ANNUAL REPORT 2022

BASE

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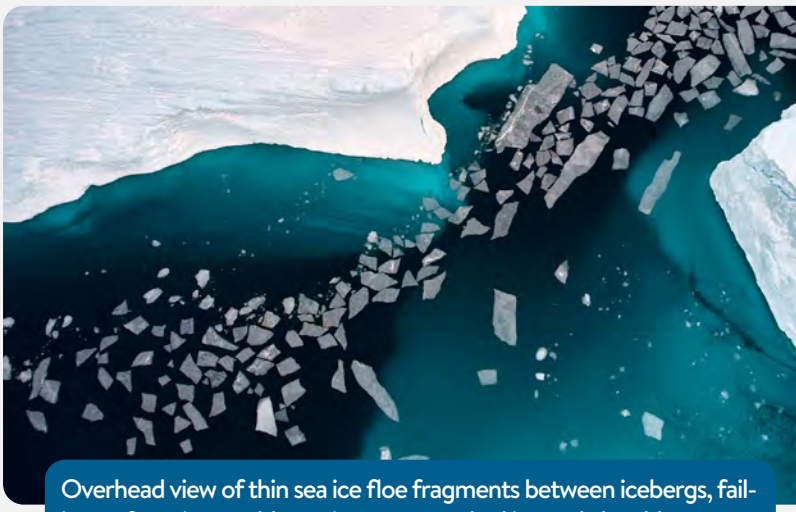
INTRODUCTION

The problem

Rising Temperatures, Rising Stakes

A few days before the opening of the 27th Conference of the Parties (COP27), in October 2022, the United Nations Environment Programme (UNEP) released its eagerly awaited **Mitigation Gap Report.** This annual publication assesses the current state of global warming against the effectiveness and ambition of the governmental emission reduction targets and climate pledges. Painted with a striking title emphasising the time-sensitive nature of the climate crisis, The Closing Window report found "no credible pathway to 1.5°C in place", evoking a sense of urgency and the need for intensified action. In parallel, UNEP's **Adaptation Gap Report** did not bring more optimistic news, with a general assessment that global efforts had to be largely scaled up and accelerated.



Overhead view of thin sea ice floe fragments between icebergs, failing to form into stable sea ice cover, packed ice and clear blue water.

According to the **International Monetary Fund**, the annual financing needs for both mitigation and adaptation amount to at least USD 3 trillion annually, while the **current average investment falls significantly short at USD 630 billion annually.** Bridging this financing gap is crucial if we ever hope to reach the Paris Agreement target of a 1.5 degree Celsius terrestrial warming. Consequently, the urgent priority lies in implementing **large-scale market-based solutions** that can effectively mobilise climate finance. These solutions must incentivise both public and private entities to transition towards sustainable, climate-friendly practices, fostering a transformative shift towards a low-carbon future.

Local Solutions, Global Impact:

Our Role in Climate Action

Through its 21-year journey, the BASE Foundation has intensified its commitment to developing, designing, adapting and rolling out projects that bear the potential to scale the adoption of cleaner and more sustainable solutions.

At BASE, we believe in the power of collaboration and innovation to drive climate action. **We actively co-create cutting-edge business models and financial mechanisms to overcome market barriers that hinder progress on climate change.** By harnessing the latest trends, such as servitisation and digitalisation, we strive to make renewable energies and climate-friendly technologies accessible to all, promoting adaptation and mitigation efforts. Our solutions are developed and tested in collaboration with local partners from various sectors to make them self-sustaining, scalable, and accessible to the most vulnerable.

Highlights 2022

In 2022, BASE drew upon a confluence of past experience, current trends, and future challenges to inform its actions.

- Harnessing the momentum and valuable insights gained from the successful Cooling-as-a-Service and Efficiency-as-a-Service initiatives, **BASE launched the global Servitisation for Energy Transition alliance to mainstream servitisation** as a step to move towards more sustainable energy.

- Meanwhile, BASE's pioneering **Energy Savings Insurance** model, which guarantees energy savings, has made significant strides in expanding its reach beyond Latin America, where it was first piloted. Through strategic partnerships and collaborations, BASE has been able to navigate various market landscapes and overcome barriers to implement this groundbreaking model in **Morocco, Mongolia, and many parts of Europe.**

- BASE tapped into the **transformative power of digitalisation** to facilitate adaptation in the agricultural sector with the **introduction of Your Virtual Cold Chain Assistant (VCCA).** This cutting-edge solution features a mobile application that has played a pivotal role in maximising the potential of 'as-a-service' cold rooms to combat postharvest food loss. Additionally, Your VCCA released interactive maps that help identify ideal cold storage locations with the most significant operational and impact potential in India and Nigeria.

- Responding to the need of the hour, BASE strengthened its efforts on providing essential guidance to financial institutions, aiding them in **transitioning towards Net-Zero banking, aligning their practices with sustainability goals, and adopting circular economy principles** through a taxonomy and categorisation tool.

- BASE has expanded its sphere of activity to encompass the emerging field of **integrated technologies.** With a focus on Africa, BASE is actively assessing the potential of intelligently combining cleaner energy systems such as renewables and storage. This strategic approach aims to accelerate the reduction of costs and emissions in the region, contributing to the transition to a more sustainable energy landscape.

- In a noteworthy achievement, BASE supported UN-Habitat in identifying and prioritising **infrastructure and services for assisting vulnerable populations in migrant neighbourhoods.** BASE placed particular emphasis on incorporating climate resilience, gender equity, and sustainable practices into the prioritisation process, followed by guidance on securing funding for the chosen infrastructure projects.

- As part of BASE's commitment to **engage youth and emerging leaders in climate action** and provide them with a platform to share their innovative ideas, we established global collaborations with students and universities. The joint research projects focused on crucial topics such as methane leakages in partnership with EPFL and the integration of gender considerations into climate finance projects with the Geneva Graduate Institute's Capstone Programme.

- As an organisation connecting governments, financial institutions, the private sector, and communities, **BASE plays a crucial role in creating and sharing knowledge** on effective methods to mobilise increased finance for climate action in various contexts. By fostering collaboration and knowledge exchange, BASE aims to identify and promote successful strategies, enabling the expansion of climate finance initiatives globally.

Night operations on the Pine Gulch Fire in Colorado.
Photo by Kyle Miller, Wyoming Hotshots, USFS

WHO WE ARE

VISIT BASE WEBSITE →

Our Mission

Established in 2001, BASE is a Swiss not-for-profit foundation and a Specialised Partner of the United Nations Environment Programme.

Our core mission centres on developing innovative and actionable financial strategies and market-driven solutions aimed at unlocking investments in climate change solutions. We operate globally, working across all markets and segments, including those that are typically considered challenging and underserved. Our expertise lies in addressing climate change through innovative and practical financial mechanisms.

Our vision

At BASE, we work towards building an environmentally conscious and resilient world, where sustainability becomes an inherent part of how businesses and markets operate. By facilitating the adoption of climate change solutions, we aspire to drive positive change and contribute to building a better future for our planet and future generations.

Our values

Integrity and commitment

Our work at BASE is powered by our passion and commitment on climate action for the common good. We deliver long-lasting impact through iterative innovation and continuous learning from feedback, and by building trustworthy relationships within the team and with our partners.

People-centric and Diversity

At BASE, open hearts and minds come together. We embrace diversity, recognising that it is key to fostering an inclusive and fun working environment where every individual feels valued, resilient, and empowered to contribute their unique perspectives and talents for our collective growth.

Co-creation

Our solutions are born from collective creativity. We nurture connections, exchange, and collaborations between different segments of society to improve our solutions and pass the learnings forward.

OUR PROJECTS

VISIT BASE WEBSITE →

ENERGY SAVINGS INSURANCE EUROPE 2.0

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Setting the Context

The Energy Savings Insurance (ESI) is an insurance-based model with potential to accelerate the shift to energy-efficient technologies by guaranteeing the energy savings such systems can deliver. The model was created after identifying the main barriers preventing Small and Medium Enterprises (SMEs) from adopting higher performing energy solutions, which include price sensitivity regarding a significant investment, and the lack of trust in the long-term gains associated with the saved energy. To de-risk energy efficiency investments and ensure long-term profitability, the ESI model was first developed and implemented in Latin America, and later rolled out in Europe and a few countries in Asia and North Africa.

The ESI Europe 2.0 project is supported by the European Union's Horizon 2020 funding and is currently being implemented in Croatia, Greece and Slovakia, where BASE is cooperating respectively with Društvo za oblikovanje održivog razvoja (DOOR), the Centre for Renewable Energy Sources (CRES), and the Slovak Innovation and Energy Agency (SIEA), (together referred to as the 'project consortium').

Since SMEs represent 99 percent of all companies in the European Union, ESI Europe 2.0 has been bringing the model to these three new countries, by adapting it to the market needs, identifying and engaging key actors, conducting capacity-building activities, marketing and promotion of the GoSafe with ESI brand, improving the ESI Europe toolkit, and the creation of the ESI Europe Alliance.

Review of 2022

2022 was dedicated to tailoring the ESI model and all its elements according to the market needs in Croatia, Greece and Slovakia. It started with having a market assessment conducted in all three countries, which identified the industries and technologies with the highest po-

PERIOD

2021-2024

COUNTRIES

Croatia, Greece and Slovakia

PARTNERS

Door, CRES, SIEA

FUNDER

European Commission

EXPECTED IMPACT WITHIN THE NEXT 2 YEARS

FINANCE MOBILISED:

EUR 12.5 million

ENERGY SAVINGS:

42,700 MWh

EMISSION REDUCTION:

19,000 tCO_2eq/y

NUMBER OF BENEFICIARIES:

185 SMEs

NUMBER OF PEOPLE AND ORGANISATIONS REACHED WITH TRAINING/CAPACITY-BUILDING ACTIVITIES:

420 Technology Providers and Financial Institutions in the three countries.

VISIT PROJECT PAGE

tential to adopt the GoSafe with ESI. When it comes to identified industries, the hotel sector was prominent in all three countries. In addition, the food processing industry was identified to have high potential in Croatia and Greece, and the manufacturing of motor vehicles was identified to be promising to adopt the ESI model in Slovakia. Regarding technologies, among the ones that were identified with the highest potential were led lighting, solar PV, solar water heaters, boilers, and HVAC systems. These results were further refined through a cost-benefit analysis of the selected technologies, where up to date economic and financial indicators were used to give a realistic estimation of the profitability of these investments as well as an overview of the full market potential. Due to the recent increases in energy prices all over the world, the profitability of investing in EE technologies was higher than first estimated. In parallel to the market scoping, the elements of the ESI model (standardised contract and validation procedures) were adapted to laws, regulations and languages of the three countries. A big effort of 2022 was dedicated to the first level stakeholder engagement where numerous technology providers, private banks and insurance companies were contacted and presented with the ESI model, in order to gain a first picture of how the model is perceived by the main stakeholders, and gain feedback from them. This effort was backed up by marketing and communication activities where the team updated the new **ESI Europe** and **GoSafe with ESI** websites, developed marketing materials, and a communication strategy.

Future of the project

The first half of the project (up to the end of 2022), was dedicated to having the ESI model elements ready for the Croatian, Greek and Slovak markets, and the main stakeholders informed and engaged in this region. 2023 and 2024 will be dedicated to build capacities of these stakeholders on how to best adopt GoSafe with ESI in their daily business, and profit from its potential. This will be done through a series of workshops targeting the main stakeholders throughout the three countries and through bilateral coaching with the frontrunners who are willing to try out the model in their next energy efficiency project. The ultimate goal is to have successful pilot investment projects in energy-efficient technologies that benefit from the ESI model, and let these successful cases help the overall market to adopt the model. This goal will be supported through continuous dissemination, communication and marketing activities. At the end of the project, the ESI Europe 2.0 toolkit will be ready for public use, and will include all the necessary tools for an easy uptake of the model by anyone.

Viola Buli and Pablo Osés from BASE during the consultation workshop introducing the ESI model to technology providers in Bratislava, Slovakia.

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BASE

ENERGY SAVINGS INSURANCE IN MONGOLIA

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Setting The Context

The implementation of the ESI programme in Mongolia is being carried out by **XacBank**, a commercial bank in Mongolia, in collaboration with BASE. In 2020, XacBank secured a grant of USD 296,300 from the Green Climate Fund (GCF) to tailor and develop the ESI model specifically for the Mongolian context. This initiative complements an existing credit line of USD 60 million, operated by XacBank and co-funded by GCF, known as the 'Micro, Small, and Medium Enterprises (MSME) Business Loan Programme for Greenhouse Gas (GHG) Emissions Reduction.' The primary objective of this credit line is to promote the adoption of energy-efficient and renewable energy solutions within the Mongolian MSME market. Since its establishment in 2017, the credit line has facilitated access to funding for more than 240 MSMEs. The ongoing development of the ESI programme is expected to reduce investment barriers and further contribute to the success of this initiative.

Originally, a twelve-month timeline was set for the development of the ESI programme elements using the GCF grant. However, the COVID-19 pandemic and its related restrictions caused several delays. Nonetheless, the development stage activities for the ESI programme in Mongolia have now concluded, and a pilot programme was initiated in February 2023.

Review of 2022

In 2022, significant efforts were directed towards the completion of various elements of the ESI model and its adaptation to the local context. In this regard, the selection of the validating entity and the management information system provider were successfully accomplished. In the case of Mongolia, both services are provided by the same company **Ureca**.

PERIOD

2016- currently

COUNTRIES

Mongolia

PARTNERS

Xacbank

FUNDERS

Xacbank, Green Climate Fund

EXPECTED IMPACT WITHIN THE NEXT 2 YEARS

FINANCE MOBILISED:

USD 36 million

ENERGY SAVINGS:

39 GWh

EMISSION REDUCTION:

234,206 tCO_2eq

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Additionally, BASE played a crucial role in assisting Tenger Insurance in developing the ESI policy in Mongolia. Working with regulators, Tenger Insurance identified a suitable product that aligns with the characteristics of the ESI model and obtained approval. This was particularly important due to certain local regulations in Mongolia that restrict the use of certain products, such as surety insurance, which are commonly utilised by the ESI model in other countries.

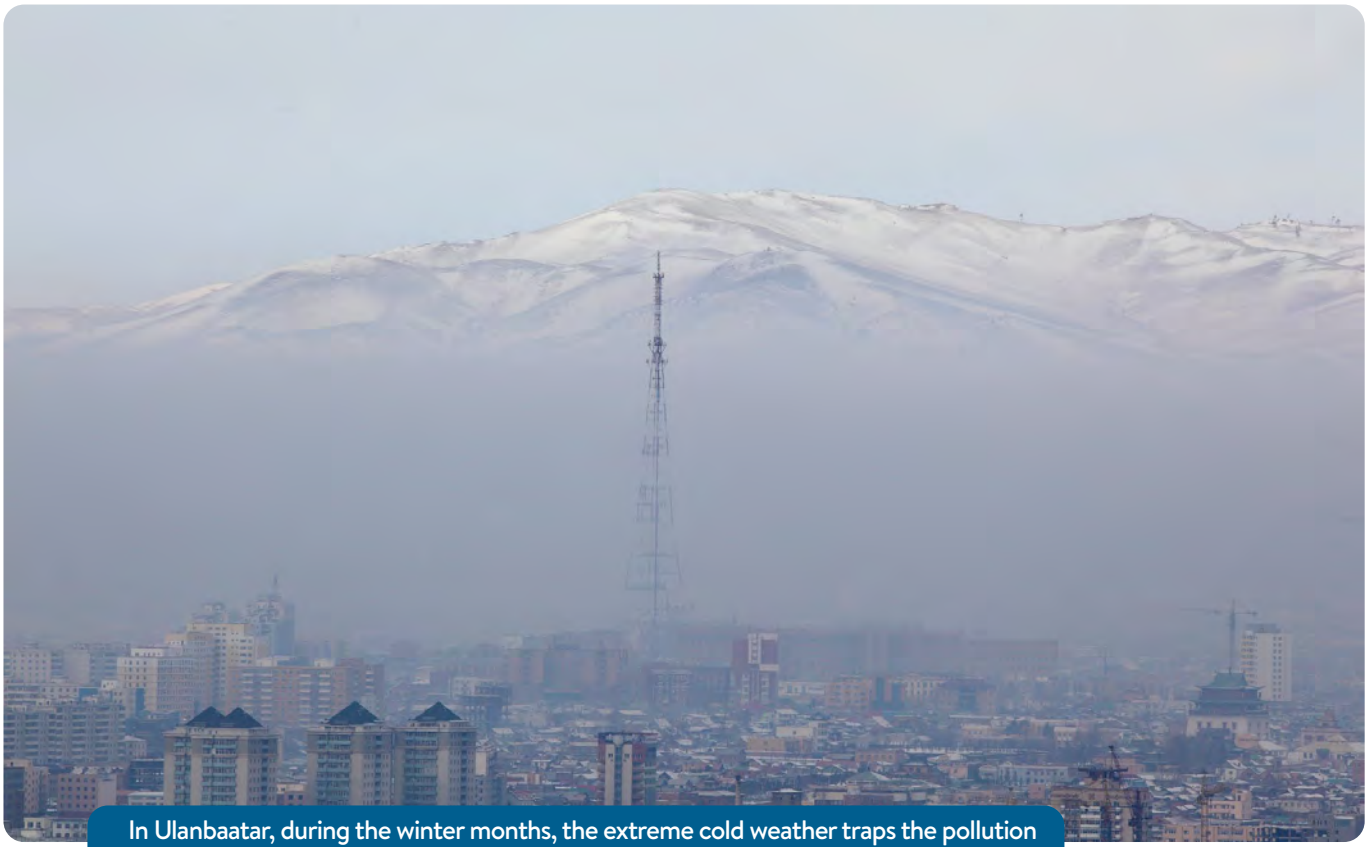
Another important focus of 2022 was identifying technology providers that could benefit from the ESI model. A comprehensive strategy was formulated to effectively engage these providers and establish mutually beneficial partnerships.

To summarise, the tasks undertaken in 2022 primarily revolved around finalising the development of the ESI model elements and tailoring them to the Mongolian context. These tasks included selecting service providers, collaborating with Tenger Insurance to navigate regulatory challenges, and identifying technology partners.

Future of the Project

The upcoming phases of the project will centre on developing a marketing strategy to effectively promote and create awareness about the model among potential users, including customers, relevant associations, and technology providers. To ensure active engagement and gather valuable insights, workshops and round table discussions will be organised to gather feedback from potential users of the ESI model.

The primary objective of these activities is to identify the initial pilot projects that will serve as test cases for the ESI model. By carefully assessing the model's performance and feasibility through these pilot projects, the aim is to gain valuable experience and insights that will facilitate its implementation on a larger scale.



In Ulanbaatar, during the winter months, the extreme cold weather traps the pollution at ground level due to the thermal inversion phenomenon.

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ENERGY SAVINGS INSURANCE IN MOROCCO

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Setting the Context

Morocco aims to achieve 25 to 30 percent energy savings by 2030 through increased private sector investment in energy efficiency (EE) across all sectors. Innovative financing schemes can create favourable conditions for private finance, stimulate demand, and reach new market segments. BASE is partnering with **Société d'Ingénierie Énergétique (SIE)** to expand the benefits of its Energy Savings Insurance (ESI) model to the Moroccan market, supported by funding from the Climate Emergency Collaboration Group.

Small and medium-sized enterprises (SMEs) are a vital part of the Moroccan economy, representing nearly 98 percent of all enterprises and employing almost 65 percent of the working population. Although individually, SMEs consume relatively modest amounts of energy, collectively, their energy consumption is quite significant – around 13 percent of total global, and at least one-third of total industrial energy demand, according to IEA estimates. Therefore, the potential to reduce their energy consumption is considerable, with the IEA estimating energy savings of up to 30 percent by implementing cost-effective measures.

However, barriers such as low investment priority, high-risk perceptions, and a lack of trust hinder SMEs from investing in EE. To encourage SMEs and generate bankable projects, improving the risk-return profile of EE initiatives is crucial.

PERIOD

February 2022 – June 2023

COUNTRIES

Morocco

PARTNERS

Société d'Ingénierie Énergétique

FUNDERS

Climate Emergency Collaboration Group (CECG)

ACHIEVED IMPACT

STAKEHOLDERS ENGAGED

33 financial institutions, insurance companies, validation entities and technology providers were engaged throughout the development phase.

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Review of 2022

The project worked closely with a competitively selected law firm and validation entity based in Morocco to develop the critical components of the ESI approach, namely the standard contract and the technical validation processes and templates, in alignment with the local context. In parallel, throughout 2022, the project tried to capitalise on SIE institutional role as Super ESCO to engage technology providers who supply EE solutions, the business and SME sector as the demand side for EE projects and financing, and banks, credit guarantee institutions, and insurance companies that help businesses access finance and mitigate risks. The project aimed at presenting a new market segment for existing market-based instruments, such as surety bonds tailored for the EE project's purpose specifically and green credit lines and loan products targeting energy efficiency projects to create a long-term business for the actors mentioned above.

Various resources were created tailored to the Moroccan market, such as a standardised contract, an insurance product, a validation mechanism and documents, a consolidated lists of financial institutions offering green financing products and potential clients and techology providers for pilot projects, guidance documents on MIS processes, and dissemination material.

Future of the Project

It is anticipated that SIE will continue engaging key stakeholders and eventually leverage partnerships to select a few relevant energy efficiency pilot projects to showcase the ESI approach's benefits in Morocco.

Thomas Fuhr and Aurélien Pillet from BASE meeting in Casablanca with Moroccan key stakeholders for the implementation of the ESI model.

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BASE

SUPPORTING BANKS TOWARDS NET-ZERO

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Setting the Context

The Net-Zero Banking Alliance (NZBA) was launched in April 2021, by founding signatory banks from around the world and convened by UNEP-FI. It is a flagship climate initiative under the Principles for Responsible Banking (PRB) to accelerate science-based climate target setting and develop common practice which is open to all banks globally, including banks that are not UNEP FI members and Principles for Responsible Banking signatories. The Alliance also executes coordinated advocacy and alignment as the banking element of the Glasgow Financial Alliance for Net-Zero recognising the vital role of banks in supporting the global transition of the real economy to net-zero emissions.

The year of 2022 was characterised by the launch of numerous guidelines, publications and reports related to the topic and marked as well as the arrival of the first milestone of NZBA founding signatories 18 months later: publishing their portfolio emission and setting reduction targets for prioritised sectors.

Many questions and uncertainties surfaced on how to fulfil NZBA commitments, especially with regard to banks and bank groups with operations in the developing world, where the policy context and climate action are not necessarily mainstreamed.

Review of 2022

Through the longstanding collaboration with both UNEP-FI and the Inter-American Development Bank (IDB), BASE was at the forefront of supporting banks in developing countries in their path towards Net-Zero in three different fronts:

i) At a higher level: Conducting consultations with different signatory banks that revealed that they require assistance and guidance to meet the requirements of the NZBA.

PERIOD

Ongoing

COUNTRIES

Global, Ecuador, Trinidad & Tobago

PARTNERS

Produbanco, RFHL

FUNDER

UNEP, UNEP-FI, IDB Invest

ROLE OF BASE

Produbanco, Republic Financial Holdings Limited, and other signatory banks engaged through interviews and workshops.

EXPECTED IMPACT

NUMBER OF BANKS INTERVIEWED TO SUPPORT THE CONCEPTUALISATION OF NZBF:

22 banks in Latin America, Europe, Africa and Asia

NUMBER OF BANKS REACHED THROUGH CAPACITY-BUILDING SESSION WITH UNEP-FI:

82 banks in Latin America and the Caribbean, Africa and Asia

NUMBER OF BANKS DIRECTLY SUPPORTED IN THEIR NET-ZERO TRANSITION PATH:

2 banks in Latin America and the Caribbean.

VISIT PROJECT PAGE →

ii) At the interface: Preparing training materials for climate target setting and transition plan for PRB signatory banks, delivered by UNEP-FI together with BASE for the regions of Latin America and the Caribbean, Africa and Asia.

iii) On the ground: Supporting individual banks on the ground for climate target setting and developing a strategy for transition in Ecuador and Trinidad and Tobago.

The Net-Zero Banking Facility (NZBF)

To validate and refine the architecture of the Net-Zero Banking Facility (NZBF), a comprehensive consultation was conducted with a diverse group of signatory banks. The primary objective was to understand their specific requirements in meeting their commitments within the NZBA and gather their valuable feedback on the proposed support offered by the Net-Zero Banking Facility.

During the consultation process, a total of 22 commercial signatory banks from Africa, Latin America, Asia, and Europe were interviewed. Among these banks, 6 were based in developed countries with subsidiaries in developing countries, while the remaining 16 were located in developing countries. Additionally, almost half of the banks interviewed were founding signatories of the alliance.

These interviews served as the basis for creating a concept note for the Facility, led by UNEP-FI and delivered through BASE, and fundraising activities have already commenced.

Capacity-building for PRB signatories

BASE was engaged by UNEP-FI as a global partner in the preparation of capacity-building sessions for banks who are signatory of the PRB and/or the NZBA on the topic of climate target setting. The workshops include staff members of signatory banks from developing countries in the regions of Latin America and the Caribbean (LAC), Middle-East, North Africa and Sub-Saharan Africa (MENA + SSA) and Asia.

The two rounds of workshops cover the topics of the Foundations of Climate Target Setting, which included the four steps of understanding the landscape, measuring and disclosing emissions, setting science-robust targets and developing a transition plan. The number of banks participating in the workshops reached 26 in the LAC, 17 in Africa and 39 in Asia, 82 banks in total.

The global banking system can have make decisive contribution in the transition to a more sustainable society.

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Technical Assistance on NZBA Commitment

BASE has been engaged by IDB Invest to provide technical assistance to Produbanco in Ecuador on their process of setting their NZBA emission reduction targets and transition strategy development. The technical assistance covered the support in the measurement of a baseline of GHG emissions according to PCAF and target setting according to NZBA guidelines, preparing a gap analysis for TCFD reporting, creating a short-term action plan and a mid to long-term strategic plan for Net-Zero implementation, and concluding with capacity-building and knowledge transfer to the Bank's staff members. BASE also delivered a webinar for all bank's staff in two sessions that reached about 400 people, bringing the topic of sustainability and climate change action closer to the bank's employees daily life.

BASE also supported the Republic Bank in Trinidad & Tobago in measuring their portfolio's emission, identifying key sectors and setting a target to meet with their NZBA commitment.

Future of the projects

BASE continues to be engaged in the transition of banks towards a Net-Zero path through individual support to banks, but moreover, the experience collected will support a strong positioning of BASE as the NZBF comes to life. Moving forward, fundraising efforts will continue for the Facility to become operational in the near future, as timing is key. The financial sector is increasingly recognising the urgency of addressing climate change and actively participating in finding sustainable solutions.

Greening urban areas is an important stake of climate adaptation and such projects can greatly benefit from bank financing.

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GREEN FINANCING STRATEGY FOR BANKS

Setting the Context

To accelerate the socially-just energy transition, and address the triple planetary crisis of climate change, biodiversity loss, and pollution, the banking sector is increasingly called to be the catalyst for unlocking private sector finance. Developing countries, including Small Island Developing States (SIDS) such as Trinidad and Tobago, will require up to one trillion USD annually to address these challenges. In the context of climate change mitigation and adaptation objectives, there is a recognition that the financial sector must increase green lending, as well as prepare for the impact of climate change.

BASE has been supporting financial institutions in Guatemala, Mexico and currently in Trinidad and Tobago to develop sustainable finance strategies and establish green lending lines. In Guatemala and Mexico, the focus has been the credit growth strategy towards the Small and Medium-sized Enterprises (SMEs) segment.

Review of 2022

Green Financial Products and Services for Solar PV and EE in Mexico–Mercader Financial 2021-2022

BASE has provided consultancy support to Mercader in Mexico by establishing a sustainability policy and designing a methodology to build a sustainable portfolio. BASE conducted a market assessment of business opportunities for the bank, analysed its current portfolio, proposed green financial products in solar PV and energy efficiency, and developed tools to support project and supplier eligibility criteria. The support included the development of the green taxonomy, guidance for the implementation of the products and capacity-building of the management and specific areas of the bank. The advisory incorporated the creation of a Social and Environmental Risk Management System (ESMS), in alignment with international best practices in sustainable finance.

PERIOD

2022-2023

COUNTRIES

Guatemala, Mexico, Trinidad and Tobago

PARTNERS

First Citizens Bank Trinidad and Tobago, Banco Industrial Guatemala, Mercader Mexico

FUNDER

IDB Invest

Green Credit Lines for SMEs in Guatemala IDB Invest. 2020-2022

BASE supported Banco Industrial Guatemala in three aspects of its climate change strategy: the elaboration of a Sustainability Policy, the development of green financial products and services, and the improvement of the financial strategy and internal processes for SMEs.

Regarding the sustainability policy, its objectives and goals were discussed with the bank and aligned with its existing social and environmental policy. Regarding its green financial products and services, a market assessment was developed to identify business opportunities for the bank and different business strategies, alliances and partnerships were proposed. The team also helped Banco Industrial to reinforce its financial products and services strategy focused on SMEs and supported the different areas of the bank to integrate processes and guidelines for the massification of credit for this segment, especially in green finance opportunities.

Developing green lending lines and a sustainable finance strategy for First Citizens Bank, in Trinidad and Tobago.

First Citizens Bank serves Trinidad and Tobago and the Eastern Caribbean. Starting in late 2022, the objective of this consultancy is to develop a sustainable finance strategy and roadmap and build capacity within the institution to implement this roadmap; to expand the green and blue finance portfolio and pioneer a tailor-made green financial product.

Future of the project

BASE is facilitating the creation of a sustainability framework, and the sustainability policy. Following the analysis of the Bank loans' portfolio and a market assessment, the next steps are the implementation of a green and blue loans portfolio categorisation and labelling methodology and tool, to create the baseline for green/blue finance growth. The designed mechanism uses existing international frameworks and standards whilst including the realities of First Citizens Bank. It is intended to facilitate the design and structuring of the Bank's green/blue products and sets the foundation to establish, grow and track a green/blue lending portfolio and prepare future thematic bond issuances.

Ultimately, the methodology will facilitate more informed decision making, improved portfolio management, anticipate regulatory compliance, impact tracking and reporting for stakeholders.

The consultancy includes the development of an Environmental and Social Risk Management System (ESMS).

Corporate Offices of First Citizen Banks in Port of Spain, Trinidad and Tobago. Credit: Antony Scully/Scully Photography

BASE

PROMOTING CIRCULAR ECONOMY FINANCING IN COLOMBIA AND BEYOND

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Setting the Context

Our current production and consumption patterns have placed an immense strain on the planet, leading to severe environmental and social consequences. The linear economy model, which treats resources as endless and follows a path of extraction, transformation, use, and disposal, is no longer sustainable. The world needs to shift to a new approach: the circular economy, to address the mounting challenges.

This resilient, decentralised, diverse, and inclusive model has the potential to tackle 45 percent of greenhouse gas emissions.However, realising the circular economy's potential requires active participation from the financial sector. It is a complex task to identify credible projects that embody circularity in their economic, social, and environmental impact. A common understanding of the circular economy and agreed-upon criteria are essential to secure funding for these initiatives.

Colombia has emerged as a trailblazer in promoting the circular economy in the Latin American and Caribbean regions. Their National Strategy on Circular Economy sets the stage for transformative change. Recognising the pivotal role of development and commercial banks in driving this transition, the Inter-American Development Bank (IDB) and IDB Invest have taken concrete action in collaboration with BASE to promote circular economy financing in Colombia. Their vision extends beyond national boundaries as they aim to inspire other countries in the region.

Review of 2022

In 2022, BASE embarked on the mission of developing a Circular Economy Categorisation System specifically tailored for the Colombian financial sector. This pioneering effort marked the first of its kind in Latin America. This system facilitates the identification of projects that actively contribute to the transition towards a circular economy—a transformative shift in our economic system.

PERIOD

2021- 2023

COUNTRIES

Colombia

PARTNERS

Asobancaria, 12 bank members of Asobancaria including Bancoldex, Banco de Bogotá and Bancolombia.

FUNDER

IDB and IDB Invest

ACHIEVED IMPACT

NUMBER OF BANKS REACHED AND WORKED WITH REGARDING CIRCULAR FINANCING:

3 (Bancolombia, Banco de Bogotá, Bancoldex)

PEER-REVIEWERS:

Validated by esteemed peer reviewers, including UNEP FI, the Ellen MacArthur Foundation, and the Association of Banks in Colombia (Asobancaria).

FINANCE MOBILISED

BASE's support to Bancolombia in aligning their existing circular economy taxonomy with the National CE Strategy and the CE Categorisation System helped mobilise USD 66 million in 2022 in CE lending to 55 projects.

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Aligned with the National Circular Economy Strategy (ENEC), the Categorisation System draws upon international experiences and best practices, ensuring its robustness and effectiveness. Unlike traditional approaches that focus solely on recycling activities, this system encompasses the entire value chain, allowing for the identification of opportunities at every stage. It reflects the shared vision of the Latin America and Caribbean (LAC) Circular Economy Coalition, uniting countries in their pursuit of sustainability. Moreover, its adaptable nature opens doors for its implementation in other nations, amplifying its impact across borders.

At the end of 2022, the **executive summary** of the circular economy analysis and methodological development behind the creation of the Categorisation System was published, marking a significant milestone in the project's journey. The Categorisation System enabled Bancolombia, the bank leading the way on circular economy in the colombian financial system, to validate and fine-tune its own taxonomy of circular initiatives, cementing its role as a pivotal actor in helping achieve the goals of the National Circular Economy Strategy (ENEC).Recognising the pivotal role of the banking sector in facilitating this shift, a comprehensive diagnosis of circular economy financing was conducted in Colombia and the wider region. With the support of IDB-Invest and Asobancaria, this analysis laid the groundwork for a transformative training programme designed specifically for banks.

Future of the project

Set to commence in January 2023, the training programme on circular economy for the financial sector will involve the participation of 12 Colombian banks, fostering a unified understanding of the circular economy within the context of sustainability. Participants will gain the knowledge and tools to identify projects contributing to the circular economy transition, measure their impact over time, and overcome existing barriers. They will also learn from the experiences of other institutions, both in Latin America and around the world, gathering insights that will shape their own strategies and progress.

In addition, the Categorisation System has captured members' attention in the LAC Circular Economy Coalition. Recognising its potential, we foresee the potential to adapt this system to other countries in the region in the near future.

This training programme is more than just a learning opportunity—it's a crucial step towards unlocking the potential of international financial institutions (IFIs) in the circular transition. During COP27, a high-level roadmap was launched, highlighting four key focus areas. First, aligning circularity with the objectives of the Paris Agreement to allow for the management of climate change risks. Second, enhancing assessment methods for circular economy investments. Third, building internal capacity within IFIs to embrace the circular economy. And finally, developing mechanisms to reduce investment risks and improve financing. The Categorisation System and the Capacity-Building Programme for banks directly address these focus areas. This validation confirms their relevance not only for the Colombian financial system but also for the entire Latin American and Caribbean region, as well as their global potential.

Shared-bikes are a common example of circular practices, here in Medellín, Colombia.
Credit: EnCicla Bicicletas Públicas

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BASE

YOUR VIRTUAL COLD CHAIN ASSISTANT

VISIT INDIA PAGE → VISIT NIGERIA PAGE →

Setting the Context

Climate change is affecting food supply worldwide. Due to the lack of integrated cold chains, between 25 and 40 percent of harvest is lost before reaching the market in our target countries, India and Nigeria. Without the option to store their crops and extend the sales season, farmers are forced to distress sell at low prices.

BASE and Empa launched Your Virtual Cold Chain Assistant (Your VCCA) in 2021 under Data.Org's Inclusive Growth and Recovery Challenge. Initially implemented in India, the project later expanded to Nigeria with support from GIZ. Your VCCA utilises the 'Cooling as a Service' (CaaS) model in the agricultural sector, partnering with cooling service providers to offer solar-powered, decentralised cold rooms to farmers on a pay-per-kg, per-day basis. This enables safe storage of produce and extends crop quality without high upfront costs.

Your VCCA revolutionises cold room management with Coldtivate, a first-of-its-kind mobile application. Coldtivate digitalises inventory management, utilises digital fruit twins to determine remaining storage life, and provides market price predictions. This valuable information empowers farmers to make decisions about when and where to sell their harvest, optimising their income potential.

Review of 2022

INDIA

The journey of designing Coldtivate began with baseline surveys to gauge the hurdles smallholder farmers and marginal traders face. The Your VCCA team worked with three cooling companies – CoolCrop (Himachal Pradesh), Koel Fresh (Odisha), and Oorja Development Solutions (Bihar) to interview 800+ farmers and traders. The data was disaggregated by gender, revealing that, on average, postharvest losses ranged from 14 percent (for male farmers) to 17 percent (for female farmers). One-third of the farmers shared that access to better-paying markets would help them secure higher prices for their

PERIOD

2021-2023

COUNTRIES

India, Nigeria

PARTNERS

EMPA

FUNDER

GIZ, Data.org, Rockefeller Foundation and Mastercard Center for Inclusive Growth

ACHIEVED IMPACT

FARMER'S INCOME GAIN (PERCENTAGE):

30 percent from the baseline

FOOD LOSS REDUCTION:

1,4450 tonnes of food waste is avoided annually across 17 cold rooms, which is 20 percent reduction in postharvest loss compared to the baseline.

NUMBER OF CRATES CHECKED-IN:

6063

NUMBER OF COOLING USERS ON THE APP:

363 (includes registered employees, cold room operators, and farmers), 30 percent of whom are women.

EMISSION REDUCTIONS:

328 tonnes indirect CO_2 emissions have been avoided annually through the use of solar power instead of diesel generators for the energy supply of cold rooms.

crops. However, high transportation costs and the lack of proper facilities prevented this.

Even though farmers that had previously used cold rooms reported loss reductions, there was a general lack of trust in cooling solutions because farmers preferred regularly checking on the produce. To address their concerns, Your VCCA's Coldtivate app featured 25+ fruit and vegetable digital twins that let farmers monitor their produce's remaining storage life in real-time. The app was made compatible with the Ecozen and UbiBot sensors to extract temperature data for accurate storage life predictions.

The **app's first version**, launched in August 2022, allowed cold room operators to digitally check-in and check-out crates and provided instructions on how to maintain multicommodity cold rooms. Under this version, operators were responsible for informing farmers of the remaining storage life of their crates. The app also offers fortnightly market price predictions for selected states and commodities in the Indian market, using machine-learning-based forecasts that were developed together with Mastercard's AI Garage. Alongside the app, Your VCCA worked on supporting cooling companies to identify the best locations to open cold rooms via an interactive web map based on parameters such as proximity to roads, farming households, electricity grids, among other factors.

In May 2022, the project team conducted a mission trip to India, where they had the opportunity to interact with and conduct training sessions for cooling companies, operators, and users. The training and awareness-raising efforts have since been continued by our partner cooling companies, reaching nearly 300 farmers across India. Steps were taken to make the training gender responsive through the active involvement of women self-help groups.

The Your VCCA team tests sensors to link to Coldtivate for storage life prediction.

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Over the last year, Your VCCA collaborated with several experts to shine light on how clean and affordable cooling can help build agricultural resilience against a warming climate. It published articles with the Observer Research Foundation and a three-part series with Gaon Connection, India's biggest rural media platform to create awareness about the country's fragmented cold chain industry and how a shift to decentralised cooling can serve postharvest management needs in rural areas.

NIGERIA

In 2022, Your VCCA expanded to Nigeria, partnering with ColdHubs to introduce the solution across 12 cold rooms. The first six months were marked by the collection of user needs via baseline surveys. The team's research that informed the app design was consolidated into a publication titled 'Bottlenecks in Nigeria's fresh food supply chain: What is the way forward?' in the Global Food Security journal. Based on primary and desk research, the project team developed a holistic gender strategy to make the cold rooms physically and culturally accessible to female farmers and conduct training that helps them leverage digital tools to commercialise their crops.

The cold room operator stacks crates for proper ventilation of crops at Oorja's cold room in Bihar, India.

The initial versions of the app were piloted in the Relief market and Obinze vegetable market in Imo State, Nigeria. Based on inputs from user testing via mock sessions, Coldtivate was tailored to Nigeria and publicly released in September 2022. The project team released an updated version of Coldtivate in December 2022. The main added functionalities were driven by user feedback, including the connection to the UbiBot sensors, revenue summary screens, and the option to manage user and room deletion. Additionally, the project team developed a free interactive multi-layered map of Nigeria showing locations ideal for cold storage rooms to be placed.

In February 2023, the Your VCCA team selected five cooling companies from India, Nigeria, Kenya, and the Philippines for an incubator programme to support them with using Coldtivate and structuring their CaaS business model via a mix of 12 group and individual sessions, which can now be accessed here.

The team developed a comic strip to raise awareness about cooling benefits among farmers. It applies a gender-sensitive lens, i.e., showcasing how female farmers can benefit from higher income using cold storage and Coldtivate. With simple captions, the comic strip discusses postharvest best practices, how to access cold rooms on a pay-per-use basis, and the features of the Coldtivate app.

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As Your VCCA is tested and piloted across regions, the project team has been collecting feedback from partners on potential improvements and extra features that could be integrated into the app to promote its uptake.

Future of the Project

For the coming year, Your VCCA will focus on supporting its partners with increasing the utilisation rates of their rooms and following up on pilots for impact evaluation. In India, Koel Fresh is set to roll out 50 cold rooms in Odisha that will use Coldtivate to benefit more than 1000 farmers. ColdHubs will expand the usage of Coldtivate to 10 additional cold rooms in the Northern and Southern parts of Nigeria. Farmer engagement material, from comic strips to videos, will support this process. Your VCCA is also creating a comprehensive pictorial guide for operators on how to run multicommodity rooms, a description of the CaaS model and its application in the agricultural sector, technical maintenance of the cold rooms, and a deep dive into Coldtivate's features.

Coldtivate includes an interface for farmers with a smartphone that enables them to directly monitor their crates, and uses SMS-based notification to communicate with farmers without smartphones. The app also features a Knowledge Hub, to inform cooling operators and farmers on how to optimise their postharvest handling practices. All learning material is being translated to local languages (currently available in English, Hindi, Odia, and Gujarati).

Your VCCA is working towards integrating an Impact Dashboard (for cooling companies and farmers) within Coldtivate, including environmental metrics tracking the GHG emission reduction from using solar energy to power the rooms and preventing food loss. BASE, together with four pro-bono data scientists, developed a monitoring and evaluation (M&E) system, which allows for data collection via in-app surveys and automated generation of reports to inform the dashboard creation. The Impact Dashboard can be used by cold storage providers to report on the impact of their business to obtain renewable energy certificates, providing them an additional revenue stream. Further, the dashboard aims to develop a Life Cycle Assessment (LCA) model integrated with the existing digital food twins to dynamically translate food loss reduction into the amount of CO_2-equivalent saved per crop type per room condition. These calculations could serve as a starting point for converting food rescued into carbon credits.

BASE

EFFICIENCY AS A SERVICE INITIATIVE

VISIT PROJECT PAGE →

Setting the context

The **Efficiency as a Service model (EaaS)** is an innovative business model based on the better-known 'pay-per-use' model, following which customers (Small and Medium Enterprises) increase their access to clean and energy-efficient solutions without the need for any upfront CAPEX investment but through the payment of the service or deliverable actually used (energy, cooling, heating, compressed air, lighting). This servitisation-based model is not new and is gaining popularity as it allows customers to access flexible products that match their fluctuating needs. Servitisation models involve innovative pricing schemes beyond merely renting or leasing products by bundling services with the product as a consumer-focused, integrated solution. For certain assets, customers are increasingly attracted by the prospect of paying to use rather than to own. This model is creating a transition from selling products to selling holistic services.

In 2022, the EaaS initiative entered its third year. Funded by the European Union's Horizon 2020 research and innovation programme, EaaS' project partners **AGORIA**, **InnoEnergy** and **ANESE**, together with BASE, continued to develop and deploy the servitisation model to accelerate the market adoption of energy-efficient solutions by SMEs in Belgium, the Netherlands and Spain respectively. EaaS builds on the learnings and tools developed by **Cooling as a Service (CaaS)**, going beyond cooling to cover all clean and efficient solutions and tailor the model to the European market. The model also aims to contribute to an accelerated post-COVID-19 recovery, providing value against energy price increases and synergising with the European Green Deal activities for a climate-neutral continent by 2050.

Review of 2022

In 2022, the team focused on sharing the tools developed in 2021 with relevant stakeholders involved in the Energy-as-a-Service (EaaS) model. This was achieved through webinars and capacity-building efforts, building on the interest generated during the first international

PERIOD

2020-2023

COUNTRIES

Belgium, Netherlands, Spain

PARTNERS

AGORIA, ANESE, Innoenergy SE

FUNDER

European Commission

EXPECTED IMPACT

FINANCE MOBILISED:

EUR 40 million

ENERGY SAVINGS:

27 gigawatt hours a year of primary energy.

EMISSION REDUCTION:

14,000 tCO_2eq/y

Achieved impacts on these KPIS will be monitored by companies and reported at the end of the funding period.

ACHIEVED IMPACT

CAPACITY-BUILDING REACH:

291 among technology and solution providers, 78 financial institutions, 71 potential clients of EaaS (including SMEs) and 162 from other sectors.

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EaaS virtual dialogue series in July 2021. Each partner country conducted more than 3 webinars targeting stakeholders and designed 2 internal webinars for 2023 to raise awareness within the financial sector for funding EaaS projects. Additionally, BASE participated in the Zurich Smart Services Summit in October 2022, presenting the project to a community of experts and working on a paper which will be published later in 2023 with Springer.

The team also engaged with industrial members and analysts from the Commercial Chamber of Ile de France region (CCI IdF) and industrial clusters to understand sector-specific needs and support adapting the EaaS model in the French market. Multiple Memoranda of Understanding (MoUs) were signed with key industrial partners to involve them in implementing the model.

Furthermore, to ensure sustainability, the project was embedded within the global Servitisation for Energy Transition (SET) Alliance, launched by BASE in May 2022 at the Spring Servitisation Conference in Florence. This initiative aims to institutionalise the work done within EaaS, Cooling as a Service, and other pay-per-use initiatives.

Future of the project

The project has been extended by the CINEA agency to allow for more interactions between service providers and pre-selected users, including financing institutions. The EaaS H2020 will close in November 2023. During this time, the BASE team will continue to connect the EaaS program with the global Servitisation for Energy Transition (SET) Alliance and work towards institutionalising the model. This includes preparing case studies for publication in 2023. Regarding dissemination, the consortium has expanded activities to raise awareness of the model beyond Belgium, the Netherlands, and Spain to other countries like France and Switzerland.

The EaaS steering committee meeting in at BASE offices in Basel.

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BASE

SERVITISATION FOR ENERGY TRANSITION ALLIANCE

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Setting the Context

To institutionalise the work completed by the CaaS Initiative (2018-2021), BASE together with a Steering Committee formed of key partners from the CaaS Alliance (in alphabetical order: Aston Business School, ATMOsphere, Energy Partners Refrigeration, KAER, The Advanced Services Group and The University of Oxford) launched the global Servitisation for Energy Transition (SET) Alliance in May 2022. The aim of the alliance is to support members in scaling up the adoption of the as-a-Service model across sectors, and accelerating the path to a climate-resilient future. The Alliance is designed as a self-sustaining initiative, with activities funded by annual membership fees.

Review of 2022

As acting Secretariat, BASE together with the Steering Committee formalised an initial 12-month work plan and strategy for the launch of the Alliance including the design of a website and marketing materials. Together with the Steering Committee, BASE defined the constitution of the Alliance and the role of its active members who must play an active role in the design, implementation or financing of sustainable clean and energy efficient solutions, projects or companies, and must have interest in, be involved, or be deploying the servitisation model. The SET Alliance focuses on solutions and projects linked to clean and energy efficient technologies across applications such as cooling, heating, lighting, solar PV and e-mobility. Membership is open to a range of entities such as technology providers, financiers, as well as customer associations. The Alliance also aims to secure strategic outreach partners for dissemination and collaboration.

An as-a-service cold room deployed by SokoFresh in Kenya.

PERIOD

Ongoing

COUNTRIES

Global

PARTNERS

Aston Business School, ATMOsphere, Energy Partners Refrigeration, Kaer, The Advanced Services Group, the University of Oxford

FUNDER

Member-funded

ACHIEVED IMPACT

FINANCE MOBILISED:

>USD 60 million

ENERGY SAVINGS:

>48.78 GWh

EMISSION REDUCTION:

>30,690 CO_2eq/y tonnes of carbon emission per year from energy efficiency improvements

TRAINING AND CAPACITY-BUILDING ACTIVITIES REACH:

>30 organisations

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Activities of the Alliance include raising awareness on the model through outreach, event attendance, webinars, case studies, and articles as well as developing specific tools and materials to support members and build capacity. The Alliance aims to update and build on the materials developed as part of the earlier CaaS Initiative, such as the pricing model and standardised contract.

Notable highlights include the first webinar featuring a panel of circular economy, financing for energy efficiency and servitisation experts, and participation in the Circular Building Coalition's workshop on Product-as-a-Service which brought together experts from the building industry to discuss potential solutions and opportunities for collaboration. The SET Alliance also participated and contributed to the Swiss Smart Services Summit focusing on advanced services (publication to be released in 2023), presenting the ongoing progress of the connected Efficiency as a Service project.

Future of the project

The Alliance will continue to monitor the development of the as-a-Service market, identifying new players, potential members and opportunities for collaboration. Planned activities include publishing regular case studies to showcase successful projects, articles on relevant topics, and a webinar series focusing on relevant topics such as digitalisation and financing. With the support of the Steering Committee, tools and materials are to be developed such as an updated version of the CaaS contract. BASE has secured a team of MBA students from Michigan Ross Business School to conduct a research project in early 2023 on the potential use of carbon credits for CaaS projects, and will also apply for funding from the Circular Building Coalition for a blueprint project surrounding product-as-a-Service and circular buildings. The consortium partners and network of the Efficiency as a Service project will be invited to join the SET Alliance when the project ends in 2023 to continue servitisation efforts in Spain, Belgium and the Netherlands.

The panel of the first webinar of the SET Alliance included speakers from different key sectors.

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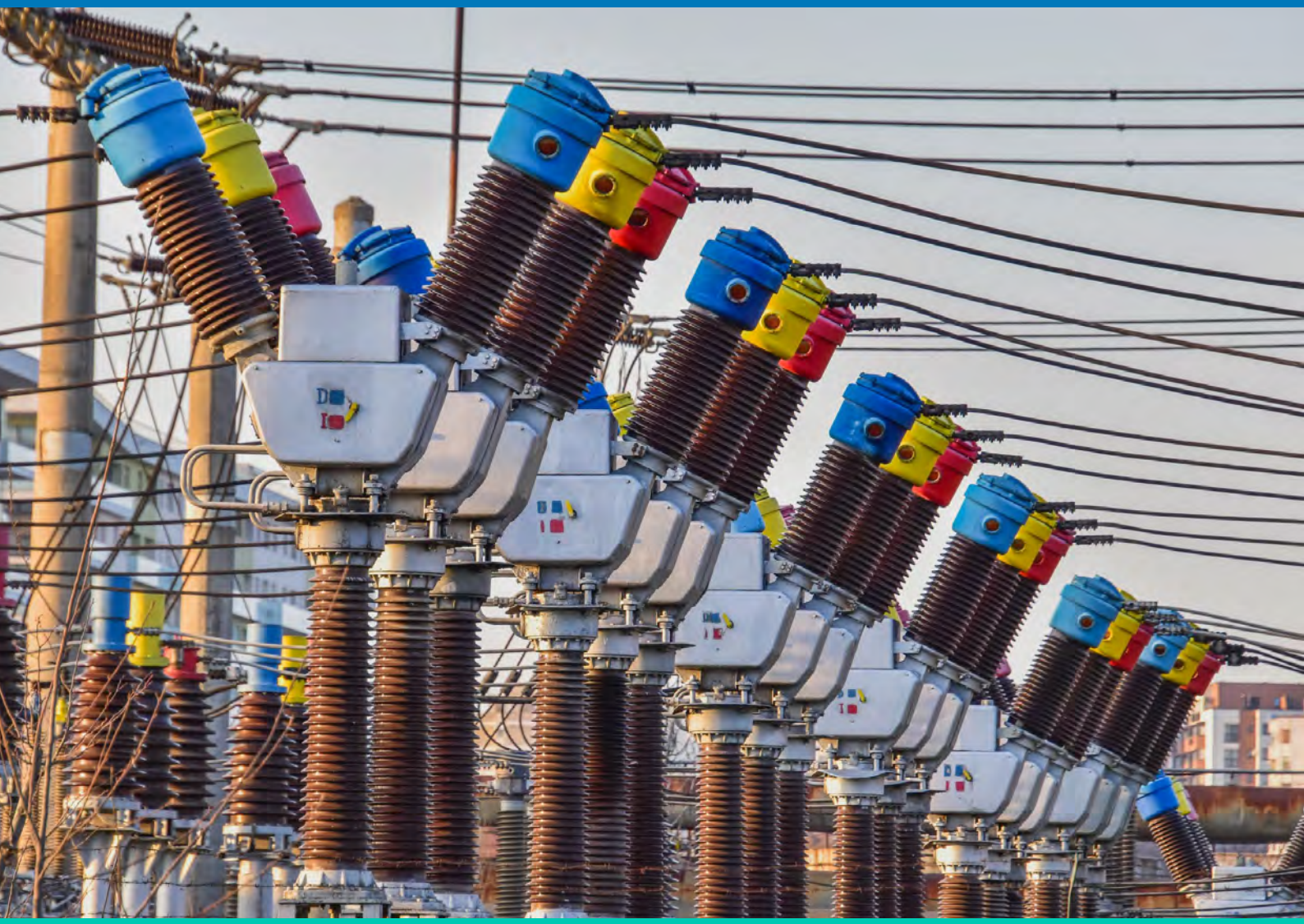
BASE

NATIONAL FRAMEWORKS FOR ENERGY-EFFICIENT APPLIANCES AND EQUIPMENT IN SOUTHERN AFRICA



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Setting the Context

Access to electricity is a critical element of countries' economic development in the Southern African region, with low access to grid electricity. With financial constraints, high dependency on electricity imports, and subsidised electricity tariffs, the need for higher efficiency equipment, including refrigerators and distribution transformers (DTs), is crucial as a means to reduce electricity losses and pressure on the grid of these economies in terms of capacity addition and electricity generation and lessen the burden on the governments' budgets hampering the countries' electrification potential. Projected energy savings for Malawi, Namibia, Zambia and Zimbabwe, when moving from the current state of technologies to MEPS, could generate significant energy savings by 2030 with a full market transformation for both refrigerators and DTs.

Review of 2022

BASE in partnership with Southern African Development Community (SADC) Centre for Renewable Energy and Energy Efficiency (SACREEE) and the International Copper Association (ICA) continued providing technical services until October 2022 for the implementation of GCF Readiness projects with Climate Technology Centre and Network (CTCN) through United Nations Environment Programme (UNEP) on national frameworks for leapfrogging to energy-efficient appliances and equipment in Malawi, Namibia, Zambia, and Zimbabwe through regulatory and financing mechanisms.

The project focused on enhancing knowledge, policies, and financing recommendations to unlock market potential for these energy-efficient solutions. Key country stakeholders were engaged through a participatory approach including policy working groups, technical committees, and public consultations, throughout the policy making process, ensuring alignment between government priorities and market views. As final project outcomes, national policy roadmaps were endorsed by respective key stakeholders from private and public sectors creating an enabling environment for the future development and implementation of policy and financing recommendations

PERIOD

2018 - 2022

COUNTRIES

Malawi, Namibia, Zambia, Zimbabwe

PARTNERS

SADC Centre for Renewable Energy and Energy Efficiency (SACREEE) and International Copper Association (ICA)

FUNDER

Green Climate Fund with Climate Technology Centre and Network (CTCN) through United Nations Environment Programme (UNEP)

EXPECTED IMPACT (ACROSS 5 TARGET COUNTRIES)

From residential refrigerators and distribution transformers:

ENERGY SAVINGS:

42,700 MWh

EMISSION REDUCTION:

1,097,500 tons of CO_2eq/y if Mandatory Minimum Energy Performance Standards are implemented in 2022.

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covering minimum energy performance standards (MEPS), labelling, monitoring, verification, and enforcement (MV&E), as well as financing mechanisms, and business models for both technologies.

In the short term, the technical assistance projects helped create an enabling policy and regulatory environment and improve the country programming process regarding refrigerators and distribution transformers and strengthen climate finance strategies. The activities which were coordinated with similar GCF Readiness projects in four additional Southern African countries (Botswana, Eswatini, Lesotho, and Tanzania) by UNEP's United for Efficiency (U4E) initiative also helped improve regional harmonisation.

Future of the Project

Key counterparts from the public sector, such as the Ministry of Energy, energy regulators, and standards bodies, are expected to utilise national policy roadmaps to plan and implement recommended actions and timelines. This will be achieved through additional technical assistance and capacity-building projects supported by multiple donors in the coming years. The ultimate goal is to establish and implement key policy and financing mechanisms.

In the mid to long term, these efforts have the potential to yield significant benefits. Governments can reduce strain on the electricity grid, expand their reach, and enhance disposable income for households through reduced electricity bills. Moreover, the planned increase in grid connections and electrification is anticipated to improve energy efficiency in various technologies, leading to lower energy consumption and reduced greenhouse gas emissions.

Domestic refrigeration appliances is a non-negligible factor of energy use in Africa, and needs are set to increase.

ACHIEVED IMPACT (ACROSS 5 TARGET COUNTRIES)

NUMBER OF BENEFICIARIES (LEGAL OR NATURAL ENTITIES):

734 participants in events organised comprising policy working groups meetings, technical committees, public consultation meetings and coordination meetings.

NUMBER OF PEOPLE AND ORGANISATIONS REACHED WITH TRAINING/CAPACITY-BUILDING ACTIVITIES:

638

VISIT PROJECT PAGE

BASE

INTEGRATION OF RENEWABLE ENERGY BUILDINGS IN INDIA

VISIT PROJECT PAGE →

Setting the Context

In addressing the urgent climate challenges and aligning with international climate discussions, this project addresses the obstacles impeding the widespread adoption of renewable energy (RE) technologies in India. These barriers include restricted availability of financing, absence of viable business models, and insufficient backing for favourable market conditions. To overcome these challenges, this project develops innovative financial strategies and business models, poised to propel the large-scale implementation of RE technologies across the nation.

Review of 2022

During 2022, the project made significant progress in identifying and analysing the barriers through multiple consultations with key stakeholders. These stakeholders included technology providers, development finance institutions (DFIs) like the World Bank and Asia Development Bank, local financial institutions (LFIs) such as Tata Financials and the State Bank of India, and other critical public stakeholders like Energy Efficiency Services Limited and building and construction customers.

The consultations before this period yielded invaluable insights, which were meticulously analysed. The BASE team diligently compiled and documented all interview notes, serving as a foundation for preparing a comprehensive final report that encapsulated the findings from these interviews and consultations.

The significant contributions made during this phase can be summarised as follows:

i) **Innovation in business models and financing strategies:** The project presented a diverse range of pioneering business models and financing strategies to effectively accelerate the deployment of renewable energy (RE) technologies across India.

PERIOD

2019 - 2022

COUNTRIES

India

PARTNERS

International Institute for Energy Conservation (IIEC)

FUNDER

Swiss Agency for Development and Cooperation (SDC) and IIEC

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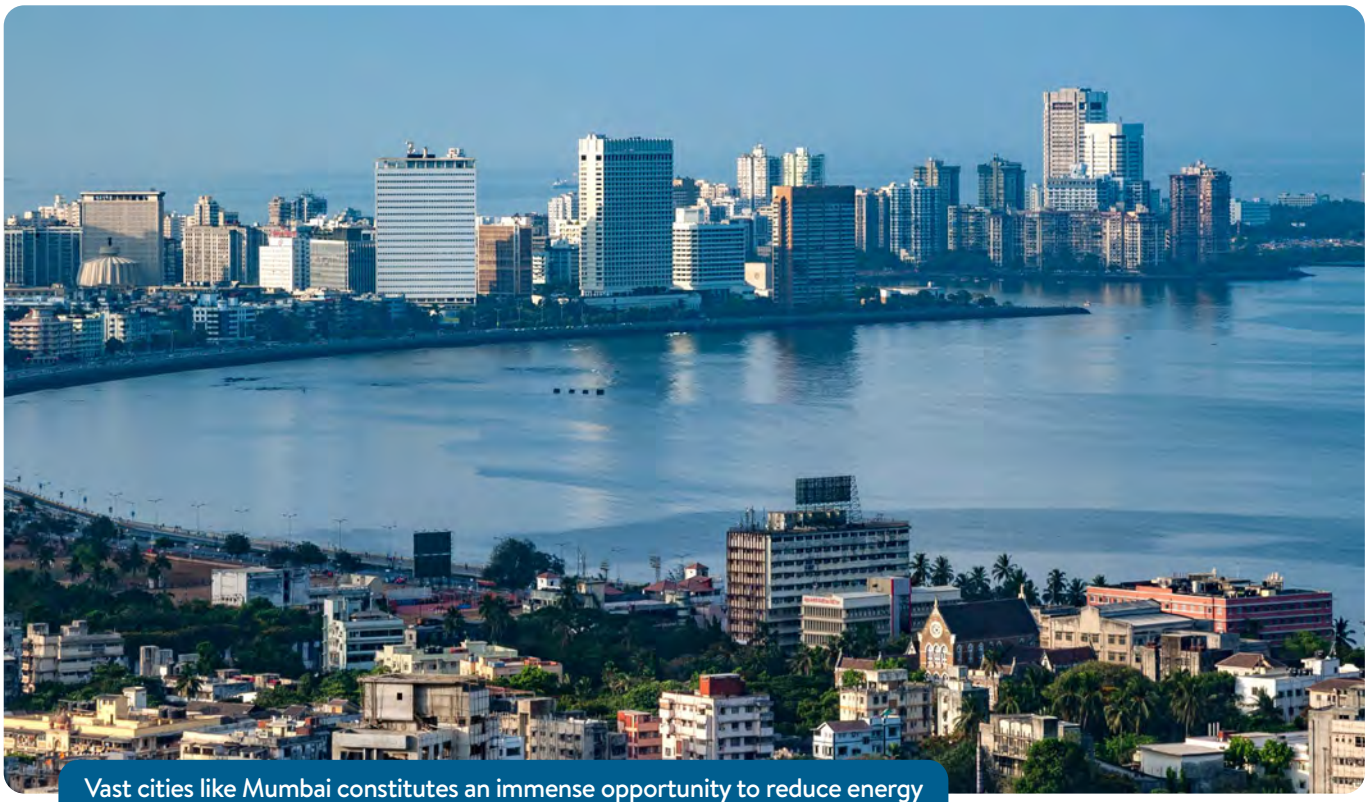
ii) **Identification of key stakeholders, resources, and time requirements:** The project successfully identified the critical stakeholders, essential resources, and time commitments necessary to successfully implement the proposed business models and financing strategies.

iii) **Comprehensive recommendations to the Sustainable Development Commission (SDC):** The project meticulously drafted comprehensive recommendations for the SDC, outlining their crucial role and the necessary support required to establish favourable market conditions conducive to implementing the proposed business models and financing strategies in India.

Moreover, a mission to India was conducted from September 13th to 16th, 2022, during which the BASE team actively participated in events organised by the International Institute for Energy Conservation (IIEC) and engaged in further project-related discussions. Throughout this mission, the BASE team held productive meetings with various stakeholders, including iRAS, PFS, PTC, and SIBDI. Building on the outcomes of these consultations, BASE explored the feasibility of providing additional assistance to SDC in developing a payment guarantee mechanism. The mission also entailed in-depth discussions on the intricacies of the payment guarantee mechanism and secondary market development activities, emphasising the potential advantages of such interventions. Consequently, BASE formally proposed the implementation of a recommended 'payment guarantee' mechanism.

Furthermore, the final report's content was refined, and a comprehensive guidelines report reached an advanced completion stage. The report encompassed informative figures illustrating the proposed business models and financial instruments, an analysis of national policies pertaining to RE technologies and buildings, and existing initiatives.



Vast cities like Mumbai constitutes an immense opportunity to reduce energy consumption and emissions by adopting renewables in buildings.

VISIT PROJECT PAGE →

Future of the project

When assessing the anticipated and realised impact, the recommendations presented in the final report hold great promise for significantly influencing the deployment of renewable energy (RE) technologies in India. Key recommendations include:

i) Strengthening capacity and enabling crucial stakeholders to provide financial support for RE technology solutions through Operational Expenditure (OPEX) contractual arrangements.

ii) **Establishing a specialised self-sustaining partial credit guarantee** that facilitates access to competitive financing for RE technology providers offering OPEX or leasing contracts.

iii) **Introducing an innovative financial risk mitigation mechanism** in the form of a partial payment guarantee, effectively mitigating payment default risks for customers engaging in OPEX contracts with providers.

iv) **Enhancing the capacity of banks** and internal processes to mainstream lending to RE technology projects and providers offering OPEX contracts.

v) **Cultivating market conditions conducive to developing a secondary market for RE technologies,** thus enabling lenders to consider RE assets as collateral.

To clearly communicate and elucidate these proposed mechanisms, the project prepared six concept notes covering the secondary market, payment guarantee, OPEX, bank engagement, and credit guarantee.

In conclusion, over the past year, the project has made substantial progress in identifying the problem, structuring the project to address the challenges, and making significant contributions towards achieving the project's objectives. The proposed business models, financing strategies, and recommendations outlined in the final report can drive the widespread adoption of RE technologies in India, making a meaningful impact in the fight against climate change.

VISIT PROJECT PAGE →

BASE

SOLAR FOR HEALTH PROGRAMME IN SUB-SAHARAN AFRICA

VISIT PROJECT PAGE →

Setting the Context

In 2021, BASE, in partnership with the **SADC Centre for Renewable Energy and Energy Efficiency (SACREEE)**, was contracted to support the United Nations Development Programme (UNDP) in developing a Green Climate Fund (GCF) Funding Proposal package for the **Solar for Health Programme**. This initiative aims to equip up to 2,000 rural and urban public healthcare facilities (HCFs) in Malawi, Namibia, Zambia, Zimbabwe, and Liberia with performance-based renewable energy services and complimentary climate adaptation measures. The project proposal is designed to address the climate change challenges faced by the health sector in Sub-Saharan Africa, incorporating insights from pilot projects and aligning with the specific needs of each country. The programme leverages the expertise and collaboration of UNDP, the World Health Organization (WHO), Sustainable Energy for All (SEforALL), and local governments for effective implementation.

The health sector, like many others, is deeply interconnected with the climate crisis. Climate change poses significant threats to public health, exacerbating existing health challenges and increasing the vulnerability of communities. Without operational and informed healthcare facilities, people are left to cope with the adverse effects of climate change on their own. Lack of access to electricity or climate and disease information can hinder the capacity to respond effectively to health risks, leaving individuals and communities more susceptible to harm. Operational and climate-informed health facilities are vital for protecting public health and reducing the burden on communities affected by climate change.

By integrating climate change adaptation and renewable energy solutions, the Solar for Health Programme serves as a comprehensive intervention, simultaneously addressing climate mitigation and adaptation needs in public health centres. The Energy as a Service business model has been tailored to suit the requirements of healthcare facilities and energy service providers, ensuring continuous, affordable and clean energy supply. At the same time the programme will strengthen existing health surveillance and information systems

PERIOD

2021 - 2023

COUNTRIES

Liberia, Malawi, Namibia, Zambia, and Zimbabwe

PARTNERS

SADC Centre for Renewable Energy and Energy Efficiency (SACREEE)

FUNDER

United Nations Development Programme (UNDP)

EXPECTED IMPACT

FINANCE MOBILISED:

USD 250 million for the provision of low-carbon and climate informed health services

EMISSION REDUCTION:

Up to 680,000 tons of CO_2eq emissions over the programme's lifetime in the selected countries.

NUMBER OF HEALTHCARE FACILITIES (HCFS) BENEFITING FROM CLEAN, RELIABLE AND AFFORDABLE ENERGY PROVISION:

Up to 2,000

NUMBER OF HCFS EQUIPPED WITH CONNECTED INFORMATION SYSTEMS:

12 per country

NUMBER OF NEW JOBS CREATED:

Over 1,000 including employment opportunities for the installation of PV systems, energy services, and local support teams at HCFs.

VISIT PROJECT PAGE →

to enhance the adaptive capacity of health services, enabling better understanding and prediction of the impacts of climate change on diseases and disease outbreaks to create conditions for preventive early actions to safeguard public health.

Review of 2022

Throughout 2022, significant milestones were achieved within the Solar for Health Programme:

i) **Programme Design and Structuring:** BASE provided technical assistance to UNDP in designing the programme, integrating activities across energy, health, and climate change to address healthcare facility access gaps and climate change impacts on health. BASE also tailored the Energy as a Service model to public healthcare facilities, considering country-specific needs and implementing financial and non-financial risk mitigation mechanisms to facilitate private sector participation. These activities lay the foundation for potential collaborations during the programme implementation phase.

ii) **Funding Proposal Development:** BASE and SACREEE collaborated closely with UNDP, WHO, SEforALL, the governments of Malawi, Zambia, Zimbabwe, Namibia, and Liberia, as well as local private sector representatives to develop the full GCF funding proposal package. Key documents, such as the feasibility study, market assessment, and comprehensive financial and economic analysis, were prepared to support the proposal.

iii) **In-Country Validation Missions:** BASE conducted in-country missions to the five target countries, accompanied by UNDP Country Offices, to validate the funding proposal with relevant stakeholders. Discussions were held with ministries, banks, and technology providers to refine the programme targets, co-financing contributions, and the Energy as a Service business model.

Future of the Project

Validation workshops are currently being conducted in each of the target countries to finalise and confirm the funding proposal package before its submission to the GCF. BASE will guide the validation workshops, with local leadership provided by SACREEE. Once validated by key national stakeholders, the funding proposal will undergo the due diligence process at the GCF. BASE will offer technical support during this evaluation period. Upon approval by the GCF Board, the programme implementation is expected to commence toward the end of 2023.

The BASE team meeting with UNDP Namibia and SACREEE in Windhoek.

VISIT PROJECT PAGE

BASE

SMART FINANCING TO SCALE UP RENEWABLE ENERGY AND E-MOBILITY IN AFRICA

VISIT PROJECT PAGE →

Setting the Context

The project aims to overcome the barriers and challenges faced by the nascent ESCO market in the region through the development of integrated clean technologies and business models to promote renewable energy and e-mobility in Africa. These barriers include the lack of financing mechanisms, limited one-stop-shop services, and the need for supportive policies and regulations. Our goal is to foster a sustainable and resilient energy ecosystem in Africa through the adoption of clean energy and e-mobility solutions.

Moreover, BASE and **Integrate to Zero (I2Z)** research, which examines ESCOs in six African countries, identifies promising business opportunities in digitalization, e-mobility sharing, renewable energy, and green initiatives. Developing renewable energy and electric charging infrastructure can further enhance these opportunities, driving economic growth, job creation, and sustainable development in the region.

Review of 2022

Throughout 2022, the project followed a structured approach that allowed for comprehensive data collection, cost-benefit analysis, and extensive desk research. The initial stage involved conducting interviews to gather information on various factors such as pricing, market trends, and feasibility. These interviews provided valuable insights and enabled us to define examples that demonstrate the business benefits of different approaches.

A significant portion of our efforts was dedicated to examining the CO impact of different business models. This involved a thorough examination of environmental factors and a regulatory review across six countries. Internal advisory channels were actively engaged in discussions to ensure that all aspects of the project were thoroughly evaluated and considered.

PERIOD

2022 - 2023

COUNTRIES

Rwanda, South Africa, Kenya, Morocco, Ghana, Nigeria

PARTNERS

Integrate to Zero (I2Z)

FUNDERS

Climate Emergency Collaboration Group (CECG)

ACHIEVED IMPACT

OUTREACH

Access: 1775 times have the audience accessed the content.

Exposure: 5,150 people have been exposed to the report through various mediums.

VISIT PROJECT PAGE →

Based on the results of the consultations, the BASE team finalised the final report and a restricted memo. The key contributions made during this phase include:

i) **Identifying insights and key barriers in the ESCO market:** The project identified three main insights and key barriers and challenges faced by the ESCO market in Africa, shedding light on the specific areas that need attention and improvement.

ii) **Proposing business models and financing strategies:** The project put forth a range of business models and financing strategies that have the potential to scale up the adoption of integrated clean technologies in the region, addressing the identified barriers and challenges.

iii) **Drafting recommendations to donors:** Comprehensive recommendations were drafted, outlining the role and support required from donors to enable the implementation of the proposed business models and financing strategies in Africa's ESCO market.

Additionally, two significant presentations took place during this period. Firstly, a presentation was made at COP27, specifically in a panel discussion titled 'Smart Financing For Renewables and E-mobility in Africa.' The presentation provided an opportunity to share the initial findings of the project and engage in fruitful discussions with experts and stakeholders, gaining a clearer understanding of the ESCO market and the barriers and challenges faced.

Secondly, a presentation was made at an advisory panel, where the report results were presented, and feedback was received. This engagement helped refine the content of the final report, ensuring its accuracy and relevance.

Future of the Project

The expected impact of the project lies in unlocking the potential of consumer-driven integrated clean energy systems and promoting renewable energy and e-mobility in Africa. The proposed business models, financing strategies, and recommendations outlined in the final report have the potential to drive significant change in the ESCO market and the broader clean energy sector in the region.

By addressing the identified barriers and challenges, such as the lack of innovative financing mechanisms and limited one-stop-shop services, the project aims to create an enabling environment for the growth of integrated clean energy solutions. This, in turn, can lead to reduced CO_2 emissions, improved energy access, increased energy efficiency, and enhanced sustainability in Africa.

The final insight report, with its proposed business models, financial instruments, and analysis of regulatory and national policies related to cleantech and e-mobility, serves as a comprehensive guide for stakeholders, governments, banks/financiers, suppliers, and philanthropy to take specific actions in support of the integrated clean energy market.

In summary, the project has made significant contributions in understanding the ESCO market in Africa, proposing viable business models and financing strategies, and providing recommendations to stakeholders. The expected impact of our work includes promoting clean energy solutions, reducing CO_2 emissions, and driving sustainable development in the region.

E-mobility can be up with aproper ESCO ecosystem. Ampersand, in Rwanda, leverages servitisation and battery swapping system.

VISIT PROJECT PAGE →

ELECTRIC REFUSE TRUCKS IN THE DOMINICAN REPUBLIC

Setting the Context

Managing municipal solid waste is a crucial concern for government authorities, given the environmental and health risks associated with improper waste management. Implementing Integrated Solid Waste Management has proven complex in many Latin American and Caribbean countries, often due to limited resources, changing consumption patterns, population growth, and public education challenges.

Municipal solid waste storage, collection, and disposal pose significant challenges for local authorities in densely populated areas like Greater Santo Domingo in the Dominican Republic. To address this issue, the Inter-American Development Bank (IDB) is actively supporting the national government through its "Integrated Solid Urban Waste Management Program." The IDB provides funding and technical assistance to reduce municipal solid waste disposal in open-air landfills and promote properly designed and operated landfills in urban and tourist centres. The program also focuses on increasing waste recovery and valorization efforts.

With the IDB's support, the program aims to gradually close the Duquesa landfill (the main open dump in Santo Domingo) and introduce improved techniques and technologies for solid waste collection.

Review of 2022

As part of the landfill closure project, the Inter-American Development Bank (IDB) engaged BASE to conduct a comprehensive feasibility analysis on the best use of the biogas that will be captured due to the landfill's closure. The analysis explores two potential avenues: utilising biogas as fuel for refuse trucks or generating electricity to power a fleet of waste collection vehicles.

The feasibility analysis encompasses various aspects, including a market study and evaluation of enabling conditions for these technologies. Driving cycle modelling is conducted to determine

PERIOD

2022 - 2023

COUNTRIES

Dominican Republic

FUNDERS

Inter-American Development Bank

EXPECTED IMPACT

120 TRUCKS POWERED BY THE CAPTURED BIOGAS OVER 12 YEARS.

EMISSION REDUCTION:

100,000 tCO_2eq

NUMBER OF BENEFICIARIES:

185 SMEs

FINANCE MOBILISED:

USD 40 million of required investment which includes the power plant, electrical infrastructure and trucks.

energy consumption, while technical and financial feasibility assessments are performed. Ultimately, the analysis culminates in proposing a bankable business model and financing mechanism.

The BASE team travelled to Santo Domingo in 2022 to gather essential insights, engaging with key stakeholders such as municipal authorities, service operators, manufacturers, and energy companies. This collaborative approach ensures the inclusion of diverse perspectives and expertise in shaping the recommendations for the biogas utilisation project.

Future of the Project

In 2023, an upcoming working mission is anticipated to present the findings of the analyses and provide training to the relevant authorities. The analysis tasks scheduled for this year include:

i) **Comparative evaluation:** Assess the performance of refuse trucks utilising diesel, electric, and biogas technology on the proposed routes to select the most suitable truck typology.

ii) **Energy consumption profiling:** Calculate the energy consumption profile of the electric and biogas truck fleet based on GPS-captured route information.

iii) **Infrastructure requirements:** Define the necessary infrastructure for implementing a fleet of electric and biogas solid waste transport trucks, considering evaluating current energy and transport policies.

iv) **Total Cost of Ownership (TCO) calculation:** Determine the Total Cost of Ownership for the selected technology and charging systems, considering factors such as procurement, operational costs, and maintenance.

v) **Financial and economic evaluation:** Conduct a comprehensive financial and economic assessment of the potential implementation, highlighting cost disparities compared to current diesel technology. Propose a technical tariff based on the cost basket analysis.

vi) **Bankable business model and financing mechanisms:** Develop a viable and bankable business model along with suitable financing mechanisms to support the implementation of the recommended technology.

vii) **Technical specifications and tendering documents:** Define the necessary technical specifications and prepare tendering documents for the recommended technology, ensuring compliance with project requirements.

These analyses will form the foundation for informed decision-making and the subsequent steps towards successful implementation.

The landfill of Duquesa, on the outskirts of Santo Domingo, Dominica Republic, is set to close.

BASE

REMITRESILIENCE IN THE PACIFIC

VISIT PROJECT PAGE →

Setting the Context

The Pacific region is highly vulnerable to the effects of climate change. Pacific Island Countries (PICs) are already facing severe climate-related disasters like tropical cyclones, rising sea levels causing storm surges, and droughts, which severely hinder development. These extreme events disproportionately affect the most vulnerable groups, including impoverished households, women, and children, leading to physical damage and social-economic devastation. Investing in sustainable and resilient housing solutions can help these vulnerable groups cope with and recover from the consequences of climate change. However, a major challenge is the lack of adequate financial resources and access to them for vulnerable households.

A solution was identified in remittances, which play a crucial and increasing role as a source of financial inflows into PICs. In fact, remittances often exceed three times the amount of official development assistance and, in some cases, two to three times more than foreign direct investment. For instance, in Fiji, remittances make up 7.8 percent of the GDP (equivalent to USD 355 million), and 39 percent (equivalent to USD 190 million) in Tonga, the highest proportion in the world. More than ten years ago, BASE for the first time leveraged money transfers from the Haitian diaspora working in the United States to finance tens of thousands clean energy products, including lanterns, and mini solar home systems. The model was replicated for Bolivia and Central Asia. Building on this experience, BASE in partnership with Oxfam started in 2021 to investigate the possibility of implementing such a model to fund resilience in small island nations.

Review of 2022

The RemitResilience project aimed to implement a market-based, locally-relevant, and self-sustaining finance mechanism that allowed migrant workers from Pacific Island Countries (specifically Fiji, Tonga, and Vanuatu) living and working abroad (in Australia or New

PERIOD

2021 - 2022

COUNTRIES

Fiji, Tonga and Vanuatu

PARTNERS

Oxfam in the Pacific

FUNDERS

Convergence Blended Finance Inc.

EXPECTED IMPACT

FINANCE MOBILISED:

USD 1.6 M

NUMBER OF BENEFICIARIES:

760 households and 3,707 people (1 per-cent of the potential market)

RESILIENT PRODUCTS SOLD:

685 water tanks and 75 prefabricated houses will be sold within one year of the finance vehicle implementation.

VISIT PROJECT PAGE →

Zealand) to direct a portion of their remittance payments towards investments in sustainable and climate resilient infrastructure for their families and communities back home.

Remittances have the potential to contribute to development goals, but their full potential is often not realised. High fees for sending money overseas result in a significant loss of remittance funds. Furthermore, recipients tend to prioritise short-term cost savings over long-term investments, posing a barrier to sustainable and climate resilient household solutions with higher upfront costs but greater long-term benefits.

Water tanks were highlighted as some of the most needed resilient products by local resident during the consultations.

Over the year 2022 BASE conducted a feasibility study, funded by Convergence Blended Finance, to design a finance mechanism suitable for the cultural and market context of the Pacific Islands. The study involved engaging with various stakeholders, including remittance service providers, technology providers, financial institutions, and civil society organisations. Quantitative and qualitative data were collected through focus group discussions, household interviews, surveys, and consultations with remittance receivers and senders in Fiji, Tonga, Vanuatu, Australia, and New Zealand.

Key findings include the severe impact of climate change on housing and infrastructure in the studied countries, the preference for resilient housing and water supply solutions, and the importance of remittances in supporting recovery and development. The RemitResilience finance vehicle was very well received by both communities in the Pacific and migrant communities in Australia and New Zealand. Communities are keen to receive sustainable and climate resilient infrastructure solutions as part of their remittances. This could help them cope with natural disasters to live more sustainably. Diaspora and migrants are also willing to send some of these products to support their families.

Future of the project

Given the positive outcomes of the feasibility study and the strong support from communities and stakeholders, the next step would be to launch the finance vehicle as soon as the necessary funding to roll out the model is secured. The development and implementation phase is expected to take around two years. This timeline includes approximately one year for vehicle development, training, marketing material preparation, and model launch, followed by another year of ongoing support by the consortium to facilitate pipeline development and ensure smooth operation of the model.

VISIT PROJECT PAGE →

BASE

URBAN PLANNING AND SUSTAINABLE INFRASTRUCTURE IN MIGRATION CONTEXTS

VISIT PROJECT PAGE →

Setting the Context

By May 2022, over 100 million people were forcibly displaced—a record high reflecting a worsening trend in the 2020s, **as reported by the UN Refugee Agency.** Climate-related extreme weather events resulted in twice as many displacements as violent conflicts. Displaced populations seek refuge in densely populated, ecologically fragile areas facing climate and development challenges. Climate change drives displacement and hampers voluntary return.

Refugees and IDPs spend an average of 17 years in low-income neighbourhoods, necessitating sustained support. However, the temporary nature of most settlements poses challenges for long-term infrastructure investments. To address the threat of climate change on resources and livelihoods, investments must meet adaptation needs and prioritise climate-resilient assets.

To address the gaps in provision of essential services and infrastructure in migrant neighbourhoods, **UN-Habitat (UN-H)**, with funding from the **Swiss State Secretariat for Economic Affairs (SECO)**, launched the three-year 'Urban Planning and Infrastructure in Migration Context' (UPIMC) programme in 2021. As part of SECO's 'Swiss Accompanying Measures (SAM)' mechanism, BASE was entrusted to support the UPIMC's three country teams in the initial phase. The main objectives were twofold: to ensure the integration of urban planning with finance and to address cross-cutting issues related to climate and gender.

Review of 2022

BASE joined the project at a point when UN Habitat offices, responsible for project operations in Jordan (Aman and Irbid), Egypt (New Damietta City), and Cameroon (Douala), had finished data collection and stakeholder consultations. Using this information, they were tasked with prioritising infrastructure projects to mobilise investments.

PERIOD

2022 – 2023

COUNTRIES

Cameroon, Egypt, Jordan,

PARTNERS

UN Habitat, SECO

FUNDER

SECO

EXPECTED IMPACT

NUMBER OF BENEFICIARIES:

- 5 neighbourhoods in 4 cities addressing a population of 558, 000 and 17 prioritised infrastructure projects are in Phase 1.

- 12,100 internally displaced persons were reached through multi-stakeholder consultation.

VISIT PROJECT PAGE

BASE's inputs and coordination across the three country teams helped establish a standardised matrix for project prioritisation, while allowing for contextualisation through specific parameters such as well-being, safety, and employment rates within each impact criterion. The project team advised country offices on integrating climate adaptation and mitigation, life cycle assessment for sustainable infrastructure, and gender considerations into the project prioritisation process. This ensured that the true impact potential of new infrastructure was showcased and in case of fundraising estimates that climate-related costs will be factored into.

BASE provided the UPIMC team with introductory material, offering insights into investment strategies impacting financiers' decisions across project phases. The goal was to facilitate discussions on attracting financing and determine the optimal moment to incorporate financiers' perspective. Finance experts were onboarded by each country office to collect information on municipal financing, including past investments, available funds, and projects requiring external financing. BASE reviewed the data to align across countries in subsequent project iterations. To pitch the prioritised projects to donors and investors, BASE identified key points and guided presentation structuring.

Future of the project

For Phase 2, BASE recommends mobilising investments for some prioritised projects from Phase 1, serving as a roadmap for financing other identified infrastructure projects by combining government and community perspectives. This approach maintains project momentum by exploring blueprints for business models to finance the infrastructure projects and keeps the communities and authorities engaged. BASE's insights on climate adaptation, sustainable infrastructure, gender-mainstreaming, and integration of financier's perspective will be included in UPIMC's upcoming methodology and normative document.

The UPIMC met at UN Habitat's headquarters in Nairobi, Kenya, to review the project and share learnings.

VISIT PROJECT PAGE

KNOWLEDGE SHARING

VISIT BASE WEBSITE →

Setting the context

BASE assumes multiple roles to foster an enabling environment for mobilising climate finance. Our responsibilities include conducting market assessments and feasibility studies, engaging stakeholders and facilitating connections between them, designing and implementing initiatives, as well as localising and replicating successful models.

The first two steps, market assessment and stakeholder engagement, form the foundation of knowledge creation. They involve identifying market barriers that impede climate actions, understanding the needs and motivations of stakeholders, and developing a business model that aligns with national and regional climate commitments. Field and secondary research play a crucial role in deepening BASE's understanding of its focus areas, enabling the crafting of effective business and financial models. Meanwhile, the implementation and replication phases are centered around sharing knowledge and adapting business models to suit the local context.

Since our climate solutions are developed and tested in collaboration with local partners from diverse backgrounds to make them self-sustaining, scalable, and accessible to the most vulnerable, we find ourselves in environments conducive to sharing and cross-pollinating ideas and thoughts, information, and tacit knowledge.

Over the years, BASE has channelled its learnings from different projects across regional and sectoral settings into publishing a wide range of knowledge resources, from papers and articles to video essays and capacity-building initiatives to support adaptation and mitigation globally. Therefore, our vast canvas of knowledge material is informed by and informs various stakeholders, from financial institutions and governments to technology providers and project practitioners.

This section showcases our knowledge creation and dissemination endeavors throughout 2022-2023, encompassing both project-related activities and additional initiatives. BASE's knowledge products can be accessed on our website's Resources page.

University collaborations

1. In March 2022, BASE was invited by the United Nations Institute for Training and Research (UNITAR) and the University of Geneva to take part in the fourth edition of the Geneva Trialogue. This edition of the Geneva Trialogue brought together 140 participants from international organisations, academia, and the private sector, fostering dynamic dialogue centered on the theme of **Open Innovation for Education**.

Under the Your Virtual Cold Chain Assistant project, BASE led a roundtable on **Good Practices for Building the Capacities of Farmers and their Service Providers**. Despite the project's many benefits, it continues to face one critical challenge – **the digital literacy gap in rural areas**. BASE's roundtable sought to address this problem through discussions on the main barriers to increasing the uptake of digital tools in rural areas, the digital gender gap, and how to design inclusive training material on digital technologies. To benefit from diverse perspectives on the topic, the roundtable featured local cold room providers (Koel Fresh Private Limited, Oorja Development Solutions, and ColdHubs), academia (Wageningen University, University of Geneva), and practitioners from international organisations (Instructional Design Specialists from UNITAR).

The insights gathered during the roundtable were subsequently shared at the Open Geneva Festival and utilised in developing the Your VCCA farmers' and operators' capacity-building toolkit. The capacity-building material developed as a result of these efforts will be utilised to train approximately 350 farmers in India and an additional 150 farmers in Nigeria in 2022-2023.

Following the roundtable, BASE extended the question of enhancing accessibility to digital tools to students and researchers at the Open Geneva Festival from 17 to 27 March 2022. Professors teaching the Innovation and Philanthropy course at the University of Geneva integrated the challenge into their curriculum for a student team. With BASE's guidance and support over the next six months, the students developed a toolkit emphasising economic, social, and environmental principles for development organisations implementing outreach campaigns for digital services in marginalised communities.

2. From April to December 2022, BASE collaborated with a student research team from the Geneva Graduate Institute of International and Development Studies. **The objective was to create an actionable, step-by-step guide for practitioners to mainstream gender in their climate finance projects.** To gather insights for the toolkit, the team conducted interviews with BASE experts, exploring various stages of mobilising climate finance, including design, testing, implementation, monitoring, evaluation, and replication. Additionally, they engaged with gender experts from organizations such as the Green Climate Fund, World Bank, UN World Food Programme, and International Institute for Sustainable Development to identify opportunities for gender mainstreaming in climate projects. In order to raise awareness about innovative business models that facilitate investment in gender-inclusive climate solutions, the team transformed three interviews with BASE experts into 15-minute podcasts. The podcast, published under the title 'The Big Shift: The Climate Finance (R)evolution' cover topics such as remittances for building climate resilience, on-wage and on-bill green lending solutions, and sustainable financing in the agricultural sector. The final versions of the podcasts are currently available on Spotify.

In the past year, BASE has increasingly worked towards integrating gender considerations and strategies into its projects. The toolkit serves as a one-stop destination for analysing the current level of gender mainstreaming in the project, identifying gaps, setting intentions, and selecting indicators. It also provides a list of resources for practitioners to refer to in their journey of creating comprehensive gender action plans in consultation with local communities. Once publicly released in 2023, the toolkit will be sent to development organisations to test its effectiveness.

COP27 knowledge material

1. Every year, experts from BASE take part in the Conference of Parties (COP) to interact with development organisations, government agencies, civil society organisations, and youth groups that are driving forward climate action. Equally, it offers us the opportunity to take the stage and share our learnings on trends and use-cases in the field of climate financing with hundreds of attendees, learn from their experiences, and discover synergies to enhance the effectiveness of climate action delivery. As part of these efforts, BASE authored articles focusing on the technical aspects of solutions related to the key themes being discussed at COP27 in Sharm El-Sheikh. These themes encompassed Nature-based Solutions, Green Buildings, E-Mobility, and Banking for Net-Zero. These articles were reshared by platforms such as Illuminem, a leading source of sustainability and energy information.

2. A fifth article focusing on financial models to promote energy efficiency was published by the Energy Efficiency magazine as part of their COP27 special issue. This article highlighted lessons learned from BASE projects in Africa, including technical assistance provided to Southern African governments, successful on-bill and on-wage financing mechanisms in Ghana and Senegal, and the launch of the Energy Savings Insurance model in Morocco.

COP27 presentations

1. BASE partnered with Integrate to Zero (I2Z) to organise a talk on **Smart Financing to Scale-Up Renewable Energy and E-Mobility through Customer-Driven Business Models in Africa**. The discussion was based on a research briefing co-developed by BASE and I2Z that identified available ESCO business models and financial instruments for adopting sustainable energy solutions in Africa. The event featured experts from organisations such as the Climate Policy Initiative (CPI) and the Climate Emergency Collaboration Group, discussing the role of business models, financing mechanisms, and philanthropic funding in supporting African businesses to transition to sustainable energy and e-mobility solutions.

Aurélien Pillet (BASE), Vivek Sen (CPI), and Rachid Ennassiri (I2Z) at the event hosted by the NDC Partnership pavillion.

The talk was hosted at the NDC Partnership Pavilion, jointly administered by the World Resources Institute and the United Nations Framework Convention on Climate Change.

2. In collaboration with the Ministry of Natural Resources and Environment of Vietnam and the Cool Coalition, BASE co-organised an event titled **Sustainable Cooling: A Multipurpose Tool to Deliver on Net-Zero, Adaptation, Food & Energy Security.** The event aimed to address the challenge of improving access to cooling solutions, given the global risks faced by over a billion people and the impact on food loss and farmer revenue.

Participants included experts from UNEP FI, Ministries of Environment of Vietnam and Cambodia, the Clean Cooling Collaborative, UNOPS, Cool Up Programme, and IRENA. BASE's Deputy Director, Carla Della Maggiora, highlighted innovative business models and financing mechanisms for clean cooling technologies. Discussions emphasised the need to incorporate cooling in NDCs, and other organisations showcased their clean cooling solutions.

Carla Della Maggiora at COP27, explaining servitisation and its potential to further deploy sustainable cooling solutions.

Webinars

BASE has been utilising webinars as a powerful tool to enhance public knowledge of climate finance across different sectors, from agriculture to energy efficiency and renewable energies. By leveraging webinars, BASE has effectively overcome geographical limitations and reached a broader audience interested in understanding its projects and actively participating in climate finance discussions.These webinars provide convenient and interactive platforms, enabling participants to engage through live chat and Q&A sessions.

Through various webinar formats, including presentations, case studies, and expert panels, BASE has successfully demystified the intricacies of climate finance while presenting practical insights and solutions from its projects. By recording and sharing these webinars for on-demand viewing, BASE ensures that knowledge and understanding of climate finance can be disseminated to a broader audience, including those unable to attend the live sessions. Through its webinar initiatives, BASE has facilitated public engagement, raised awareness, and made information on climate finance more accessible to all.

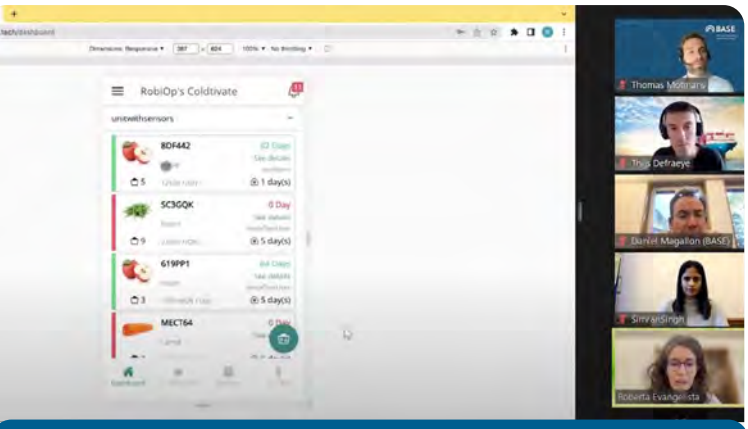
1. **Leveraging digitalisation and servitisation to reduce postharvest loss in Latin America and the Carribean:**

The LAC region is home to 15 million smallholder and family farmers, who grow a substantial share of the world's food. At the same time, it accounts for one-fifth of all the food lost globally from post-harvest up to, but excluding, the retail stage. Strengthening the cold chain logistics in the region can help provide quality and safe products for consumers, extend access to decent work, and improve the incomes of farmers, especially women.

To address this issue, BASE collaborated with the Inter-American Institute for Cooperation on Agriculture (IICA) in October 2022 to disseminate best practices for improving cold chain logistics. The webinar included guidance on setting up decentralised cold rooms on a pay-per-use basis, adopting digital cold room management systems, and promoting effective post-harvest handling practices.

During the webinar, the Your VCCA team walked the attendees through how to use its data-science based app, Coldtivate, to manage the check-in and check-out of crates, set appropriate temperatures for different commodities, and monitor cold room occupancy rates. Thijs Defraeye, head of the Simulating Biological Systems Group at Empa, joined the webinar to discuss

how the app used a digital twin, a virtual representation created through computer simulations, to calculate the shelf life of stored crops in real-time.BASE's experts also emphasised the importance of involving the local community in the solution to enhance resilience and promote gender equality. On-the-ground insights on the benefits of the Your VCCA solution, the challenges to implementing it and how to overcome them were added to the webinar by Clementine Chambon, Co-founder of Oorja Solutions, the company piloting Your VCCA in Bihar, India.



Walkthrough of the check-in and check-out process in Your VCCA's Coldtivate app.

2. **Cleantech in Africa:** The Swiss Leading House for Africa, supported by the University of Basel (UNIBAS) and the Swiss State Secretariat for Education, Research and Innovation (SERI), assists Swiss start-ups through the AIT Cleantech program. This program aims to facilitate the deployment of Swiss cleantech solutions in Africa.

To generate more interest and applications for the program, an event titled **Cleantech - The next opportunity for impact in Africa** was organised on 25 November 2022, focusing on business models and success stories of Swiss innovation in cleantech. During this event, BASE was presented the following business models and financial mechanisms:

- ESI: To highlight the potential of the model to accelerate the uptake of clean energy solutions, the kicked-off implementation in Morocco, and its high replicability.
- Your Virtual Cold Chain Assistant: To to explain how servitisation can be also leveraged for climate adaptation projects and paired with technologies such as cold rooms to successfully improve food security.
- ECOFRIDGES: To explain what are on-bill and on-wage financing systems and highlight the successes they are currently encountering in West Africa (Ghana and Senegal) to make efficient domestic refrigerators and air conditioning systems more affordable and accessible to salaried workers.
- SET Alliance: To describe this new project and explain why it has the potential to expand the adoption of the servitisation business model by supporting companies willing to implement it.

VISIT BASE WEBSITE

LEGACY REVISITED

VISIT BASE WEBSITE →

Reflecting on Success:

A Review of BASE's Past Projects

Upscaling renewable energy in the Maldives *(2018)*

Back in 2018, BASE provided technical assistance to support the Government of Maldives develop a Green Climate Fund programme design with the aim to deliver a long-term transition to renewable energies. Fast forward to 2022 and thanks to a World Bank programme, large-scale clean energy projects are now being implemented in the country, using a three-tier risk mitigation structure amd aiming to create over 50 megawatts (MW) of solar capacity.

Visit project page | World Bank Article

Ecofridges Initiative in West Africa

(2018-2021)

In 2022, the follow-up on the ECOFRIDGES consisted in creating the projects impact video documenting the success of the on-wage model in Ghana as well as pursuing the monitoring and evaluation process, keeping track of the impact figures of the programme, including the quantity of appliances sold, the amount of finance mobilised, and projected energy savings and emission reduction resulting from the adoption of this more efficient equipment. The video describes the model and recounts its journey in the country, gathering several interviews with partner vendors, government officials, and testimonies from beneficiaries. As a mini-documentary, its purpose was to showcase first-hand stories behind the impact numbers, exposing the real-life difficulties ECOFRIDGES GO has helped Ghanians overcome and sharing the concrete advantages of shifting to energy-efficient cooling appliances.

As of April 2023, ECOFRIDGES GO is proud to have achieved:

>3,003 new certified refrigerators and ACs sold.

>GHS 15.8 million / USD 1.4 million of finance unlocked.

2018

>25,849 MWh of total energy savings, via reduced residential electricity demand (equipment lifetime).

>21,497 tonnes of total CO_2 Emissions saved during the equipment's lifetime (equipment lifetime).

Watch the video | Visit project page

Cooling-as-a-Service *(2018-2021)*

In 2022, Cooling-as-a-Service continued to grow in the hands of the initiative's partners and committed adopters of the model. As highlights, projects leveraging CaaS included: - The Clover dairy factory in Durban, South Africa, which replaced its refrigeration system with a totally new and efficient one, outperforming expectations by resulting in a 40 percent improvement in efficiency.

2020

- The Sokofresh cold rooms, which deployed 9 solar powered units in rural and off-grid areas of India, significantly reducing post-harvest food loss and resulting in a 40 percent increase in income for local smallholder farmers.

- Torre Optima II, an office skyscraper in Mexico City, which shifted to high performance chillers and consequently obtained the LEED Gold Level certification.

The total cooling capacity created through those CaaS projects amount to 6044 tons of refrigeration (TR).

Visit CaaS website

R-Cool GO in Rwanda *(2018-2021)*

In 2021, BASE and its partners launched RCOOL GO, a innovative on-wage financing mechanism that incentivise households and micro-entrepreneurs to take part in a dedicated take-back scheme, encouraging the trade of end-of-life cooling equipment for certified higher-efficiency cooling appliances in partnership with interested vendors and an e-waste management company.

300 highly efficient fridges have been sold so far under the programme.

Visit project page

2021

VISIT PROJECT PAGE →

PARTNERSHIPS

VISIT BASE WEBSITE →

Testimonials:

Oorja Development Solutions
Project Partner:
Your Virtual Cold Chain Assistant

"Our partnership with BASE has been exceptionally valuable as their support has strengthened the viability of our CaaS offering to smallholder farmers. Coldtivate, the app developed under the Your Virtual Cold Chain Assistant project, not only provides real-time guidance to end-users on how to optimise storage but has also allowed our operators to maintain digital inventory and start transitioning from keeping manual records. Throughout our collaboration, they have sought feedback from us to continually improve the app. This collective effort is having a multiplier effect in amplifying the impact on farmer incomes, food security and climate change."

Clementine Chambon and Amit Saraogi, Founders

Koel Fresh
Project Partner:
Your Virtual Cold Chain Assistant

"Our partnership with BASE is a testament to Koel Fresh's commitment to driving innovation in agriculture. Supported by the BASE and Empa's Your VCCA, we leverage the Coldtivate app to optimize inventory management, revolutionize post-harvest practices, and unlock valuable market intelligence. This collaboration empowers us to deliver cutting-edge Cooling-as-a-Service solutions that transform the industry."

Asutosh Nayak, CEO

University of Michigan
Project Partners: Efficiency as a Service, and Servitisation for Energy Transition Alliance

"Working with BASE was an amazing opportunity for a team of MBA students at Michigan Ross to integrate their coursework and experiences on a project that had a real impact. We are grateful to the BASE team not only for their partnership but for providing such a robust learning experience for our students on the topic of carbon credits and its synergies with the as-a-service business model."

Chris Tarnacki, Managing Director at University of Michigan - Ross School of Business

Produbanco
Project Partners:
Supporting Banks towards Net-Zero

"BASE's method to develop of strategy was extremely productive and enriching. It gave us the opportunity to get a solid, executable result and deliver the right messages both internally and externally. The webinars by BASE, for Produbanco employees, were very positive. The participation of close to 400 people demonstrates the empowerment and motivation that our team has towards the commitment we have made as an institution and towards the preservation of the planet.

I am convinced that this collaborative and educational approach has strengthened our understanding of the importance of achieving net zero emissions and how we can actively contribute to it. We are proud to be part of this partnership and look forward to continuing to work hand in hand with BASE to achieve our goals."

Marcelo Delgado A., Crédito y Cobranzas

Testimonials:

Advanced Services Group: Project Partners: Efficiency as a Service, and Servitisation for Energy Transition Alliance

"I've had the pleasure of working with the BASE team since 2020 and our shared interests in sustainability, net zero and the adoption of innovative business models has led to joint webinars, supporting their EaaS EU-project advisory board and, more recently, being invited to be one of the founding partners of the Servitization Energy Transition (SET) Alliance.

Their passion for sustainability is second to none and it is a pleasure to be associated with, and part of, the BASE Group's activities."

Iain McKechnie, Director of Strategic Partnerships

Integrate to Zero: Project Partners: Smart Financing to Scale Up Renewable Energy and E-Mobility in Africa

"BASE continue to be at the cutting edge of designing and delivering business and financial models to scale clean energy.

ESCOs in Africa, energy saving insurance, battery swaps and PV franchises are just some of the innovative and important solutions their excellent team is bringing to the world. Keep up the impact!"

Dan Hamza-Goodacre, Founder

BASE's team during their 2022 retreat, Switzerland.

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OUTLOOK 2023

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In 2023, BASE will continue to hone the competencies it acquired in 2022 to further its exploration of various facets of climate finance. Initially focused on sustainable energy, BASE has expanded its work to encompass adaptation strategies, resilience-building, circular economy practices, urban planning interventions, and digitalisation, with finance mobilisation as its core focus. This expanded mandate reflects BASE's response to the evolving needs of people and the planet, allowing the organisation to address them more comprehensively and effectively.

1. Scaling up and implementing climate adaptation projects: BASE will continue supporting climate adaptation by driving financing into projects on climate-resilient agriculture, infrastructure development in migrant neighbourhoods, climate-proofing housing in coastal communities, and making early warning systems accessible to the most vulnerable populations. While climate mitigation projects typically report on established indicators —the balance of greenhouse gas emissions and removals—adaptation projects require a more locally-informed and project-specific monitoring and evaluation design. BASE is strengthening its adaptation-related M&E efforts by documenting best practices derived from practical experiences in the field. Further, it is working on mainstreaming gender in its projects through gender analyses and gender action plans.

2. Assisting banks towards Net Zero and Paris-aligned financing: BASE will continue its work in developing tools and strategies to support financial institutions to align their lending and investments to Net Zero targets and decarbonize their portfolio and operations. BASE work implies strong collaboration with key stakeholders such as UNEP FI, DFIs, NDBs and sectoral associations. In the same vein, BASE envisions continuing supporting banks and financing entities with the development and implementation of sustainable thematic financing strategies such as green and blue lending portfolios, and circular economy financing. We are actively exploring opportunities to incentivise the protection and sustainable management of natural areas and implement nature-based solutions. Moreover, we are diligently exploring an extensive array of financing opportunities available for banks in the field of adaptation, while also uncovering their specific requirements pertaining to the Task Force on Climate-related Financial Disclosures.

3. Pioneer and test new business models: In addition to adapting its existing business models like ESI, on-bill and on-wage financing, and servitisation to different contexts, BASE has been conducting research on similarly designing other models with applications across different countries and sectors. One such effort is to test how philanthropic funding can help to support the expansion of integrated renewable energy solutions in Africa. Integrated sustainable energy solutions can be tailored to the specific needs and resources of a particular location or community. Combining different technologies and approaches makes it possible to create an economically competitive, efficient and environmentally friendly system. Philanthropic funding can help de-risk investments in climate solutions and mobilise private investments for deploying technologies that leapfrog carbon-intensive energy systems in Africa.

4. Supporting the development of innovative financing strategies: BASE will persist in its pursuit of innovative financing mechanisms and strategies that can help change market behaviour and decision-making patterns towards more sustainable and climate change-oriented solutions and facilitate resource mobilisation. We are actively analysing and exploring various approaches, including tokenisation of environmental and social impacts, carbon finance and risk mitigation instruments such as sustainable credit guarantees and payment guarantees.

As we move into 2023, we face the significant challenges ahead with enthusiasm and great optimism. We are acutely aware of the immense opportunities before us, which drives our commitment to expand our work in all facets of sustainable and climate finance, along with pioneering business models. We firmly believe that our work has never been more crucial.

The opportunity to collaborate with exceptional entities fills us with great satisfaction, and we look forward to forging new and fruitful partnerships that can accelerate our path towards an even more sustainable and resilient future.

THANK YOU!

BASE

Photo: Dave Lawrence / World Bank