ECOFRIDGES GO : Key Stakeholders and Responsibilities

Vendors

1. Certified vendors offer high energy efficient systems

2. Properly dispose the replaced systems with authorised E-Waste Management Companies.

Efficient systems

3. Customers apply through certified vendors to acquire any registered system.

4. Customers receive a pro-forma invoice and contact certified banks to lodge credit applications.

Banks

5. Certified banks offer credits to customers at competitive conditions.

6. Banks transfer the cost of the cooling systems to vendors minus a negotiated rebate.

Employers

7. Bank-Employers sign collaboration agreements

8. Employers become the guarantors of employees' repayments.

Repayment options:

9. Customers make repayments. Employers guarantee credits.

10. Customers authorize deduction of repayments from month payrolls.

11. Employers make bulk repayments on behalf of employees that requested credits.

ECOFRIDGES GO Green, Save Money

Case Study
Cooling in Maldives

Fathmath Usra
International Relations Officer,
Ministry of Tourism and Environment, Maldives

UN environment programme
Cool Coalition
a UNEP-convened initiative
Federal Ministry for the Environment, Climate Action, Nature Conservation and Nuclear Safety
MINISTERO DELL'AMBIENTE E DELLA SICUREZZA ENERGETICA
وزارة الطاقة والبنية التحتية
MINISTRY OF ENERGY & INFRASTRUCTURE

COOLING IN MALDIVES

14 June 2025

Ministry of Tourism and Environment

Key details about the Green Climate Fund

Strategic plan targets 2024-2027

- Mitigation of 1.5 to 2.4 gigatonnes of CO2 equivalent
- Enhanced resilience of 570 to 900 million people

Lower level targets for infrastructure, clean energy, transport, buildings and industry, private sector early stage ventures, MSMEs, banking sector

- Should deliver balanced funding across mitigation and adaptation over time.
- 50 % adaptation allocation to developing countries that are particularly vulnerable to the adverse effects of climate change, including SIDS, LDCs and African States

GCF performance indicators for a cooling programme

Impact indicators

- GHG emissions reduced, avoided or removed/sequestered
- Direct and indirect beneficiaries reached.

Outcome indicators

- Annual energy savings (MWh); Installed RE capacity(MWH); RE generated(MWh);
- Beneficiaries adopting innovations that strengthen climate change resilience; Beneficiaries living in buildings that have increased resilience against climate hazards

Enabling environment:

1. Contribution to strengthening institutional and regulatory frameworks for low-emission climate-resilient development pathways;
2. Contribution to technology deployment, dissemination, development or transfer and innovation;
3. Contribution to market development/transformation at the sectoral, local or national level; and
4. Contribution to effective knowledge generation and learning processes, and use of good practices, methodologies and standards.

Presentation

Guidance on Investment Assessment for the Cooling Sector

Mehul Jain
Senior Disaster Risk Management Specialist
World Bank

UN environment programme

Cool Coalition
a UNEP-convened initiative

Federal Ministry for the Environment, Climate Action, Nature Conservation and Nuclear Safety

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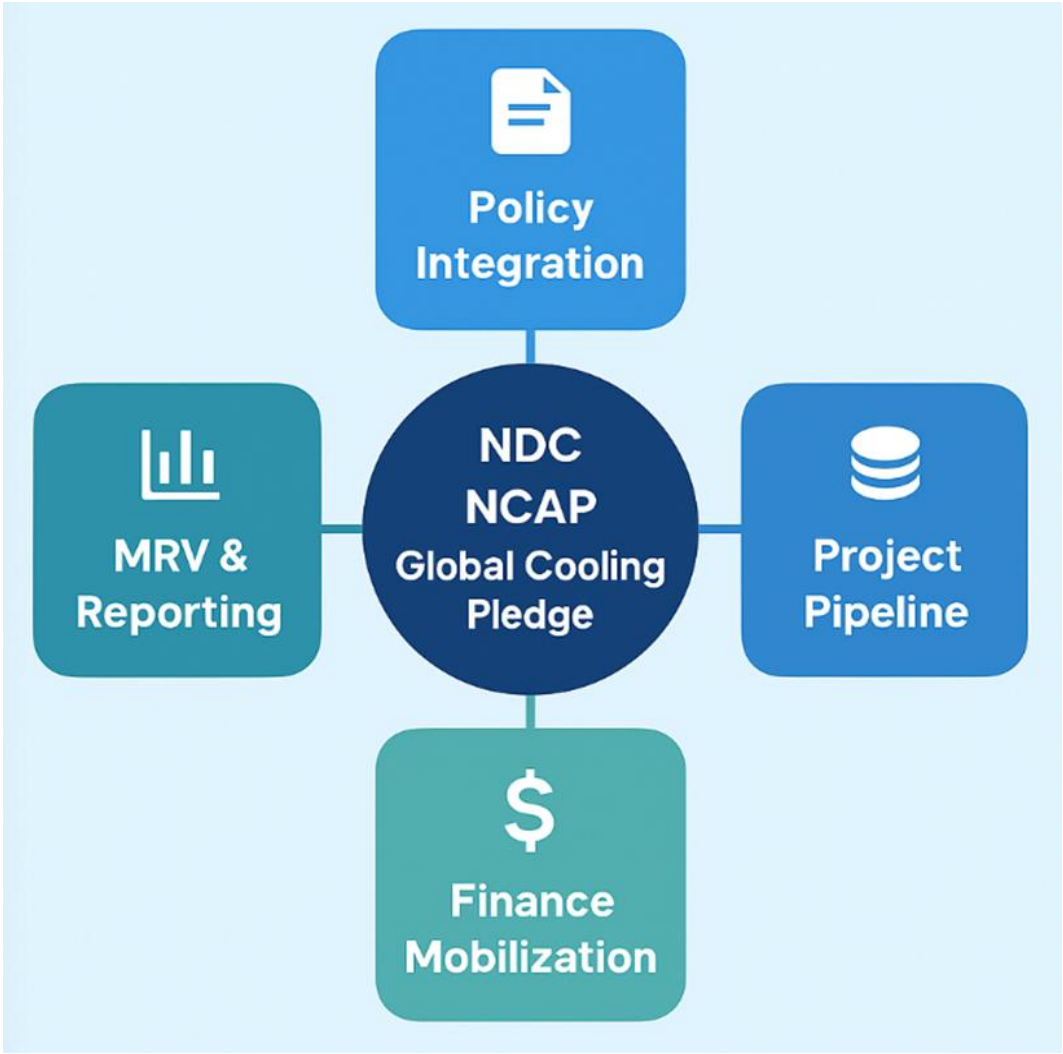
Implementation Framework and Governance

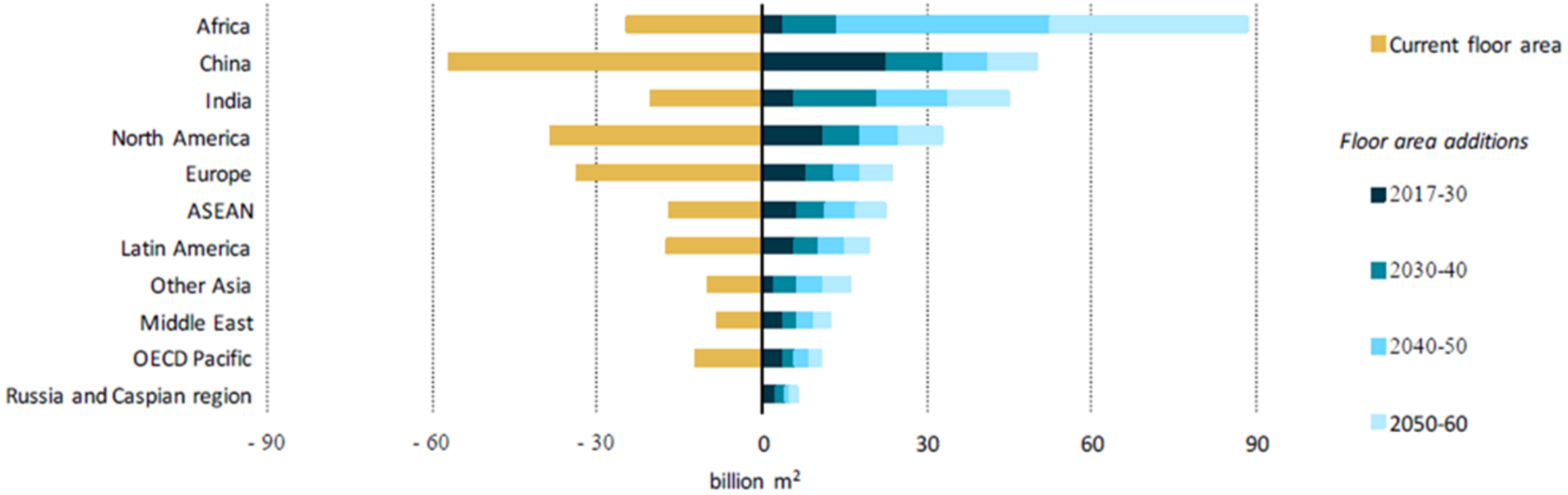
- The framework provides a roadmap to embed sustainable cooling within national systems
- **Continuous cycle:** Integrating cooling into policy, developing a pipeline of projects, actively mobilizing finance, and crucially, monitoring and reporting on progress
- **Align with Paris Agreement's Enhanced Transparency Framework** and to deliver a robust, quantified, and finance-ready cooling component for your NDC, NCAP and the Implementation of the Global Cooling Pledge



Growing Population & Growing Floor Area

Global Buildings construction markets are exponentially emerging:

Growing opportunity to address energy efficiency (EE) in buildings and construction sector



Source: Global Status Report (GABC) 2017, http://www.oneplanetnetwork.org/sites/default/files/gabc_global_status_report_2017_en.pdf

UN environment programme | Global Alliance for Buildings and Construction | Cool Coalition | IFC International Finance Corporation WORLD BANK GROUP

UNEP Cool Coalition Global Cooling Watch

Passive cooling can reduce cooling demand by 24% by 2050, saving up to $3T in equipment costs and 1.3T tons of CO2e.

The Report demonstrates the pathway to achieve near-zero emissions from cooling through joint action in three areas: **passive cooling**, higher-energy efficiency, and a faster phase down of climate-warming refrigerants. The report was released in support of the Global Cooling Pledge at COP28.

Source: Global Cooling Watch Report 2023

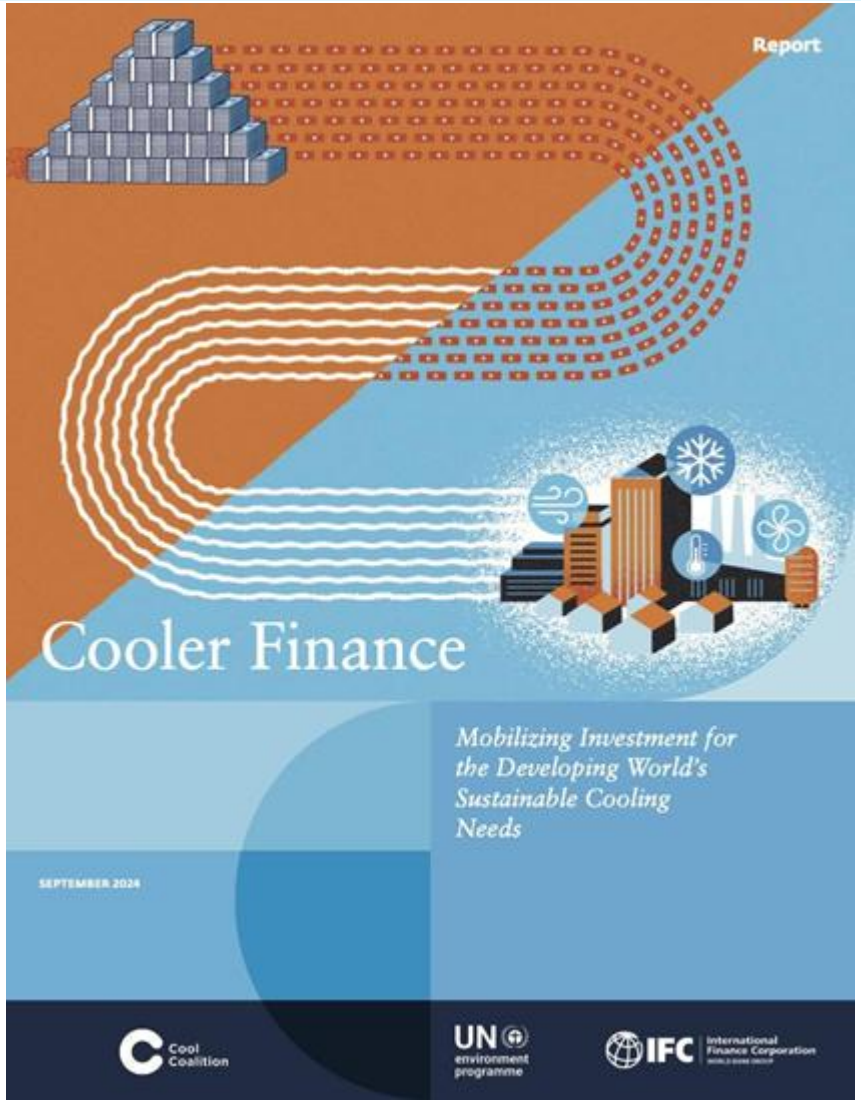
UN environment programme | Global Alliance for Buildings and Construction | Cool Coalition | IFC International Finance Corporation WORLD BANK GROUP

UNEP Cool Coalition IFC Cooler Finance

•Size the market opportunity that sustainable cooling represents across EMDEs

•Bring attention to challenges and opportunities to financing sustainable cooling in the context of EMDEs

•Provide a blueprint on how to finance sustainable cooling



Source: Cooler Finance 2024 (IFC/UNEP)

Q&A Session

Global Cooling Pledge Signatories Focal Points Meeting

June 13 - 14 2025 | Bonn, Germany

13:15 – 14:45

14 June 2025

Session 3.1

Finance Mechanisms and Business Models

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MINISTRY OF ENERGY & INFRASTRUCTURE

Opening remarks

Unlocking Finance to tackle extreme heat

Gennai Kamata
Associate Officer, Buildings and Cooling
Cool Coalition, UNEP

UN environment programme

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Federal Ministry
for the Environment, Climate Action,
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Setting the scene

Frameworks and Sources of Finance for Cooling

Myriem Touhami
Head,
UNEP Finance Unit

UN environment programme

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The finance gap for climate action

Unlocking opportunities

$4 trillion

annual funding gap for the Sustainable Development Goals.

$2.2 trillion

investment shortfall for clean energy in emerging and developing economies annually.*

$1 trillion

fossil fuel subsidies globally in 2022. Redirecting these funds could dramatically accelerate clean energy adoption.*

*Source: https://unctad.org/news/investing-energy-transition-countries-need-more-balanced-policies

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The finance gap for climate action

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investment shortfall for clean energy in emerging and developing economies annually.*

$1 trillion

fossil fuel subsidies globally in 2022. Redirecting these funds could dramatically accelerate clean energy adoption.*

Private finance: the missing link to the SDGs

Private finance remains the biggest challenge, consistently highlighted in nearly every UN global conference and by Member States.

*Source: https://unctad.org/news/investing-energy-transition-countries-need-more-balanced-policies

UN environment programme

What we do

Our unique approach

Stakeholders

Investors, Development Banks & Financial Institutions

Technology Providers & Energy Companies

Government & Public Institutions

Our goals

To ensure **a just & inclusive energy transition for all**

To mobilize private investments for **low-carbon and climate resilient solutions**

To support countries shift to **a low-carbon & inclusive development pathway**

UN environment programme

What we do

Our unique approach

Stakeholders	Obstacles	Our goals
Investors, Development Banks & Financial Institutions	Limited investment in **small-scale projects**	To ensure **a just & inclusive energy transition for all**
Technology Providers & Energy Companies	**High perceived risks** in specific sectors, communities, and regions	To mobilize private investments for **low-carbon and climate resilient solutions**
Government & Public Institutions	Limited **field-proven data**	To support countries shift to **a low-carbon & inclusive development pathway**
	Inadequate **regulatory frameworks**	

UN environment programme

What we do

Our unique approach

Stakeholders

Investors, Development Banks & Financial Institutions

Technology Providers & Energy Companies

Government & Public Institutions

UNEP Finance Unit

Reduce cost of capital for underserved communities

Finance project development in high-risk markets

Enable **lighthouse projects**

Technical assistance for policy development, public-private partnerships

Obstacles

Limited investment in **small-scale projects**

High perceived risks in specific sectors, communities, and regions

Limited **field-proven data**

Inadequate **regulatory frameworks**

Our goals

To ensure **a just & inclusive energy transition for all**

To mobilize private investments for **low-carbon and climate resilient solutions**

To support countries shift to **a low-carbon & inclusive development pathway**

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Prosol

Domestic Solar Water Heating Systems

Budget	Scope	Objective and methodology	impact
2.5M USD	**Tunisia**	PROSOL aims **to upscale the Market for Residential Solar Water Heaters.** PROSOL **helps local banks build loan portfolios** in RE solutions. Costs are reduced through a combination of **interest rate subsidy** which is gradually phased out within 18 months and the **reallocation of existing gas subsidy to solar**. To minimize the risk of non-payment, **bank loans are repaid through electricity bills**, creating a more secure and convenient repayment mechanism for users and financial institutions alike.	$ **USD 425 M** (2023) **332,000** systems (2023) **135,000 tCO_2e** avoided (2005-2010) **Scalability** (COLLECTIF, ELEC, INDUSTRY)

MINISTERO DELL'AMBIENTE E DELLA TUTELA DEL TERRITORIO E DEL MARE

GEF

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

UNITED NATIONS FOUNDATION

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The state utility model

A mechanism to facilitate consumers access to credit

It helps local banks offer **more loans for renewable energy** by keeping costs and risks low.

Customers don't feel the cost — loan repayments are made through already-lower electricity bills.

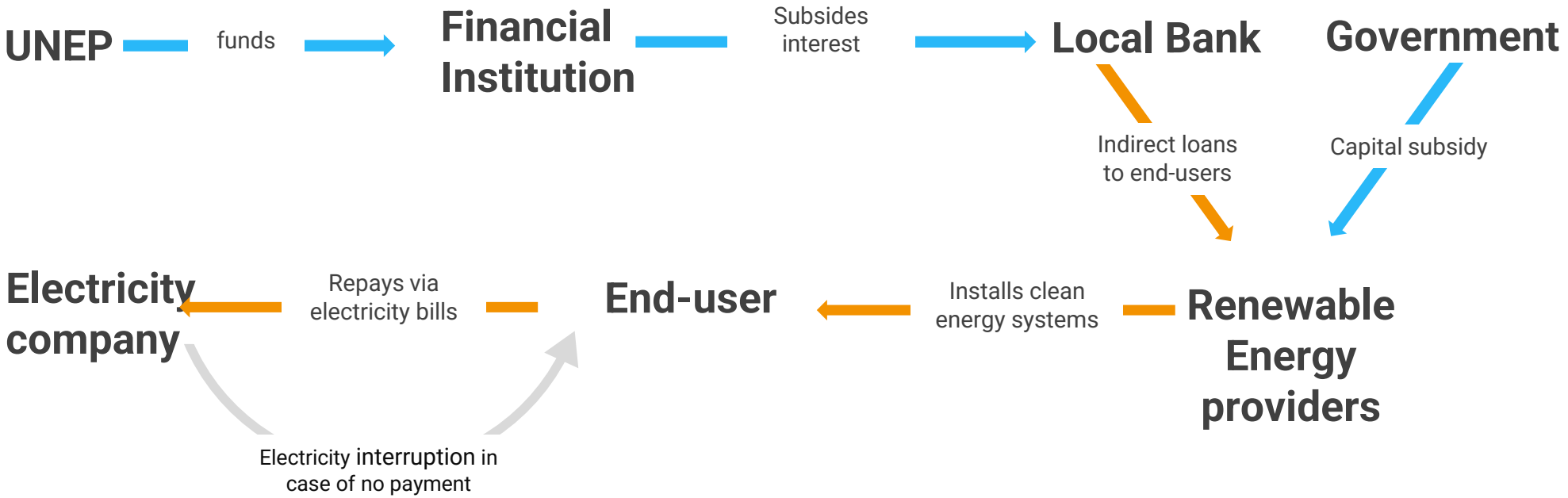
UN environment programme

The state utility model

How it works

Private capital

Public capital



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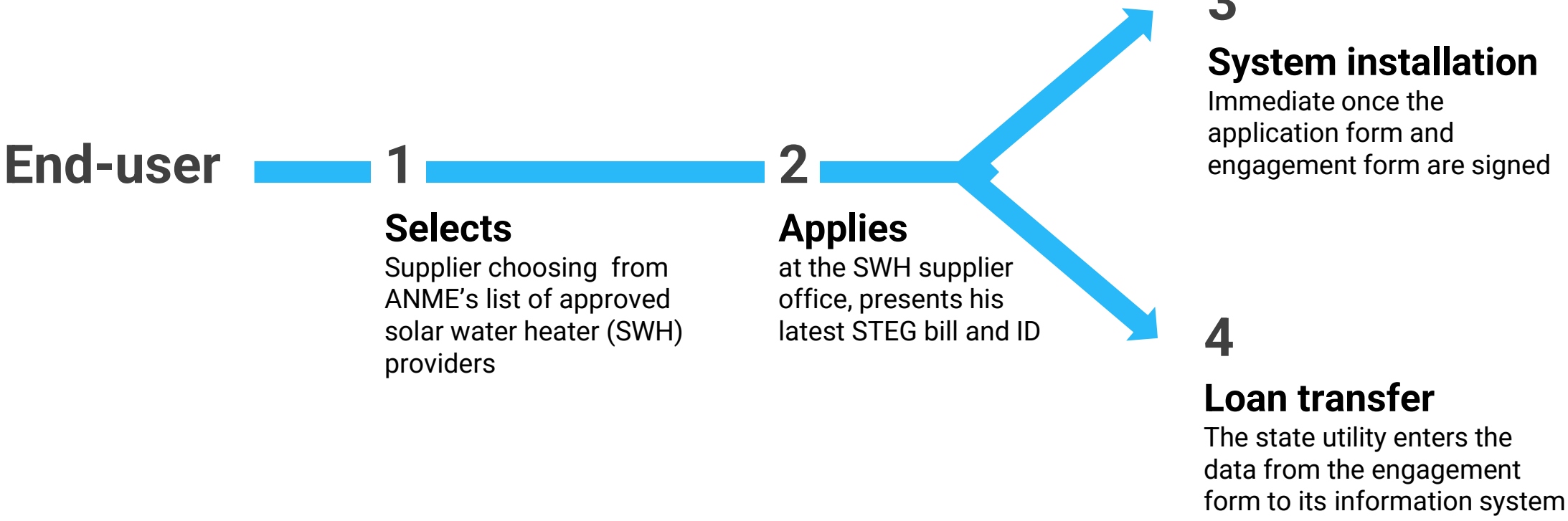
The state utility model

From the end-user perspective



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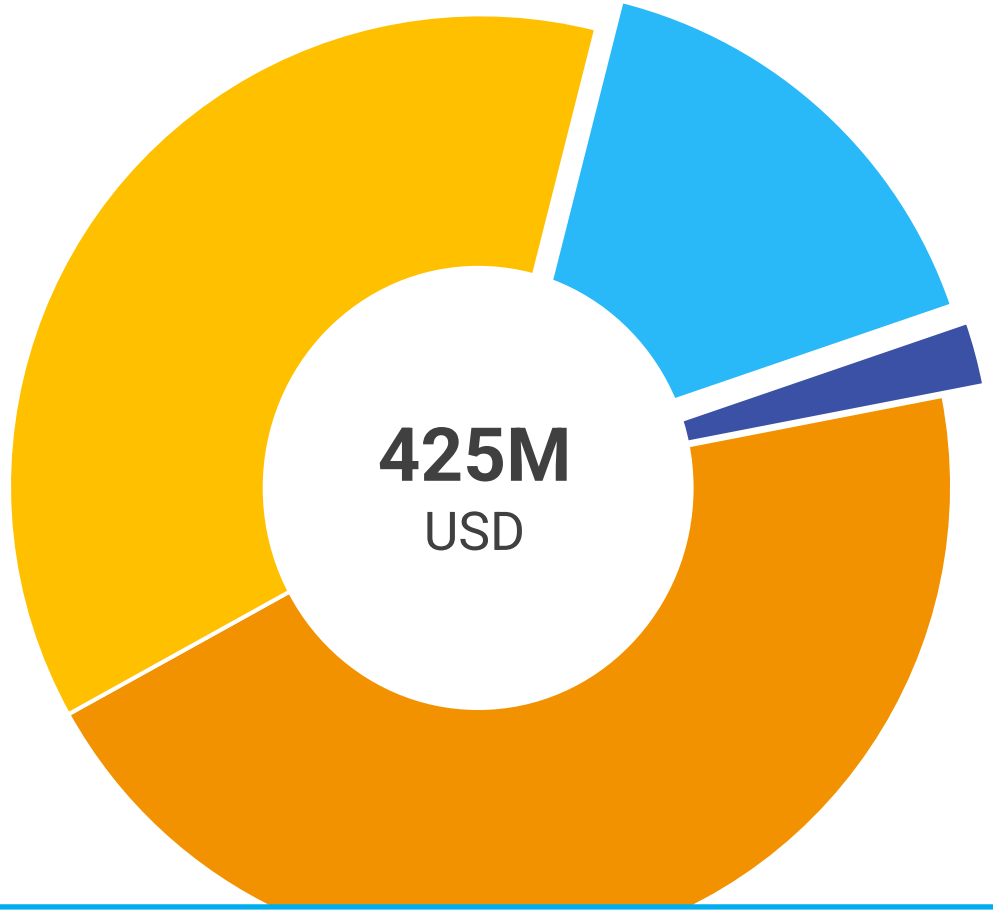
The state utility model

Who pays what



16%
Government

2%
UNEP

18%
Public

45%
Banks

37%
end-users

82%
Private

1:5
leverage ratio

UN environment programme

The state utility model

Opportunities for all

Private institutions

Non-payment **risk reduced to <1%**

Boost in **job creation** and **business opportunities**

Public institutions

Efficient use of **public funds** (1:5 leverage)

Supports **clean energy transition** and subsidy reform

End-user consumers

No upfront cost, repayment through **lower bills**

Faster access to affordable, clean technology

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Hipoteca verde

Green Mortgage Programme | Mexico

Implemented by

INFONAVIT
(Institute for the National Workers' Housing Fund)

Goal

to support low-income families in accessing energy-efficient solutions

UN environment programme

Hipoteca verde

How it works

An extra credit to add to your mortgage…

… for Solar Water Heaters (SWH) and efficient appliances.

… repayable over 20 years

… that covers up to US$1,250

… only +US$6/month, but saves families ~US$17/month on bills

… payroll-based repayment = minimal non-payment risk

EmPower

Women for climate-resilient societies

Budget	Scope	Objective	Projected Impact
21.3M USD 5 years	Bangladesh, Cambodia, Indonesia, the Philippines, and Viet Nam ; regional component	Accelerating gender responsive climate action through policy implementation, mobilizing investment and enterprise development, strengthening capacities and fostering regional and national collaboration	$ **USD 20 M** mobilized 🌱 **600 MtCO2e avoided** ♀ **2000 +** women entrepreneurs 👷‍♀️ **110,000** beneficiaries

Federal Ministry for Economic Cooperation and Development

NEW ZEALAND FOREIGN AFFAIRS & TRADE Manatū Aorere

Sweden Sverige

Schweizerische Eidgenossenschaft Confédération suisse Confederazione Svizzera Confederaziun svizra

Swiss Agency for Development and Cooperation SDC

UN WOMEN

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EmPower

Women for climate-resilient societies

Federal Ministry for Economic Cooperation and Development
NEW ZEALAND FOREIGN AFFAIRS & TRADE Manatū Aorere
Sweden Sverige
Schweizerische Eidgenossenschaft Confédération suisse Confederazione Svizzera Confederaziun svizra
Swiss Agency for Development and Cooperation SDC
UN WOMEN
UN environment programme

SCAF

Seed Capital Assistance Facility II

Budget	Scope	Objective	Projected Impact
34.5M USD	Sub-Saharan Africa and South-East Asia	Addresses **early-stage financing gap** through repayable and non-repayable grants to develop **strong project pipelines** and fully develop **promising projects in clean energy**	$ **USD 4.7 B** mobilized **6.29 $MtCO_2e$** avoided **25,478 jobs** created **3,478 MW** co-financed

Foreign, Commonwealth & Development Office

Federal Ministry for Economic Affairs and Climate Action

IKI International Climate Initiative

UN environment programme

SCAF

Seed Capital Assistance Facility II

Foreign, Commonwealth & Development Office

Federal Ministry for Economic Affairs and Climate Action

IKI INTERNATIONAL CLIMATE INITIATIVE

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Innovative Models

and much more

1. **The leasing model**
2. **The fee for service scheme**
3. **Direct and indirect fiscal incentives**
4. **Interest Rate Subsidy**
5. **Guarantee Funds**
   1st and 2nd loss
6. **Dedicated lines of credit**
7. **Junior and senior debt**
   provided by banks
8. **Equity funds**
9. **The Feed in tariff**
10. **The net metering**

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What we don't do

Safeguarding UNEP's neutrality, integrity, and reputation

🚫 Take on fiduciary duty

No direct financial transactions, investments, or fund management.

🚫 Hold debt or equity positions

UNEP does not own stakes in financial mechanisms.

🚫 Compromise on safeguards

All supported projects must meet rigorous ESG standards.

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The impact of our work

Accelerating Sustainable Development

Foreign & Commonwealth Office

124.7 M
USD raised

6.25 B
Investment leveraged

51
countries

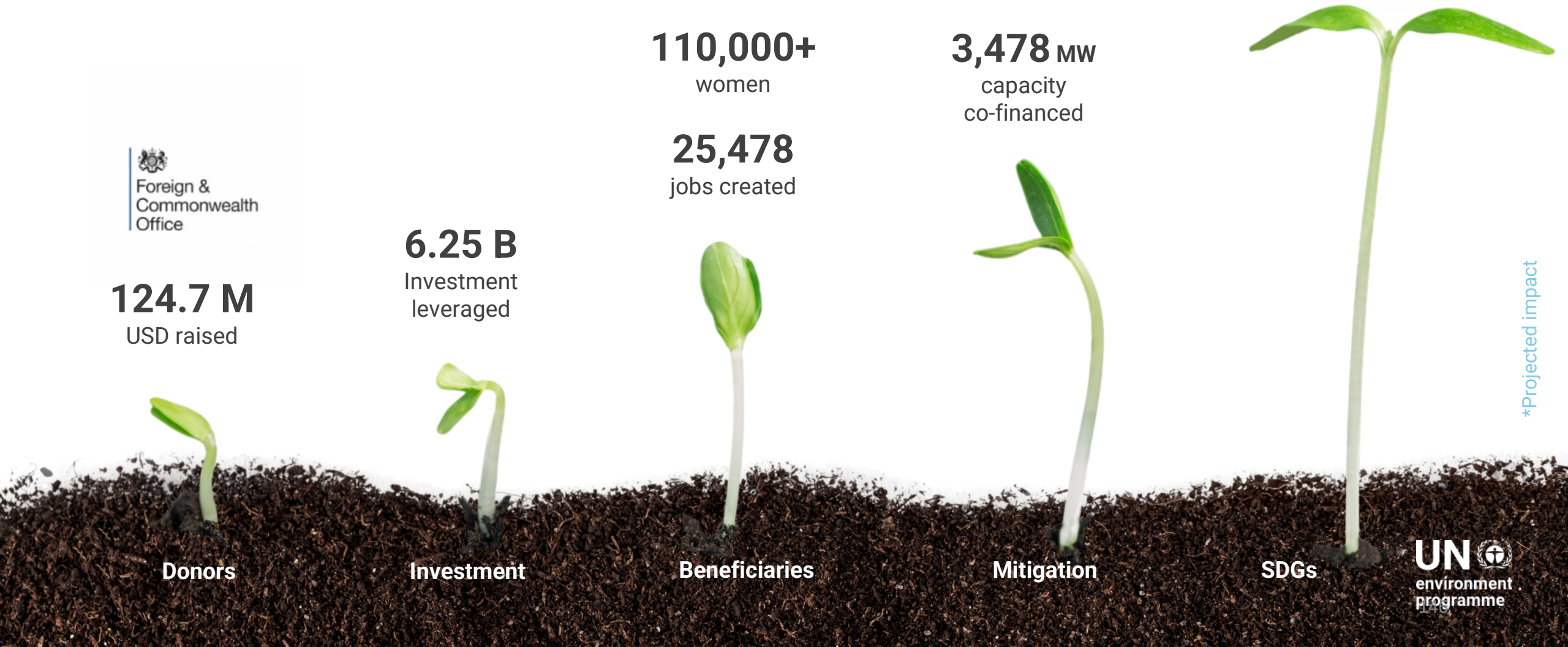
110,000+
women

25,478
jobs created

6.3 $GtCO^2e$
mitigated

3,478 MW
capacity co-financed

5 GENDER EQUALITY



Donors | Investment | Beneficiaries | Mitigation | SDGs

*Projected impact

UN environment programme

Our projects empower marginalized communities, drive innovation, and foster climate action

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www.unep.org

Q&A Session

1. What types of support are needed at the national and sub-national levels to accelerate financing for sustainable cooling?

2. What is the best practice on finance mechanisms and business models to accelerate sustainable cooling in your countries? And is it replicable to other countries?

Case Study Session

Introduction to panelists

Gennai Kamata
Associate Officer, Buildings and Cooling
Cool Coalition, UNEP

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Cool Coalition
a UNEP-convened initiative
Federal Ministry for the Environment, Climate Action, Nature Conservation and Nuclear Safety
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Case Study
Ghana

Hubert Nsoh Zan
Assistant Manager,
Energy Efficiency Regulation/ Energy Transformation Expert, Ghana

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Federal Ministry for the Environment, Climate Action, Nature Conservation and Nuclear Safety
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Introduction : ECOFRIDGES GO Project

ECOFRIDGES
GO Green, Save Money

DEEC

AEME
Agence pour l'Economie
et la Maitrise de l'Energie

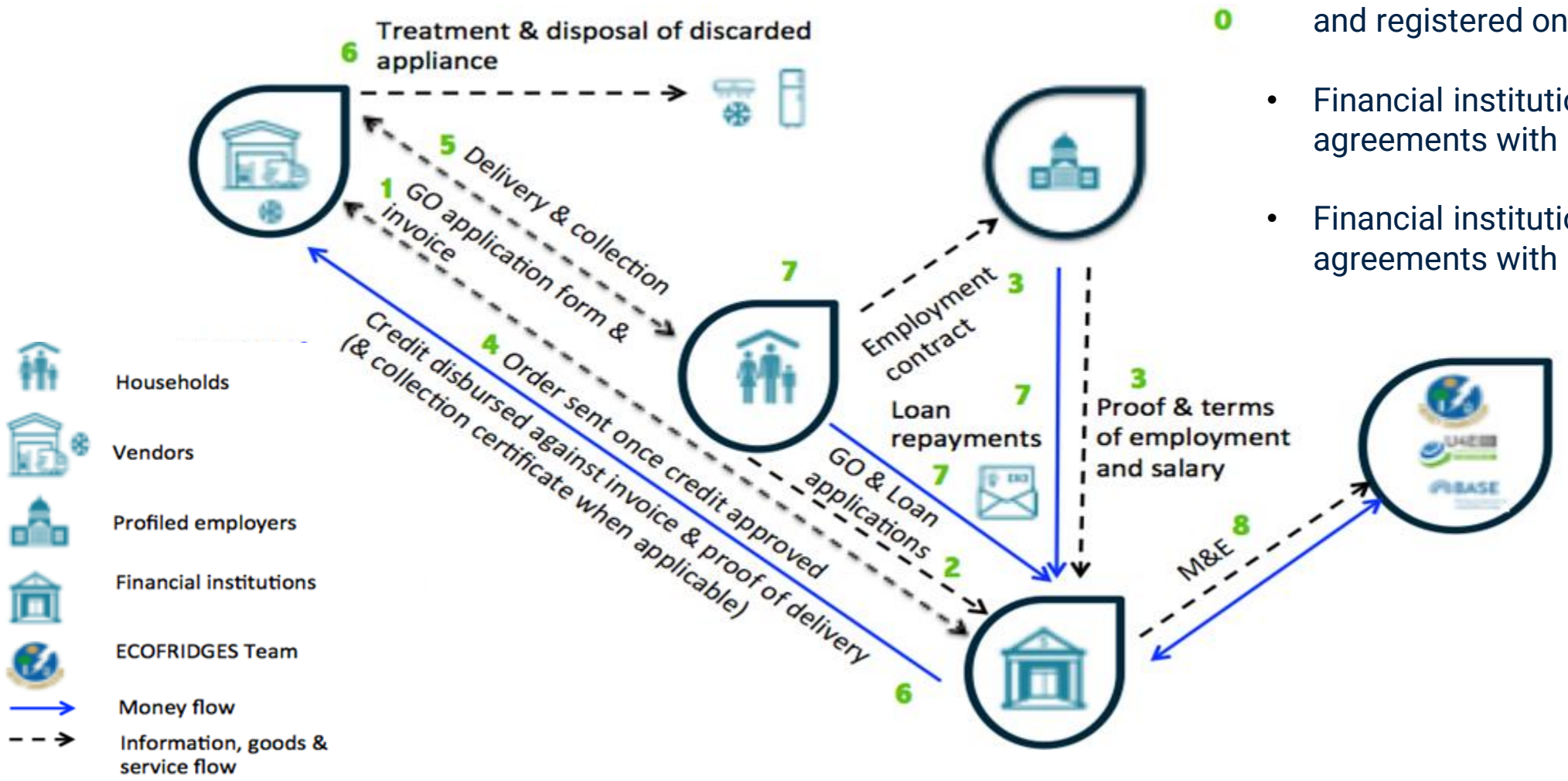
U4E United for Efficiency

ENERGY COMMISSION

BASE
Driving investment in
sustainable energy

Clean Cooling
COLLABORATIVE

ECOFRIDGES GO : Project Structure



- Certified Models supplied by Vendors and registered on the positive list.
- Financial institutions in repayment agreements with profiled employers.
- Financial institutions in finance agreements with participating vendors.

ECOFRIDGES GO Green, Save Money

ECOFRIDGES GO : Main Components

MARKET ASSESSMENT

FINANCIAL MECHANISMS

ELIGIBILITY CRITERIA

WASTE MANAGEMENT

COMMUNICATION CAMPAIGN

ECOFRIDGES GO : Eligibility Criteria

Criteria	ACs	Refrigerators
Type of products:	Ductless Split Air Conditioners	Household refrigerators and refrigerator-freezers -freezers- are only excluded
Age:	Only new products	Only new products
Product Size:	Nominal Cooling Capacity upto 5.3 kW	Between 901 to 5001
Refrigerants and	GWP limit of 750	GWP limit of 20, maximum charge of 0.15kg
Foam Blowing Agents	N/A	GWP limit of 20
Warranty:	Minimum 2-years	Minimum 2-years
Safety Certification:	Conform to safety regulations of both the manufacturing country and Ghana (e.g. IEC 60335-2-40)	Conform to safety regulations of both the manufacturing country and Ghana (e.g. IEC 60335-2-24:2002 / AMD:2017, or a subsequent revision)
Energy Efficiency:	Interim criteria until introduction of new MEPS & labels regulation: - 3-star equipment as per current Ghanaian regulation:EER>3.45 Criteria following introduction of new MEPS & labels regulation: - TCSPF>7 (see notes on evaluation below)	Interim criteria until introduction of new MEPS & labels regulation: - 5-star equipment as per current Ghanaian regulation: Climate Class ST: I<30 Climate Class T: I<42 Criteria following introduction of new MEPS & labels regulation: - EEI<22 (see notes on evaluation below)

ECOFRIDGES GO Green, Save Money

ECOFRIDGES GO : Partner Vendors

- Sun Electronic
- Ederick
- NESSTRA GH LTD
- Service Merchantile Ltd
- Novotec

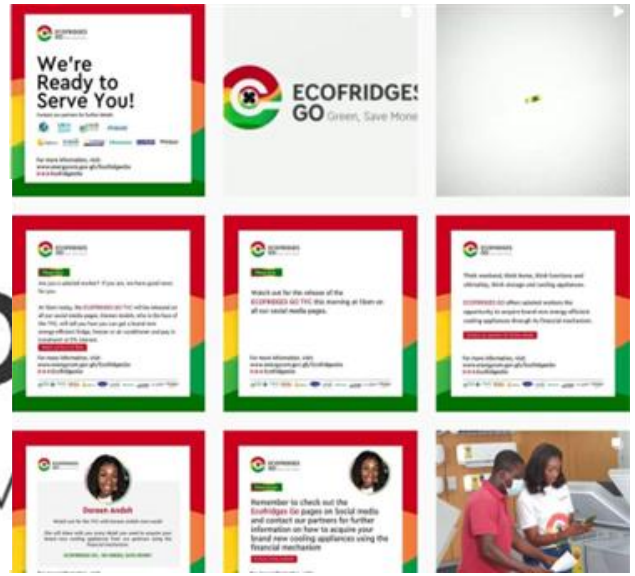
ECOFRIDGES GO : Benefits

•Introduced high efficient cooling products into the Ghanaian market

•Provided flexible financing scheme for purchase of these appliances

• Consumers can save money on their bills

•Eco-friendly refrigerants



ECOFRIDGES GO Green, Save Money

ECOFRIDGES GO : Summary of Achievements

2,055 New
Air conditions sold

Reduction in energy
Consumption 41,783 MWh
Of total energy savings
Noting the peak load when it come to air conditions

3,136 New
Refrigerators sold

Total finance mobilized
Ghs 33.77 million

Reduction in direct &
Indirect GHS emissions
34,603 tonnes of CO_2

AS AT SEPTEMBER 2024

ECOFRIDGES
GO Green, Save Money

ECOFRIDGES GO : Key Challenges

Products Availability :

Low stock levels for eligible products

Difficult Communication Campaign:

Due to limited budget, the work plan had to be amended to focus on Social media platform as a low hanging fruit.

Prevailing high Market interest rate:

The prevailing high market interest made the zero-interest rate unattractive to the Banks

Limited beneficiary experience:

People don't want others to know that, they benefitted from a loan scheme to purchase their appliances.

Application through WebApp:

The response rate of the participating vendors and banks on the WebApp not encouraging. Consumers skeptical about filling online details.

ECOFRIDGES GO Take back scheme :

The take-back scheme delayed pending advise from EPA.

ECOFRIDGES GO Green, Save Money

ECOFRIDGES GO : Key lessons for replication

- **The price myth is busted**. African market is ready for high energy efficient appliances.
- Proper **Institutional framework**.
- A strong **collaboration** between the NOU and Energy is key to success.
- **System leadership**
- The **culture** of the people should inform the choice of financing mechanism -On-bill or On-Wage (less than 100 people applied for the loan)
- The propagation of the ***Green Agenda*** is key in getting the buy in of vendors and Banks

ECOFRIDGES GO Green, Save Money

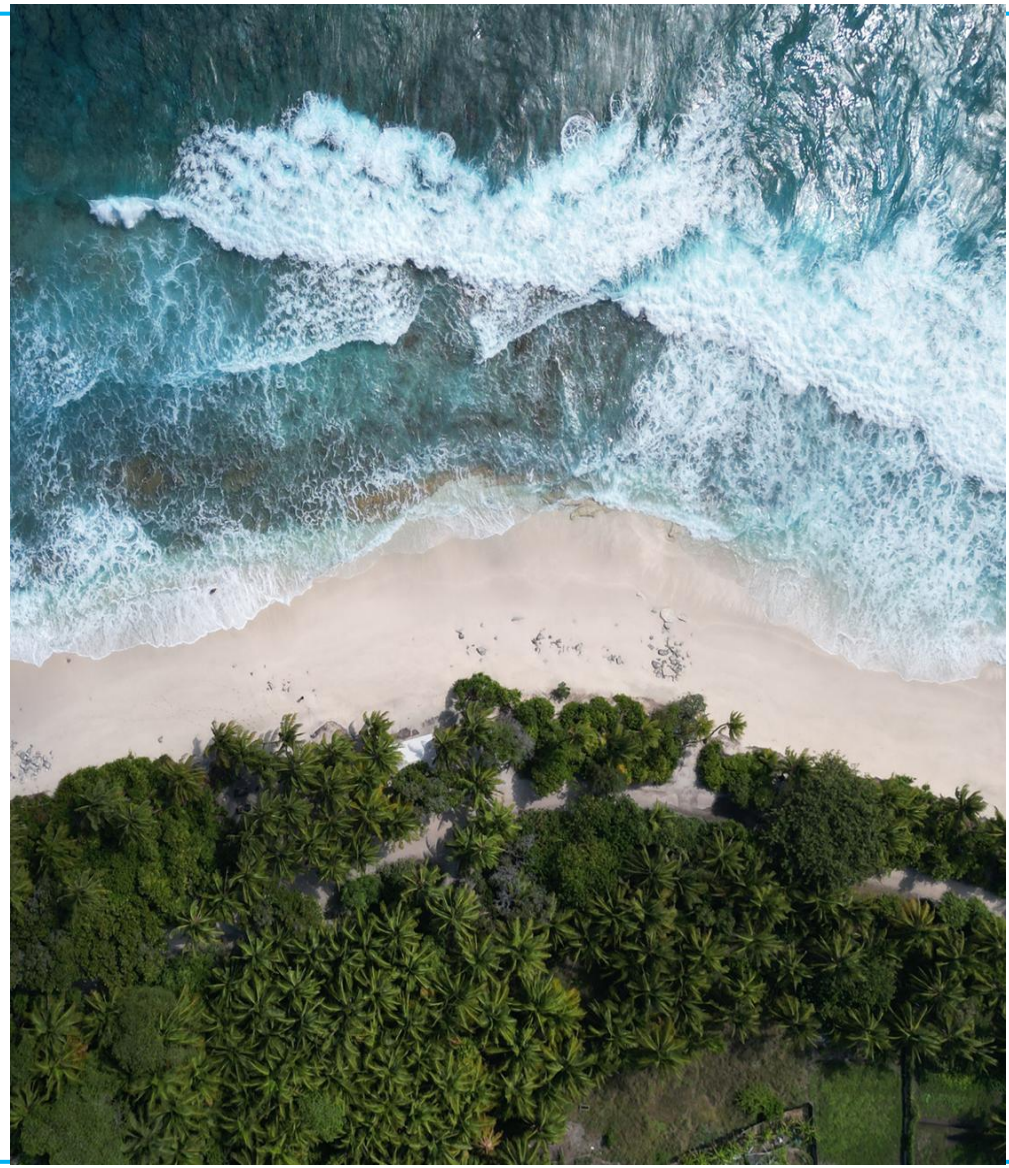
Why pay attention to cooling appliances in Africa?

- Africa leads in urbanization, globally.
- The incidence of climate change-rising temperatures.
- Efforts to strengthen the cold chain to reduce hunger and diseases.
- Need to give attention to EE, refrigerants and installation & maintenance

ECOFRIDGES
GO Green, Save Money

Background - Cooling in Maldives

- **1,190 coral islands** grouped into 27 atolls.
- Average **elevation of 1-1.5 meters** above sea level
- Approximately **90,000 km2, only 298 km2 is dry land**.
- **187 Inhabited Islands.**
- Population of **515,132 people.**
- Dependent on **Tourism and Fisheries Sector.**



Need for Sustainable Cooling

- Climate impacts are lived realities
- **Tourism, Fisheries and Construction Sector** continue to grow- increasing the demand for cooling
- **Fuel imports amounted to 21%** of total imports
- Annual **fuel expenses amounted to 11% of GDP**
- **Air-conditioning accounts for 40% of the electricity bills** of ordinary households in Capital
- In **Tourism Sector, Cooling is the most energy intense** operation
- Residential Housing is the sector with most cooling demand

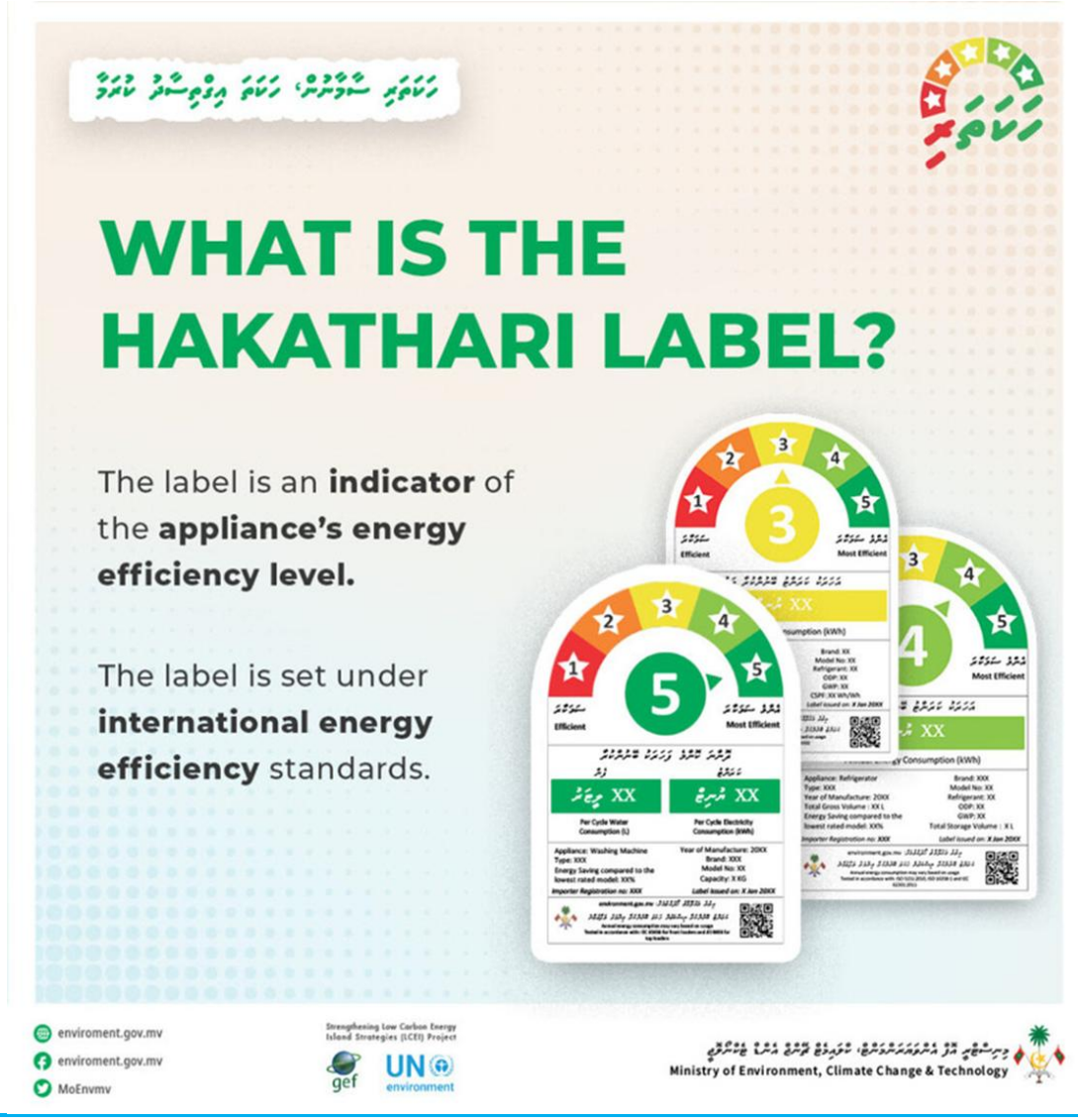
Energy Efficiency

•**Hakathari Program** – an energy efficiency labeling program for appliances and equipment.

•Minimum energy performance standards (**MEPS) and assigns star-rated labels.**

• Provides consumers with a simple and clear **indication of the energy-saving potential.**

• Approved Models of appliances includes **44 Air-conditioners and 25 Refrigerators**, runs in all low GWP refrigerants.



Ozone Action

• Phased out the use of CFCs, an ozone-depleting substance, **in 2008.**

• **First developing country to successfully and completely phase out** the production and consumption of HCFCs, in 2020.

• Kigali Implementation Plan is to be finalised, looking into:
- Increasing **Natural Refrigerants and low GWP.**
- Works to **increase Energy Efficiency.**

Need for Passive Cooling

- Increasing Urban Heat Effect.
- Rising Energy Use for Cooling.
- Nature-Based Solutions.
- To recognize Cooling across Sectors.
- For Planning and Designing Cities.

Challenges in Adopting Passive Cooling

- **Financing** - Dependent on Donor Funds.
- Geographic Distribution of the islands
- Rapidly developing construction industry.
- Synergies between the policy makers in different sectors.
- Establishing incentive programs to promote adopt green building codes
- Capacity building in all sectors
- Scarcity of land, allocating green spaces is a challenge

Q&A Session

Session Wrap-Up

Taking the lessons forward

Gennai Kamata
Associate Officer, Buildings and Cooling
Cool Coalition, UNEP

UN environment programme

Cool Coalition
a UNEP-convened initiative

Federal Ministry
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Nature Conservation and Nuclear Safety

MINISTERO DELL'AMBIENTE
E DELLA SICUREZZA ENERGETICA

وزارة الطاقة والبنية التحتية
MINISTRY OF ENERGY & INFRASTRUCTURE

15:00 – 16:30

14 June 2025

Session 3.2

Accessing Climate Finance

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Federal Ministry
for the Environment, Climate Action,
Nature Conservation and Nuclear Safety

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وزارة الطاقة والبنية التحتية
MINISTRY OF ENERGY & INFRASTRUCTURE

Opening remarks

Accessing Climate Finance

Gennai Kamata
Associate Officer, Buildings and Cooling
Cool Coalition, UNEP

UN environment programme

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a UNEP-convened initiative

Federal Ministry
for the Environment, Climate Action,
Nature Conservation and Nuclear Safety

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MINISTRY OF ENERGY & INFRASTRUCTURE

Presentation

Accessing Climate Finance

Jessica Troni
Head, Climate Change Adaptation Unit
UN Environment Programme

UN environment programme

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a UNEP-convened initiative

Federal Ministry
for the Environment, Climate Action,
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GCF investment criteria

Impact potential: Core indicators:

- GHG emissions reduced, avoided or removed/sequestered
- Direct and indirect beneficiaries reached.

Paradigm shift: Scale, replicability, sustainability.

Country ownership, Sustainable development, Needs of the recipient, Efficiency and effectiveness.

‘Projectising’ the cooling solution matrix

Solution	Type of project intervention	Project execution entity	Longer-term investment
1. Passive cooling Building design Urban planning **Nature-based solutions**	Enabling Enabling Investment	Government Government Government	Private sector Private sector Government
2. Super-efficient cooling solutions	Enabling	Government	Private sector
3. Phase out high-emitting refrigerants	Enabling	Government	Private sector

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Investment support by GCF

100% concessionality = grants. Used in cases where:

- Investing in public goods
- TA, capacity building
- Investing in people whose ability to pay is low
- No direct reflow/repayment mechanism.
- Limited ability of country to borrow, e.g IMF restrictions.

Grants, loans, equity, guarantees

- The level of concessionality provided by GCF will be the minimum amount necessary to make a proposal viable. Minimum concessionality an assessment criteria in the effectiveness and efficiency investment principle.

Accreditation scope

Is GCF for you?

Negative

Long project development timeframes:

- 1 year for CN development and approval
- 6 months for PPFA approval
- 2 years for Funding Proposal development
- 6 months for review

Total minimum: 4 years.

Positive

- Larger investment scale than other grant finance
- Programme scale and visibility; implementation ‘model’ integration;
- Potential to create blue-prints for scale-up

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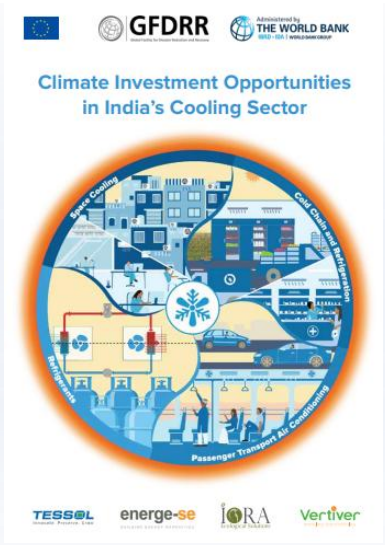
Q&A Session

WB's evolution of work on heat stress & cooling in India



Ongoing engagements informed by report findings

Key Findings

- $1.6 trillion investment potential
- Space cooling is the largest impact area and investment opportunity
- Potential to create 1.7 million jobs through targeted interventions in sustainable agriculture and cold chains
- •Need for an integrated implementation approach encompassing institutions and sectors to achieve goals of the ICAP

Expand Domestic Manufacturing

Enhancing Domestic Manufacture of Sustainable Cooling Technologies

Department for Promotion of Industry and Internal Trade

- Program to enhance domestic manufacture, research and development of sustainable cooling technologies.

Enhance resilience of affordable housing

Mainstreaming Thermal Comfort in PMAY Grameen

Ministry of Rural Development

- Program to integrate passive design and disaster resilience into PMAY Grameen (rural), and enhanced monitoring and evaluation for improved beneficiary outcomes.

Cool Coalition
a UNEP-convened initiative

UN environment programme

THE WORLD BANK

HEAT

IORA Ecological Solutions

Cooling Finance Framework : A collaborative effort

A collaborative effort for actionable implementation of UNEP Cool Coalition and World Bank

Evidence-Based Design

Built on proven World Bank Group experience (India ICAP, ASC facility) and comprehensive country case studies

Adaptive Framework

Flexible methodology accommodating diverse national contexts from SIDS to rapidly industrializing economies

Action-Oriented

A roadmap translating strategies into bankable project pipelines with robust MRV frameworks

Global Integration

Aligned with Paris Agreement, Kigali Amendment, SDGs, and NDC 3.0 enhancement requirements

Guiding Integrated Framework

A systemic framework from Assessment to Prioritization to Implementation

- Country Classification
- Baseline Assessment
- Evidenced based design based on Built on proven World Bank Group experience (India ICAP)
- Sectoral Focus
- Mapping of available financing mechanisms

- Multi-Criteria Priorisation considering feasibilty & viability
- Finance Strategy combining Public & Private, National & international Funds & Investments

- NDC & NCAP Integration
- Country Roadmaps
- Capacity Building & MRV
- Plan to Action

Indicator Based Country Classification

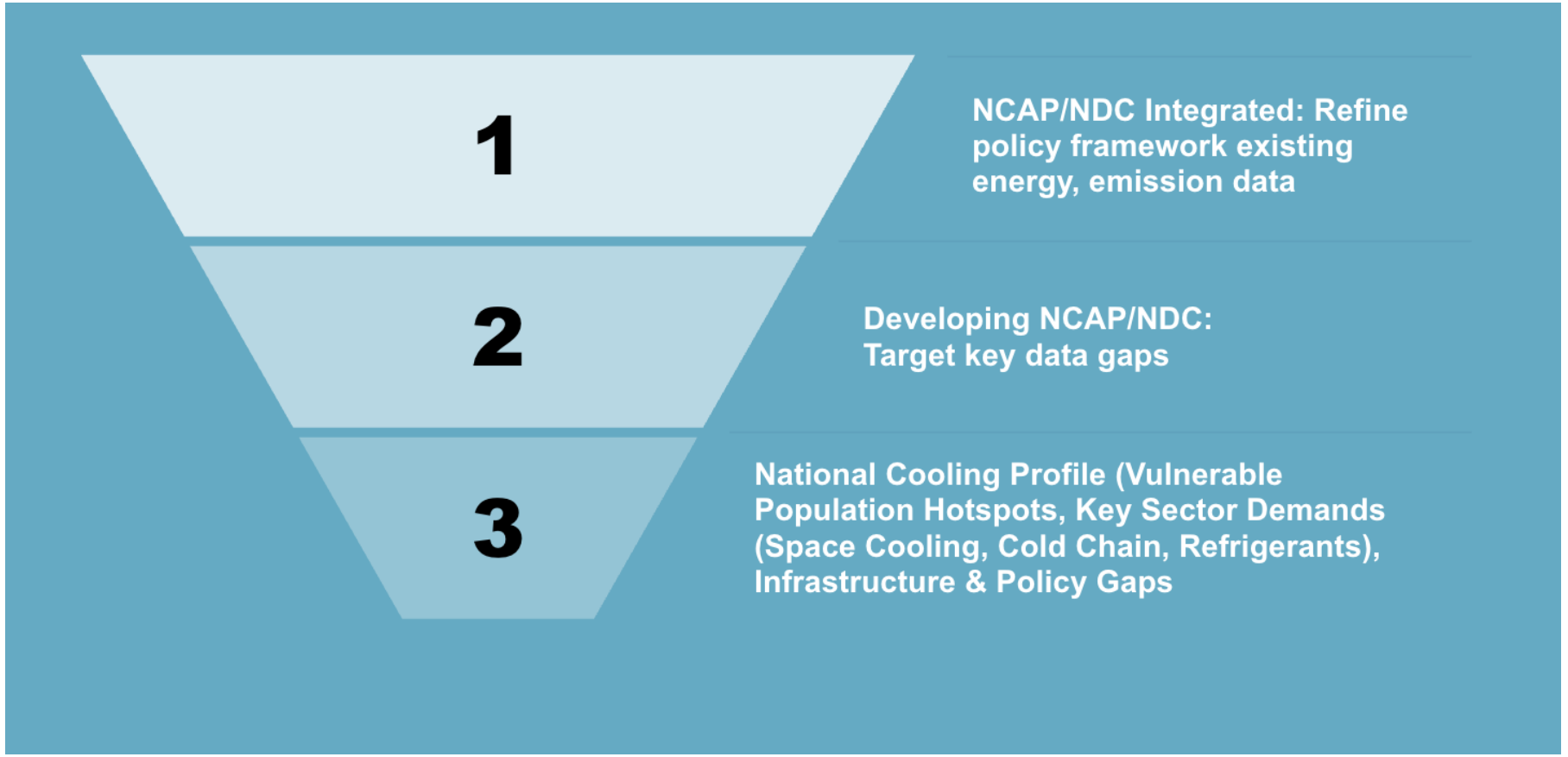
Objective: Categorizing the country based on indicators to develop a cooling action plan depending on their needs and capacity.

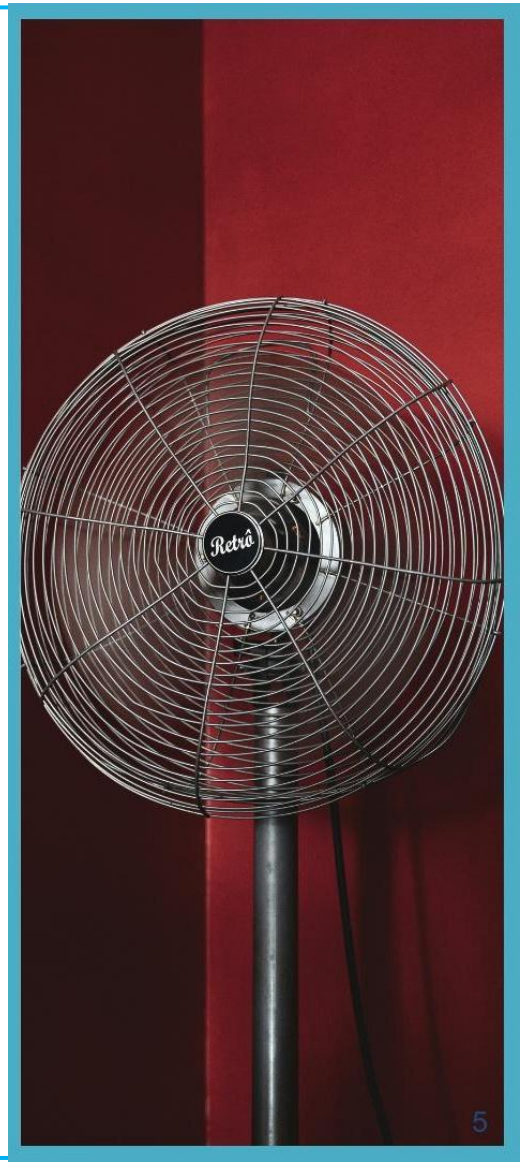
Category	Indicator
Climate Vulnerability	% GDP from climate-sensitive sectors, (Agriculture, Forest and Tourism)
	Existing Cooling Action Plan
	Climate Risk Level
Development Status	Development Category
	Poverty rate (% population below poverty line)
	HDI Index
Agro-ecological zones	Dominant climate type
	Location (Tropical or non-tropical)
	Forest Cover and Urban Forests
Policy Commitments	Emission reduction targets (NDC)
	NCAP
	Kigali Pledge CC
	Clarity of investment/financing mechanisms

FOUR TIER CLASSIFICATION
Tier 1: Climate-vulnerable, low capacity (Focus: basic access + adaptation)
Tier 2: Climate-vulnerable, medium capacity (Focus: efficiency + resilience)
Tier 3: Moderate climate risk, high capacity (focus: deep decarbonization)
Tier 4: Advanced economies (focus: innovation + carbon markets, deep decarbonisation)

Understanding cooling needs

Objective Gain a clear understanding of the national cooling landscape to establish a solid foundation for the National Cooling Action Plan (NCAP).





Multi-Criteria Sectoral Prioritization Framework

Objective:

Enable countries to prioritize interventions using robust decision framework by ranking them.

A two-step multi-criteria prioritization framework to be developed

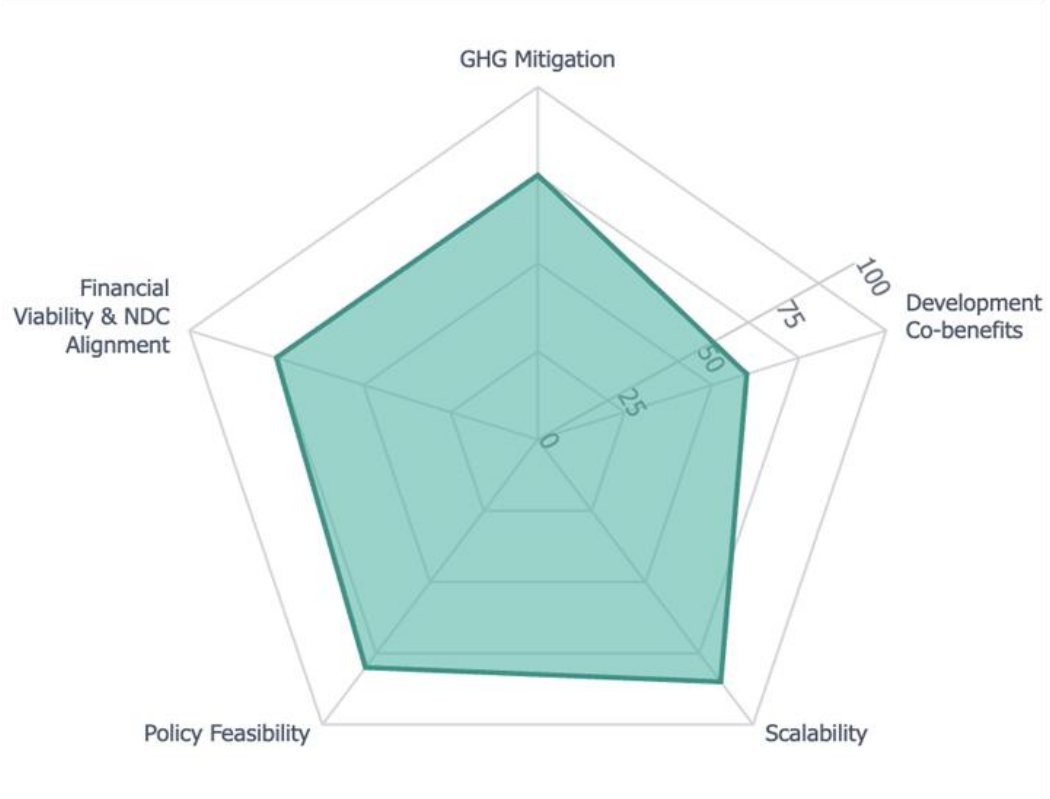
- First level of prioritization will cover the criteria of climate and development benefits, and ease of implementation
- Second level of prioritization will focus on evaluating the potential of concessional financing and private sector investments.
- Scoring scale and rationale used for selection to be provided.
- Countries to assign weightages to the criteria based on specific contexts and priorities

Criteria	Sub-Criteria	Description
Benefits	Climate Mitigation Benefits	▪ GHG mitigation potential for the sustainable cooling opportunity
	Development Benefits	▪ Job creation potential, SDGs, Number of people impacted
Implementation	Technical feasibility	▪ Ease of technology access – includes access to associated technologies and knowledge, with no restrictions in terms of IPR; ▪ Market preparedness and adaptability of technologies
	Likelihood of large-scale adoption	▪ Sustainable cooling is a key driver in ensuring adoption; ▪ Potential for scalability and replicability of opportunity
	Administrative feasibility	▪ Policy feasibility: Supportive laws, regulations and policies in place; ongoing programmes & schemes in place for convergence ▪ Level of stakeholder participation needed to plan & implement the opportunity
Financing		▪ CAPEX per unit delivered ▪ Need and potential for leveraging various concessional finance instruments and/or private sector investment

Assessment Toolkit

Objective: Adopt-Multi-Criteria Toolkit to Identify Priority Sectors for Climate Financing and Implementation Assessment Toolkit builds on Country Assessment Data

INTERVENTION ASSESSMENT: e.g. Efficient ACs



SECTORAL PRIORITY RANKING

Ranked Interventions

1	Passive Cooling (Cool Roofs) Utilizing reflective materials and designs to reduce heat ab...	320.9
2	Efficient Air Conditioning Promoting high-efficiency AC units through standards and inc...	310.6
3	Cold Chain Infrastructure Developing and improving refrigerated storage and transport ...	307.9
4	District Cooling System Centralized cooling production and distribution network for ...	301.7
5	R290 Natural Refrigerants for Split AC Transitioning to low-GWP natural refrigerants like R290 in s...	301.6
6	MAC Efficiency Standards Implementing and enforcing Minimum Energy Performance Standa...	281.0
7	Rail HVAC Modernization Upgrading existing rail HVAC systems and setting standards f...	256.4

Cost Framework and Financing Strategy

Finance Investment Toolkit

From public and concessional funds to market-based instruments like Green Bonds for large-scale projects tailored to country needs and classification

Financing Framework

Strategic Blending
Blended finance to leverage public funds and attract private investment.

Foundational De-risking
Early-stage risk mitigation and capacity building through public funds.

Innovative Access
Examples include pay-per-use and pay-as-you-go models to enhance accessibility.

Market Mobilization
Carbon finance and green bonds to attract investment and generate revenue.

Cooling-as-a-Service
Pay-per-use model removing upfront costs

PAYG/On-bill Financing
Expanding access flexibility to households

Green Bonds for Cooling
Scaling through capital markets with $100M+ issuance

Article 6 Carbon Markets
Revenue through cooperative approaches

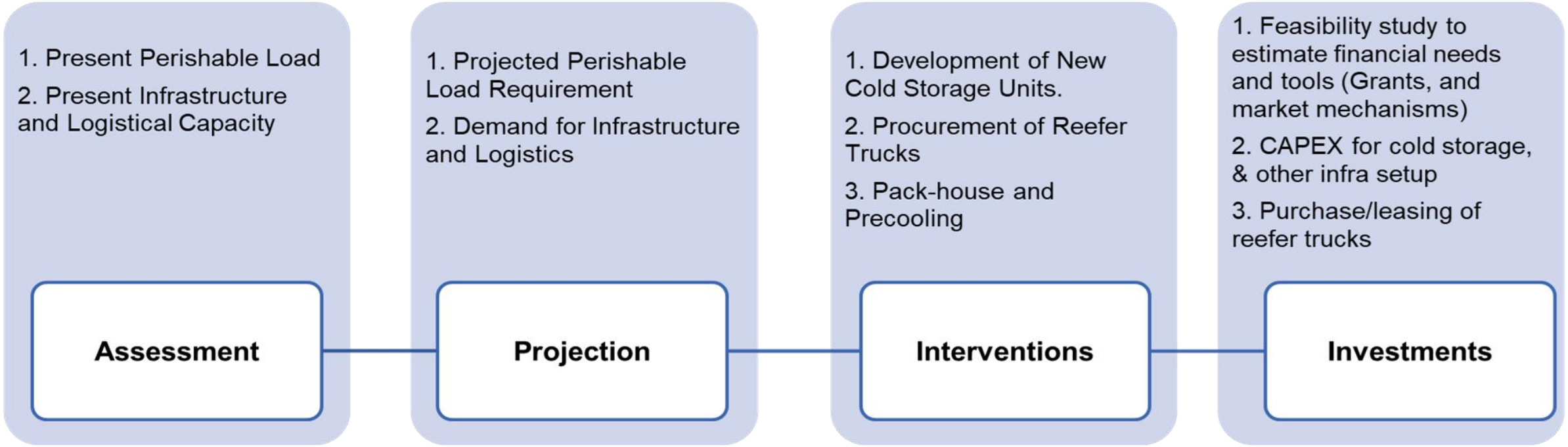
Blended Finance Architecture
De-risking through guarantees

Energy Savings Insurance
Performance guarantees with 85-95% coverage

Potential Financial mechanisms for Sustainable Cooling

Strategic Approach for Financing

Financing sectoral cooling needs through assessment, projections, interventions and investing through viable financing mechanism. Illustrative example of financing cold chain



Parameters influencing the projection of demand and perishable loads:

- Population Growth & Urbanization
- Disposable Income & Consumer Spending
- Organized Retail Growth
- E-commerce & Quick Commerce Penetration (Groceries)
- Domestic Perishable Production
- Existing Cold Storage Capacity & Utilization
- Refrigerated Transportation Fleet Size & Technology

Q&A Session

1. What are the **cooling priorities** (sectors, sections of population, etc.) for your country?

2. What is your **single biggest barrier** to financing sustainable cooling projects?

3. Which **data points for cooling assessment** are most difficult for your country to obtain?

4. How can this framework **best support your NDCs and Global Cooling Pledge** implementation?

Presentation
Cooler Finance Report

Gennai Kamata
Associate Officer, Buildings and Cooling
Cool Coalition, UNEP

UN environment programme
Cool Coalition
a UNEP-convened initiative
Federal Ministry for the Environment, Climate Action, Nature Conservation and Nuclear Safety
MINISTERO DELL'AMBIENTE E DELLA SICUREZZA ENERGETICA
وزارة الطاقة والبنية التحتية
MINISTRY OF ENERGY & INFRASTRUCTURE

Action on Sustainable Space Cooling

Why Sustainable Cooling?

- Cooling needs are expected to grow rapidly due to rising temperatures, especially **in developing economies** mostly located in **hot/tropical climate**.
- Space cooling is **the most dominant** area in the cooling sector and is growing rapidly as **floor space increases** due to population growth.
- Inefficient cooling system needs **more energy** and emit **more GHG** than sustainable cooling systems such as passive cooling & inverter-controlled air-conditioners.

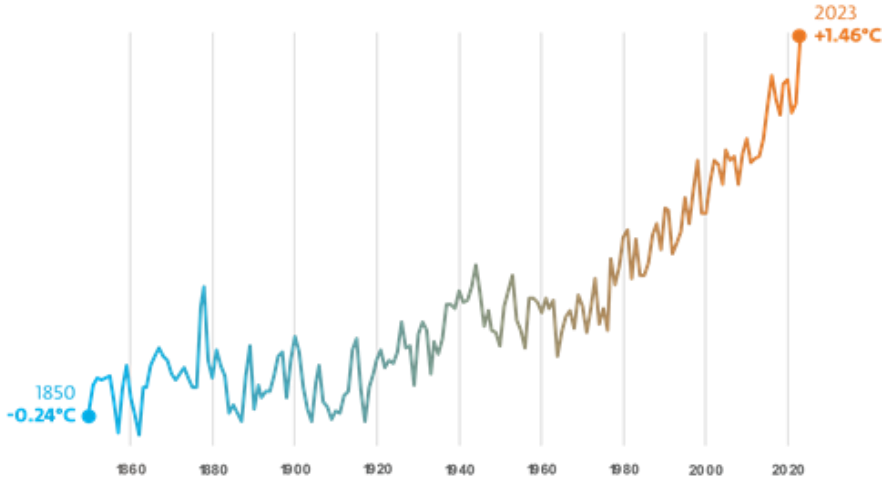


Image 1: The World is Heating Up at an

Accelerated Pace
Global mean temperature difference (compared to 1850-1900 average)

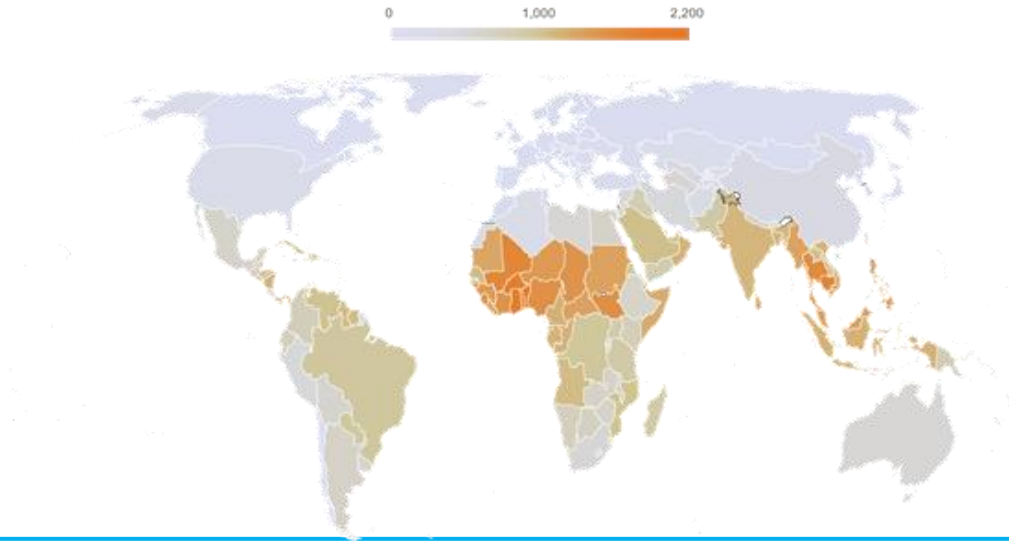


Image 2: Developing Countries Are the Most Exposed to High

Temperatures
Annual Cooling Degree Days (CDDs, 18.3 °C-day), 2021

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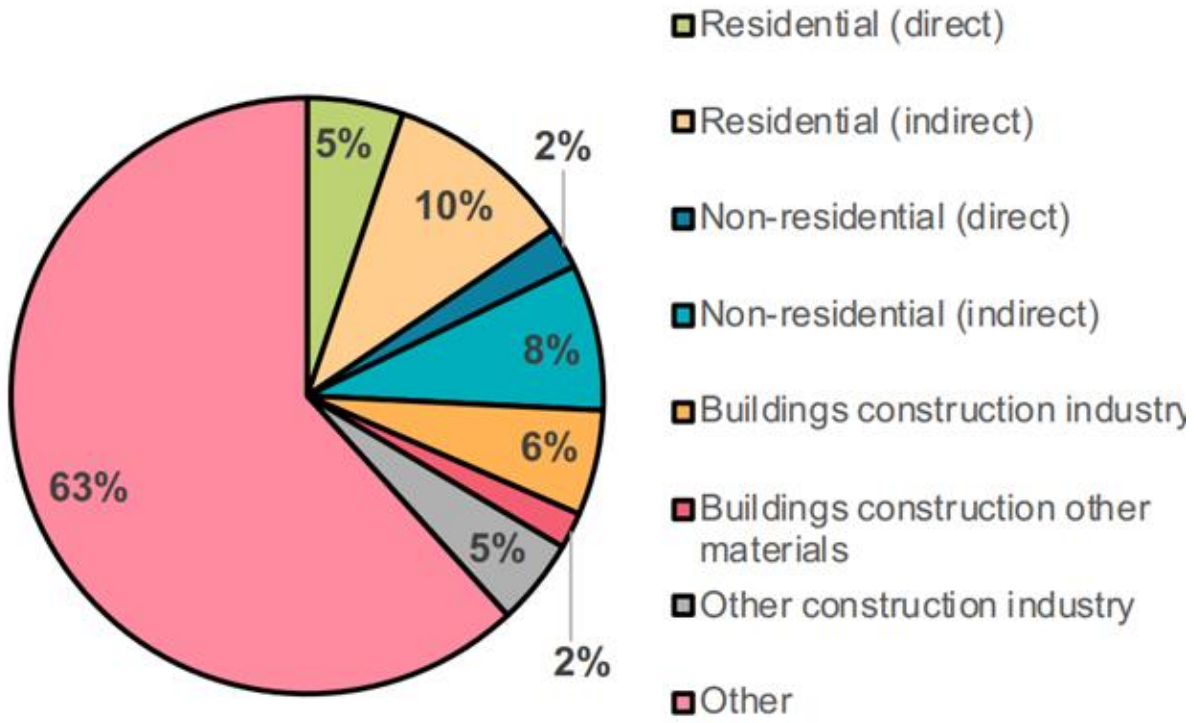
Cool Coalition
IFC International Finance Corporation WORLD BANK GROUP

Energy Consumption and GHG Emissions in the Building Sector

In 2023, **One-Third** of the global energy consumption and CO2 emissions is attributed to the Building Sector.

Operational emissions reached a record 9.8 gigatonnes, while embodied carbon was around 2.9 gigatonnes, which suggests more reduction for the space cooling is needed.



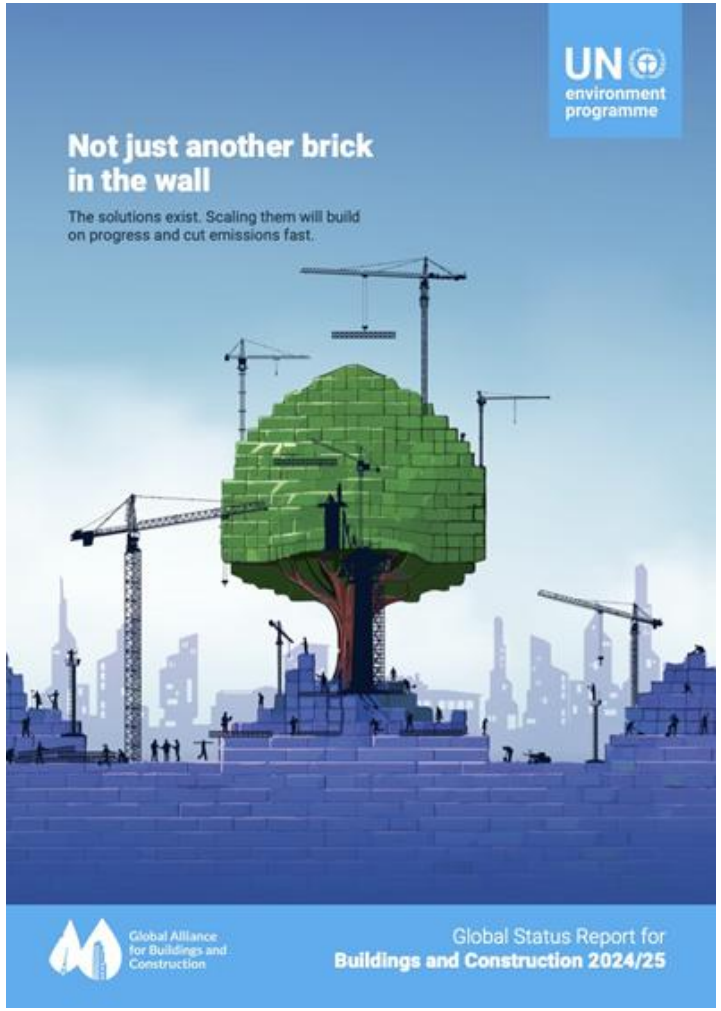
Share of the CO2 emissions in 2023

Source: Buildings Global Status Report 2024/2025

UNEP Buildings-GSR

Cooling remains the fastest-growing end-use in the buildings sector, particularly driven by the Asia-Pacific region, having increased at an average rate of four per cent per year since 2000.

The Global Status Report for Buildings and Construction (Buildings-GSR), provides **an annual snapshot of the progress of the buildings and construction sector** on a global scale. It reviews the status of policies, finance, technologies and solutions to monitor whether the sector is aligned with the Paris Agreement goals.



Source: Buildings Global Status Report 2024/2025.

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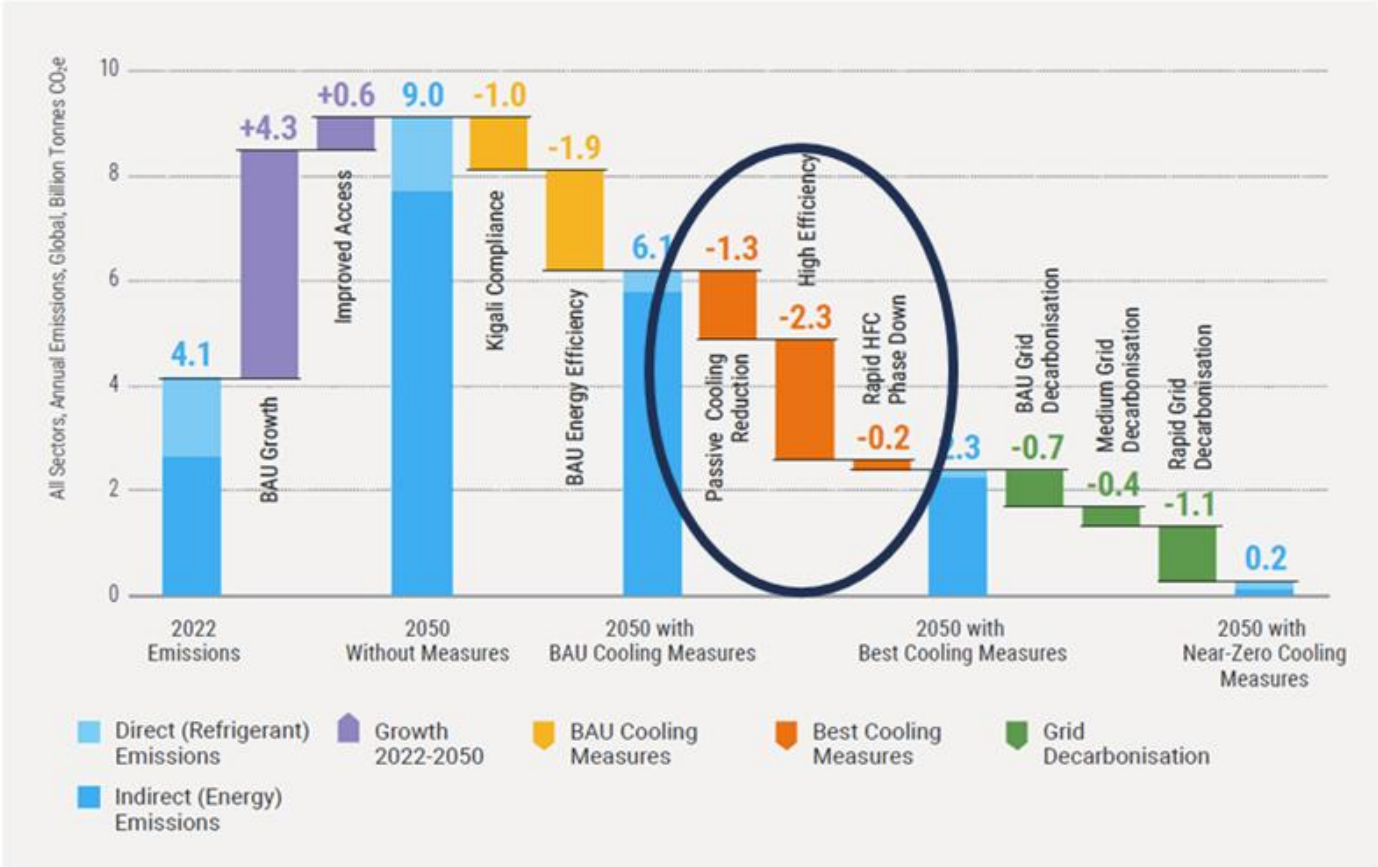
UNEP Cool Coalition Global Cooling Watch

If the world follows the best measure pathway we can **achieve 60% reduction** below projected 2050 emissions – 3.8 billion tons of C02e

Grid decarbonization leads to 96%- additional 2 billion tons of CO2e

Source: Global Cooling Watch Report 2023

Figure ES-1: **Global pathway and key steps to achieve near-zero GHG emissions from cooling, 2022-2050**



Note: Blue bars show emissions in 2022 and 2050. Purple bars indicate growth. Yellow bars indicate BAU Cooling Measure emission reductions. Orange bars indicate Best Cooling Measure emission reductions. Green bars indicate emission reduction due to electricity grid decarbonisation.

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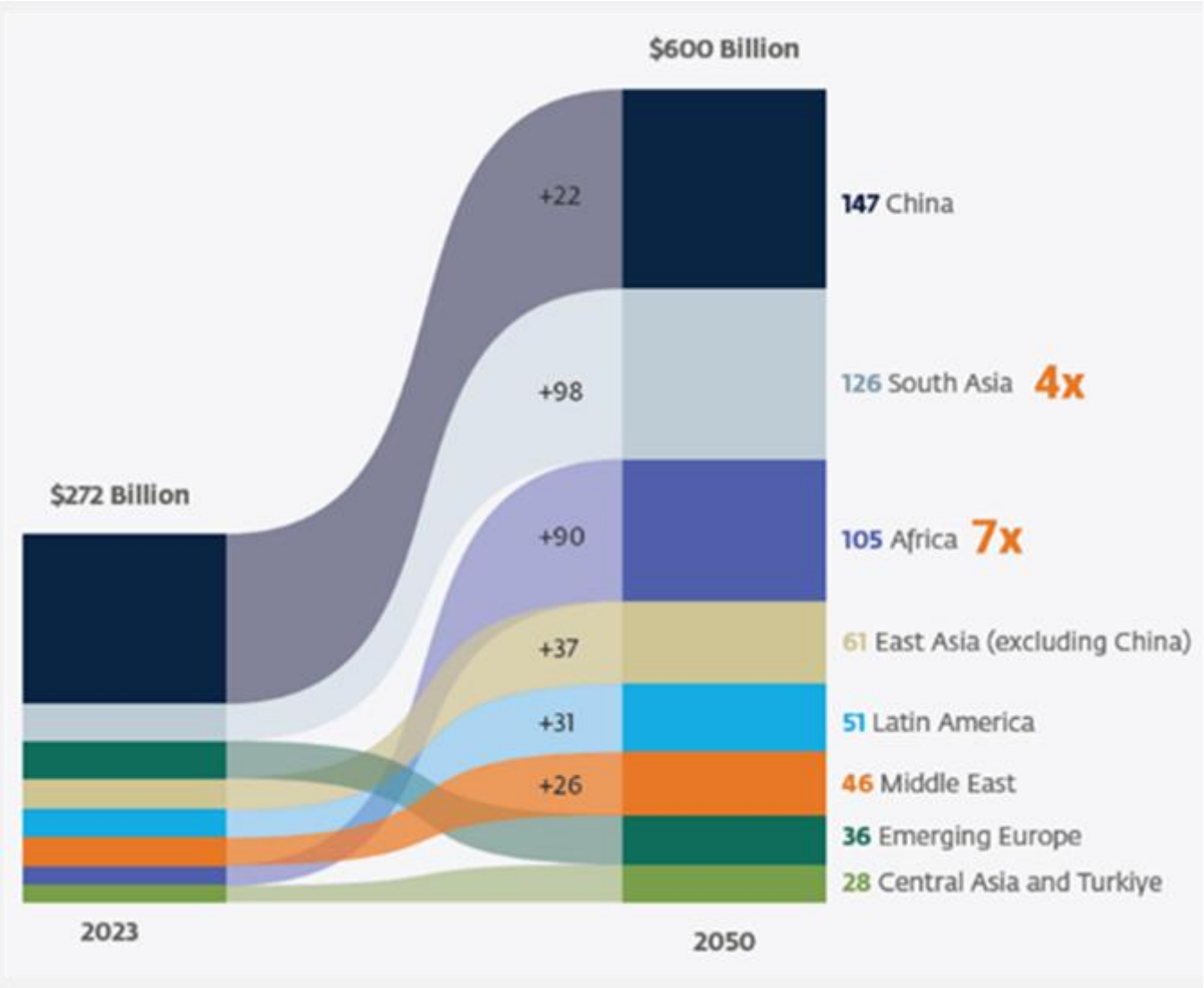
Total Cooling Market Growth

The cooling market in developing economies is expected to grow **from about $300 billion to $600 billion**, or more, by 2050.

South Asia grows **4 times** and **Africa 7 timers** larger than today



The total cooling market size in developing economies

Source: Cooler Finance 2024 (IFC/UNEP)

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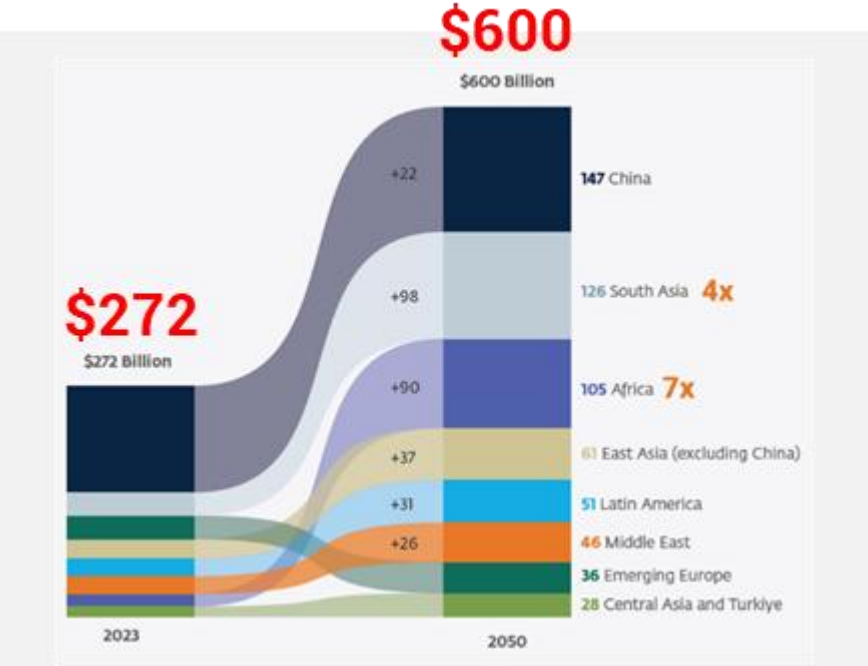
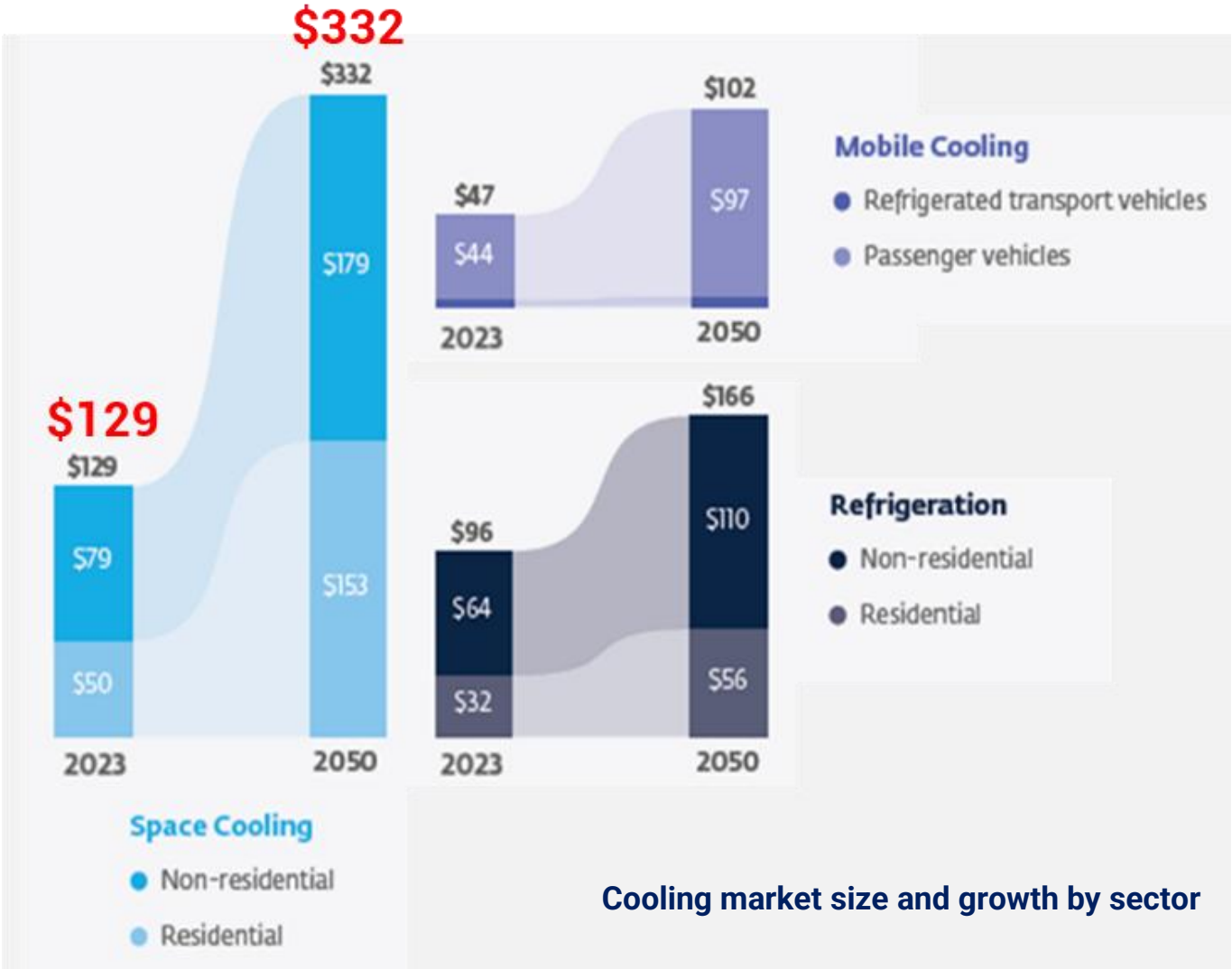
Cooling Market Growth - Space Cooling

Space cooling accounts for about **half of the total cooling market** and driving the most growth.



Source: Cooler Finance 2024 (IFC/UNEP)



Cooling market size and growth by sector

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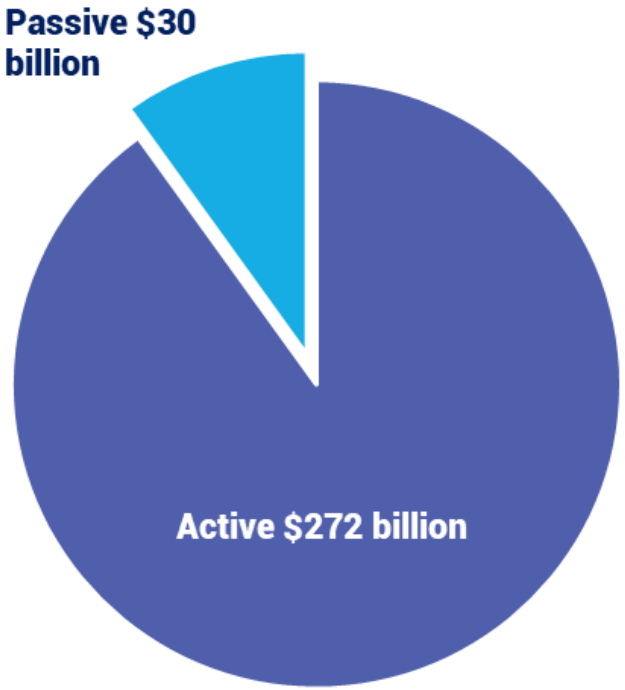
Space Cooling Market Breakdown - Passive & Active

Passive cooling market is estimated at **$30 billion**, but can grow further with the right incentives.

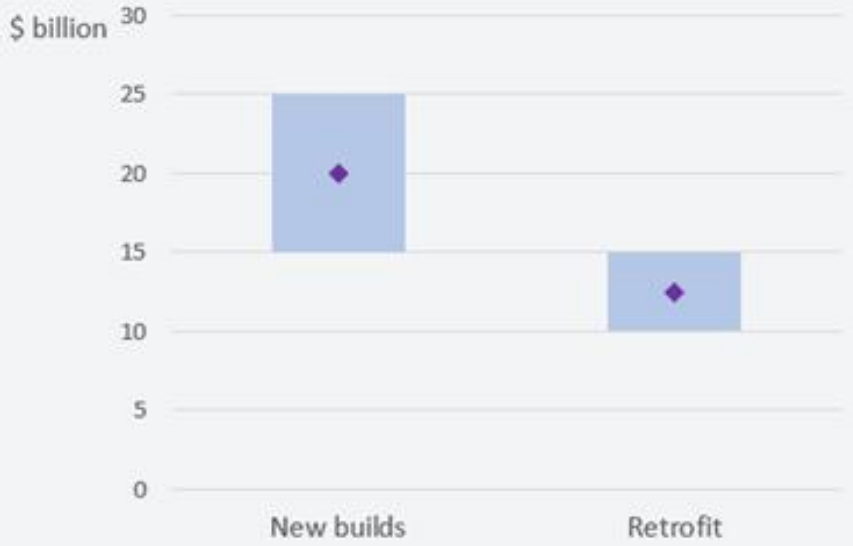


Source: Cooler Finance 2024 (IFC/UNEP)

Current passive cooling capital investments across developing economies:

- **New builds:** $15–$25 billion per year
- **Retrofit:** $10–$15 billion per year

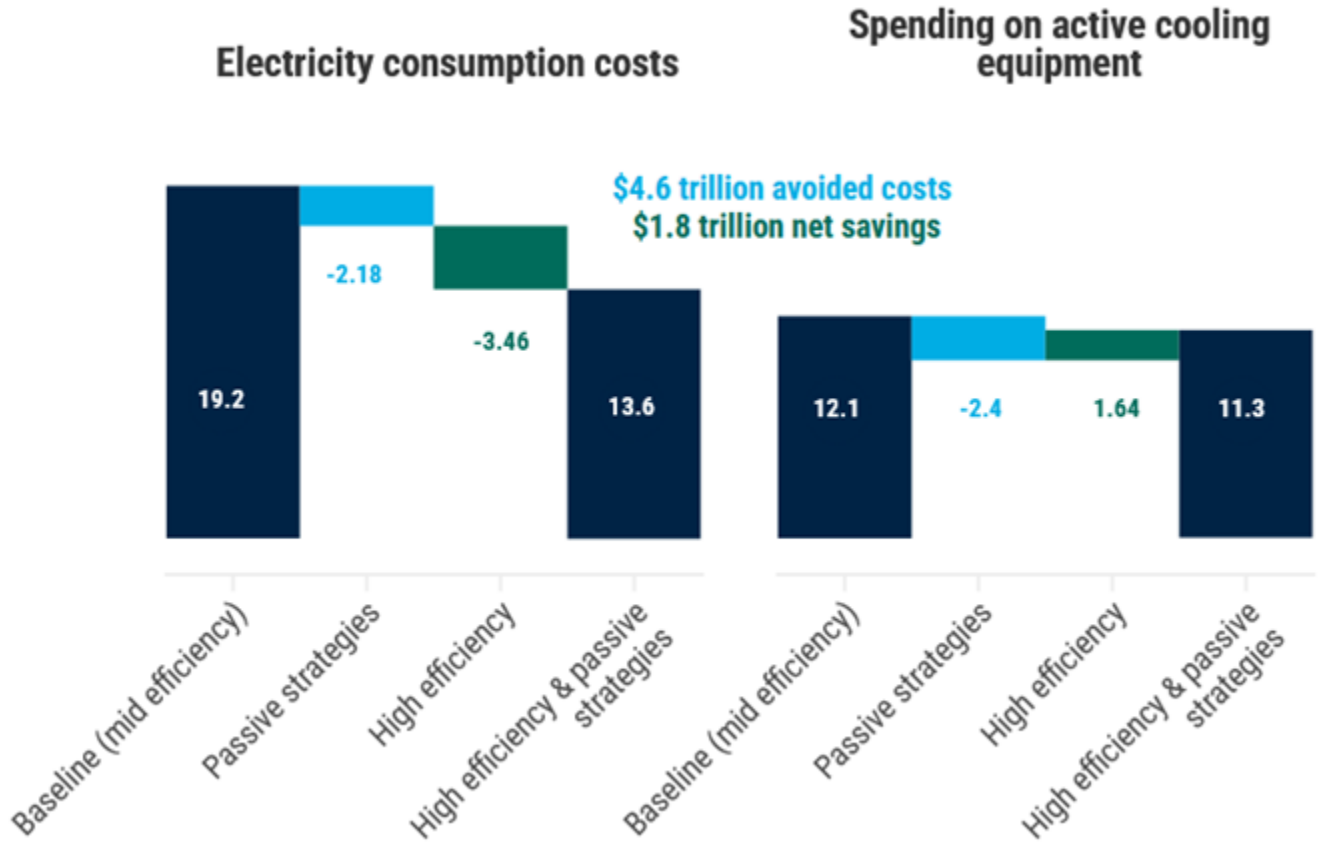
By 2050, the new builds market could reach $150 billion per year.



Saving Electricity Cost

Accelerating the transition to sustainable cooling will help developing economy consumers spend $6.4 trillion less by 2050.

Changes in cumulative electricity consumption costs and spending on cooling equipment for consumers from accelerating adoption of sustainable cooling 2025 to 2050 ($ Trillion)



Source: Global Cooling Emissions and Investment Model

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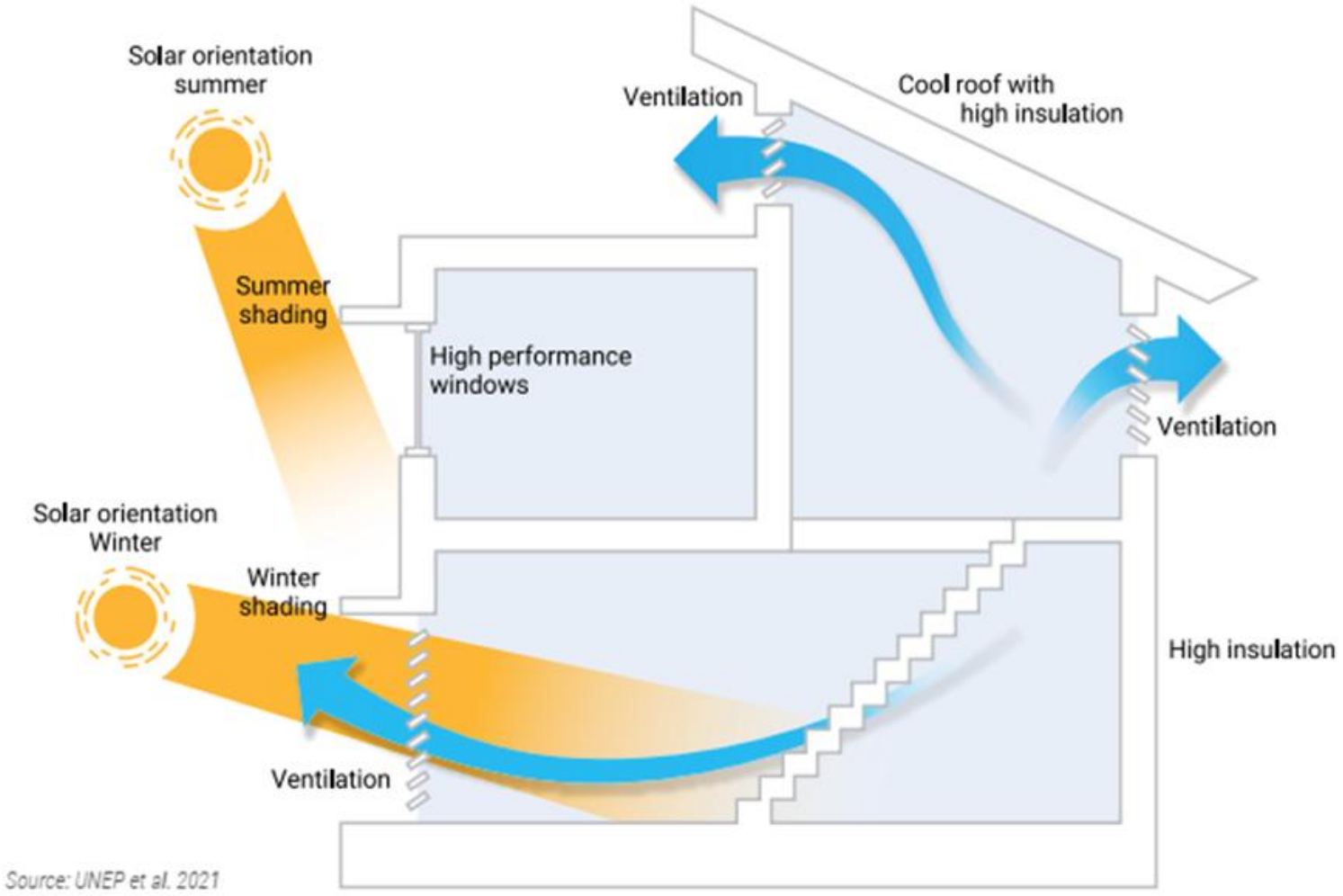
Passive Cooling

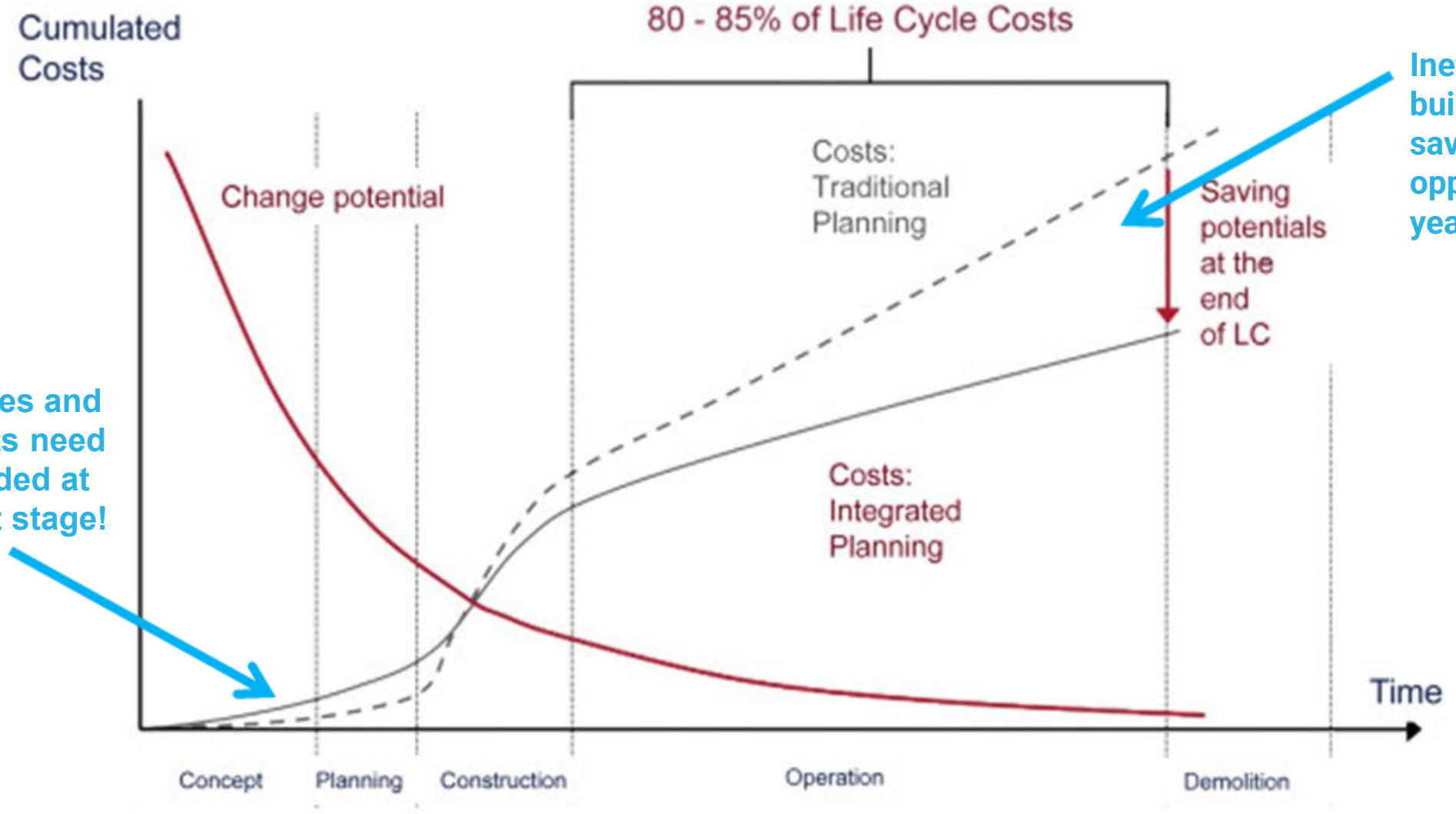
What is Passive Cooling?

Passive cooling is the practice of using non-mechanical technology, design elements and nature-based solutions to keep a space cool by reducing the dependence on air-conditioners.



Source: UNEP et al. 2021

Early Design Decision Matters



Inefficient buildings lock-in savings opportunities for years

EE measures and investments need to be included at the earliest stage!

Source: ***Building life cycle optimization tools for early design phases,*** *https://www.sciencedirect.com/science/article/abs/pii/S0360544215003217*

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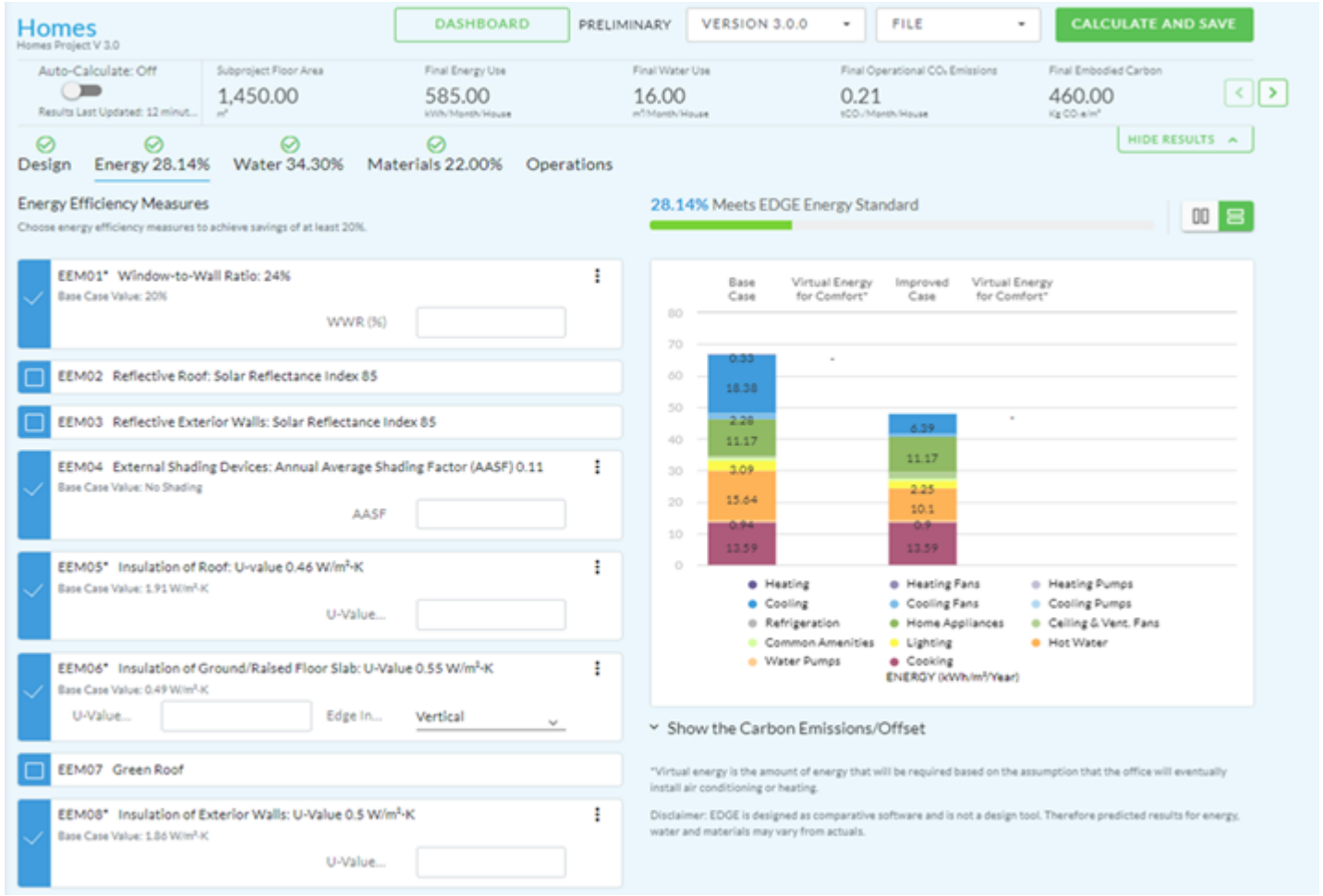
IFC's EDGE - EE and Cost Simulation

- **Quick resource efficiency assessment**: Allows developers and designers to immediately evaluate a building's energy, water, and material usage efficiency compared to conventional buildings.

- **Financial ROI calculator**: Calculates utility savings and payback periods for green building investments, making the business case for sustainability clear to stakeholders.

- **Evaluate different settings:** A variety of parameters can be entered, ranging from building typologies, floor areas and stories, occupancy patterns and densities, climate zones, etc.

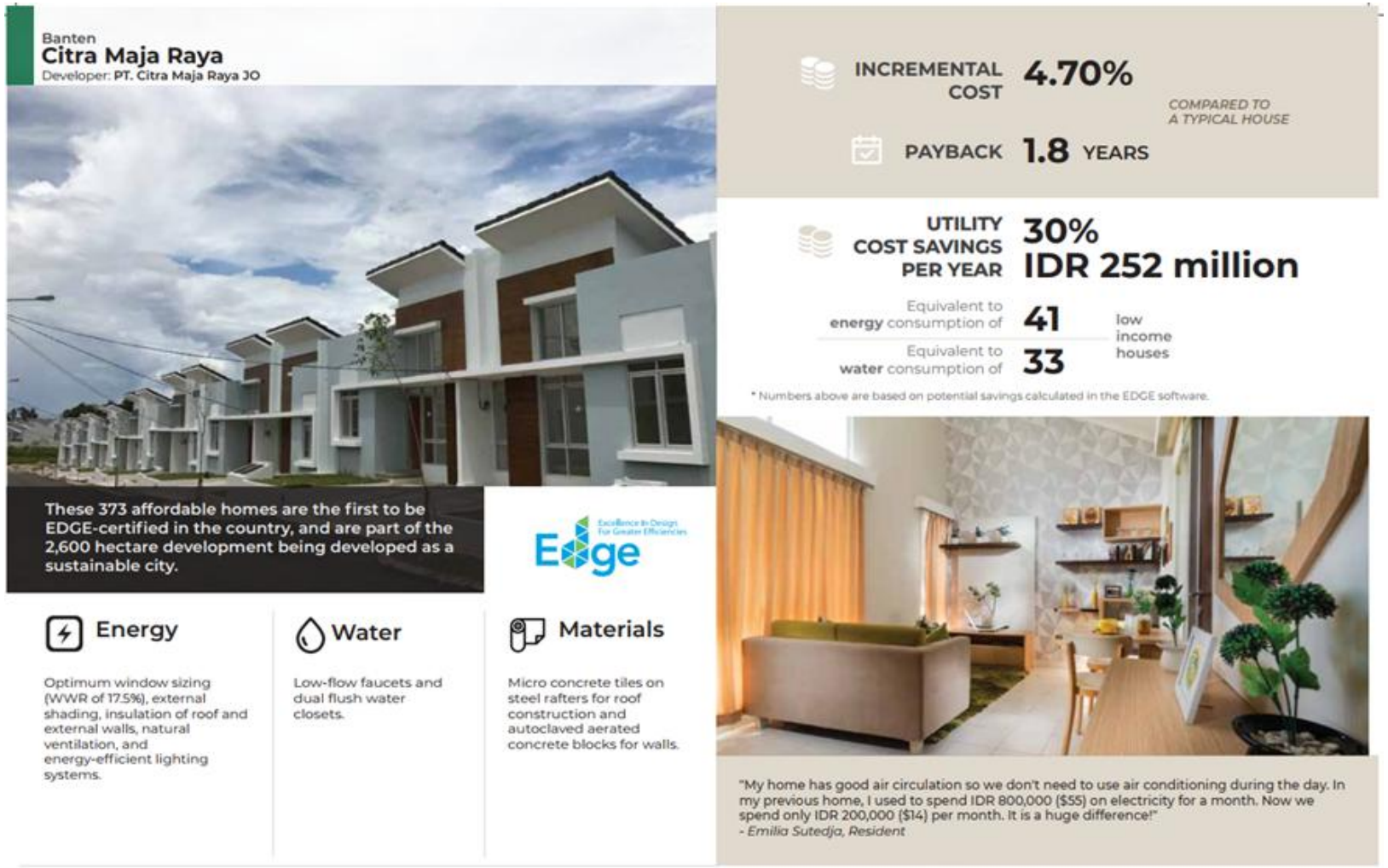


Simulation example 1

Affordable Housing:
•373 houses in 2,600 hectare development

Passive Cooling Strategies:
•WWR of 17.5%
• External shading
• Insulation of wall and roof
• Natural ventilation

Cost Performance Simulation:
• Incremental cost: 4.70%
• Payback period: 1.8 years
• Utility cost saving: 30% (equivalent to 41 low-income houses Annual energy consumption)



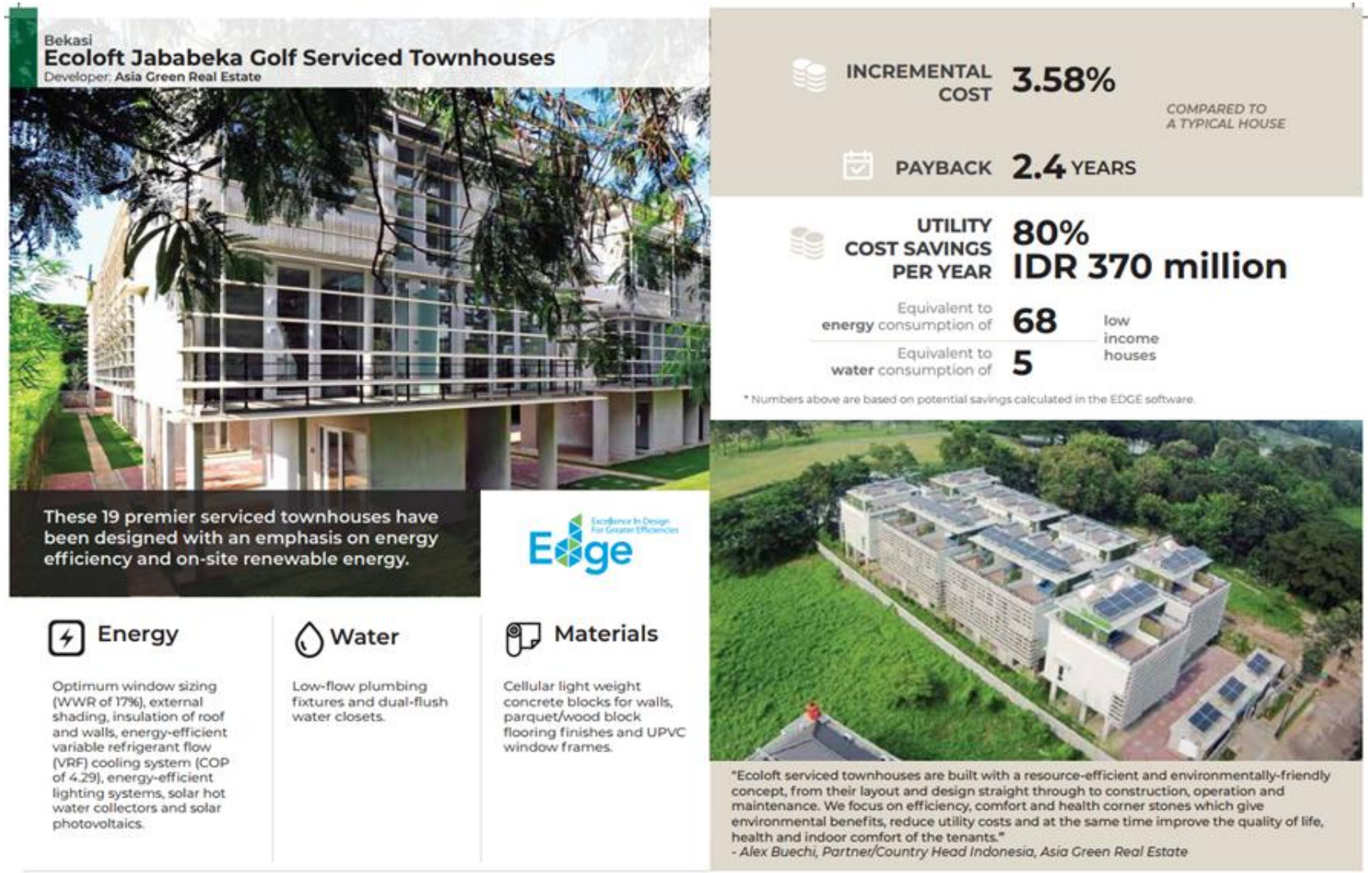
Source: Cooler Finance, P85, IFC EDGE

Simulation example 2

Service Housing:
- 19 premier serviced houses

Passive Cooling Strategies:
- WWR of 17%
- External shading
- Insulation of wall and roof
- Natural ventilation

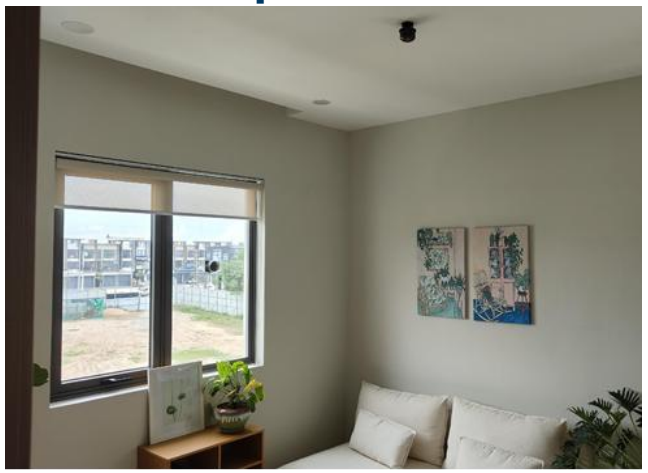
Cost Performance:
- Incremental cost: 3.58%
- Payback period: 2.4 years
- Utility cost saving: 80% (equivalent to 68 low-income houses)



Source: Cooler Finance, P85, IFC EDGE

UNEP/UNESCAP - PCS demonstration project in Cambodia

Measurement of the ceiling surface temperature



Design Workshop

PCS Pilot in Cambodia

Cool Roof Paint

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ESCAP
Economic and Social Commission for Asia and the Pacific

URBANLAND

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Cool Coalition

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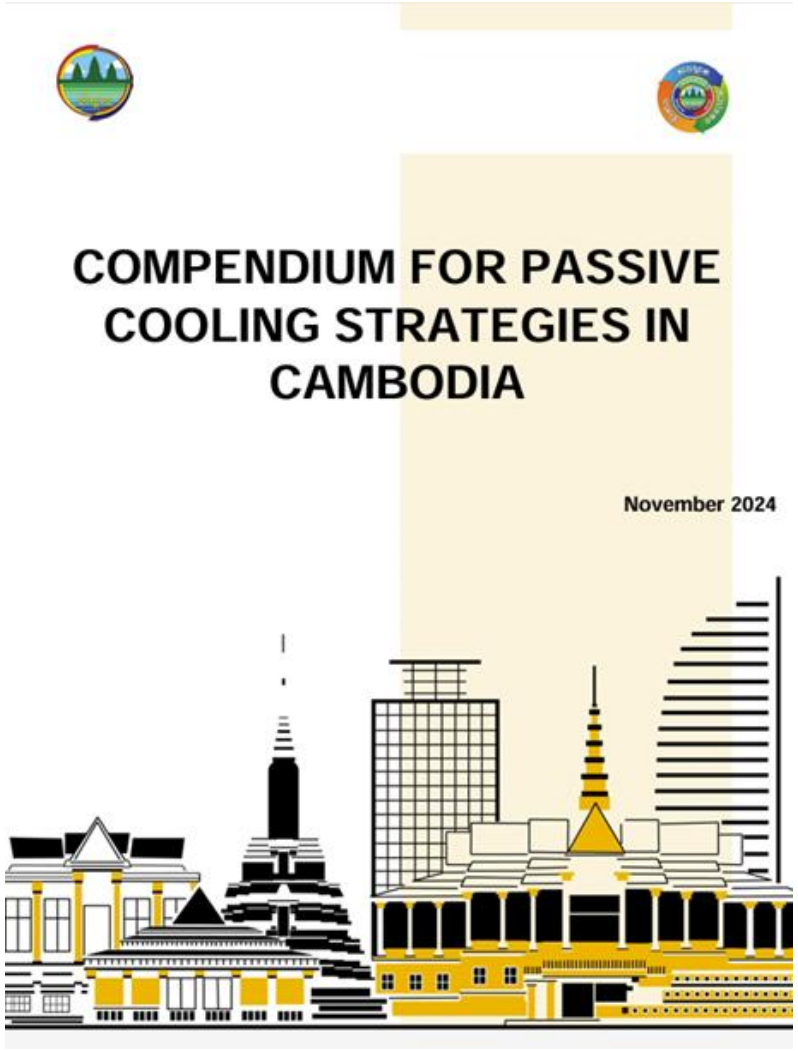
UNEP/UNESCAP - PCS demonstration project in Cambodia



UNEP & UNESCAP Passive Cooling Strategies Compendium was published in November 2024. It introduces a variety of passive cooling measures for the Cambodian context.

Frame Type	Image	U-Value
Wooden frame		1.2 and 2.4 W/m².K
Unplasticized Poly Vinyl Chloride (UPVC) frame		1.2 and 1.6 W/m².K
Aluminium frame		6.0 to 7.0 W/m².K

Compendium For Passive Cooling Strategies in Cambodia (2024)

Webinars & Guidelines Development

01: PROVIDING THERMAL SECURITY THROUGH ENERGY EFFICIENT METHODS IS A MATTER OF SURVIVAL FOR MANY REGIONS

02: PASSIVE COOLING STRATEGIES FOR SUSTAINABLE DEVELOPMENT IN CAMBODIA (UNEP&UNESCAP)

03: ACCELERATING NATURE-BASED SOLUTIONS FOR BUILDING ENERGY-EFFICIENCY AND THERMAL COMFORT

04: COOLING PEOPLE WITH AIR MOVEMENT

Webinars & Guidelines Development

05: HEAT MITIGATION WITH COOL SURFACES FOR THE SUSTAINABLE BUILT ENVIRONMENT

Session Wrap-up

Towards effective financing for Sustainable Cooling

Gennai Kamata
Associate Officer, Buildings and Cooling
Cool Coalition, UNEP

UN environment programme

Cool Coalition
a UNEP-convened initiative

Federal Ministry
for the Environment, Climate Action,
Nature Conservation and Nuclear Safety

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E DELLA SICUREZZA ENERGETICA

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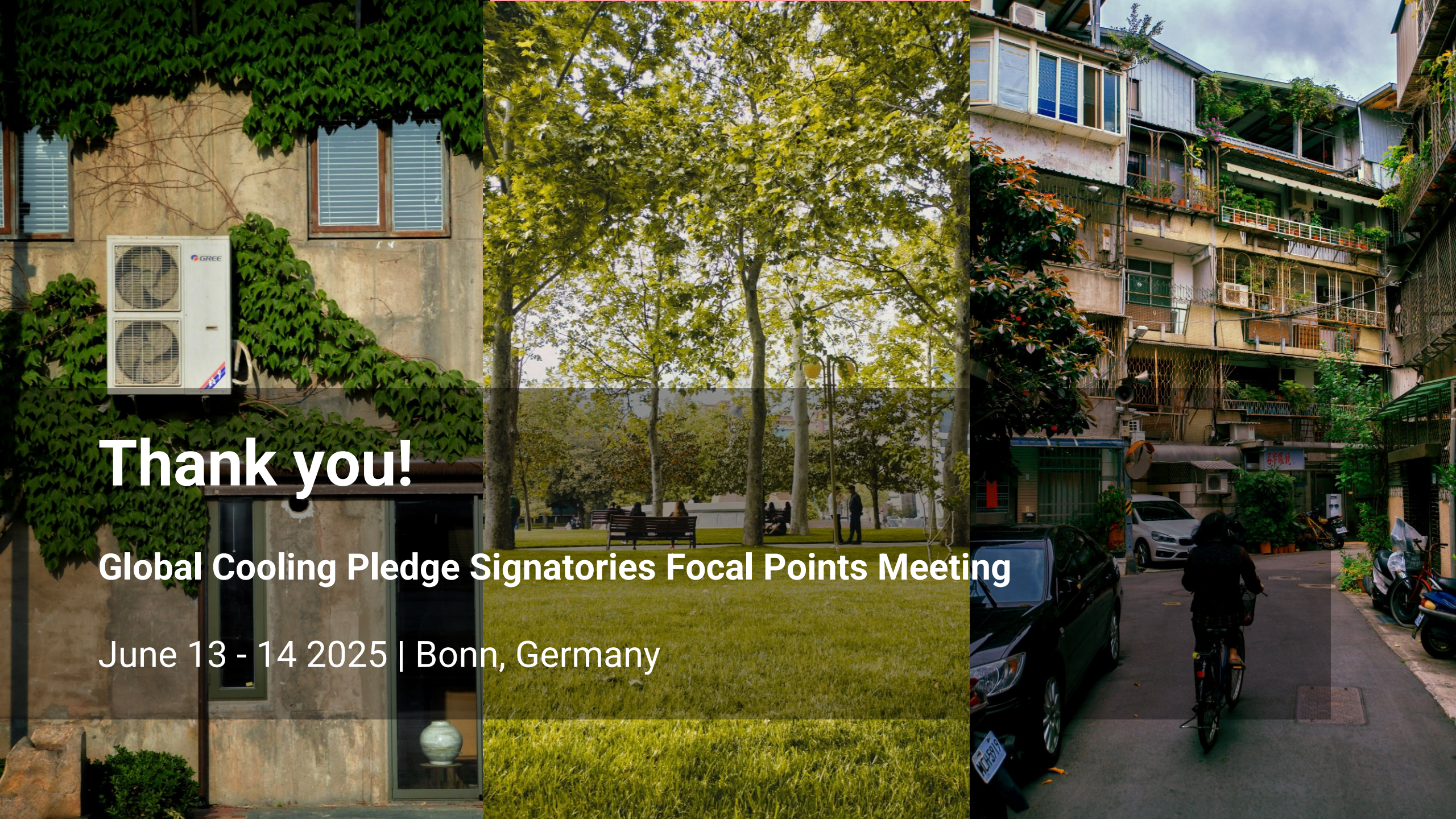

Thank you!

Global Cooling Pledge Signatories Focal Points Meeting

June 13 - 14 2025 | Bonn, Germany