



CARBON MARKETS & ARTICLE 6: OPPORTUNITIES FOR SUSTAINABLE COOLING IN MENA & TÜRKIYE

Synthesis report

February 2026

Carbon markets & Article 6 opportunities for sustainable cooling in MENA & Türkiye

Synthesis report



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Supported by:



based on a decision of the German Bundestag

The Cool Up programme is led by Guidehouse Germany GmbH. This project is supported by the International Climate Initiative (IKI) of the Federal Government of Germany. Within the Federal Government, the IKI is anchored in the Federal Ministry for the Environment, Climate Action, Nature Conservation and Nuclear Safety (BMUKN). Selected individual projects are also the responsibility of the Federal Foreign Office (AA).

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Summary

Cooling demand is being expanded rapidly across the Middle East, North Africa, and Türkiye (MENAT), driven by rising ambient temperatures, population growth, urbanisation, and economic development. Cooling is therefore not optional infrastructure: it is being relied upon to protect public health during heat extremes, sustain productivity, and secure food systems through cold chains. At the same time, the emissions footprint of cooling is being intensified through (i) electricity consumption, often supplied by fossil-based marginal generation, and (ii) direct refrigerant emissions from leakage and end-of-life losses. As a result, cooling is being positioned as one of the fastest-growing and most system-shaping sources of emissions in MENAT, particularly because it affects peak load, capacity expansion needs, and long-lived infrastructure lock-in.

A results-based finance opportunity is being created by the increasing operationalisation of international carbon markets under Article 6 of the Paris Agreement. When mitigation outcomes are designed with strong environmental integrity, particularly through conservative baselines, robust MRV, and transparent accounting; carbon finance can be used to improve bankability and overcome incremental cost barriers for sustainable cooling interventions. It is emphasised, consequently, that carbon revenues should be treated as performance-based income that accelerates deployment and improves investment viability, not as a substitute for core policies, grid decarbonisation, or compliance obligations under other treaties.

Figure 1: Why Article 6 Matters for Cooling



A central constraint and therefore a defining design principle, has been the dual-regime nature of cooling. The Montreal Protocol (including HCFC phase-out schedules and HFC phasedown under Kigali Amendment) is already governing the refrigerant transition, while the Paris Agreement governs economy-wide greenhouse gas emissions via NDCs and enables international cooperation via its Article 6. These regimes are aligned in climate ambition but differ in legal instruments and compliance logic. In practical terms, a clear “no overlap” approach has been required: mitigation crediting should not be used to pay for actions that are already required or funded under Montreal Protocol/Kigali instruments. Refrigerant-related interventions can be highly impactful in CO₂e terms, but they have been treated conservatively in this report because (a) overlap risks are material, and (b) perverse incentives can be created, especially around end-of-life, if crediting unintentionally rewards retention, accumulation, or delayed replacement of high-GWP refrigerants. For these reasons, the primary scalable carbon finance proposition is framed around energy-efficiency-driven mitigation.

Across Egypt, Jordan, and Türkiye, readiness for Article 6 has been advancing, but along different pathways. Egypt is being differentiated by the rapid development of a regulated voluntary carbon market infrastructure and governance architecture; Jordan is being characterised by speed and procedural clarity in moving from concept to transaction; and Türkiye is being characterised by a strong MRV trajectory and emerging domestic carbon market instruments (including ETS development and domestic crediting/offsetting rules), alongside a significant RAC manufacturing base that enables industrial and supply-chain efficiency opportunities. In all three contexts, it has been concluded that near-term success is most likely where interventions are programmatic, MRV-friendly, and focused on measurable electricity savings, while institutional capacity for authorisation, tracking, and reporting is strengthened in parallel.

Key takeaways of this report:

Cooling is financeable. The analysis demonstrates that sustainable cooling can reliably attract results-based finance when interventions are structured programmatically, grounded in conservative baselines, and supported by credible MRV. Carbon revenues can meaningfully improve bankability and accelerate deployment—not as substitutes for policy, but as amplifiers of real mitigation.

Energy efficiency is the credible near-term anchor. Across all three countries, efficiency-driven cooling interventions consistently emerge as the strongest, most measurable, and most scalable source of high-integrity mitigation outcomes. They offer clear MRV pathways, large reduction volumes, and minimal overlap risks, making them the core of any viable Article 6 cooling strategy. In parallel, natural-refrigerant-based cooling technologies can further strengthen emission-reduction potential, as their low-GWP refrigerants offer significantly lower climate impact compared to conventional alternatives.

Article 6 can scale cooling - but only with robust governance and MRV. The report confirms that Article 6 becomes transformative only when supported by functioning authorisation processes, transparent accounting (including corresponding adjustments where relevant), and audit-grade monitoring systems. Integrity is the enabler; without it, mitigation cannot credibly move across borders or unlock premium demand.

Each country has a pathway - but sequencing matters. Türkiye, Jordan, and Egypt are progressing along different institutional and market trajectories. Their opportunities are real, but not uniform. The evidence shows that success depends on sequencing the right pilots in the right contexts—starting where MRV is strongest, data is accessible, and governance can support predictable authorisation.

The roadmap provides a clear path from pilots → scaling → policy. The implementation roadmap lays out how countries can move from high-confidence early pilots to standardised portfolio programmes, and ultimately to policy-linked, sector-wide approaches. It demonstrates how today's practical actions build tomorrow's scalable cooling finance architecture.

1. Carbon markets and Article 6: a technical framing for sustainable cooling

1.1. Carbon market typologies and why the route changes project design

Carbon markets are not a single instrument; they are a family of mechanisms that assign monetary value to verified emission reductions or removals under different rulesets. For sustainable cooling, the carbon market route selected is not a marginal detail: it determines (i) what methodological flexibility is available, (ii) what documentation and verification requirements will be imposed, (iii) how claims must be framed relative to national targets, and (iv) whether mitigation outcomes can be authorised and transferred internationally under Article 6.

Figure 2: How Different Market Routes Shape Cooling Projects

Voluntary standards	Article 6.2	Article 6.4	CORSIA
<ul style="list-style-type: none"> • Flexible methods • Fast to deploy • Programmatic 	<ul style="list-style-type: none"> • Bilateral • Fastest • Country-led 	<ul style="list-style-type: none"> • UN-supervised • Standardised • More paperwork 	<ul style="list-style-type: none"> • Buyer demand driver • Needs high-integrity credits • EE = strong fit

Independent / voluntary carbon standards (e.g., Verra, Gold Standard, Global Carbon Council) are often used as near-term channels because methodologies can be developed and updated relatively quickly, programmatic designs can be piloted, and crediting cycles are familiar to developers and verifiers. In cooling, this flexibility matters because mitigation is most feasibly delivered through programmatic deployments (portfolios of buildings, commercial chains, aggregated chiller replacements, district cooling performance upgrades) rather than stand-alone projects. It is also important that transaction costs, especially MRV and verification, can be reduced through standardised templates and monitoring tiers. These features can be supported by independent standards.

This demonstrates that the voluntary market environment is being reshaped by integrity scrutiny and by the growing operational relevance of Article 6. For cooling, the design implication is clear: if international transfer is intended, the “Article 6 alignment” dimension must be designed from the beginning, rather than being retrofitted after implementation.

International mechanisms are intergovernmental frameworks that provide legitimacy and comparability once fully operational. The CDM is now a legacy mechanism, but it remains practically relevant because many baseline and monitoring approaches used today were shaped by CDM methodologies, and because institutional “muscle memory” from CDM-era practices continues to influence readiness (DNAs, validation/verification routines, documentation standards). A critical lesson from the CDM experience is that small, fragmented activities struggled under high transaction costs; therefore, cooling interventions must be structured programmatically so that MRV remains feasible and carbon revenue is not overwhelmed by due diligence burdens.

Government compliance markets and domestic schemes (ETS, carbon taxes, domestic crediting) matter in MENAT because they shape incentives, data systems, and accounting environments. Türkiye’s move toward an ETS is significant as it strengthens MRV capacity and institutional clarity. Even where cooling is not directly regulated under an ETS cap, ETS development typically strengthens the ecosystem that makes cooling programmes financeable (metering practices, data governance, verification capacity, institutional clarity on claims). At the same time, domestic market evolution creates a critical design requirement: rules must be established to prevent overlapping and double counting between domestic compliance units, voluntary credits, and any Article 6 transfers.

1.2. International mechanisms relevant to cooling: CDM legacy, Article 6.2, Article 6.4, and CORSIA demand

CDM (legacy): Its relevance for cooling is methodological and institutional. It historically demonstrated that energy efficiency can be credited credibly, but it also demonstrated that complex documentation and high transaction costs can undermine feasibility for dispersed interventions. The portfolio/programmatic lesson is especially important for cooling.

Article 6.2 (cooperative approaches / ITMOs): A decentralised route is provided for international cooperation where countries can authorise mitigation outcomes for transfer under bilateral or multilateral arrangements. Its defining feature is not a global methodology pipeline; it is host-country authorisation combined with Paris accounting discipline; particularly corresponding adjustments when outcomes are transferred for use toward another Party's NDC or other international mitigation purposes. For cooling, Article 6.2 is operationally attractive because programmatic, scalable interventions can be packaged under tailored cooperation terms, drawing on recognised methodologies where useful, while moving ahead through bilateral arrangements even as Article 6.4 continues to mature.

Article 6.4 (centralised UN crediting): An UN-supervised mechanism is being established as the Paris successor to CDM. Over time, it will provide standardised, widely recognised routes for programmatic energy efficiency, potentially including appliance efficiency rollouts, chiller replacement programmes, district cooling performance improvements, and large building retrofit portfolios. In the near term, it is still being operationalised; therefore, voluntary standards and Article 6.2 cooperative approaches are expected to remain practical near-term channels, while compatibility with 6.4 standardisation is kept in view.

CORSIA (aviation offsetting scheme): Its relevance is demand-side. A potentially significant source of purchasing interest can be created for credits that meet CORSIA eligibility criteria. Cooling credits that are grounded in measurable electricity savings, paired with conservative baselines and robust MRV, can be attractive in an integrity-sensitive demand environment. Tightening eligibility over time reinforces the need for conservative quantification and auditable evidence.

1.3. Growing role of voluntary credits in national climate strategies

Beyond private demand, national and supranational governments are increasingly recognising voluntary carbon markets as complementary instruments to achieve climate mitigation goals. Rather than replacing domestic action, high-integrity voluntary credits are being positioned as flexibility mechanisms that can help manage cost, timing, and residual emissions within legally binding climate frameworks. This signals a structural shift: voluntary credits are no longer viewed solely as corporate offsetting tools, but as part of a broader climate finance architecture that supports ambition while maintaining environmental integrity. Voluntary carbon markets must be aligned with the goals of the Paris Agreement and contribute to a global increase in mitigation ambition, with both supply and demand sides meeting strict quality and integrity requirements to avoid undermining climate ambition or causing environmental and social harm.

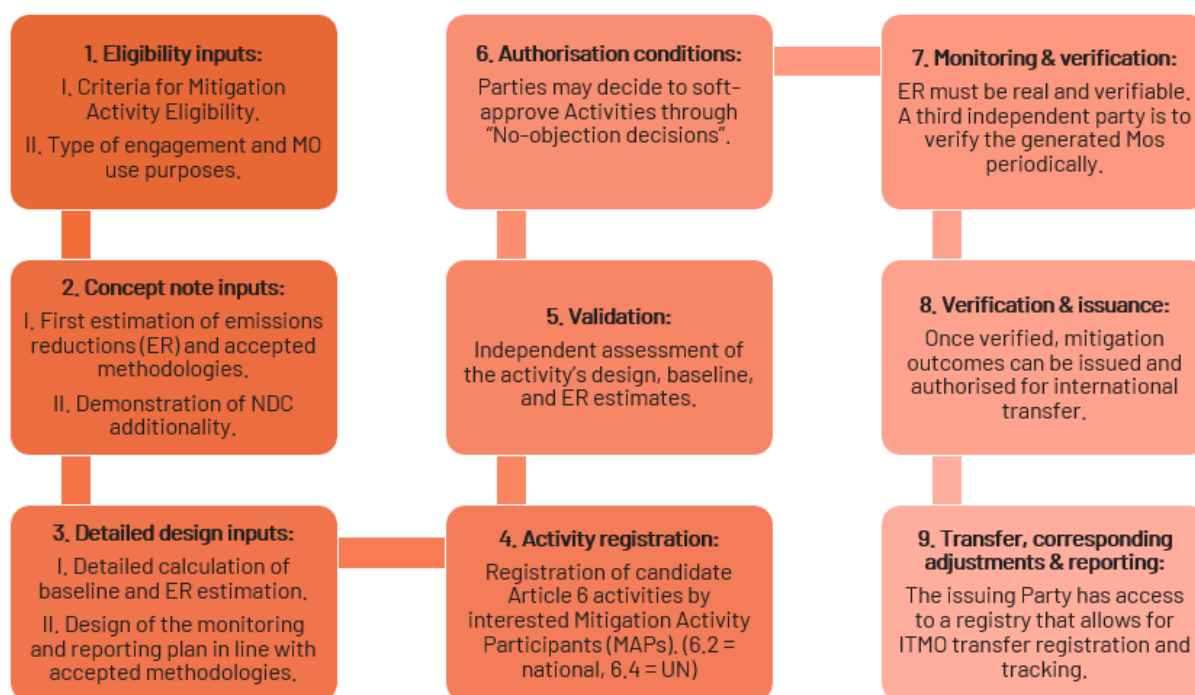
A prominent example is the European Commission's proposal for the EU's 2040 climate target, which explicitly allows a limited and conditional contribution from high-quality international carbon credits toward compliance with the EU's legally binding climate objective. While the carve-out is framed conservatively and subject to strict safeguards, it represents a material policy signal that demand for robust voluntary credits, aligned with Paris accounting principles and strong MRV, will persist and potentially expand. Importantly, this approach reinforces the value of sector-credible credit classes that deliver measurable mitigation while supporting systemic transformation rather than one-off projects.

For sustainable cooling, this policy trajectory strengthens the case for developing "cooling credits" that are integrity-driven, programmatic, and compatible with national accounting frameworks. As cooling becomes more visible in NDCs and long-term strategies, and as governments seek cost-effective pathways to address rapidly growing electricity demand and peak-load emissions, high-quality cooling credits can emerge as a credible mitigation option. The increasing policy recognition of voluntary credits therefore adds an additional demand-side rationale for investing early in cooling-specific crediting approaches that are Paris-aligned, MRV-robust, and suitable for eventual integration into Article 6 cooperation frameworks.

2. Operational steps for developing Article 6 activities

Article 6 transactions are best understood as full cycles, from concept definition and host endorsement, through baseline/MRV design and authorisation, to verification, issuance, transfer, and Paris reporting. Although Article 6.2 and 6.4 differ in who registers activities and how methodologies are governed, the operational logic remains similar: sovereign control is retained through authorisation; buyer confidence is created through MRV and transparent tracking; and system integrity is protected through corresponding adjustments and reporting.

Figure 3: Full Article 6 Activity Cycle for Cooling



Step 0: the institutional backbone that must exist before transfers become credible

Before any activity can credibly generate internationally transferable outcomes, a minimum national backbone is required. This typically includes:

- a designated authority (or inter-ministerial mechanism) able to review and authorise Article 6 participation;
- a national decision on whether outcomes will be authorised for transfer, and for what international purpose;
- a registry/tracking arrangement capable of uniquely identifying units and managing their lifecycle (issuance, transfer, cancellation, use); and
- a practical plan for how corresponding adjustments will be applied and reported.

In parallel, buyer countries must be able to acquire, track, and account for outcomes. Article 6 is therefore a governance and accounting system as much as it is a project pipeline.

Step 1: Concept definition and early host-country endorsement (cooling-specific requirements)

The activity cycle begins with a concept that is clear on fundamentals: what will be implemented, where and at what scale, how emission reductions will be quantified, and who will own and claim outcomes. In cooling, the strongest starting point is typically programmatic energy efficiency delivered through aggregation (e.g., chiller replacement portfolios, performance-based retrofits across large commercial facilities, district cooling optimisation, or large-scale upgrades in commercial RAC). Early host endorsement often takes the form of screening or “prior consideration” to confirm alignment with national priorities and to avoid retroactive design, an issue that can undermine additionality.

Step 2: Activity design, baseline setting, and MRV plan (where bankability is determined)

A structured design package is required, including:

- baseline and crediting approach;
- additionality demonstration and barrier explanation;
- monitoring plan specifying data sources, frequency, QA/QC, sampling approaches, and uncertainty handling; and
- safeguards for integrity and non-overlap (especially policy interactions and other treaty obligations).

In cooling portfolios, this step determines feasibility. Electricity savings can be MRV-friendly when monitoring is built around measurable indicators (metered consumption, equipment performance metrics, verified savings). The principal challenge is scale: thousands of devices or many facilities. Transaction feasibility depends on standardised programme architecture: common eligibility rules, standardised baselines linked to MEPS or market averages where defensible, tiered monitoring approaches, and conservative uncertainty management that keeps costs proportionate while protecting integrity.

Step 3: Validation and host-country authorisation (the sovereign gate)

Host-country authorisation typically involves administrative completeness checks, technical review, and final approval. Authorisation will usually specify (i) that the activity is approved as an Article 6 activity, and (ii) that outcomes are authorised for specific international use. Authorisation stages can be time-intensive; several months can be required in emerging processes due to due diligence needs (NDC alignment, double counting avoidance, comfort with transferring outcomes). The output is commonly a Letter of Authorisation and recording of the activity in a national system/database.

Step 4: Registration route differs between 6.2 and 6.4

Under Article 6.2, there is no centralised UN registration, the activity proceeds under national authorisation and cooperative approach terms, with UN involvement primarily through accounting and transparency systems. Under 6.4, after host authorisation, the activity must also be registered under the UN mechanism with additional validation/registration steps. In practice, 6.2 is often preferred due to flexibility and speed. Over time, 6.4 will become attractive as a standardised route once procedures and methodologies mature.

Step 5: Implementation, monitoring, and third-party verification

After authorisation, implementation proceeds through procurement, installation, commissioning, and ongoing monitoring. Monitoring systems must be audit-grade, with clear data ownership, QA/QC procedures, and traceability of equipment and sites. Verification at defined intervals is performed by independent auditors, verification reports feed issuance decisions under the relevant governance route.

Step 6: Issuance, transfer, and corresponding adjustments

Units are issued into registries and transferred as specified. Under 6.4, share of proceeds and OMGE-related cancellations apply; under 6.2, issuance and lifecycle management are governed by national rules and cooperative approach terms but must remain transparent and traceable. Where units are transferred for another Party's NDC use or other international mitigation purposes, corresponding adjustments are applied to prevent double counting.

Step 7: Reporting and international transparency (what makes Article 6 "real")

Under 6.2, Initial Reports and annual transfer/use information are submitted in agreed formats and reflected in Biennial Transparency Reports subject to technical review. Under 6.4, extensive publication occurs at mechanism level, but Parties still report use and adjustments in their transparency reporting. The key implication is that institutional workflow readiness must be developed in parallel with project pipelines.

Practical design implications for cooling portfolios

To keep transaction costs manageable and to generate meaningful volumes, cooling interventions must be designed programmatically from the outset. Pilot selection should favour interventions where MRV can be strong without being prohibitively expensive (large building portfolios, chillers, district cooling, aggregated commercial segments). Baselines and eligibility rules should remain credible even as policies evolve. Early clarity is required on authorisation intent (domestic use vs international transfer) so accounting decisions are not retrofitted later. Integrity must be embedded by design, so credited outcomes are transparently additional, traceable, and compatible with national reporting systems.

3. Carbon market trends shaping cooling credit design and demand

Carbon markets are undergoing rapid institutional change. Compliance markets are expanding, voluntary markets are consolidating around integrity, and Article 6 is increasingly being positioned as an anchor for Paris-aligned internationally transferable outcomes. These trends are directly affecting cooling: what interventions are financeable, what buyers will accept, and what host countries must build institutionally to access premium demand.

3.1. Compliance market expansion and the “MRV ecosystem effect”

Government-led compliance instruments are expanding in coverage and importance. This matters for MENAT because a stronger global carbon price signal is being reinforced (including through trade-related dynamics). As compliance markets grow, domestic MRV systems and carbon governance capacity become more valuable. For cooling, the implication is indirect but substantial: energy efficiency interventions become more aligned with compliance-oriented expectations (measurable reductions, conservative baselines, replicability), while data governance and verification capacity improve. **This means cooling interventions must meet compliance-grade expectations from the outset, treating MRV and conservative baselines as non-negotiable design requirements.**

3.2. Voluntary market contraction and the shift to “fewer credits, higher confidence”

After rapid growth in 2021–2022, voluntary markets have contracted due to heightened scrutiny of credit quality and buyer hesitation. This does not imply disappearance; it implies a transition from volume-driven demand to more selective demand where transparency and credibility determine purchase decisions. Efficiency-led cooling programmes can align well with this environment because electricity savings can be measured and verified with relatively high confidence, provided additionality is demonstrated and baselines remain conservative. **This means only interventions with transparent, verifiable savings will access premium demand, positioning efficiency-led cooling as the safest near-term credit class.**

3.3. Buyer preferences: integrity, co-benefits, and NDC consistency

Buyers increasingly seek three qualities simultaneously:

- integrity and transparency, with claims that can withstand scrutiny;
- co-benefits and development value (health, resilience, energy affordability, service delivery); and
- consistency with host-country climate strategies and NDC accounting (no undermining of ambition; no double counting/double claiming).

Cooling is compelling because it is tied to heat resilience, productivity, and health system performance, while also reducing peak demand and improving energy system reliability. These features strengthen demand potential when governance and MRV are credible. **This means cooling programs must demonstrate airtight additionality, clear NDC alignment, Montreal Protocol and Kigali Amendment implementation, and strong co-benefits to remain competitive in a tightening market.**

3.4. Why Article 6 is being positioned as a next-generation pathway (especially for efficiency and policy-led mitigation)

Article 6 formalises the relationship between market units and national targets via authorisation, reporting, and corresponding adjustments where relevant. Article 6.2 has emerged as a near-term route for pilots because bilateral cooperation can move ahead, while 6.4 is expected to become a standardised route as methodologies mature. For energy efficiency, Article 6 is particularly relevant because outcomes are measurable and can be verified conservatively; efficiency is best delivered programmatically; and policy crediting will become feasible where MRV systems can credibly isolate impacts. **This means host countries must build authorization, accounting, and registry capacity now if they want cooling portfolios to be internationally transferrable at scale.**

4. Montreal Protocol alignment and “no overlap” safeguards

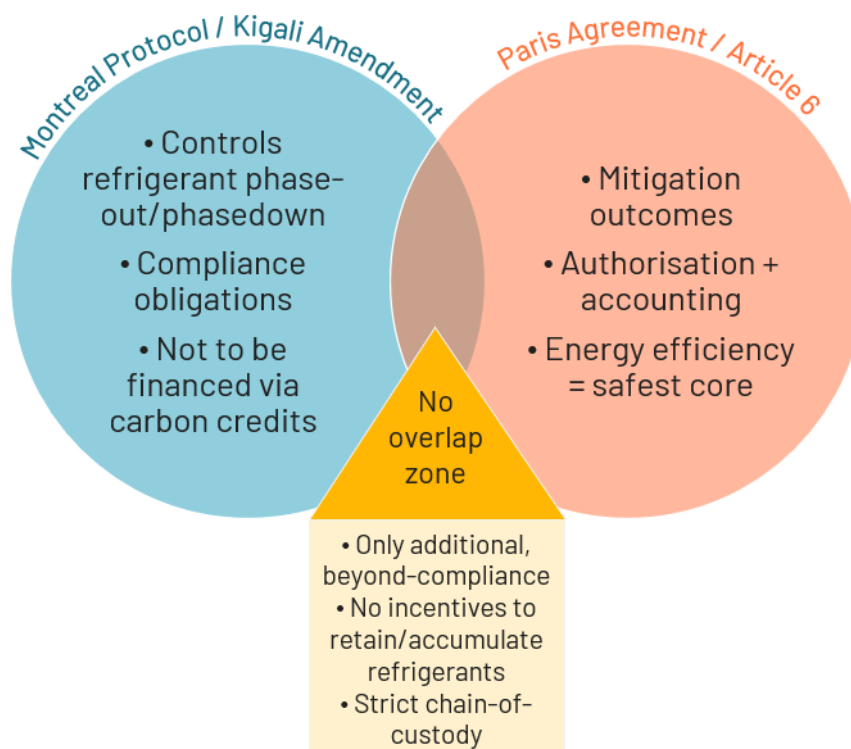
Cooling sits at the intersection of the Montreal Protocol and the Paris Agreement. HCFC phase-out and HFC phasedown schedules under Kigali create legally binding trajectories for refrigerant transitions, while the Paris Agreement enables mitigation accounting and international cooperation. This means cooling crediting must be explicitly designed to avoid financing compliance actions, ensuring integrity across both treaty regimes.

It is therefore required that crediting does not pay for compliance. Actions that are already required under Montreal Protocol/Kigali schedules; or funded through Montreal Protocol instruments; should not be credited as carbon market mitigation. A clear “beyond compliance” rationale and boundary setting are required to preserve integrity and avoid double financing.

It is also required that refrigerant-related programmes avoid perverse incentives, especially around end-of-life. End-of-life collection and destruction can be additional because Kigali controls production/consumption rather than emissions from existing banks in retired equipment or stockpiles. Programmes must be structured so that they do not reward retention, accumulation, or extended use of high-GWP refrigerants to claim future destruction credits. In practice, this requires: (i) crediting only verifiable recovered quantities from decommissioned equipment and legitimate stockpiles, (ii) robust chain-of-custody, (iii) conservative baselines, and (iv) clear separation of eligible actions from compliance actions.

For these reasons, energy efficiency must anchor all early cooling crediting efforts because it avoids overlap risks and delivers the cleanest, most defensible mitigation, while refrigerant-related measures are treated as complementary and conditional. In addition, the visibility of cooling emissions in national climate architecture is treated as a practical bottleneck. HFCs are typically accounted for under IPPU in national inventories; if HFCs are treated as “only Kigali matters” and left outside NDC framing, accounting gaps can complicate Article 6 authorisation and corresponding adjustments. A conservative enabling approach is therefore indicated: HFC emissions should be included in inventory and NDC accounting coverage at least as a clearly scoped action area so that Article 6 transfers do not create blind spots reporting.

Figure 4: Avoiding Double Counting & Double Financing

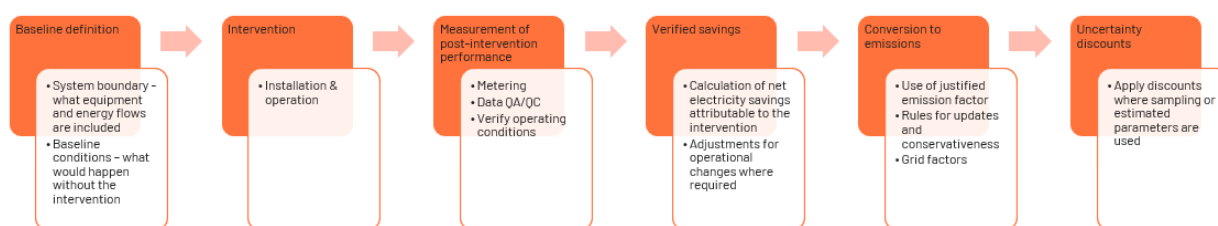


5. Linking carbon markets and sustainable cooling: intervention archetypes and MRV logic

5.1. How cooling mitigation is typically quantified (and why MRV design is decisive)

For energy-efficiency-led cooling, the emissions reduction logic is straightforward. Energy savings are multiplied by an emission factor to estimate avoided emissions. Technical credibility depends on whether baselines are conservative, whether monitoring data are audit-grade, and whether uncertainty is handled transparently. A practical quantification chain is generally required.

Figure 5: How Cooling Emission Reductions Are Quantified



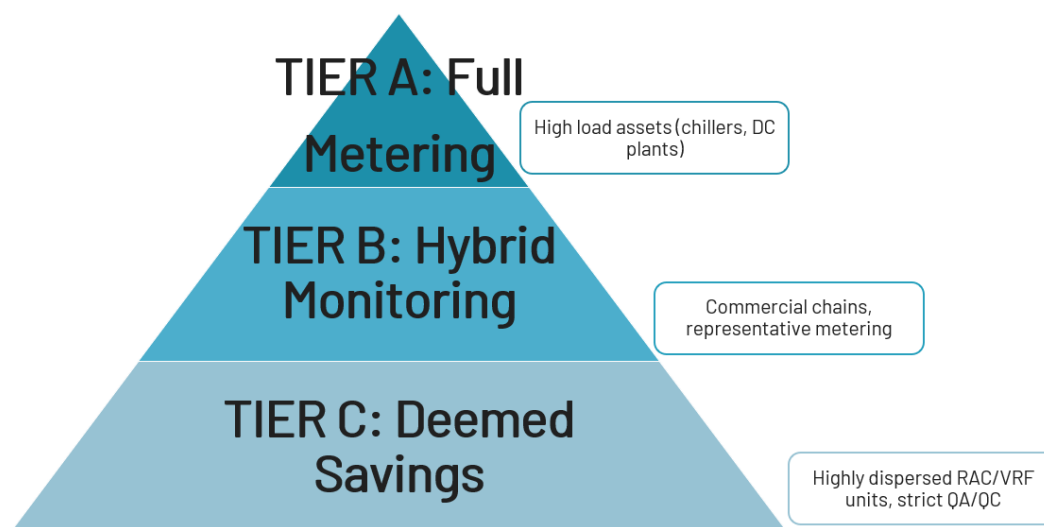
In cooling, additional complexity is introduced by usage variability and weather dependence. Baseline and monitoring designs must address how changes in occupancy, business activity, hours of operation, and ambient temperature extremes are treated. Without such controls, savings can be overstated. For this reason, MRV systems are treated as core infrastructure rather than as secondary documentation.

5.2. Why programmatic scale is required (and how transaction costs are controlled)

Cooling mitigation is often dispersed across many devices or sites. Crediting feasibility depends on programmatic aggregation, standardisation, and monitoring tiering. Standardised programme architecture is required: consistent eligibility rules, common commissioning requirements, standardised baselines (often linked to MEPS trajectories or market averages), and tiered monitoring/verification designs that remain conservative but keep costs proportionate. A three-tier logic is typically used in scalable portfolios:

- Tier A (high-load assets): full metering and continuous monitoring (e.g., chillers, district cooling plants, large facilities), where savings per asset justify robust monitoring.
- Tier B (portfolio sites): hybrid monitoring with stratified sampling and standardised baselines (e.g., commercial chains), where representative metering calibrates savings, but full metering is not imposed on every site.
- Tier C (highly dispersed units): conservative deemed savings with strong QA/QC and statistically valid sampling, used only where monitoring costs would otherwise exceed credit value.

Figure 6: Programmatic Monitoring Pathways for Cooling



5.3. Cooling mitigation options (with emphasis on energy efficiency)

5.3.1 Energy efficiency (primary scalable crediting pillar)

Energy efficiency is prioritised because it is measurable, financeable, and replicable. Key intervention families include:

- **Commercial RAC and VRF upgrades:** improved seasonal efficiency, better controls, optimised setpoints and schedules, improved commissioning, and maintenance regimes that sustain efficiency.
- **Chiller replacement and HVAC optimisation:** high-efficiency chillers, improved pumping and cooling tower performance, variable speed drives, controls optimisation, and holistic system commissioning.
- **District cooling performance improvements:** plant efficiency upgrades, distribution optimisation, pumping efficiency, controls and monitoring improvements, and performance-based operational improvements.
- **Cold chain modernisation:** improved refrigeration systems, insulation, controls, and operating practices across cold rooms, logistics hubs, and supermarkets.
- **Factory-side energy efficiency in RAC manufacturing and supply chains:** process optimisation, motor/drive efficiency, compressed air optimisation, waste heat recovery, operational improvements, and facility-level energy management upgrades.

Efficiency-led interventions also align well with co-benefits: reduced peak load, improved reliability, reduced operating costs, and improved service delivery features that increase political attractiveness and buyer interest.

5.3.2 Refrigerant lifecycle management (selective, safeguarded, non-core)

Refrigerant measures can be impactful in CO₂e terms but are treated conservatively. Where included, they should be bounded as supporting components integrated into efficiency-led replacement programmes (e.g., managed recovery during decommissioning). Strict rules are required to avoid overlapping with Kigali obligations and to prevent incentives to preserve or accumulate high-GWP refrigerants. Robust chain-custody and conservative baselines are required.

5.3.3 Passive cooling and demand reduction (strategic but method-limited)

Passive cooling is recognised as essential for NCAP outcomes and urban resilience, but current crediting approaches are limited. A conservative approach is implied: passive cooling can be integrated into policy/sectoral approaches and credited through measurable energy outcomes where robust monitoring pathways exist, rather than being treated as stand-alone credited actions without credible measurement.

5.4. Integrating cooling into NDCs and national planning (why it matters for authorisation and accounting)

Cooling is increasingly recognised in national climate strategies, but integration into NDC accounting and inventories can be uneven. NCAPs help define baselines, policy priorities (MEPS, building codes, RAC regulations), and institutional roles. Integration into NDC framing makes authorisation and double counting management easier and supports clearer accounting for Article 6 transfers. In addition, including HFC coverage in inventory/NDC accounting avoids blind spots that complicate Paris reporting and corresponding adjustments.

6. Methodological landscape and gaps (what exist, what can be deployed, what is to be developed)

Established methodological pathways already exist and can be deployed (or adapted) for MENAT cooling programmes. Mature routes are highlighted for:

- **chiller efficiency** (e.g., AM0060);
- **building energy efficiency** (e.g., AMS-II.E);
- **demand-side appliances** (e.g., AMS-II.C);
- **refrigerator replacement with refrigerant recovery** (e.g., AMS-III.X);
- **refrigerant destruction protocols** (e.g., CAR, ACR, VM0016); and
- **district cooling retrofits** (e.g., GCCM006).

Cool Up's analysis also noted that certain approaches are positioned for international transfer under Article 6.2 or voluntary use, and that some standards commonly apply CDM-derived methods with additional sustainable-development requirements.

From an implementation perspective, the existence of these methods means that near-term pilots do not need to wait for entirely new methodologies; particularly for efficiency-led programmes. However, gaps remain where cooling markets transform primarily through policies and service models rather than stand-alone projects. The main gaps include:

- crediting approaches for MEPS implementation;
- sector-wide NCAP-linked crediting approaches;
- crediting pathways for passive cooling and urban design;
- Cooling-as-a-Service (CaaS) and utility demand-side management methodologies; and
- combined energy and refrigerant approaches suitable for integrated programmes

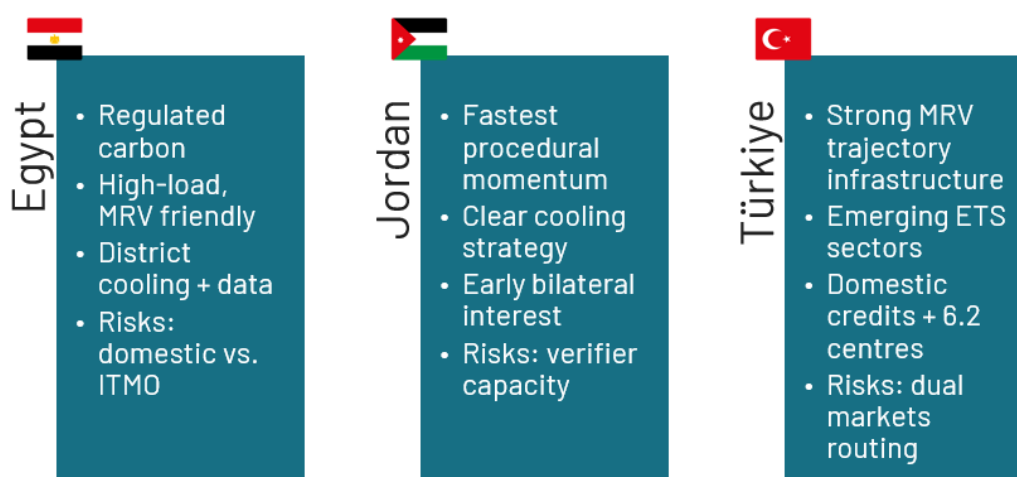
A two-track methodological strategy is therefore implied:

- Track 1 (deploy now): implement pilots using existing cooling efficiency methodologies and programmatic architectures.
- Track 2 (scale later): develop policy/sectoral approaches based on data and institutional learning generated through Track 1 pilots (sales-weighted efficiency distributions, compliance rates, market surveillance evidence, standardised baselines).

7. Cool Up country analysis: Türkiye, Jordan, Egypt

Cooling market readiness across Türkiye, Jordan, and Egypt is advancing, but through distinctly different pathways that shape how Article 6 opportunities can be operationalised. Each country presents a unique combination of policy progress, institutional capacity, MRV maturity, and sectoral opportunity areas. Understanding these national trajectories is essential for designing credible, scalable programmatic interventions that reflect local governance dynamics, technical feasibility, and emerging carbon market architectures. This section synthesises the specific readiness features, priority intervention archetypes, and practical implementation considerations for each country, highlighting where early pilots can gain the most traction.

Figure 7: Country Readiness at a Glance



7.1. Türkiye: MRV trajectory, emerging dual-market logic, and manufacturing-linked opportunities

7.1.1 Institutional and market architecture

Türkiye is characterised by rapid advancement of climate policy infrastructure, including development of a national ETS (TR-ETS) and a strong MRV trajectory. In parallel, the emergence of domestic crediting and offsetting rules (draft regulation and associated domestic unit design) is creating an environment where two market logics will need to be managed simultaneously: a domestic unit stream (for domestic claims and/or ETS-linked use depending on final rules) and internationally transferred outcomes under Article 6.

It has been emphasised that coherence, not capability, is the key readiness challenge. Clear decisions are needed early on how mitigation outcomes will be allocated between domestic use and international transfer, and how double counting will be prevented across domestic and international systems. Without early routing clarity, overlapping claims and market fragmentation risks are increased.

7.1.2 Cooling sector positioning and policy context

Türkiye's Kigali Implementation Plan (Stage I) and emerging national cooling strategy signals provide a policy foundation for linking cooling with climate objectives, while energy efficiency and system performance are identified as the cleanest carbon-finance proposition. The industrial and manufacturing base in RAC and related cooling supply chains is a distinctive advantage. This opens a mitigation channel beyond building-side retrofits: factory-side energy efficiency and process optimisation can deliver measurable reductions with comparatively structured data availability, making MRV and verification more straightforward than in highly dispersed consumer segments.

7.1.3 Pipeline opportunities (with MRV and programme design implications)

A portfolio of interventions is indicated, with emphasis on MRV-friendly and scalable archetypes:

- **Factory-side energy efficiency in RAC manufacturing and supply chains:** Implementation can be structured around clearly specified upgrades (process optimisation, high-efficiency motors and drives, compressed air systems, waste heat recovery, operational improvements). Industrial energy data is typically more structured, enabling robust verification. Transaction costs per ton can be reduced because large volumes are produced per facility and monitoring boundaries can be tightly defined. Export-market dynamics further strengthen the investment case, as emissions performance is increasingly valued by international supply chains.
- **Large building and commercial portfolios (HVAC optimisation and chiller programmes):** High-confidence monitoring can be deployed through metering at facility or system level. Baselines can be anchored in pre-intervention measured consumption adjusted for operating conditions, or in standardised baselines linked to typical performance and MEPS trajectories where justified. Commissioning and quality assurance become decisive for persistence; therefore, procurement standards, installation QA/QC, and O&M requirements should be embedded in programme rules.
- **Aggregated commercial cooling segments (retail chains, malls, supermarkets, cold rooms):** MRV can be structured through a combination of site metering (for representative calibration), standardised savings models, and conservative sampling. Eligibility and monitoring templates should be standardised so that additional sites can be added without bespoke methodological negotiation.

7.1.4 Implementation constraints and sequencing

Near-term pilots should be designed not only to generate reductions but to stress-test domestic vs international routing logic, authorisation workflows, and registry requirements. With clear allocation rules and coherent governance, Türkiye can become a high-confidence host environment for efficiency-led cooling programmes. Without such coherence, transaction friction and integrity concerns are likely to rise even if technical capacity is strong.

7.2. Jordan: procedural momentum, cooling strategy anchor, and fast operationalisation potential

7.2.1 Institutional and policy anchor

Jordan is differentiated by strong policy intent and comparatively fast progress in Article 6 operationalisation. The National Cooling Strategy (2024) provides an important anchor because cooling is treated as a structured policy agenda rather than a diffuse subset of energy efficiency. This clarity supports baseline definition, intervention packaging, and alignment with national planning; advantages when preparing Article 6 activities that require authorisation and transparent prioritisation.

Jordan is advancing an Article 6 framework with relatively clear procedures for Letters of Authorisation. Combined with bilateral cooperation signals (including engagement with Norway) and pipeline support through partners such as GGGI, willingness to move from “concept” to “transaction” is high. In Article 6 practice, procedural capacity and consistent decision-making can be more constraining than technical ideas; therefore, this institutional momentum is highly relevant.

Kigali Stage I implementation is active. The same integrity implication applies: efficiency-led programmes are the cleanest carbon finance entry point, and refrigerant-related components must be strictly additional and non-overlapping, with safeguards against perverse incentives.

7.2.2 Pipeline opportunities and practical programme architecture

Jordan's comparative advantage is speed and clarity rather than scale. This demonstrates that pilots should be selected to maximise MRV confidence and minimise complexity while institutional routines are established.

- **Chiller and large-facility HVAC programmes:** These are attractive because monitoring boundaries are clear, savings per asset are large, and metering is feasible. A standardised chiller replacement/optimisation programme can be rolled out across public and institutional portfolios under common rules: equipment eligibility, commissioning protocols, monitoring templates, and verification cycles.
- **Aggregated commercial portfolios (fewer, larger, easier-to-monitor portfolios):** Momentum can be converted into bankable programmes where aggregation is feasible (commercial chains, large

facilities). Hybrid MRV can be used: representative metering combined with conservative sampling and standardised baselines.

- **Structured exploration of policy-linked pathways:** Policy crediting (MEPS/NCAP-linked) is high-upside but method- and data-constrained. A staged approach is implied: data system development and conservative pilot approaches should be run before scale claims are made.

7.2.3 Constraints and sequencing

Jordan's rapid momentum increases the importance of (i) cooling-specific verifier capacity, (ii) standardised documentation toolkits (monitoring plans, baseline templates, QA/QC protocols), and (iii) institutionalised authorisation review routines. Without these, speed at concept stage can be followed by bottlenecks at verification and issuance stages. Therefore, implementation should be used deliberately to build the institutional "transaction muscle" required for repeated approvals and scalable portfolios.

7.3. Egypt: regulated carbon infrastructure, high-load segments, and technology cooperation drivers

7.3.1 Domestic carbon market differentiation and governance implications

Egypt is differentiated by the rapid development of a regulated voluntary carbon market environment, linked to the Egyptian Exchange, with the Financial Regulatory Authority regulating market and verification standards. A more structured domestic carbon infrastructure is therefore present than in many peers, reducing perceived risk for market actors and supporting standardisation and transparency; such qualities increasingly demanded by buyers.

Kigali implementation (Stage I) is advancing with strong NOU leadership, and climate governance is being strengthened around NDC implementation and cooling-related planning. As in other contexts, this reinforces the need for clear non-overlap boundaries where any refrigerant components are considered.

7.3.2 Cooling opportunity set: scale, sector diversity, and MRV advantages

Egypt's cooling opportunity set is distinctive due to scale and sector diversity: large building retrofit potential, growing commercial cooling demand, expanding district cooling relevance in certain developments, and high-growth segments such as data centres and large service-sector facilities. These segments are particularly attractive for efficiency crediting because they are easier to meter, monitor, and verify than dispersed household appliances.

From a programme design perspective, this implies that early pilots can be selected where MRV confidence is naturally high: large buildings, centralised cooling systems, and high-load facilities with existing metering infrastructure or strong feasibility for metering deployment. Transaction costs per ton can be reduced because mitigation volumes per site are substantial.

7.3.3 Technology cooperation and transfer drivers (within Article 6 cooperation framing)

While carbon finance is positioned as results-based revenue, additional cooperation dimensions are also relevant; particularly under Article 6.8 non-market approaches and through the broader cooperative framing of Article 6.2 partnerships.

The prominence of district cooling developments, performance optimisation needs, and high-growth data centre segments enables advanced technologies and operational capabilities: high-efficiency equipment, digital control systems, advanced commissioning practices, and performance monitoring infrastructure. For this reason, cooperation packages are often strengthened when they include:

- technology cooperation for high-efficiency cooling systems and controls;
- training and capacity development for commissioning, performance measurement, and O&M practices that sustain savings; and
- digital MRV capabilities that reduce verification friction and improve auditability.

This is not presented as a separate "technology transfer project"; rather, it is treated as a practical requirement for achieving and sustaining performance in high-load segments. Technology cooperation can therefore be integrated into cooling carbon programmes as enabling components that increase persistence and credibility.

7.3.4 Pipeline opportunities and programme structuring needs

Egypt's pipeline potential is substantial, but it is emphasised that unlocking it requires programme structuring that reduces transaction costs and strengthens MRV credibility. A regulated market environment can help, but delivery mechanisms must be programmatic and anchored in measurable energy performance.

Priority archetypes include:

- **Public and commercial building portfolio retrofits:** standardised packages for HVAC optimisation and chiller upgrades, with metering and conservative baselines.
- **District cooling performance improvements:** system-level monitoring can provide strong MRV and large reductions per project.
- **High-load service segments (including data centres):** energy performance can often be measured with high granularity; verification confidence can be strong if boundaries are defined carefully.

7.3.5 Constraints and sequencing

Domestic market governance can accelerate standardisation, but Article 6 transfers still require clear authorisation and accounting processes for international routing and corresponding adjustments where applicable. Early pilots should therefore be designed to clarify how domestic crediting interacts with international transfer requirements, so accounting conflicts are avoided and buyer confidence is maintained.

8. Cross-country analysis: common archetypes, differing readiness dynamics, and harmonisation priorities

8.1. Convergent conclusion: efficiency-led, programmatic, MRV-friendly interventions are the robust near-term core

MENAT countries share a common efficiency-led opportunity, but readiness varies in ways that directly determine which interventions can scale. Across Egypt, Jordan, and Türkiye, the most robust near-term opportunities are those that are energy-efficiency-led, programmatic, and MRV-friendly. Commercial facilities offer an early “sweet spot” because consumption can be metered, facilities can be aggregated through chains, and upgrades have clear performance metrics. Chillers, district cooling plants, and large-building HVAC systems are strong candidates because they combine large absolute savings with strong MRV feasibility.

Industrial/manufacturing efficiency is a particularly strong channel in Türkiye and meaningfully relevant in Egypt. Interventions can be specified clearly, data availability is stronger, and verification can be executed with comparatively high confidence.

8.2. Differing readiness dynamics (what is strong, what is risky, what is needed)

The readiness of Türkiye, Jordan, and Egypt to engage in Article 6 cooling activities reflects different stages of institutional capacity, policy alignment, and MRV maturity. These differences shape where each country can most credibly and quickly develop programmatic, efficiency-led interventions. The graphic below provides a comparative snapshot of these readiness dimensions, highlighting the strengths, gaps, and strategic considerations that inform how Cool Up can sequence pilots and support national implementation pathways.

Figure 8: Cooling Opportunities Across MENAT

Factors	Egypt	Jordan	Türkiye
MRV strength	High	Medium	High
Governance	Strong domestic VCM	Very clear	Developing ETS
Scale	Large buildings, DC, data centres	Institutional	Industrial & buildings
Risk areas	Accounting alignment	Verifier gaps	Routing clarity

- In Türkiye, institutional capacity and MRV trajectory are strong; the key challenge is coherence between domestic units and international transfers as market architecture evolves.
- In Jordan, technical depth may be more limited than Türkiye, but procedural momentum and political willingness are strong; pilots can move quickly if interventions are selected carefully and MRV is strengthened in parallel.
- In Egypt, domestic carbon infrastructure and governance architecture are advanced; the readiness focus is translating this into bankable cooling programme design and technology transfer, especially through aggregated efficiency programmes in high-load segments.

8.3. Strategic cross-cutting requirements (treated as design constraints)

Several cross-cutting requirements recur across countries and are treated as design requirements rather than optional add-ons:

- Avoidance of double counting/double claiming: ownership and allocation of mitigation outcomes must be defined early; domestic vs international routing decisions should be made upfront.
- Domestic vs international strategy: where domestic markets exist or are emerging, decision logic must be established for domestic demand versus ITMO opportunities.
- MRV and data systems: monitoring systems, sampling protocols, and QA/QC must be treated as core investments.
- Private sector aggregation: delivery at scale depends on banks, retailers, facility owners, ESCOs, manufacturers, and utilities as implementation vehicles.

8.4. Regional harmonisation potential (practical)

High value is seen in regional harmonisation because cooling markets share technologies, performance baselines, and policy instruments. Practical priorities include:

- shared baseline and MRV templates for programmatic cooling efficiency (commercial portfolios, chillers, district cooling);
- a unified methodological development agenda for MEPS/NCAP crediting, including data requirements and conservative quantification rules;
- structured peer learning on authorisation procedures, registry readiness, and MRV systems; and
- coordinated investor/buyer outreach positioning MENAT cooling efficiency as a credible, high-integrity mitigation portfolio with strong co-benefits.

9. Priorities and next steps: methodology development, capacity building, governance support, and financing

A consistent implementation logic is indicated: near-term value is unlocked by prioritising programmatic efficiency pipelines that can be credited under existing methods, while institutional and methodological foundations for policy and sector-wide approaches are built in parallel. Across all workstreams, carbon finance is positioned as accelerating mitigation beyond compliance and remaining compatible with national accounting and Montreal Protocol obligations.

9.1. Methodology development (two-track agenda)

Cooling is not constrained by mitigation potential; it is constrained by scaled methodologies matching how cooling markets transform (standards, procurement systems, portfolios, service models). Two tracks are indicated:

Track 1. Deploy now using existing efficiency methods: Standardised MRV “modules” should be developed for commercial portfolios, chillers, and district cooling so pilots can be launched quickly with credible monitoring and conservative baselines.

Track 2. Scale nationally through policy and sectoral approaches:

- **MEPS policy crediting methodology:** A conservative framework is required to quantify impacts from improvements in sales-weighted efficiency distributions, compliance rates, and market surveillance outcomes, designed for Article 6 compatibility with transparent baseline and uncertainty management.
- **NCAP sector-wide methodology:** A portfolio approach is indicated using stock models and structured MRV, with clear boundaries, conservative quantification rules, and defined data system requirements.
- **Passive cooling approaches (positioned for policy/sectoral crediting):** A conservative approach should be developed that links passive measures to measurable energy outcomes via building codes or municipal portfolios.
- **CaaS/DSM methodologies:** Performance-based crediting approaches are needed that credit verified reductions per unit of cooling service delivered (or portfolio-level reductions), with clear baseline and persistence requirements.

9.2. Capacity building (transaction-critical capabilities)

Capacity building must focus on the capabilities required to move from readiness to transactions:

- joint training for NOUs and climate/Article 6 authorities on authorisation logic, additionality above compliance, no-overlap boundaries, and inventory/NDC visibility of cooling emissions;
- verifier capacity building with cooling-specific competence (metering strategies, sampling, uncertainty management, commissioning verification);
- development of cooling-tailored documentation templates (MAIN/MADD-style packages), baseline tables, monitoring plans, eligibility rules, and conservative default assumptions; and
- establishment of a regional Cooling Carbon Project Facility to standardise pipeline screening, feasibility assessment, MRV design, documentation preparation, and matchmaking with buyers/financiers.

9.3. Governance support (reducing friction, increasing predictability)

Governance is where many carbon initiatives stall. Practical support should include:

- drafting Article 6 eligibility guidance for cooling (eligible interventions, MRV thresholds, additionality interpretations, treatment of MEPS interactions, refrigerant non-overlap rules);
- modelling corresponding adjustments and accounting for mixed domestic vs ITMO routes (especially relevant where domestic markets exist or are emerging);
- defining registry data modules for cooling programmes (equipment types, installation dates, performance data links, sampling frames, decommissioning evidence where relevant);

- guidance in designing streamlined and predictable LoA processes with clear timelines and standardised review criteria; and
- guidance in establishing inter-agency coordination mechanisms between NOUs, energy authorities, standards bodies, and Article 6 authorities.

9.4. Financing and market engagement (carbon as a revenue layer, not a standalone source)

Carbon finance works best as revenue that improves bankability and unlocks other capital. Priority actions include:

- structuring programmatic approaches (PoA/portfolio programmes) for commercial cooling, chillers, and district cooling performance upgrades under repeatable architectures;
- blending carbon revenue with green loans, ESCO models, and DFI funding so carbon income reduces upfront costs or improves debt service coverage;
- developing buyer-facing briefs anchored in conservative quantification, strong MRV, and transparent accounting choices; and
- using carbon revenues strategically to address incremental cost barriers to high-efficiency RAC/VRF systems and high-performance cooling solutions in large facilities.

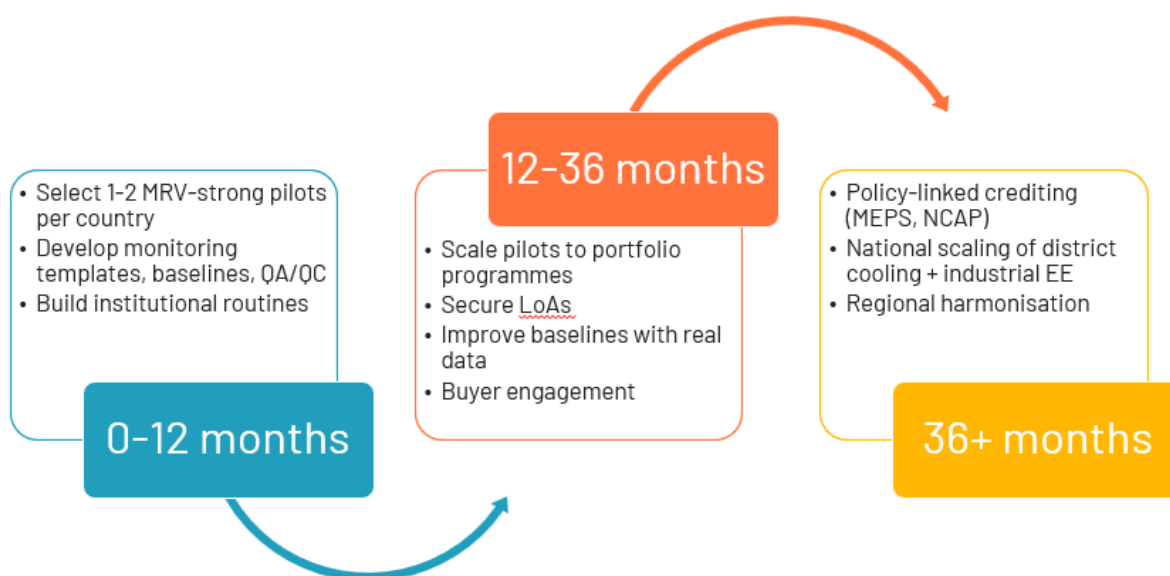
Figure 9: Three Pillars for Scaling Cooling Under Article 6



10. Implementation roadmap

This section outlines the phased implementation roadmap that translates Cool Up's Article 6 proposal into practical, sequenced action. Building on the country analyses and cross-cutting priorities, it highlights how early pilots, institutional strengthening, and methodological development come together over time to form a scalable and credible cooling mitigation pipeline. The overview graphic below provides a visual summary of the short-, medium-, and long-term steps, illustrating how technical, governance, and market-readiness elements progress in parallel to enable sustained Article 6 engagement.

Figure 10: Cooling Article 6 Roadmap (0–36+ Months)



10.1. Short term (0–12 months): establish credibility, generate data, and validate workflows

The first year would be designed to prove that cooling can be operationalised credibly as an Article 6 pipeline through MRV-ready pilots and workable authorisation workflows. A small number of pilots per country should be selected to maximise MRV confidence and replication potential.

Key outputs should include standardised monitoring templates, conservative baseline parameter guidance for selected archetypes, stratified sampling protocols for portfolios, QA/QC procedures, and commissioning requirements. Institutional workshops should be anchored in these concrete tools rather than generic training so that shared interpretations and review routines are built.

Representative actions include:

- identification of 1–2 MRV-strong pilot programmes per country (commercial portfolios, chillers, district cooling performance, manufacturing efficiency as applicable);
- development of full monitoring plans, baseline assumptions, sampling designs, and verification packages;
- implementation of government-first capacity workshops focused on authorisation review routines and accounting choices; and
- compilation of initial baseline datasets (stock proxies, efficiency distributions where available, operating assumptions, grid factor sources used in quantification).

10.2. Medium term (12–36 months): scale portfolios and institutionalise verification routines

Once pilots deliver verified performance and workflows are validated, scaling should focus on replicable programmatic structures: standardised MRV, strengthened verifier capacity, improved baselines using real data, and clearer authorisation practices.

Actions include:

- conversion of pilots into portfolio programmes with standardised templates and conservative sampling/discount approaches;
- securing LoAs for a limited set of high-confidence activities and institutionalising predictable review processes;
- buyer engagement using evidence-based briefs derived from verified pilots; and
- initiation of narrow policy-linked pilots (MEPS/NCAP concepts) focused on data systems and compliance verification rather than immediate volume claims.

10.3. Long term (36+ months): national scaling and policy-linked approaches where integrity is durable

Long-term scaling depends on national embedding and durable data systems. Policy-linked crediting should be pursued only where datasets, market surveillance, compliance evidence, and institutional capacity can support conservative attribution under scrutiny.

Actions include:

- national scaling of proven programme archetypes;
- operationalisation of policy-linked methodologies where enforcement and data systems are strong;
- expansion of district cooling and industrial efficiency programmes where justified; and
- regional standardisation and learning systems that reduce transaction costs and accelerate replication.

Conclusion

Cooling is being positioned as one of the most strategically important mitigation sectors in MENAT because it is simultaneously essential for resilience and development and increasingly emissions-intensive in both direct and indirect terms. Article 6 is creating a credible pathway for results-based finance to accelerate sustainable cooling, but the pathway is operational rather than abstract: authorisation processes, accounting choices (including corresponding adjustments where relevant), MRV systems, registry/tracking arrangements, and transparency reporting must function reliably for transactions to be credible and scalable.

The most robust and realistic near-term portfolio is being anchored in energy-efficiency-led, programmatic interventions where measurement is strongest and transaction costs can be controlled: commercial portfolio upgrades, chiller replacement and large-building HVAC optimisation, district cooling performance improvements where relevant, and factory-side efficiency within RAC manufacturing and supply chains (especially in Türkiye and meaningfully in Egypt). These interventions can be quantified conservatively and verified with high confidence when monitoring and commissioning requirements are embedded into programme rules and when standardised MRV modules are used.

Refrigerant-related interventions are recognised as potentially high impact in CO₂e terms but are treated conservatively due to Montreal Protocol obligations, overlap risks, and the potential for perverse incentives—especially around end-of-life. Where refrigerant components are included, they are best treated as tightly bounded supporting elements within efficiency-led programmes, governed by strict no-overlap rules, robust traceability, and conservative baselines.

Country readiness is progressing but heterogeneous. Egypt benefits from regulated domestic carbon infrastructure and high-load segments that are MRV-friendly, while international transfer pathways still require clear authorisation and accounting coherence. Jordan benefits from strong procedural momentum and a clear cooling strategy anchor, enabling rapid piloting if MRV systems and verifier capacity are strengthened in parallel. Türkiye benefits from a strong MRV trajectory and an emerging domestic market ecosystem alongside a significant manufacturing base, while coherence between domestic unit streams and international transfer routes must be clarified early to avoid overlap and fragmentation.

A balanced implementation pathway is therefore indicated: a small number of MRV-ready pilots should be implemented to generate verified evidence and institutional routines; standardised templates and monitoring modules should be institutionalised to enable replication; policy-linked methodologies (MEPS/NCAP) should be developed as structured workstreams grounded in real data and compliance evidence; and financing should be structured so carbon revenue acts as a bankability layer alongside green loans and performance contracting models. Under this sequencing, scalable sustainable cooling finance can be.

Cooling can no longer be treated as a side-issue in mitigation finance. With Article 6 operationalising and MENAT demand rising, sustainable cooling is poised to become one of the most investable, measurable, and high-impact mitigation portfolios available. The time to organise pilots, standardise MRV, and mobilise results-based finance is now. Cool Up stands ready to support governments and partners in making this transition real.