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Financing Sustainable Cooling

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World Bank taking action on cooling finance

- Billions of sustainable cooling investments will be needed to improve cooling efficiency and performance, increase productivity, bring cooling to vulnerable people, and to build the infrastructure sustainably that protects us against a future world of increasing climate heat.
- However, we do not yet have a good understanding of financing sustainable cooling investments.
- The WB is pursuing sustainable cooling finance along two avenues:
 - Integration of cooling into World Bank mainstream financing operations through analytics and technical assistance
 - Development of dedicated financing vehicles for cooling investments
- Instruments
 - ESMAP efficient clean cooling program
 - GCF sustainable cooling facility
 - IFC district cooling program
 - Sustainable cooling bonds

ESMAP Efficient Clean Cooling Program

- ESMAP: Energy Sector Management Assistance Program
 - Global technical assistance and knowledge program in the World Bank’s Energy Global Practice
 - Works on energy efficiency, renewable energy and access to energy services
 - In 2019, created Efficient, Clean Cooling Program with a \$3 million grant from K-CEP (Clean Cooling Collaborative)
- **Goals: Accelerate access to sustainable cooling solutions through a market development approach**
 - By supporting research, knowledge products, technical assistance, and project preparation (“mainstreaming”).
 - ESMAP has allocated \$15.72 million in 3 years to 28 technical assistance activities in 27 countries across 7 sectors (Agriculture, Buildings, Energy, Health, Industry, Transport, Urban Planning).
 - This support has “informed” more than \$2.5 billion of World Bank project financing.
 - In August 2021, the program was recognized by K-CEP’s High Impact Award.
- *Examples:*
 - ESMAP funding ensured that World Bank support for vaccine cold chains follows best available practice with regard to energy efficiency and refrigerants.
 - In Mexico and Bangladesh, ESMAP supported market diagnostic and business planning for the agricultural cold chain infrastructure in the context of broader World Bank operations.

GCF Sustainable Cooling Facility

- **The World's 1st facility to finance sustainable cooling**
 - Approved by GCF last year – operational this summer – for implementation over 10 years
 - \$157 million in GCF climate finance plus IBRD/IDA co-finance of \$722.8 million
 - \$15.7 million for policy, regulatory issues and enabling environment
 - \$141.3 million for investment finance – of which \$125 million as concessional loans
- **Goal: Use financing and implementation models that can generate lessons to help scale up access to sustainable cooling and spur more interest and action to mainstream sustainable cooling.**
 - 9 countries: Malawi, Panama, El Salvador, North Macedonia, Bangladesh, Sri Lanka, Somalia, Kenya, Sao Tome & Principe
 - Investment focus: (i) space cooling (incl. green/cool surfaces), (ii) refrigeration and cold chains.
 - Addressing mitigation and adaptation concerns: 16.2 MtCO₂e avoided, benefitting 21.1 million people, several SDGs
- **Project selection criteria**
 - Reduce/avoid cooling loads – improve energy efficiency (at least 20%) – lower GHG emissions (at least 20%)
 - Optimize cooling (smart sensing, behavior change) – improve access to cooling for the most vulnerable
 - Transformational potential (new business models / markets, replication / scale up)
 - Country ownership (development and climate priorities)

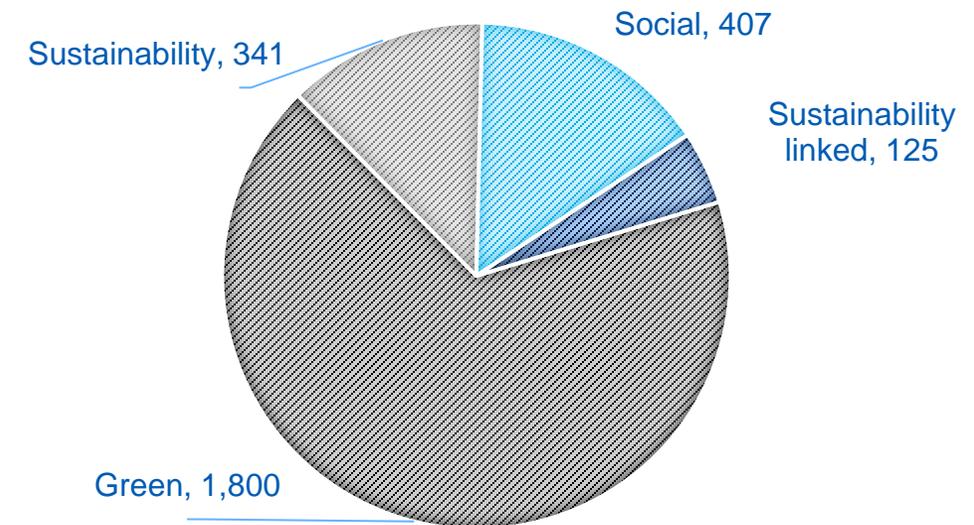
IFC District Cooling Program

- The IFC has a history of investments in energy efficient buildings and infrastructure.
 - EDGE green building program (Excellence in Design for Greater Efficiency)
 - In 2019, IFC began to expand this business line into efficient space cooling infrastructure
 - with a focus on district cooling and temperature-controlled logistics (cold chain).
- **IFC signed its first district cooling deal in Dec. 2021: with Tabreed** (the world's largest listed district cooling utility)
 - IFC committed \$25 million of its equity to a \$100 million joint company to establish a district cooling platform for Asia
 - with a mandate to invest up ca. \$400 million over five years in district cooling projects targeting about 100,000 refrigeration tonnes, servicing industrial, commercial, and retail developments across India.
- IFC and Tabreed have agreed investment criteria which promote the Kigali objectives:
 - robust environmental, social, and corporate governance (ESG) requirements and
 - sustainable cooling principles (refrigerants, energy efficiency)
- IFC has a suite of sustainable finance products, including green loans and green bonds as well as sustainability-linked products, which it blends flexibly with traditional instruments (loans, equity) to meet clients and project needs.

Bonds with a Cause

- In 2008, the World Bank pioneered the first labeled “green” bond.
- This year, the World Bank issued a US\$150 million “wildlife conservation bond”, which offers a GEF-supported payout linked to the successful protection of black rhinos.
- The market for such bonds is still small but growing quickly and becoming more sophisticated with issuers ranging from financial institutions to (sub)national governments to private corporations.
- About \$2.7 trillion worth of such bonds have been issued, most of them thematic bonds (green, social, sustainable - GSS) (in a market with \$140 trillion in bonds outstanding)
 - \$349 billion in IBRD/IDA countries
 - \$2.23 trillion in developed countries
- Sustainability-linked bonds (SLBs) are less than 5 percent of the market but growing.

GSS issuance by category, billion USD



Source: Bloomberg.

Is there a case for sustainable cooling bonds?

Maybe ...

- Some cooling investments could be financed by sustainable cooling bonds under certain conditions:
 - The cooling component in the overall investment should be large.
 - The investing entity should be financially sophisticated such as governments and large corporations.
 - The cooling investment should be financially viable or be blended with donor funds which can be linked to bonds.
 - The financed project should fit established (evolving) taxonomies for green investments.
 - Verification of project performance should be possible using well defined Key Performance Indicators.
- Which types of cooling investments may be suitable for bond financing?
 - Manufacturing of new generations of cooling equipment
 - Financing of government programs under national cooling action plans
 - District cooling
 - Real estate development
 - Cooling-as-a-service (CaaS) business models
 - Food cold chains
 - Data centers

1 - Thematic Bonds

- Thematic (Green, Social and Sustainable - GSS) bonds are any type of bond where the proceeds or an equivalent amount will be exclusively applied to finance or re-finance new and/or existing eligible green or social projects or a combination thereof.
- Green Bonds
 - Projects that incorporate environmental characteristics and fit into a defined category (renewable energy, energy efficiency, pollution prevention and control, green buildings ...)
 - Green Bond Principles (voluntary guidelines)
- Social Bonds
 - Projects that promote social causes (affordable infrastructure, access to services, food systems, climate resilience / adaptation ...)
 - Social Bond Principles
- Sustainability Bonds
 - Projects that incorporate both green and social aspects simultaneously.

Thematic Bond Characteristics

- Must follow the Green (or Social) Bond Principles and embody four core components:
 - Use of bond proceeds for GSS project investments
 - Process for project evaluation and selection
 - Management of proceeds
 - Reporting
- Have established a framework that explains how the bond program aligns with the 4 components (the bond strategy).
- Use external reviewers to independently verify the framework and approach towards bond issuance, use of proceeds and management (for impact reporting)
- Have the same basic terms, credit and financial risks as traditional bonds.
- Carry somewhat higher management, reporting and validation costs.
- The financial benefit (“the greenium”) is typically small. But awareness and promotional benefit can be substantial.

Thematic Cooling Bonds?

- There appears to be no need to define a separate category of a thematic cooling bond:
 - Bonds to finance clean / sustainable cooling projects will usually fit under the “green” categories (e.g., energy efficiency, pollution control, climate adaptation).
 - They can also be considered under the “social” and the “sustainability” categories since investments in provisioning of cooling services can have social motives (access to cooling, health, food safety) or social co-benefits.
- The added transparency of thematic cooling bonds would be welcome, especially for cooling investments in the context of international commitments and climate policies, to promote public awareness and support, and to attract GSS motivated investors.
- *Examples:*
 - In 2019, home appliance and refrigeration manufacturer Electrolux (a member of the net-zero by 2050 pledge) issued a SEC 1 billion (~\$100 million) green bond to (re)finance eligible investments.
 - The district cooling company Tabreed could issue a green bond to bring district cooling to new markets.
 - Cities could issue municipal sustainability cooling bond to finance cooling investments and bring cooling services to vulnerable citizens.

2 - Sustainability-linked Bonds

- Sustainability-linked bonds (SLBs) are funding mechanisms that highlight the issuer's commitment to sustainability goals and feature a financial incentive for future performance.
- They follow voluntary Sustainability-Linked Bond Principles. These include five core components: Key Performance Indicators (KPIs), sustainability performance targets, bond characteristics, reporting, and verification.
- They typically carry a performance-based coupon that varies with verified results based on agreed KPIs. Use of proceeds is not a defining feature.
- They can offer a financial benefit to borrowers who achieve sustainability objectives (i.e., a lower coupon payment) whereas bond investors are compensated with a higher financial return (a performance payment) if sustainability targets are not met.
- The performance payment can be made by donors as a positive incentive while mobilizing private capital, which protects donors against the risk of making payments to non-performing projects (impact bonds).
- Bond issuers have used a variety of KPIs, which matter to them and to society: GHG emissions, ESG ratings, energy consumption, renewable energy production, gender equality.
- Bond markets prefer KPIs that are few and simple.

Sustainability-linked Cooling Bonds

- SLBs can be used for sustainable cooling investments by corporate and sovereign bond issuers if they can define suitably KPIs.
- Corporate bond issuers may establish cooling-related KPIs if sustainable cooling is central to their investment and sustainability objectives.
- But sovereign borrowers may prefer large bond issuance with KPIs that are not specific to cooling investments (e.g., GHG emissions).
- A donor-offered performance payments added to the coupon can reward achievement of wider environmental and societal benefits, thus making an otherwise unprofitable cooling investment bankable.
- *Example:*
 - A government (implementing its NCAP) could commit to a stringent sustainable cooling policy by issuing a bond that links the coupon payment to the enactment of energy performance standards (MEPS as KPI), i.e., the bond coupon would pay a premium if MEPS are not introduced or raised).

3 – Structuring bonds to hedge risks

- Structured bonds can sometimes be used to pass risks to bond market investors.
- For instance, the future price of energy or the cost of emission reduction certificates can affect the profitability of an investment in sustainable cooling. Bonds can be structured to react to such price changes, allowing investors to hedge against rising or falling prices.
- In 2008, the World Bank issued CO₂-linked bonds to investors in Japan, where the coupon was linked to future production of certified emission reductions (CERs) of specific projects and to the future price of CERs, shielding the project investor from uncertain project and market performance.
- Similar linkages to energy and carbon markets are conceivable for sustainable cooling investments. Cooling bonds could be used to leverage carbon credits that help pay for efficient cooling.
- Future government policy on energy efficiency standards (MEPS) can impact demand and thus the viability of investments in high efficiency cooling equipment. A way to share this risk with capital markets via structured bonds could accelerate manufacturers' willingness to engage in the sustainable cooling transition.
- *Examples:*
 - Investments in EE/HFC synergies could be financed, and market risks hedged, with carbon market-linked cooling bonds.

Some Conclusions

- Financing sustainable cooling can be as complex and varied as the diversity of cooling operations in different sectors themselves.
- It is possible to draw on experience with energy efficiency and energy access financing and to “mainstream” cooling into larger development and commercial financing operations.
- We need a better understanding of the commercial aspects of cooling services and how to finance them – versus the public policy and financing options that may be required to support the societal (co)benefits of cooling – and how to blend the two.
- More work is needed to understand whether sustainable cooling bonds could play a useful role and which bond structures to use.

Note:

This presentation and the underlying research paper is

Work in Progress.

We welcome your feedback and contribution.

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