrastructure efficiency and service viability.

- **Petroleum and Natural Gas Regulatory Board (PNGRB)** is a central regulator for downstream activities such as regulating the oil and gas pipeline networks. It licenses gas pipelines and City Gas Distribution (CGD) networks. PNGRB has experience with conducting more than 10 bidding rounds (with public-private partnerships) to establish city gas networks nationwide. This suggests a conceptual fit, similar to gas, in that DCS involves a network of pipes delivering chilled water to consumers. In fact, an article by DBDH proposes modelling DCS licensing on PNGRB's CGD framework[22]. PNGRB's track record in stimulating CGD by designating geographical areas and running bids offers lessons for DCS. However, PNGRB's statutory scope is limited to petroleum and natural gas under the PNGRB Act, 2006. Expanding its mandate to DCS would require legislative amendment and a broadening of its technical expertise. Moreover, DCS relies on electricity and water utilities as inputs, domains outside PNGRB's experience.

- **Other bodies:** BEE promotes energy conservation but lacks licensing authority. The Central Electricity Authority (CEA) sets technical standards for the electricity grid but not for cooling. Relevant Ministries, such as the MoP, the MoHUA, or the MoEFCC have policy roles but would need to designate a regulator for implementation.

In short, **no existing regulator neatly covers DCS** today. Tasking CERC/SERC with DCS would stretch their purview beyond electricity; PNGRB with DCS would stretch it beyond fuel. Each option carries trade-offs.

[22] https://dbdh.org/learning-from-the-past-cooling-for-the-future-district-cooling-and-indias-city-gas-distribution-infrastructure/#:~:text=Learning%20from%20CGD%E2%80%99s%20bidding%20model%2C,would%20further%20solidify%20the%20framework

8.1. PROS AND CONS OF EXPANDING PNGRB'S MANDATE

A central consideration is whether PNGRB could be assigned DCS regulation, given its recent experience on pipeline and gas distribution licensing. The arguments include:

- **Pros:** PNGRB already has a unified national framework for network utilities (natural gas pipelines and CGD). It knows how to create bidding areas and long-term licenses, which could be adapted for "Cooling as a Service" franchises. India's PNGRB-licensed CGD sector expanded from 13 to 98 per cent population coverage in 2014–2023, showing the power of that model[23]. PNGRB has experience protecting consumer interests in an infrastructure monopoly (city gas networks). It could similarly regulate DCS tariffs, impose technical standards (e.g. pipe quality, metering accuracy), and enforce service continuity. In fact, DCS proponents have explicitly recommended establishing a regulatory body, such as the PNGRB, to oversee technical standards, price regulation, and consumer and licensee rights.

- **Cons:** PNGRB's enabling law covers only petroleum and natural gas. Assigning it DCS would require a formal expansion of its mandate. DCS is not a fuel pipeline but a chilled-water service, linked to electricity and water infrastructure. PNGRB would need to develop deep expertise in cooling technologies and billing. Politically, stakeholders in power and municipal sectors might resist a gas regulator taking over urban cooling. Finally, even if enabled, PNGRB's central oversight might be too rigid for highly localised cooling projects, risking regulatory overreach or conflicts with state agencies.

If PNGRB expansion is considered, careful analysis is needed of legal feasibility and capacity. It might make sense only if PNGRB's existing remit is broadened to a truly **multi-utility energy regulator**.

8.2. MULTI-UTILITY REGULATION: LESSONS FROM WORLD BANK

A World Bank analysis of utility regulators finds that multi-sector agencies (governing more than one utility industry) offer advantages in resource-scarce contexts[24]. In particular, a combined regulator can share **staff and expertise across sectors**, reducing duplication and attracting scarce technical talent. Experience gained in one industry (e.g. tariff-setting in power) can inform another (e.g. cooling). Importantly, a multi-industry regulator can **reduce the risk of "regulatory capture"**: by serving a broader public mandate, it is harder for any single industry (or political faction) to dominate the agency. The World Bank notes that broadening a regulator's scope can also insulate it from politics, since interfering in one decision would impact multiple sectors[25].

However, multi-sector regulation also has challenges. Analysts caution that an agency must maintain technical depth in each area; cross-sector teams and advisory panels can help. Moreover, spreading one agency over many industries can be risky if it fails—but multiple regulators also create coordination challenges. Overall, the consensus is that **no single model fits all**: some countries start with an industry-specific commission and later add new remits, while others create a wide-sector agency from the outset. For India's DCS market, these insights suggest that integrating Shared cooling infrastructure as a utility into an existing utility regulator could yield synergies (shared operations, unified energy planning). But the agency must be given adequate authority and diverse technical teams. Alternatively, India could consider establishing a new multi-utility regulator to oversee services, such as power, gas, water, and cooling—reflecting the growing need for integrated regulation as urban infrastructure systems become increasingly interconnected. This has been discussed in detail in Section 7.

[23] https://www.thestatesman.com/india/population-coverage-of-city-gas-distribution-reached-from-13-27-in-2014-to-98-in-2023-puri-1503255943.html#google_vignette

[24] https://dbdh.org/learning-from-the-past-cooling-for-the-future-district-cooling-and-indias-city-gas-distribution-infrastructure/#:~:text=Learning%20from%20CGD%E2%80%99s%20bidding%20model%2C,would%20further%20solidify%20the%20framework

[25] https://www.thestatesman.com/india/population-coverage-of-city-gas-distribution-reached-from-13-27-in-2014-to-98-in-2023-puri-1503255943.html#google_vignette

9. PHASED ROADMAP FOR IMPLEMENTATION

A proposed roadmap for this development around a DCS regulator could proceed in below phases:

Phase 1 – Policy Alignment and Consultation:

Immediately, integrate DCS goals into national strategies (e.g. revise ICAP/NDC roadmaps to mention regulation). Constitute a high-level task force (BEE/MoP/CERC/ PNGRB/MoHUA, etc.) to define objectives. Conduct stakeholder consultations with utilities, cities, developers and financiers to gather input on regulatory design.

Phase 2 – Draft Regulatory Framework:

Using stakeholder feedback, draft the legal/regulatory text. This could be a "District Cooling Code" under an existing regulator, or a proposal for a new law/authority. The draft should cover licensing procedures, technical standards, tariff principles, and roles/ responsibilities, including interfaces with power/gas regulators. The existing District Cooling Guidelines (2023) and other studies by UNEP, ASHRAE, etc. provide a technical foundation for these rules. Simultaneously, develop technical standards (collaborating with BIS/BEE) for DCS equipment and networks.

Phase 3 – Capacity Building:

Train regulatory staff and state utility commissions on DCS technology and market models. Develop model contracts (e.g., concession agreements, service contracts) for different business cases (fully public, PPP, private). Pilot capacity-building workshops in one or two cities (possibly Smart Cities), using existing projects like GIFT City.

Phase 4 – Regulatory Rollout:

Officially notify the regulatory agency and begin the licensing process. If Option 1 (existing Regulator) is chosen, amend their Act to include "District Cooling" in its definitions; if Option 2 is chosen, pass the District Cooling Act. Invite applications for DCS projects in designated areas (e.g. new townships, large campuses, Industrial townships and IT Cities). Begin issuing licenses or authorisations with clear terms on tariffs, technical codes and service standards. Simultaneously, empower SERCs or local bodies (as appropriate) to approve any electricity/water tariff adjustments for DCS customers, as guided by the central policy.

Phase 5 – Monitoring and Adjustment:

As early projects come online, collect data on performance. The regulator should monitor compliance (e.g., efficiency, customer satisfaction) and resolve disputes. Adjust regulations as needed (for example, refining tariff norms or expanding service areas). Launch consumer awareness campaigns that highlight the benefits of DCS.

Phase 6 – Scale-up:

Over 3–5 years, with the regulatory framework in place, aim to incorporate DCS into urban master plans nationwide, in coordination with MoHUA. Encourage all new SEZs, airports, transit hubs, and high-density developments to adopt DCS. Use lessons from pilots to refine best practices. Eventually, DCS should be mainstream enough that continued regulation simply resembles that of an ordinary utility, with routine oversight by the chosen regulator and regular updates to codes.

Throughout this process, programmes such as EE-Cool can provide technical support. Notably, EE-Cool has already developed voluntary DC guidelines and is establishing a "DC hub" for policy and project support. These resources can be leveraged at each stage for technical guidance.

10. CONCLUSION AND CALL TO ACTION

District Cooling represents a **high-impact solution** for India's dual challenges of meeting surging cooling demand while cutting emissions and grid stress. International experience shows that without regulation, DCS markets stagnate; with the right framework, they thrive. India is at a critical juncture: the technology and interest are emerging, but decisive policy action is needed to avoid "market failures" of monopoly or under-investment. A regulator and regulations would send a clear signal to investors and consumers that DCS is a recognised utility—unlocking trillions in investment savings (estimated US$10.5 billion in deferred power/city infrastructure alone[26]) and millions of jobs.

As cooling is currently not subject to any single regulatory mandate, this note is not addressed to a particular entity. It is intended to inform policymakers and institutions across the MoP, MoHUA, MoEFCC, BEE, and NITI Aayog, whose collective leadership will be crucial to guide this transition.

Policymakers are urged to consider the analyses above. Whether by empowering an existing regulator (or a successor multi-utility commission) or by establishing a dedicated authority, India must **institutionalise DCS**. A phased roadmap, from stakeholder alignment and draft codes to capacity building and rollout, can guide this transition. The strategic value is clear: a regulated DCS sector can reduce peak power needs by thousands of MW, cut greenhouse gases by millions of tonnes, and ensure cooler, more livable cities. Implementing an appropriate regulatory model should be a near-term priority considering the cooling demand projections in ICAP.

[26] EESL, UNEP, 2021

Imprint

This policy brief was researched in the framework of Gesellschaft für Internationale Zusammenarbeit (GIZ)'s 'Energy Efficiency Cooling' programme, jointly implemented with the Bureau of Energy Efficiency (BEE), Ministry of Power, and funded by the German Federal Ministry for Economic Affairs and Climate Action (BMWK) as part of the International Climate Initiative (IKI), to accelerate adoption of sustainable cooling practices.

Published by

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Project

Energy Efficient Cooling

Responsible

Nitin Jain
nitin.jain@giz.de

Registered offices

Bonn and Eschborn, Germany

T +49 61 96 79-0
F +49 61 96 79-11 15
E info@giz.de
I www.giz.de/India

Bureau of Energy Efficiency, Ministry of Power

West Block 2,
R.K Puram, Sector 1
New Delhi – 110066, India

On behalf of

Federal Ministry for Economic Affairs and Climate Action (BMWK)

Prepared by

EE-Cool PMU - Alliance for an Energy Efficient Economy (AEEE)

October 2025