



Cooling as a Service

Refresh the planet

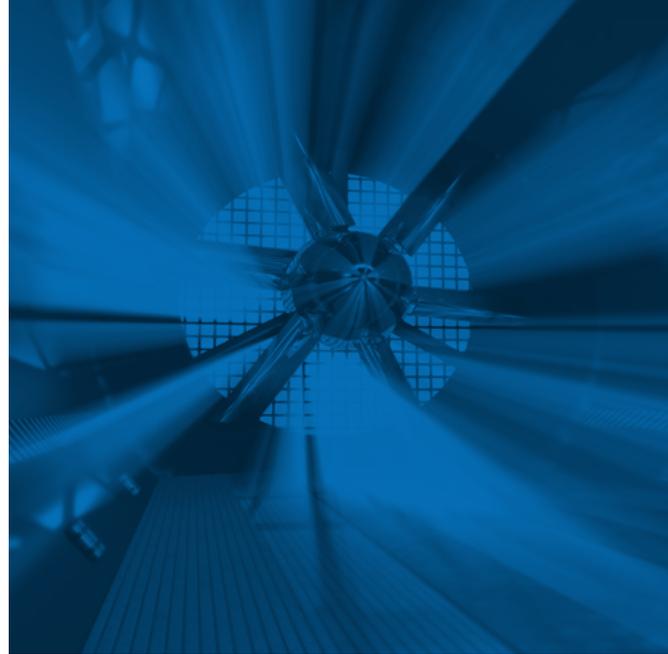
10 air conditioners will be sold every second over the next 30 years.

Energy demand for cooling accounts for nearly 20% of the total electricity used in buildings around the world, and is growing fast as economic and demographic growth becomes more focused in hotter countries. Cooling systems rely on human-made Hydrofluorocarbons (HFCs), which could account for nearly 20% of climate pollution by 2050, if not phased down and replaced with existing alternatives.

Cooling as a Service (CaaS) is a promising financial instrument to overcome key market barriers to clean and efficient cooling, without upfront investment, with integrated financial tools to recapitalize technology providers. Based on the servitisation concept which is rapidly penetrating other marketplaces, CaaS enables customers to base their investment decision on life-cycle cost rather than on the purchase price of the equipment, benefitting companies, governments and society at a large.

This knowledge brief presents a deeper look into Cooling as Service:

- > The problem
- > A global movement
- > Cooling as a Service
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KIGALI

COOLING EFFICIENCY PROGRAM

About K-CEP

The Kigali Cooling Efficiency Program (K-CEP) is a philanthropic collaboration launched in 2017 and managed by Climateworks to support the Kigali Amendment of the Montreal Protocol and the transition to energy efficient, climate-friendly, affordable cooling solutions for all.

BASE

About BASE

BASE, a Swiss Foundation and a Specialised partner of UN Environment, designs, develops and implements innovative financial mechanisms to catalyse investments towards sustainable energy.

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The problem

Today there are 1.6 billion air conditioning (AC) systems in use, consuming 2.5 times the electricity use of Africa. This will triple by 2050. Indeed, while only 8% of the 2.8 billion people living in places where it is hot every single day have an AC today, this is expected to increase to 65% by 2050. The average efficiency of ACs sold today is less than half of what is typically available on shelves – and one third of best available technology. The cumulative savings potential by 2050 is therefore immense, equivalent to all the electricity consumed in the EU in 2016 and worth 2.9 USD trillion. In addition, human-made HFCs used in AC are powerful greenhouse gases with long atmospheric lifetimes contributing significantly to climate change, and must be phased down and replaced with existing alternatives.

A global movement

The Kigali Amendment to the Montreal Protocol entered into force in January 2019 as a legally binding agreement aiming to phase down the production and use of HFC gases. 17 foundations and individuals have pledged \$52 million to support the amendment through the Kigali Cooling Efficiency Program (K-CEP), a philanthropic program managed by Climateworks to help nations transition to more efficient cooling equipment and to replace HFCs with newer, climate-safe coolants.

With the Kigali amendment, residential, commercial and public AC users will need to replace their cooling systems running on these gases, which opens the opportunity to replace these systems with state-of-the-art systems. With a market size of 210 billion USD/year, this is a large opportunity for climate finance. However, investments in clean and efficient cooling are not happening due to several market barriers.

Cooling as a Service

Cooling as a Service (CaaS) is an innovative business model that enables customers to base their decision on life-cycle cost rather than on the purchase price of the equipment. The model aims to facilitate clients to benefit from high end and efficient cooling technology without the need of an upfront investment. CaaS involves end customers paying for the cooling they receive, rather than the physical product or infrastructure that delivers the cooling. The technology provider installs and maintains the cooling equipment, recovering the costs through periodic payments made by the customer. These payments are fixed-cost-per-unit for the cooling service delivered (for example, dollars per tonnes of refrigera-

tion, or units of cooled air), and are based on actual usage. The technology provider also pays for the electricity consumed by the equipment, which is an incentive to install the most energy-efficient equipment, and to perform high-quality maintenance.

The technology provider can recapitalise through innovative mechanisms such as sale and lease-back, or the securitisation of cash flows. A payment guarantee can be established to reduce the risk of default from the end-client, which can be endorsed so that banks reduce its exposure to payment default by technology providers seeking the use of the above-mentioned financing mechanisms.

In addition, the CaaS model supports a circular-economy model, by incentivizing technology providers to make their equipment modular, with parts being reusable/recyclable since the ownership of the equipment is never transferred to the client.

The CaaS model helps to overcome many of the current barriers that hinder investments in energy efficient equipment. The customer benefits from lower whole-life equipment costs, the absence of upfront capital investments, industry-leading equipment uptime made reliable through revolutionized predictive maintenance practices, and a transparent pricing structure. The technology suppliers will benefit from a long-term sustainable revenue stream, and access to new potential clients who are interested in the service, but not willing to make the upfront investments for high quality efficiency equipment.

Although interest in service-based competitive strategies is not new and broadly applied in sectors such as software and photocopying services, the concept is still fairly new territory in the energy efficiency and cooling sector. The CaaS mechanism mirrors models such as Lighting-as-a-Service (LaaS) for LED lighting or pay-as-you-save (PAYS) for clean transport.

CaaS Initiative

The Basel Agency of Sustainable Energy (BASE) is leading the CaaS Initiative (CaaS I) on behalf of K-CEP with the objective to scale-up the demand for efficient, clean cooling systems, through the use and promotion of the innovative CaaS business model. The initiative aims to create a toolkit of standardized CaaS tools; raise awareness among technology providers, financial institutions and policy makers; institutionalise CaaS through an alliance building; and support demonstration projects in iconic or well-known buildings in LAC, Middle East-Africa and Asia to showcase the benefits of the model.