

Singapore

Study Trip

District Cooling and Passive Cooling
Study Tour and Workshops

Participant information pack

7-12 May 2023

Organised by:



GOBIERNO DE COLOMBIA



Supported by:



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1. Overview & Objectives of the Singapore Study Trip

United Nations Environment Programme (UNEP), under the framework of the Cool Coalition, with partners has organised a week-long study tour and workshop series on district cooling and passive cooling in Singapore. The visit brings together key stakeholders from multiple countries working on district cooling and passive cooling, and includes:

- Technical visits to three high-class and diverse district cooling projects across Singapore and three passively cooled buildings.
- Dedicated workshops on national and local policy development, led by UNEP and Singapore's Urban Redevelopment Authority (URA), Energy Market Authority (EMA), Building and Construction Authority (BCA) and partners with opportunities for presentations and exchanges by each country on their current and planned policy frameworks.
- Dedicated workshops on technology, business models and financing for district cooling and passive cooling, led by UNEP, IFC as well as local industry experts including Singapore Power, Engie/Tabreed and Keppel.

This event is being organised by UNEP with support from the Government of Singapore, Government of Colombia, United Nations Industrial Development Organization (UNIDO), Swiss State Secretariat for Economic Affairs (SECO), Tabreed, German Agency for International Cooperation (GIZ), Danish International Development Agency (DANIDA), Indo-German Energy Forum (IGEF), International Finance Corporation (IFC), and local district cooling industry in Singapore.

The objective of the training and study tour is to raise awareness and capacity of countries, cities, and industry on the diverse benefits of district cooling and passive cooling, challenges and opportunities for their deployment and the policies and support needed to accelerate the market for these approaches. The trip will also provide a strong opportunity for country governments and cities to exchange on their policy approaches and build long-term collaborations and for industry to exchange on best practices and interact with leading players in district cooling and passive cooling. Post the workshop and study tour, UNEP with its partners under the Cool Coalition will continue to support officials and industry on policy and best practice exchange between the international participants present at the workshop.

2. Contact persons and key logistical information

Main Contacts:

Mr. Benjamin Hickman, UNEP - Cool Coalition, benjamin.hickman@un.org, +33 641900338

Mr. Rahul Agnihotri, UNEP - Cool Coalition, rahul.agnihotri@un.org, +91 9867334415

Ms. Cristina Mariaca Orozco, ONUDI/Minambiente h.mariacaorozco@unido.org, +57 3187828895

Ms. Angelica Antolinez Esquivel, ONUDI/Minambiente, a.antolinezesquivel@unido.org, +57 3005707382

Ms. Min Liu, Local Coordinator, +65 9820 5356

Transport within Singapore to different sites listed in the agenda is being arranged for you and will be by bus/minibus. Transport to and from the airport is for you to arrange unless you have been informed otherwise. It is extremely important that participants are on time for the bus to avoid delays in the visits.

The majority of participants are staying at the Grand Pacific Hotel, Singapore. This pack will be printed and provided to you on your arrival.

Breakfasts have been included for those rooms booked and paid for by UNEP and partners at Grand Pacific Hotel – otherwise this should be paid by the participant. The lunches are covered each day Monday-Friday except for Thursday where participants will be able to directly purchase food at the site visit. Dinners and evenings are for participants to arrange themselves; recommendations are included in this pack.

Participants should purchase and carry water and other snacks as appropriate with them. Travellers are responsible for their own travel insurance.

The local currency is the Singapore Dollar, Major credit cards are accepted in most hotels, restaurants, and department stores.

Things to be aware of before travelling to Singapore:

- No smoking in public.
- E-cigarettes are prohibited.
- No eating or drinking on public transport.
- No drinking after 10.30pm.
- Chewing Gums are banned.
- You should avoid any action that could be interpreted as molestation. Scams involving false claims of molestation are thought to exist.

3. Things to do in Singapore

Singapore has been described as the “Garden City” with abundant lush greenery and clean environment. It offers more than just high-end shopping malls, luxury hotels, and fine dining. There is also a vibrant history and diverse ethnic quarters to discover, along with the many family-friendly attractions and lovely public spaces that make visiting this slightly futuristic city worthwhile.

Places to see in Singapore:

1. Marina Bay Sands and the bay area with the Merlion: 10 Bayfront Ave, Singapore 018956
2. Gardens by the Bay: 18 Marina Gardens Dr, Singapore 018953
3. CHIJMES: 30 Victoria St, Singapore 187996
4. Haji Lane and Arab Street: 79 Arab Street, Singapore 199776
5. Sentosa Island: 39 Artillery Avenue, Singapore 099958
6. Clarke Quay: 3 River Valley Rd, Singapore 179024

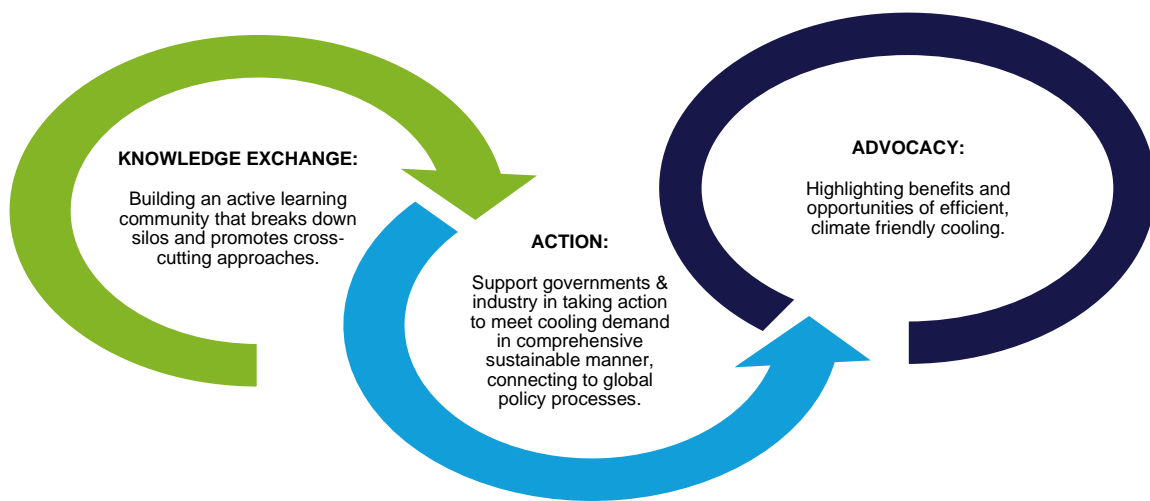
Places to eat in Singapore:

1. Lau Pa Sat: 18 Raffles Quay, Singapore 048582
2. Jumbo Seafood (reservation required): River Point Outlet: 30 Merchant Road #01-01/02, Singapore 058282 or The Riverwalk Outlet: 20 Upper Circular Road #B1-48, Singapore 058416
3. Newton Food Centre 500 Clemenceau Avenue North #01-05, Singapore 229495.
4. Amoy Street Food Centre: 7 Maxwell Road, Singapore 069111
5. Maxwell Road, Singapore: 1 Kadayanallur Street, Singapore 069184
6. Tekka Centre: 60 Bukit Timah Road, Singapore 229900
7. Tiong Bahru Market: 30 Seng Poh Road, Singapore 168898
8. The Bedok Marketplace [Halal]: 348 Bedok Rd, Singapore 469560

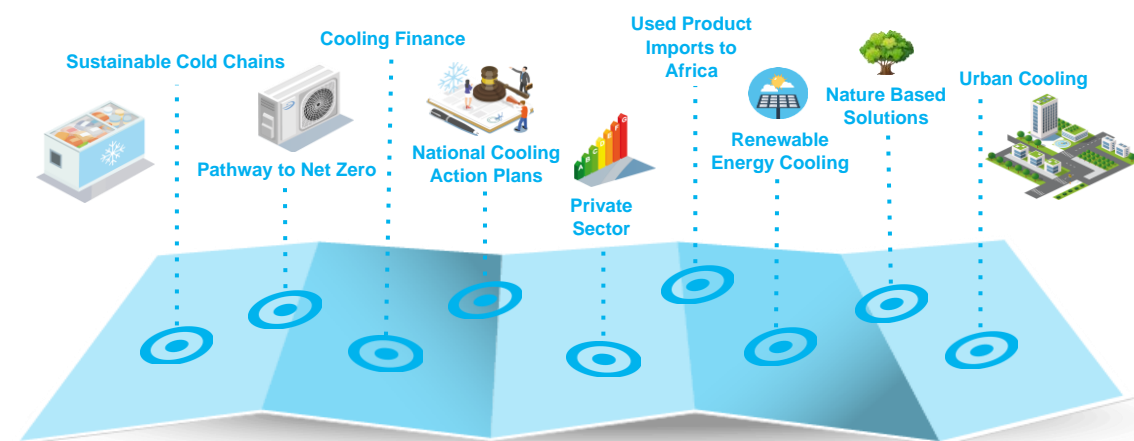
4. Introduction to the Cool Coalition

The Cool Coalition, an official outcome of UN Secretary General's summit, is a joint effort of over 130 governments, cities, businesses, development organizations, and civil society groups. Together we are collaborating on knowledge exchange on science, data, policy, joint action, and advocacy to accelerate cooling in an efficient, climate-friendly manner. The Cool Coalition promotes an 'reduce-shift-improve-protect' holistic and cross-sectoral approach to meet the cooling needs of both industrialized and developing countries through urban form, better building design, energy efficiency, renewables, and thermal storage as well as phasing down HFCs.

Cool Coalition members are collaborating on science, policy, finance, and technology to meet growing demands for cooling in a comprehensive manner, all aimed at raising climate ambition in the context of the Sustainable Development Goals while complementing the goals of the Kigali Amendment to the Montreal Protocol and Paris Climate Agreement.



The core of the Cool Coalition's work is driven by members-led working groups. Since September 2019, Coalition members have created 9 working groups on priority intervention areas in the cooling sector.

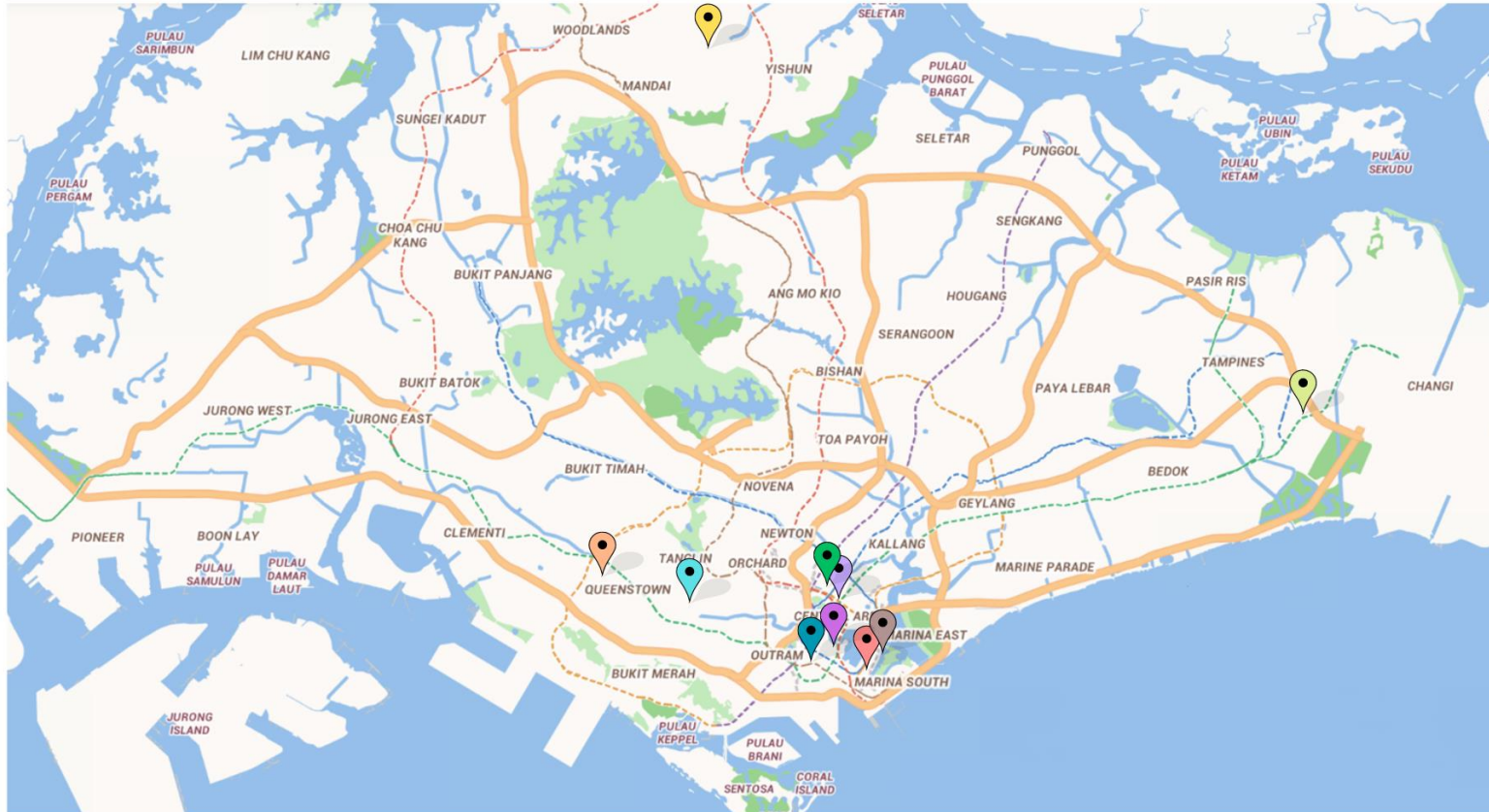


Join us and become a Cool Coalition Partner! ([Link](#))



5. Agenda

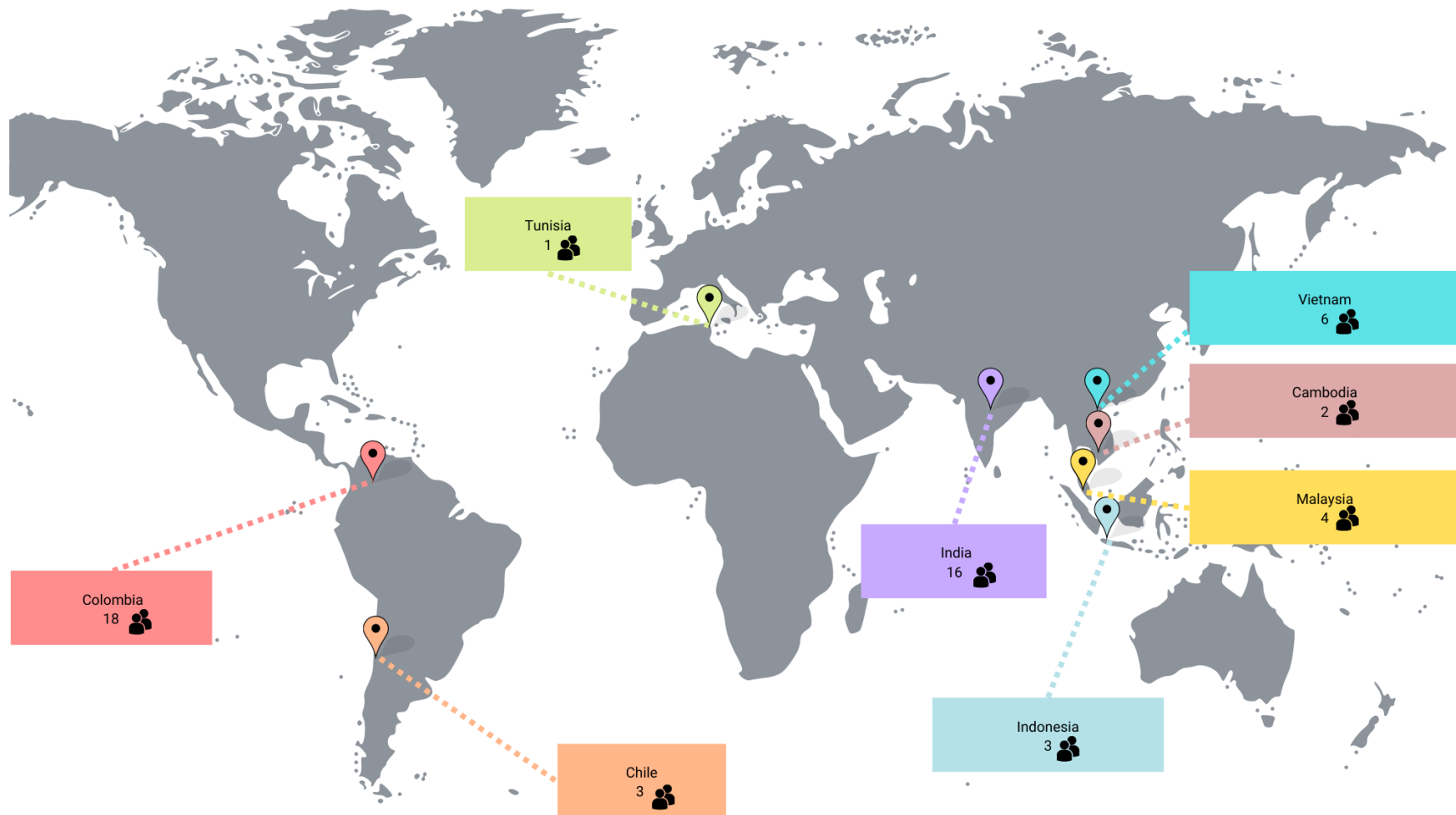
When	What	Where
MONDAY - MAY 8, 2023		
07:00 - 09:00	Breakfast & Transportation (Bus at 08:30)	Grand Pacific Hotel
09:00 - 10:00	Introduction meeting to Study Tour and Participants	Keppel Industries - Changi
10:00 - 17:00	Site Visits to Keppel DHCS District Cooling System (DCS) Plants and Technical Trainings	DES Biopolis; DES Mediapolis; Changi Operations Nerve Centre
18:00 – 20:00	Official Reception	Colombian Embassy
TUESDAY - MAY 9, 2023		
07:00 - 08:00	Breakfast	Grand Pacific Hotel
09:00 - 12:00	UNEP-ENGIE / Tabreed Delivered Trainings Presentation of Planned / Existing Projects Presented by Various Country / City Representatives and Feedback Given	
12:00 - 13:15	Lunch & Transportation	
13:15 - 14:15	Visit to Passively Cooled Building SkyVille @ Dawson	SkyVille @ Dawson
14:15 - 14:30	Transportation	
14:30 - 17:30	IFC/Tabreed Training Session: financing and procuring district cooling	IFC Office
WEDNESDAY - MAY 10, 2023		
07:00 - 09:00	Breakfast & Transportation (Bus at 08:30)	Grand Pacific Hotel
09:00 - 09:45	Visit to Singapore City Gallery	Singapore City Gallery
10:00 - 13:00	Training with Singapore Urban Redevelopment Authority and Marina Bay district cooling presentation	
13:00 - 14:00	Transportation & Lunch	
14:00 - 18:00	Policy and regulatory workshop with UNEP, Singapore Energy Market Authority, UAE etc. Presentations from countries on current policy frameworks	
THURSDAY - MAY 11, 2023		
07:00 - 09:00	Breakfast & Transportation (Bus at 08:30)	Grand Pacific Hotel
09:00 - 10:30	Site Visit to Marina Bay DCS	Marina Bay DCS
10:30 - 11:30	Transportation	
11:30 - 13:00	Visit to Kampung Admiralty Passively Cooled Building	Kampung Admiralty
13:00 - 14:00	Lunch Food Courtyard - Kampung Admiralty	
14:00 - 14:45	Transportation	
14:45 - 17:00	Workshop with Architects Firm & Buildings and Construction Authority (TBC) on Green Building Codes for Passive and District Cooling	WOHA Architects
FRIDAY - MAY 12, 2023		
07:00 - 09:00	Breakfast & Check-out	Grand Pacific Hotel
09:00 - 12:30	"Concluding session for all attendees. Lessons learned and exchange between countries. Way forward Bilateral meetings"	
12:30 - 13:30	Lunch	



-  Grand Pacific Hotel, 101 Victoria Street, Singapore 188018
-  Keppel Industries @Changi, 48 Changi Business Park Central 2, Singapore 486067
-  DES Biopolis & Mediapolis, 11 Biopolis Way, One North, Singapore 138667
-  SkyVille @ Dawson, 85-88 Dawson Road, Singapore 141085
-  IFC Office, 2-01 Marina Blvd, Singapore 018982, MBFC tower 2

-  Marina Bay DCS, 10 Bayfront Ave, Singapore 018956
-  Singapore City Gallery, 45 Maxwell Road The URA Centre, Singapore 069118
-  Mercure Hotel Singapore Bugis, 122 Middle Road, Singapore 188973
-  Kampung Admiralty, 676 Woodlands Drive 71, Singapore 730676
-  WOHA Architects, 29 HongKong Street, Singapore 059668.

Countries Represented in the Singapore Study Trip



6. Country-level Cooling Projects

For each country-specific project described below, you will find a QR code on the side. Scan it with your phone to get more information about the projects. Alternatively, click on the link next to each project on the digital version of the document.

Colombia – Energy Districts Project: [Link](#)



Beginning in 2013, the United Nations Industrial Development Organization (UNIDO), together with Switzerland's State Secretariat for Economic Affairs (SECO), has started to implement an energy districts project in cooperation with the Ministry of Environment and Sustainable Development (Minambiente) and the public utility of the city of Medellín (Empresas Públicas de Medellín – EPM).

The project supports:

- Improve and implement the regulatory framework at national and city level.
- Strengthen capacities in the different market players and enable partnership between them to promote energy district projects.
- Market development promotion and support: Provide technical assistance to cities and private companies to promote the materialisation of energy district projects.

Cambodia - Passive Cooling Project: [Link](#)

Led by the Ministry of Environment of Cambodia and in consultation with the Ministry of Land Management, Urban Planning and Construction, other ministries and partners, the project will pursue impactful measures to reduce cooling demand in buildings and cities, with a focus on passive cooling strategies (PCS) and mitigation of the urban heat island effect (UHIE). The project is co-led by the UN Environment Programme and the UN Economic and Social Commission for Asia and the Pacific in the context of the Cool Coalition.



The project supports:

- Policy interventions, including the integration of PCS in building energy regulations.
- The demonstration of passive cooling applications in a pilot building.
- Delivery of awareness raising and capacity building for large scale replication.
- Support for the inclusion of GHG emission reductions from PCS in the next cycle target for Cambodia's NDC.

India - Beat the Heat Project: [Link](#)



Under the framework of the Cool Coalition, the United Nations Environment Programme (UNEP) and RMI, in partnership with the Ministry of Housing and Urban Affairs (MoHUA), are developing a programme to sustainably cool India's cities. Drawing on best practices from around the world, the programme will deliver on-the-ground support to help cities "Beat the Heat."

The project supports:

- Immediate implementation support for no-regret, quick-to-deploy solutions.
- Support in planning and development of strategies to address extreme heat and cooling.
- Longer-term support for priority cooling projects.
- Increasing central support on extreme heat and cooling.

Chile - Districts Energy Program: [Link](#)

Chile is implementing a Program called "Accelerating investment in efficient and renewable district energy systems", which is financed by the Global Environment Facility in the 7th version (GEF 7), with a focal area on Climate Change. The Program has a duration of 48 months, from 2020 to 2024, is led by the Ministry of Energy, co-led by the Ministry of the Environment, executed by the Sustainable Energy Agency (SEA), and supported technically by the UN Environment Program (UNEP).



The project supports:

- Provide technical support to local governments and private developers to develop and commercialise efficient and renewable district energy projects.
- Develop detailed engineering of 3 projects to demonstrate bankability and implement the first round of pilot projects.
- Establishment of a Regulatory Framework.
- Awareness-raising activities, study tours, workshops, participation in regional roundtables.

Vietnam - Sustainable Urban Cooling: [Link](#)



The United Nations Environment Program (UNEP) and the Global Green Growth Institute (GGGI), in close cooperation with the Ministry of Natural Resources and Environment (MONRE), are implementing a project on sustainable cooling in urban areas in Vietnam. Drawing on international best practices, the project will provide on-the-ground support to help pilot cities "Beat the Heat". The project is developed in the framework of the UNEP-led Cool Coalition.

The project supports:

- Develop of Urban Cooling Action Plans (UCAPs) for two pilot cities and one learning city.
- Establish a National Cooling Fund within the framework of the Environmental Protection Fund.
- Integrate cooling in National Policies or Regulations.
- Awareness and capacity building on extreme heat and cooling.

Tunisia - Energy District Project: [Link](#)

The Energy Districts Project in Tunisia aims to promote sustainable urban development and enhance energy efficiency, reducing greenhouse gas emissions of cooling and heating utility services in buildings and infrastructure of the cities that will develop Energy District projects. This project is aligned with Tunisia's national energy transition strategy, and helps achieve the country's Nationally Determined Contributions (NDC) objectives.



The project supports:

- Identify potential energy district projects.
- Carry out feasibility studies.
- Prepare the legal and regulatory framework.
- Enhance National Capabilities.
- Partnership Development.

Malaysia - Accelerating the Development of District Cooling System: [Link](#)



Throughout Malaysia, there are more than 25 district cooling systems in operation serving numerous buildings, such as Gas District Cooling (M) which is Malaysia's largest district cooling provider serving Putrajaya, Kuala Lumpur City Centre (KLCC) and Kuala Lumpur International Airport (KLIA) precinct. The Malaysian district cooling market is more developed than other countries in Southeast Asia, and talent in this sector is recognized worldwide. In Malaysia, the district energy system is based on the market demand and supply.

The project supports:

- Create a centralised coordination body.
- Establish national district cooling policies.
- Developing national district cooling standards.
- Carry out energy master planning.
- Raise awareness of district cooling across all stakeholders.

Indonesia - Climate-Friendly Space Cooling for Public Sector Buildings: [Link](#)

Given space cooling's rapid dominance of energy demand growth, Ministry of Energy and Mineral Resources (MEMR), in partnership with UNEP Cool Coalition, is developing a comprehensive National Cooling Action Plan (NCAP) for addressing the cooling challenge and wants to use public buildings to demonstrate the holistic approach to space cooling for promoting and justifying stronger policies on cooling. To complement this, MEMR is also preparing a green building code and building rating system based on a life-cycle carbon footprint approach for new and existing buildings.



The project supports:

- Integrated and Holistic Policy Enhancement.
- Integrated cooling demonstration projects and scale-up financing at sub-national level to achieve net zero/near zero buildings.
- Capacity Building and Outreach.

7. Cool Toolbox

For each materials described below, you will find a QR code on the side. Scan it with your phone to get more information about the projects. Alternatively, click on the link next to each project on the digital version of the document.

Beat the Heat Report: [Link](#)

A Sustainable Cooling Handbook for Cities was launched on November 3rd, 2021, at COP26 by the Cool Coalition, UNEP, RMI, Global Covenant of Mayors for Climate & Energy (GCoM), Mission Innovation and Clean Cooling Collaborative. The new guide offers planners an encyclopaedia of proven options to help cool cities. The guide's 80 supporting case studies and examples demonstrate the effectiveness of the strategies outlined and can help cities find an approach best suited to their unique contexts.



District Energy in Cities Report: [Link](#)



The UNEP report District Energy in Cities: Unlocking the Potential of Energy Efficiency and Renewable Energy identifies modern district energy as the most effective approach for many cities to transition to sustainable heating and cooling, by improving energy efficiency and enabling higher shares of renewables. This publication is one of the first reports to provide concrete policy, finance, and technology best-practice recommendations on addressing the heating and cooling sectors in cities through energy efficiency improvements and the integration of renewables, both of which are central to the energy transition.

UNEP-CCC Knowledge Management System: [Link](#)

UNEP Copenhagen Climate Centre hosts the Copenhagen Centre on Energy Efficiency (C2E2) which serves as the Energy Efficiency Hub of the UN Secretary General's Sustainable Energy for All (SE4All) initiative and plays a leading role in advancing one of the targets – to double the improvement rate of energy efficiency by 2030. The KMS provides selected training on a range of sectors including district energy.



NCAP Cambodia: [Link](#)



UN ESCAP, in partnership with UNEP under the framework of the Cool Coalition and with the support of Energy Foundation China, jointly developed a National Cooling Action Plan Methodology which was piloted in Cambodia to support the Ministry of Environment to identify climate-friendly and low-energy cooling pathways. The NCAP methodology aims to increase the capacity of countries to achieve energy consumption and greenhouse gas emissions reduction targets under nationally determined contributions to the Paris Agreement, the Kigali Amendment to the Montreal Protocol on reducing the production and consumption of hydrofluorocarbons (HFC), and the Sustainable Development Goals.

8. Meet the Participants

UNEP - Cool Coalition

UNEP: Since its inception in 1972, the United Nations Environment Programme (UNEP) has been the global authority that sets the environmental agenda, promotes the coherent implementation of the environmental dimension of sustainable development within the UN system and serves as an authoritative advocate for the global environment. UNEP supports countries on a wider range of sectors in the energy transition and for energy efficiency including on the transport, building, lighting, district energy, and appliances sectors.

Cool Coalition: The Cool Coalition is a global multi-stakeholder network that connects a wide range of key actors from government, cities, international organisations, businesses, finance, academia, and civil society groups to facilitate knowledge exchange, advocacy, and joint action towards a rapid global transition to efficient and climate-friendly cooling. The Cool Coalition is now working with over 140 partners, including 23 countries.

District Energy in Cities Initiative: UNEP in 2013 launched the District Energy in Cities Initiative as a global multi-stakeholder platform to support countries to accelerate development of district energy infrastructure. The Initiative today is supporting the Cool Coalition to mainstream district cooling into global knowledge sharing and political advocacy and in country projects including in India, Vietnam, and Cambodia.

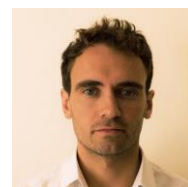
Dr. Divya Datt, Programme Manager, divya.datt@un.org



Divya Datt is responsible for developing and managing UNEP's programmatic portfolio in India. She has a doctorate in environmental economics and over 20 years of experience in applied policy research on environmental issues spanning diverse sectors including integrating passive cooling, thermal comfort, and green and blue infrastructure in city planning. She is also supporting the Ministry of Finance in the development of a Sustainable Public Procurement System for efficient and environment-friendly cooling technologies and building construction materials.

Mr. Benjamin Hickman, Advisor, benjamin.hickman@un.org

Benjamin is an advisor at United Nations Environment Programme for the Cool Coalition and the UNEP-led District Energy in Cities Initiative. He leads UNEP's Cooling Programmes in India and Viet Nam and is currently based in UNEP's Energy and Climate Branch in Paris. Benjamin joined UNEP in 2014 from a background in renewable energy policy, financing and market modelling and has degrees in Physics and Environmental Technology



Mr. Rahul Agnihotri, Advisor, rahul.agnihotri@un.org



Rahul Agnihotri is advisor for Energy Efficient Cooling and on Building Energy Efficiency at UNEP India Office. For the last 22 years, he has been working in energy security, energy efficiency, and renewables energies and from the past three years specifically on urban cooling, heat mapping, district cooling, building energy efficiency and promoting sustainable building materials. Mr. Agnihotri holds a master's degree in business administration from Mumbai University, India, and a bachelor's degree in mechanical engineering from Amravati University, India.

UNEP Copenhagen Climate Centre: UNEP CCC is a leading international advisory institution that specialises in energy, climate, and sustainable development. Among the many areas of expertise of UNEP CCC, cooling stands out as a crucial area where the organisation provides essential support to developing economies to reduce their carbon emissions. The organisation offers various forms of assistance in cooling-related issues, including analysing heat stress in cities, developing pathways to decrease cooling demand, integrating cooling solutions at both urban and building scales, and supporting policy development at the local and national levels to promote the adoption of cooling solutions. Assistance is also provided to cities in the development of Urban Cooling Action Plans. Additionally, UNEP CCC provides financial assessments of cooling solutions to aid in decision-making processes.

Ms. Trupti Yargattimath, Project Officer, trupti.yargattimath@un.org

Trupti is a dedicated energy engineer with an academic background in Sustainable Energy from the Technical University of Denmark. Her expertise lies in thermal energy systems, particularly in district heating and cooling solutions. With a passion for the green transition and a deep commitment to achieving the 2050 energy targets, Trupti has developed linear and non-linear mathematical optimisation models to enhance the operation and management of district energy networks. Currently, she is involved in various projects related to sustainable district energy projects in the global south, including the development of rapid assessment and pre-feasibility tools and e-Trainings.



IFC: International Finance Corporation (IFC) is the largest global development institution focused on the private sector in developing countries. A member of the World Bank Group, IFC advances economic development and improves the lives of people by encouraging the growth of the private sector in developing countries. We apply our financial resources, technical expertise, global experience, and innovative thinking to help our partners overcome financial, operational, and other challenges. International Finance Corporation (IFC) has been financing district heating projects in emerging economies for 15 years. In December 2021, IFC committed its first district cooling project in December 2021 to set up a District Cooling platform for Asia with Tabreed. IFC is actively scoping the market for investable opportunities playing a significant role in bringing district cooling as a solution to meet the increasing demand for space cooling in emerging markets.

Ms. Upasana Varma, Senior Investment Officer, uvarma@ifc.org



Upasana Varma is the Global District Cooling Lead & Global Municipal Finance Lead for IFC. She has 20 years of experience in the infrastructure space across energy, transport, and urban sectors. More recently, Upasana has developed business for IFC in the urban sector in South Asia and has played a key role in laying the foundation for subnational, water, waste, and district cooling projects in India. In her current role as the sector lead for IFC's district cooling & municipal finance business, she focuses on understanding the financing opportunity in developing markets for district cooling as well as furthering sustainable subnational borrowing in emerging economies.

Ms. Charu Suri, Senior Investment Officer, csuri@ifc.org

I have been working in the financial services industry for the last 25 years, including 15+ years at IFC involved in making investments across various infrastructure and financial sector segments. I am currently part of the infrastructure investments team for Asia Pacific and responsible for business development for infrastructure investments by IFC in the Philippines, Singapore, and Malaysia.



Tabreed: Tabreed, headquartered in Abu Dhabi and listed on Dubai Financial Market, is a District Cooling utility. It provides energy-efficient, cost-effective, and environmentally friendly cooling as a service through its 86 district cooling plants, delivering 1.24 million tonnes of cooling across 400 million square feet of real estate developments in the Middle East through long term concessions. In India, Tabreed is working towards faster adoption of sustainable cooling in the country.

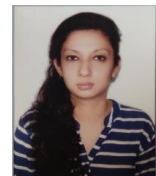
Mr. Sudheer Perla, Country Manager, sperla@tabreed.ae



In his current role, Sudheer is responsible for leading Tabreed's growth in India. Through developing private sector partnerships with appropriate government or public sector engagement, he is leading Tabreed's effort to invest, own and operate cooling assets as a cooling utility to provide more sustainable long-term services in meeting the country's growing cooling demand. Prior to his appointment as the Country Manager for India, Sudheer worked in a variety of roles leading regional asset management and business development functions.

Ms. Archa Modi, Manager – Strategy and Market Development, amodi@tabreed.in

Archa has more than 9 years of experience in strategy and business development in the clean energy sector, working across established and early age companies to promote sustainable development through innovative solutions. Over the last year, she has been a part of Tabreed's team, focused on implementing solutions that address the increasing cooling demand of the country, while ensuring minimal environmental impact.



Mr. Aseem Goyal, General Manager – Business Development, agoyal@tabreed.in



Aseem has 11 years of experience across different parts of the value chain in renewable energy, utilities, and infrastructure with world's leading organisations; and has expertise in evaluating businesses, winning tenders, financing, and partnerships. At Tabreed India, he is responsible for Business Development and Asset Management. Prior to joining Tabreed, he worked with Enel (Italy), winning renewable energy projects close to 1 GW in competitive auctions, and setting up a BD unit for India and Asia-Oceania region for Enel's power distribution and smart metering business.

Mr. Nguyen Thiep, Consultant, thiepvann@yahoo.com

From 2011-2014, as Vietnamese representative in IAEA, adviser to Vietnamese Nuclear program's implementation and cooperation between Vietnam – IAEA. From 2018- 2021, adviser to Vietnam-France Cooperation Bilateral, including Green and durable development. From 2021- Present, adviser to THMCO Consulting Ltd on projects such as central district cooling, aviation industry particularly on sustainable development. Thiep acts as liaison and coordination with Government offices.



Mr. Cao Thanh Minh, Senior Consultant, minh.ct@hoangminhcorp.vn



2001 – 2019: CEO of HMG CO., Ltd representative of BarthHaas Group, Soufflet Group and CrispMalt in VietNam in beverage engineering. 2020-present: support to THMCO Consulting Ltd on projects such as central district cooling, aviation industry particularly on sustainable development. Role: identify clients mainly megamalls and real estate developers, consulting, supporting, and organizing THMCO's projects in Vietnam.

GIZ: GIZ supports the Bureau of Energy Efficiency and MoEF&CC in the implementation of the India Cooling Action Plan (ICAP) regarding energy-efficient District Cooling Systems (DCS) in India. There are various ongoing works in this space, by different organisations, covering feasibility assessment, and pilots. In close consultation with BEE, the project will build on ongoing and past initiatives and focus on removing the barriers identified and developing techno-economic viable solutions and innovative business models to implement the DC system in India successfully.

Ms. Anneli Stutz, Principal Advisor, Anneli.stutz@giz.de

Anneli Stutz is principal advisor for Energy Efficient Cooling and on Just Energy Transition at GIZ India's Energy Cluster. Since 2019 she is working in India on behalf of the German federally owned international cooperation enterprise GIZ to promote cooperation in energy security, energy efficiency, renewables energies, energy transition and collaborative research and development with participation from India and Germany.



Mr. Rajesh Rawat, Administrative Assistant, rajesh.rawat@giz.de



Rajesh Rawat is an Administrative Assistant at GIZ GmbH with over 6 years of professional experience in leading financial management and reporting for humanitarian programs in India. Experienced in budget management, financial analysis, evaluation, and monitoring of donor funds as per agreement milestones and standards. Proficient in arranging training and capacity-building activities for employees, implementing partners, workshop, events, study tours, arranging travel and accommodation.

Clean Cooling Collaborative: Clean Cooling Collaborative (formerly K-CEP) is an initiative of Climate Works Foundation focused on transforming the cooling sector and making efficient, climate-friendly cooling accessible for all. While Clean Cooling Collaborative is a global program, its current grant making is largely focused on the four regions that are projected to contribute 75% of cooling-related emissions between now and 2050: China, India, Southeast Asia, and the United States.

Mr. Muhammad Zeki, Senior Program Associate

Zeki is the Senior Program Associate for Indonesia where he provides high-level project support to Climate Works Foundation's recently launched initiative to advance climate action and philanthropy in Indonesia. The initiative collaborates closely with several Climate Works programs, including Finance, Transportation, Cooling, and Forests and Land Use. Prior to this role, Zeki was an Analyst at Climate Policy Initiative (CPI). He contributed to a range of CPI research on the energy sector and sustainable finance, and he also led the CPI's tracking and analysis work of private climate finance in Indonesia.

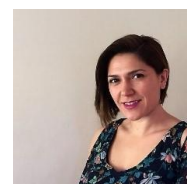


CHILE

Agencia de Sostenibilidad Energética: The Sustainable Energy Agency is a non-profit private foundation whose mission is to promote, strengthen and consolidate the efficient and sustainable use of energy by integrating and coordinating the relevant actors, nationally and internationally, and implementing public-private initiatives in the different sectors of energy consumption (including heating and cooling), contributing to the competitive and sustainable development of the country.

Ms. Pilar Lapuente, Project Manager, National District Energy Office, plapuente@agenciase.org

Pilar is the project manager of a GEF-funded country project on district energy as part of the National District Energy Office at the Sustainable Energy Agency, Chile. Before joining the Agency, she worked for the UNEPs Global District Energy in Cities initiative for 5 years. Ms. Lapuente is an industrial engineer from Pontificia Universidad Católica de Chile, with more than 12 years of experience in climate change, environment and energy policy, and sustainability projects.



Mr. Clément Demons, Director of the National District Energy Office, cdemons@agenciase.org



Clément Demons has worked for the Sustainability Agency since 2014 and is currently Head of the Local Infrastructure and Buildings line and director of the National District Energy Office (NDEO). He has more than 12 years of experience in the implementation of Renewable Energy projects, Energy Efficiency in Public Buildings, Energy Policy, Energy Diagnosis, and others. Mr. Demons is an Engineer and holds a master's degree in Renewable Energy and Environmental Modelling from the University of Dundee, Scotland.

Corporación Municipal Innova Recoleta: Innova Recoleta is the Municipal Corporation for Innovation and Economic and Social Development for the commune Recoleta. It is a Non-profit institution whose objective is to promote community, productive, social, and economic development works and innovation in the commune. The first District Energy pilot project in Chile will be concessioned and managed by the Corporation. This project benefits 4 public Hospitals, the Universidad de Chile's hospital, clinics and 4 Faculties, and 2 municipality buildings in two bordering communes: Recoleta and Independencia. It includes both district heating and cooling as a sustainable solution for public buildings.

Mr. Alberto Pizarro, Executive Director, alberto@innovarecoleta.cl

Alberto Pizarro is currently the Executive Director of the Municipality Corporation Innova Recoleta and leads the District Energy pilot project for Recoleta and Independencia, Chile communes. He has more than 17 years of experience in public management positions at the regional and municipal levels, focused on the direction, execution, development, and implementation of public infrastructure and social housing projects under the modality of public-private association.



INDIA

National Institute of Urban Affairs: The National Institute of Urban Affairs (NIUA) is a national think tank under the Ministry of Housing and Urban Affairs, Government of India. NIUA undertakes cutting-edge multi-disciplinary research, knowledge exchange and capacity development; policy planning and advocacy, through a wide array of projects encompassing areas such as spatial growth, demographic trends, municipal finance, climate change, water, sanitation, and hygiene.

Ms. Sarika Chakravarty, Team Lead – UrbanShift Country Project, schakravarty@niua.org



Sarika Chakravarty is an Architect – Planner with nearly two decades of cross-sectoral experience in urban, transportation, and environmental planning domains. Currently, she is working as the Team Lead of the GEF7-funded UrbanShift Country Project at the National Institute of Urban Affairs (NIUA) which is widely regarded as the think tank for the Ministry of Housing and Urban Affairs, Govt. of India.

Mr. Pawan Sharma, Project Coordinator (PMU) – UrbanShift Country Project, pawan@niua.org

Pawan Sharma is a Geographer - Urban Planner with over 12 years of professional work experience in land use planning, master planning, policy formulation, and government consulting advisory. He is currently working as the Project Coordinator (PMU) of the GEF7-funded UrbanShift Country Project at the National Institute of Urban Affairs (NIUA), widely regarded as the think tank for the Ministry of Housing and Urban Affairs, Govt. of India.



Mahapreit: Mahapreit having objectives to establish and carry-on business of Generating, Trading, Operating, Leasing and Renting Renewable Power Projects, mainly but not limited to Solar Power Projects including Solar Parks on ownership and/or build, own and transfer basis. Further objectives are to establish and/or carry on business in relation to Decarbonisation and energy efficiency, battery storage solutions, alternative fuel cell technology and climate change issues in accordance with Ministry of New and Renewable Energy schemes/policies or Ministry of Power or any such department of Govt of India.

Mr. Bipinkumar Punambhai Shrimali, Chairman and Managing Director, md@mahapreit.in



He was CEO ZP in Beed District, Collector Nandurbar District, VCMD MSRDC and Secretary to Hon Dy. CM till 2014. He has worked from 2014 to 2019 in Energy Department as CMD Mahatransco, CMD Mahagenco and Principal Secretary Energy Department. His Solar Power Project at Ralegan Siddhi from Mahagenco was felicitated at recently declared India Green Energy Award at National Level. During Gujrat EarthQuake in 2002 he worked as OSD at Bhuj EQ Rehabilitation Project and subsequently with Govt of Gujarat as Collector Junagadh in 2005.

Mr. Sunil D Pote, Executive Director (Operations), ed.opr@mahapreit.in

Sunil D. Pote, an Electrical Engineer graduate has 34 years of experience in leading positions pertaining to smart city initiatives, public private partnership financing, large-scale renewable and energy efficiency projects, e-mobility, water desalination, district cooling, and city surveillance. With his vast experience, Sunil Pote, presently, Executive Director (Operations) at MAHAPREIT is instrumental in leading implementation of ESCO projects, large scale solar, electric vehicle charging stations, cold storage facility, hydrogen cell and other such innovative projects.



IIT Delhi: IIT Delhi is an Institute of eminence in Engineering Education in India. A brown field District Energy System feasibility study potentially funded by GIZ is under consideration. The Department of Mechanical Engineering has courses on refrigeration and air conditioning and supports Industry needs of continuing education in the field of refrigeration and air conditioning. Consulting projects to support innovation towards sustainable cooling solutions are pursued across departments.

Prof. Bhupinder Godara, Professor of Practice, godara@iitd.ac.in



Prof. Bhupinder Godara is currently engaged in teaching and research at IIT Delhi in the Department of Mechanical Engineering with focus on refrigeration and air conditioning. With industry experience of almost 30 years, he has managed the product development cycle from concept to market in several complex applications for Indian Railways, defence, telecommunications, cellular infrastructure, milk chilling units for retail vending, residential and light commercial air conditioners, and commercial chillers.

Alliance for an Energy Efficient Economy (AEEE): Set up in 2008, AEEE supports policy implementation and enables the energy efficiency market with a not-for-profit motive. AEEE works closely with government, private sector companies and civil societies in the development and implementation of government's energy efficiency policies in the buildings, industry, and appliances. Over the last five years, AEEE has consistently contributed to the national and international cooling discourse through our portfolio of high-impact projects and publications.

Mr. Pramod Singh, Senior Director, Research & Programmes, pramod@aeee.in

Pramod Kumar Singh has about 17 years of experience in energy research and consulting for government, private sector, international development agencies, and philanthropies. He has led projects related to energy efficiency, renewable energy, climate change, and power in Australia, Bangladesh, Bhutan, China, Europe, Nepal, India, the Philippines, Thailand, the Solomon Islands, and the USA.



Mr. Akhil Singhal, Team Lead – Sustainable Cooling Technologies, akhil@aeee.in



Akhil Singhal is a Team Lead at Alliance for an Energy Efficient Economy and specialises in providing strategic advice and consultancy for policy development and implementation related to energy efficient cooling. He has worked on projects for bilateral and multilateral organisations, including projects from the GIZ, The World Bank, ADB, UNEP, UNDP and several other private stakeholders on cross-sectoral themes contributing to urban transformation in the Netherlands, Thailand, and India.

Govt Tamil Nadu: State Planning Commission was constituted to help the Government in implementing its policies effectively by more efficient utilisation of the material, capital, and human resources. Out of the 6 operational units within the State Planning Commission, Land use Division deals with four main sectors i.e., Forests and Wildlife, Ecology and Environment, Water Supply and Sanitation, Housing and Urban Development. Tamil Nadu State Land Use Research Board also pays special focus on creating strong policy support for climate change, cutting across all sectors of governance.

Sudha Ramen, Member Secretary, State Planning Commission & Head of Division -Land Use, sudharamenifs@gmail.com

Sudha Sukumar also known as Sudha Ramen amongst her friends and people is a 2013-batch Indian Forest Service (IFS) officer posted to Tamil Nadu, works at Tamil Nadu's State Planning Commission presently as its Member Secretary and Head of Division – Land Use since December 2021. She is also holding the responsibility as Deputy Conservator of Forests – GIS in the Tamil Nadu Forest Department. In the present capacity she has played a crucial role in drafting the "Sustainable Land Use Policy for Tamil Nadu".



Central Nodal Agency for Sustainable Tourism: The role of the nodal agency is crucial in ensuring that the tourism and hospitality sector employs sustainable cooling practices that reduce energy consumption, lower greenhouse gas emissions, and contribute to achieving a more sustainable and resilient tourism industry. The nodal agency can collaborate with stakeholders in the tourism and hospitality sector to develop and implement sustainable cooling solutions. The agency can also offer guidance and technical assistance to assist stakeholders in adopting sustainable cooling practices and technologies, such as energy-efficient HVAC systems, renewable energy sources, and thermal storage.

Ms. Aditi Choudhary, Nodal Officer, aditi.choudhary@iittmnoida.ac.in



Dr. Aditi Choudhary is the nodal officer for sustainable tourism, a government representative appointed by the Ministry of Tourism to supervise and coordinate efforts to promote sustainable tourism practices in their country. She is an expert in sustainable tourism practices and is responsible for implementing policies and initiatives that promote sustainable tourism in collaboration with stakeholders such as government agencies, tourism operators, local communities, and international organisations. In addition, she has 19 years of industry and teaching experience as an academican with Indian Institute of Tourism & Travel Management.

Bihar State Pollution Control Board: Bihar State Pollution Control Board (BSPCB) is the nodal agency to design strategies for Climate Resilient and Low Carbon Development Pathways for the state. The strategy aims to target net-zero by 2070 and build climate resilience of the people and systems. The strategy will cover the cooling sector while understanding the current status and the future scenarios which needs to be addressed. Increase in temperature and heat waves are posing distinct challenges to the current systems and need certain mitigation and adaptation options to be formulated. Once formulated, BSPCB will help in coordinating with different line departments of the state government in order to implement the strategies. Dissemination of the strategy document to key stakeholders including the field agencies will also be carried by BSPCB in association with technical agencies.

Dr. Ashok Kumar Ghosh, Chairman, chairmanbspcb-bih@gov.in



Dr. Ashok Kumar Ghosh is currently working as Chairman, Bihar State Pollution Control Board and Professor & HoD Research at Mahavir Cancer Institute and Research Centre. He superannuated as Professor-in-Charge of Department of Environment and Water Management, A.N. College, Patna, India on 30th June after 44 years of active service. Currently he is working on a multinational (Indo-Dutch-Bangladesh) research project DELTAP for arsenic mobilisation in Gangetic floodplains of Bihar. Dr.Ghosh is also working on DST-UKIERI supported project Nutri-SAM jointly with University of Salford ,UK.

ISHRAE: The Indian Society of Heating, Refrigerating and Air Conditioning Engineers (ISHRAE) works with an objective of an advancement of the arts and sciences of heating, ventilation, air conditioning and refrigeration engineering and related services; and promotes research in the field of HVAC&R technology. They have established a National District Cooling Working Group.

Plaksha University: Plaksha University is dedicated to advancing education and research in the field of clean energy, with a particular emphasis on reducing the demand for cooling energy. The institution is actively involved in conducting research and providing policy recommendations on topics such as District Cooling with thermal storage, mitigating Urban Heat Island effects, and developing energy-efficient smart homes.

Dr. Vishal Garg, University Chair Professor and Director, Indorama Ventures Center for Clean Energy, Vishal.garg@plaksha.edu.in

Dr. Vishal Garg is the University Chair Professor and Director of the Indorama Ventures Center for Clean Energy at Plaksha University. His research interests are in the areas of district cooling, smart energy homes, and cool roofs. He was awarded the inaugural Dr. Arthur Rosenfeld Urban Cooling Achievement Award and is a Fellow of the International Building Performance Simulation Association (IBPSA). He holds a Bachelor of Civil Engineering from MBM Engineering College, Jodhpur, and a Ph.D. from IIT Delhi.



MALAYSIA

Energy Commission: The Energy Commission is a statutory body established under the Energy Commission Act 2001. It is responsible for regulating the energy sector, specifically the electricity and piped gas supply industries, in Peninsular Malaysia and Sabah. The focus of the commission is reliable electricity and gas supply, reasonable costs, and safety.

Mr. Mohamad Faiz Bin Mohd Yusoff, Assistant Director, mfaiz@st.gov.my

Assigned to Energy Efficiency & Conservation Unit. Main task on regulating, supervising, and promoting energy efficiency to industries, business and to the public in Malaysia. In charge of Registration of Electrical Energy Manager (REEM) which is a requirement to the Efficient Management of Electrical Energy Regulation (EMEER) 2009. Involved in registration of training providers for Continuous Development Programs (CDP) for REEM to renew their certificate of registration. Involved in drafting Energy Efficiency and Conservation Act (EECA) which will focus on electricity and thermal performance. Scope also includes drafting required regulations and guides for registration of energy manager, energy auditor and training institution under EECA.



Mr. Muhammad Hasanol Bin Hj Mustafa, Assistant Director, hasanol@st.gov.my

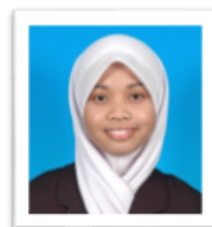


Assigned to Electricity Licensing Unit and responsible for regulating and ensuring orderly development of the electricity supply industry through effective licensing regime, to achieve reliable supply at affordable prices. Assist in technical and financial evaluation/analysis of application for electricity supply licences and prepare recommendation/terms & conditions for the issuances of licences. Enforce and monitor compliance of licensees to the requirement of licence conditions and recommend appropriate actions of non-compliance. Monitor the progress of licensee's project implementation in Peninsular Malaysia and Sabah. Monitor and ensure timely submission of relevant reports by licensees/utilities as per licence conditions. Determine and ensure timely collection of licence fees.

Iskandar Regional Development Authority (IRDA): Iskandar Regional Development Authority (IRDA) is an authority that oversees the economic corridor located in the southern part of Malaysia which is known as Iskandar Malaysia. IRDA has 3 main roles which are to plan, to promote and to facilitate the development and incoming investment in the region. Hence, IRDA has vital roles in ensuring the incoming investment will integrate the green element in the new development such as green facilities including the district cooling systems and central utilities facilities. This is to ensure energy will be used efficiently and to achieve the target of 70% reduction of Greenhouse Gases (GHG) Emission in Iskandar Malaysia by the year of 2030.

Ms. Hamizah A Rahman, Assistant Vice President, hamizah@irda.com.my

Hamizah A Rahman is currently working as Assistant Vice President of Iskandar Regional Development Authority (IRDA). She is involved in the implementation of Renewable Energy and Energy Efficiency initiatives in Iskandar Malaysia, as well as act as core team for the recent masterplan for Iskandar Malaysia, the Comprehensive Development Plan Iskandar Malaysia 2022-2030. Hamizah has been involved in projects related to renewable energy and energy efficiency installation in Iskandar Malaysia, Malaysia. She has also been involved in facilitation of energy including the district cooling system in Iskandar Malaysia.



Mr. Faisal Ibrahim, Senior Vice President, faisal@irda.com.my



Faisal Ibrahim is currently the Senior Vice President of Iskandar Regional Development Authority (IRDA). His main role is to strategize action Plan for all relevant initiative as per crafted in the Comprehensive Development Plan of Iskandar Malaysia with the mission to create Iskandar Malaysia a sustainable metropolis of International Standing. Faisal has been involved in accelerating the renewable energy and energy efficiency installation in Iskandar Malaysia, Malaysia. He has also been involved in facilitation of smart energy including district cooling systems in Iskandar with stakeholders and DCS service providers for the past years.

INDONESIA

Ministry of Energy and Mineral Resources: Define minimum energy performance standards (MEPS) and an energy efficiency labelling scheme. Promote energy efficiency in cooling and the use of passive design in buildings.

Mr. Zuhaidi, Young Expert, zuhaidi@esdm.go.id

Zuhaidi is a Young Expert Electrical Inspector for Surveying and Testing Centre of Electricity, New and Renewable Energy, Energy Conservation in the Ministry of Energy and Mineral Resources of Indonesia. His expertise includes surveying, inspecting, energy policies, energy efficiencies, renewable energy, and sustainable development. He has contributed to several projects of the Implementation of Energy Management System in Building, Implementation of Developing Renewable Energy in Underdeveloped Regions, which was also reviewed for standard of energy efficiency labelling scheme.



Ms. Anggraeni Ratri Nurwini, Sub-Coordinator of Energy Efficiency Technology Evaluation, angraeni.nurwini@esdm.go.id



Anggraeni Ratri Nurwini is currently the Sub-Coordinator of Energy Efficiency Technology Evaluation. Her main role is to compile policies on Minimum Energy Performance Standards (MEPS) and labelling for all energy-using equipment in Indonesia. There are currently five MEPS policies and labelling for air conditioners, fans, refrigerators, rice cookers and LED lights. Anggraeni is also a member of the technical committee in preparing Indonesian National Standards (SNI), especially SNI for energy management and energy conservation in buildings. She is certified as an energy auditor in building and helps buildings in Indonesia to participate in energy efficiency competitions both in Indonesia and ASEAN level.

Mr. Florentius Fanny Hendro Gunawan, Coordinator for Technical Guidance and Cooperation of Energy Conservation, hendro@esdm.go.id

FF Hendro Gunawan is Coordinator for Technical Guidance and Cooperation of Energy Conservation in the Ministry of Energy and Mineral Resources of Indonesia. His expertise includes energy policies, econometrics, energy efficiencies, renewable energies, and sustainable development. He has contributed to several projects of the Implementation of Energy Management System in Building, which also consist of energy efficiency in cooling using passive and active design.



VIETNAM

Water, Meteorology, Hydrology, Seas and Islands Department, Quang Nam Province: We have implemented climate change and mitigation programs for Quang Nam province. Some projects such as planting nipa palm forest in Hoi An City and Nui Thanh district. Currently, we are developing a plan to reduce greenhouse gas emission in the province.

Mr. Tran Ngoc Van, Head of Department, tranngocvantnmt@gmail.com



I am working at the Department of Water, Meteorology, Hydrology, Seas, and Islands. Department of Natural Resources and Environment of Quang Nam Province (DONRE of Quang Nam). Besides working at the Department of Water, Meteorology, Hydrology, Seas, and Islands, I am also in charge of the Climate Change Component Office of Quang Nam Province.

Department of Natural Resources and Environment of Can Tho City : The Department of Natural Resources and Environment has a key role in advising and coordinating policies and tasks on climate change adaptation and response, environment protection, natural resources, including contents on policy development and mitigation plans greenhouse gas emissions in all areas, air quality management, biodiversity conservation, capacity building for sustainable adaptation to climate change, implementation of environmental targets in the action plan. green growth, sustainable development through that implementation of cooling-related activities.

Ms. Chau Thi Kim Thoa, Head of Division, chauthoa@cantho.gov.vn

Mrs Chau Thi Kim Thoa – Head of Division of Mineral Resources, Water, Hydrometeorology and Climate Change; Chief of Office of Climate Change Coordinator Office - Can Tho City. Responsible for consulting, coordinating, and implementing tasks related to climate change for Can Tho city. With nearly 10 years of experience in the field of state management of environmental protection, 7 years of performing tasks related to improving the capacity to adapt to climate change.



Department of Natural Resources and Environment of Quang Binh province: The Department of Natural Resources and Environment (DONRE) of Quang Binh province is a specialised agency advising the People's Committee of Quang Binh province to perform the state management of environmental protection activities, water resources, land, minerals, and sea. islands, hydrometeorology, and climate change in the province. Currently, Quang Binh DONRE is one of the partners participating in the implementation of piloting efficient and climate-friendly cooling projects in urban areas in Vietnam, in cooperation and support of the Department of Climate Change (MONRE), UNEP and GGGI.

Ms. Nguyen Thi Bich Lanh, Deputy Head of Minerals, Hydrometeorology and Climate Change Division, nblanhkttv@gmail.com



Currently working at the Department of Natural Resources and Environment of Quang Binh province, assigned to oversee the field of hydrometeorology and climate change. Having 17 years of experience in the fields of environmental protection, water resource management, hydrometeorology, and climate change. In addition, since 2018, I have been the provincial focal point for implementation of Project on “Support Viet Nam for the implementation of the Paris Agreement” focusing on urban ecosystem-based-Adaptation in Quang Binh.

Department of Thermal Energy Engineering, School of Mechanical Engineering, Hanoi University of Science and Technology

Dr. Quoc Dung Trinh, Dr. Heat Engineering & Refrigeration, quoc.trinh@un.org

My expertise focuses on energy efficiency (EE), renewable energy for cooling production and use (e.g., absorption technology), greenhouse gas emission inventory, alternative refrigerants, and technical solutions for EE in HVAC&R. I have about 18 years of experience as a cooling expert at HUST. Currently, I am serving as senior consultant in the project "Sustainable cooling of cities in Vietnam – Urban cooling) funded by UNEP.



CAMBODIA

Department of Green Economy, General Secretariat of the National Council for Sustainable Development: Department of Green Economy plays a role in developing policies related to sustainable energy, clean energy, and energy efficiency. We are currently developing the guideline for green building which is one of the areas that we are also looking at.

Mr. Taing Meng Eang, Director of Department, mengeangtaing@gmail.com



Working in the ministry of environment of Cambodia since 2013 and currently in charge of the department of green economy, where he is supervising the works related to coordination of policy development with line ministries in the field of sustainable development and environment such as sustainable cities, sustainable consumption and production, sustainable energy and so on.

Department of Economic Development Investment, and International Relations: We are promoting Clean Energy using especially Solar Energy and Hydro power. Moreover, we are drafting the Cambodia Guidelines and Certificates for Green Building (CamGCGB) which is led by the Ministry of Environment and Ministry of Land Management, Urban Planning, and Construction (MLMUPC). In addition, we have drafted the Energy Efficient Policy which is organised by the Ministry of Mine and Energy (MoME). In terms of construction sector or cooking sector, we are drafting Building Technical Regulations which are supported by the Japanese Government.

Mr. Sok Pisith, Officer, Psok24@gmail.com

I am Pisith SOK, officer of Economic Dev, Investment, and Int. Relations of the Ministry of Land Management, Urban Planning and Construction (MLMUPC). I graduated in the field of Agri-Env at Tokyo University of Agriculture and Technology (TUAT) of Japan. I have experiences in Climate Change, Gender, Agriculture, and Economic Development. I have participated in REDD+ Project and other development projects related to climate change and livelihood improvement.



TUNISIA

National Agency for Energy Conservation “ANME”: The National Agency for Energy Conservation (ANME) is a Tunisian public institution that aims to promote and develop energy efficiency and renewable energy in various sectors, including cooling. In the cooling sector, the ANME's role is to promote energy-efficient cooling technologies and practices, as well as the development of policies and regulations that promote sustainable cooling; The agency also provides technical assistance and support to businesses, institutions, and individuals seeking to improve their cooling systems' energy efficiency.

Mr. Abderrahmen Mahfoudhi, National Agency for Energy Conservation “ANME”,
abderrahmen.mahfoudhi@anme.nat.tn



Mahfoudhi A. currently works as a main engineer in the Building Energy Efficiency Department of the Tunisian Agency for energy conservation 'ANME', where he coordinates and oversees projects and programs related to energy efficiency. In addition, he is responsible for managing the Tunisian Energy Transition Fund. Currently, Mahfoudhi holds the position of technical coordinator, overseeing the implementation of a feasibility study for a pilot heating and cooling (DHC) network at the Bab Saadoun health centre in Tunis.

COLOMBIA

Ministry of Environment and Sustainable Development / UNIDO (District Energy project in Colombia): The Energy Districts in Colombia project is an international cooperation project led by the Ministry of Environment and Sustainable Development, the Ministry of Mines and Energy and the Mining and Energy Planning Unit (UPME) of the Government of Colombia, in cooperation with the Government of Switzerland and with the collaboration of the United Nations Industrial Development Organization (UNIDO), as implementing agency.

Ms. Angelica Antolinez Esquivel, Capacity Building Expert, a.antolinezesquivel@unido.org

Project consultant with over 15 years of experience in the environment sector, 13 years of experience in project management and national capacity development related to sectors that use ozone-depleting substances, such as refrigeration, air conditioning, solvents, and fire protection. For the past 2 years, I have led the strategy of capacity and knowledge building at the District Energy project in Colombia.



Ms. Cristina Mariaca Orozco, National Strategic and Technical Coordinator – District Energy project in Colombia, h.mariacaorozco@unido.org



Mechanical and refrigeration engineer, specialist in Integrated Environmental Management, and Master in Energy and Development. Experience in the consultancy, design, and implementation of integral solutions in commercial and industrial refrigeration systems. Experience in the management and implementation of projects within the framework of international cooperation projects around the national environmental and energy efficiency obligations.

Ministry of Housing, City and Territory: Among the main objectives of the Ministry of Housing, City and Territory is to formulate and execute public policy in matters of planned territorial and urban development of the country and the consolidation of the system of cities, with patterns of efficient and sustainable use of land. On the other hand, we are committed to establishing actions to reduce GHG emissions by the sector.

Mr. Felipe Arbouin, Vice Minister of Housing, farbouin@minvivienda.gov.co

He has extensive experience in urban law, real estate, and territorial planning. He initially worked as a lawyer for the firm Pinilla González & Prieto Abogados. He then worked for several years as an adviser and consultant for different public and private entities in matters of urban law and territorial planning, and at the time of being appointed to this new position, he worked as a professor and Director of the Department of Private Law and of the Specialization in Urban Law of the Faculty of Legal Sciences of the Pontificia Universidad Javeriana.



Ministry of Mines and Energy: Among the main objectives of the Ministry of Mines and Energy is to formulate and execute public policy on the energy transition of the country, including the development of energy communities and energy districts. Also, we are committed to establishing actions to promote the efficient and sustainable use of energy and to reduce GHG emissions by the sector.

Ms. Angela Maria Sarmiento Forero, Head of the Business and Regulatory Affairs Office, amsarmiento@minenergia.gov.co



Professional and master's in electrical engineering with more than 20 years of experience in the national energy sector, where has led work teams of government entities. Currently, leading the Office of Regulatory and Business Affairs of the Ministry of Mines and Energy. Among other positions, has served as Technical Director of the Superintendencia de Servicios Públicos Domiciliarios, Advisor to the National Planning Department, and for more than 7 years, Advisor to the Energy and Gas Regulation Commission.

District Secretary of the Environment of Bogota: The District Environment Secretary (DES) is the leading entity in promoting the climate action plan in Bogota. One of the strategic projects in the city's energy transition is the consolidation of heating districts in urban planning instruments. In this context, the SDA is the focal point entity in Bogota D.C, who has the role of president of the steering committee of the heating Districts project in Bogota Colombia - Phase II.

Mr. Diego Francisco Rubio Goyes, Director of Environmental Management, Diego.rubio@ambientebogota.gov.co

With 15 years of experience in environmental management and climate change, formulation of environmental public policy and public administration between the Bogotá District Environment Secretariat and the National Planning Department of Colombia. He participated in the Green Growth mission and the formulation of the Green Growth Policy in Colombia. Currently, he works as Director of Environmental Management of the Bogotá District Environment Secretariat.



Mayor's Office of Cartagena de Indias: Review and ensure the proper implementation of district energy sector projects, clean, renewable and sustainable energy in Cartagena de Indias. Also, guide strategically and approve technical studies that allow supporting the inclusion of criteria and requirements of heating districts in the regulations of the city, taking into account the recommendations developed by the team of the project.

Mr. Franklin Amador, Secretary of Planning, famadorh@cartagena.gov.co



Masters in management and public Policies, Specialist in Project Management, Economist and Public Administrator. With more than 15 years of experience in the public sector in management positions related to public finances, planning and fiscal control; He also has extensive experience as a university teacher. Currently, he works as Secretary of Planning for the Cartagena de Indias – Colombia.

Department Administration of Environment Management: As the environmental authority in the District of Santiago de Cali, the Department has a fundamental role in the enforcement of the Plan Integral de Gestión de Cambio Climático PIGCC (Integral Plan of Climate Change Management). During 2023 we prepared ourselves to deliver to the district the first accountability report for the implementation of the 48 actions of mitigation and adaptability to Climate Change, that we committed to in the year 2020.

Ms. Viviana María Sánchez Escobar, Climate Change Group Leader, vivianamariase@gmail.com

Former administrator of municipal public companies. Former advisor to the local cities of Valle del Cauca on public services security. Former Director of Audit of Inclusive Education Fees - Gobernación Cauca. Professional Advisor for the Water Resources Office - Departamento Administrativo de Gestión del Medio Ambiente. Currently Head of the Climate Change Group - Departamento Administrativo de Gestión del Medio Ambiente.



San José de Cúcuta – Mayor's office (Environment Secretariat): The Mayor's Office of San José de Cúcuta in its Municipal Development Plan is committed to the development of good practices and environmental care, projecting the city in the year 2050 as a sustainable city and an exemplary model of the Colombia's green city.

Mr. Angel Andrey Eder Bohorquez Jauregui, Deputy Secretary of the Environment, Subsec.medioambiente@cucuta.gov.co



Responsible for the execution of environmental procedures, environmental legal compliance, environmental supervision of environmental audits, environmental audit of contractors, compliance with environmental compensation measures for the projects of the CENS Expansion Plan 2019 - 2020. Responsible for the formulation and execution of the Procurement Plan for environmental services of the CENS Project Unit during the 2017 term; 2018; 2019; 2020.

Montería – Mayor's office: The planning secretary leads all the necessary strategies and methods for the organisation and city growth. Urban development projects seeking to achieve sustainability goals are proposed. The planning secretary aims at renewable and efficient energy use, to generate adaptation and mitigation actions and achieve sustainability goals in Montería. The energy districts are part of these strategic projects that we are addressing as a city.

Mr. Julio Eliecer Lora Hernandez, Planning Secretary, juliolora72@hotmail.com

Lawyer specialised in Administrative Law, with more than 20 years of experience in the public sector (education, fiscal control, and transportation sectors); currently, from the planning secretary of the municipality of Montería, leading the environmental and development programs of the city with a view to strengthening renewable energy and environmental care.



Alcaldía de Villavicencio: Coordinator liaison between environmental ministry and the city of Villavicencio in potencia project for supporting the implementation of an intramural termic distriety. Besides, the city of Villavicencio is working on natural based solutions for mitigating the effects on climate change.

Ms. Sara maria Cabrera Elizalde, Environmental secretary, sa-cabre@uniandes.edu.co



Sara cabrera is microbiologist magister in development and environment from universidad nacional de Colombia, she has more than 8 years of experience in environmental public policy formulation and implementation, with expertise in green growth, green jobs, and climate change.

Ministry of Environment and Sustainable Development: The Ministry of Environment and Sustainable Development is the leading entity of the thermal districts project in Colombia, in its phases I and II.

Mr. Mauricio Galvan Gomez, Climate Change and Risk Management Directorate, mgalvang@minambiente.gov.co

Chemical engineer from the Industrial University of Santander, specialist in environmental law from the Externado de Colombia University. I have professional experience in the areas of evaluation and monitoring in a regional environmental authority, as a university professor of environmental engineering and recently appointed as a specialised professional attached to the mitigation group of the climate change and risk management department of the Ministry of Environment and Sustainable Development, with emphasis on the housing and waste sectors.



Mining and Energy Planning Unit, UPME: Leader in the formulation of the Indicative Action Plan of the Program for the Rational and Efficient Use of Energy, PAI-PROURE (Resolution MME 40156 of 2022) Member of the Technical Advisory Committee of the Project of Technical Districts Phase 2 Colombia.

Ms. Olga Victoria González González, Advisor, Olga.gonzalez@upme.gov.co



Advisor for the demand sub-directorate of the Mining and Energy Planning Unit, UPME, with more than 20 years of experience in the Colombian public sector on issues related to Energy and the Environment. Experience working on the design and implementation of sectoral and regional energy efficiency plans and programs, and on the development of instruments and incentives, including tax incentives. Experience leading international technical cooperation projects, energy efficiency in the Colombian industry with UNIDO, sustainable buildings with UNDP and TERA O FRANCE and energy cities with SECO SUIZA.

National Planning Department: The national planning department, provides accompaniment to the presidency of the republic and the entities of the mining-energy sector in the evaluation of government public policies and their proper implementation.

Ms. Camila Alejandra Quintero Rodríguez, Senior Energy Consultant, caquintero@dn.gov.co

Lawyer specialised in mining and energetic regulation with 10 years of experience in public and private assessment in the energetic sector.



Colombia HVAC&R and Thermal District Association: Consolidation of training activities, international cooperation projects and sectorial events that allow the development of knowledge and products that allow to improve practices and increase the energy efficiency of systems related to HVAC&R and thermal districts.

Mr. Bolívar Monroy, Technical director, direcciontecnica@acaire.org



Professional in mechanical engineering, master in sustainable development projects from the U. EAN and specialist in maintenance management, deepening studies in air conditioning and commercial and industrial refrigeration. Specific experience in formulation and execution of investment projects, research, continuous improvement processes and business innovation, as well as international cooperation projects with entities such as IFC, UNDP, UNIDO, GIZ, among others.

ACAIRE – CIDARE: Guide and coordinate the strategic planning of CIDARE, Manage, develop and consolidate strategic alliances with national and international entities in the thermal districts sector, Lead the strategy for the achievement of new businesses, services and projects. Contribute knowledge on issues related to thermal districts with the sustainability component, coordinate space for the exchange of experience and knowledge among stakeholders in the sector.

Ms. Diana Marcela Rojas Garcia, Director, direccioncidare@acaire.org

Leader in strategic planning processes and continuous improvement, implementation, standardisation, and control of HSEQ management systems, with certification in HSEQ audit and Lean Manufacturing Management. Magister in business administration and management MBA, mechanical engineer with more than 14 years of experience directing areas of Integrated Management Systems, Inspection and Audit, strategic management, planning, and innovation and new businesses.



UNIDO: As National PM at UNIDO for the DT2 project, we implement the project work plan, in close coordination with national counterparts, I prepare the ToR documents for all the procurement process and review the quality of products and deliverables submitted by all the project's consultants and vendors.

Mr. Ricardo Baquero Vergara, National Project Engineer – EE Expert, ricardo.baquero@gmail.com



15+ years in diverse EE projects in Colombia aimed at the Manufacturing Industry and Construction sectors. Experience with LEED and ISO-50001 implementation and certification projects. Active member of Colombia's Icontec national standardisation committee TC-228, and delegate at the ISO's TC-301.

Swiss Economic Cooperation in Colombia (SECO), Swiss Embassy in Colombia: State Secretariat for Economic Affairs (SECO) plays as one of Switzerland's key agencies for development assistance. SECO contributes to economic growth and sustainable prosperity in selected priority countries. To this end it supports the creation of reliable economic framework conditions and innovative private-sector initiatives.

Ms. Natalia Mayorga Mora, Deputy Head of Cooperation, natalia.mayorga@eda.admin.ch

Professional experience as project manager, policy analyst and consultant. Graduate of Political Science and Law with a master's degree in public Affairs MPA. 15 years of extensive experience working with the public sector and the international cooperation field in project management and public policy analysis in areas including sustainable urban development and economic sustainable development.



Daikin Latin America Operations: As Daikin Latin America, we have successfully implemented the cooling as a service model in Mexico under subscription payment. We have 4 implementation cases in different verticals such as Offices, Residential, Commercial and Hospitality. In the world Daikin provides equipment solutions and software solutions to monitor, operate, and optimise centralised chilled water plants.

Mr. Ricardo Miguel Rodriguez Cañar, Business Development Senior Manager, Ricardo.rodriguez@daikin.com.mx



With more than 12 years of experience in business analysis and development, investment strategy, mergers, and acquisitions (M&A) and administration. As Business Development Senior Manager, he oversees the Open Innovation program in Latin America and the expansion of the "as a service" model in the same region. He is also an investment broker and specialist in climate finance.

Please note that all documents & presentations will be available in the folder available at the following link and QR code, for a period of six months. Please download them before they are deleted.

[Link](#)





BEAT THE HEAT: NATURE FOR COOL CITIES CHALLENGE

Our cities are getting hotter. Today, 56% of the world's population – 4.4 billion inhabitants – live in cities, and 1.4 billion of these people already face high climate risks.

By 2100, cities across the world could warm by 4.4°C, exposing the world's growing urban population to conditions that will damage human health, productivity, and quality of life.

It is imperative we scale up solutions to tackle dangerous urban heat. Urban nature-based solutions (NbS) are a powerful tool to cool cities and reduce extreme heat risks for urban-dwellers around the world.

THE CHALLENGE

The **Nature for Cool Cities Challenge** asks **municipalities, groups of municipalities, or regional governments** to pledge to increase NbS implementation in their urban areas, and support **cities in low to upper-middle income countries** committed to the pledge in developing and implementing NbS to deliver on heat resilience and cooling benefits.

THE PLEDGE

By 2030, and with demonstrable progress by 2025, challenge participants pledge to increase or enhance the proportion of nature-based cooling solutions within built-up city surface area.

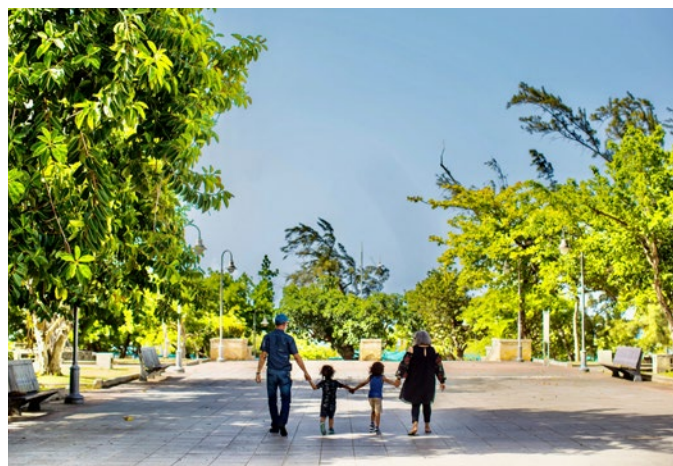
To commit to the Pledge, participants will be requested to set a **quantitative nature-based solutions target, a support target, and a minimum of three implementation actions.**

Commitments to the Pledge will contribute to the outcomes of the Global Cooling Pledge. Commitments to the Nature for Cool Cities Challenge will be aggregated and participants profiled at the UNFCCC Climate Conference COP28 in Dubai, UAE in December 2023.

THE AWARD

Among cities that commit to the pledge, **the Challenge will identify a cohort of 8-10 ambitious cities in low to upper-middle income countries designated as Challenge winners.** Challenge winners may receive small incubation grants to help refine pledges and implementation actions, technical assistance to support implementation and financing plans,

matching funding for implementation (scaled by income level), opportunities to partner with potential financiers, and communications support.



WHAT WE AIM TO DO

- Demonstrate urban nature-based solutions' ability to mitigate the urban heat island effect, avoid emissions, and reduce energy demand for cooling
- Drive finance for replication and upscaling
- Send a demand signal to project developers and financiers

The Challenge will create an ecosystem of partners that will include financial institutions and investors, creating opportunities for cities and financiers to partner for innovative finance for implementation.

PARTNERSHIP

A coalition of partners are supporting the delivery of the Nature for Cool Cities Challenge with in-kind and technical support, including:



Partnership opportunities are currently being explored to secure additional finance for the challenge roll out and implementation, including **incubation grants** for cities to refine pledges, **matching funding for implementation** of the participant's targets and actions, and additional award components.



INTERESTED?

LEARN MORE
AND REGISTER YOUR INTEREST:

<https://coolcoalition.org/pilot-projects/nature-for-cool-cities-challenge/>



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