



*Empowered lives.  
Resilient nations.*

# **EXPERIENCES WITH DISTRICT COOLING IN LATIN AMERICA AND THE CARIBBEAN**

**Funded by the Multilateral Fund (MLF)**

*Presentation by Mr. Kasper Koefoed-Hansen  
UNDP Montreal Protocol Unit /Chemicals*

*6 April 2016 : Geneva, Switzerland*



*Empowered lives.  
Resilient nations.*

# Introduction

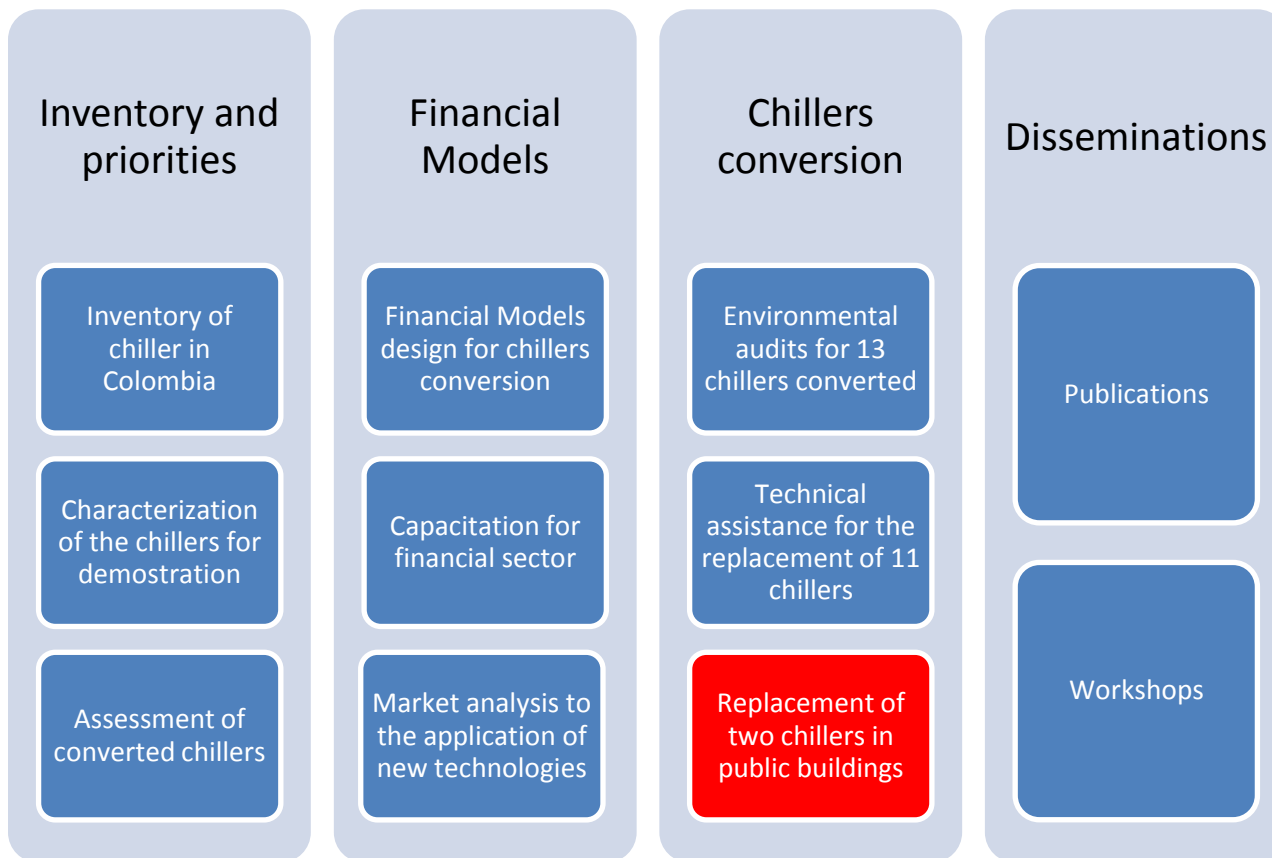
- Chillers Replacement Project in Colombia
- Feasibility Study for District Cooling in Punta Cana, Dominican Republic.
- Conclusions and Recommendations.

# DEMONSTRATIVE PROJECT IN CHILLER SECTOR AND PROMOTION OF DISTRICTS ENERGY IN COLOMBIA

Abril 2016



# DEMONSTRATIVE CHILLERS PROJECT OUTPUTS



# CHILLERS REPLACEMENT IN PUBLIC BUILDINGS



UNIDAD TÉCNICA OZONO  
C o l o m b i a

## Memorandum of Understanding



### OBJECTIVE:

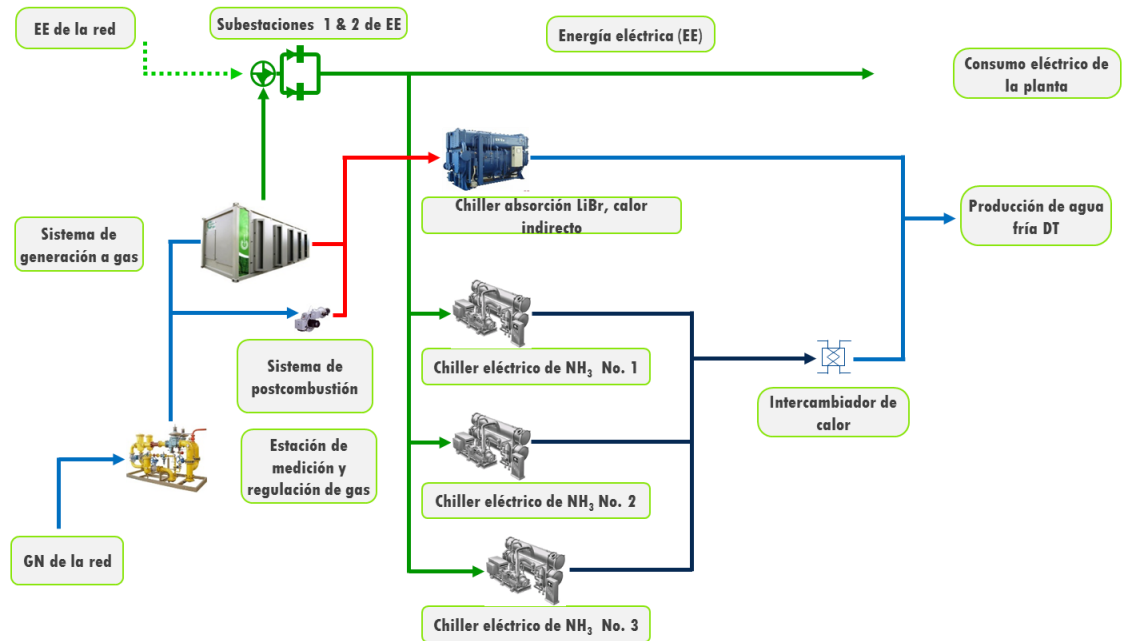
Promote the implementation of a technical, financial and environmentally friendly model, to replace CFC based chillers in public buildings in the Government of Antioquia and the National Customs Department with Energy Efficient, zero ODS and Low GWP alternatives through the introduction of District Cooling.



# Detail engineering for District Cooling La Alpujarra for the replacement of CFC based chillers in public buildings in the Government of Antioquia and the National Customs Department

## Outputs:

- Detailed engineering plans.
- Financial feasibility.
- Technical assistance.



# DISTRICTS ENERGY PROJECT IN COLOMBIA



## OBJECTIVES AND CONTRIBUTIONS

### OBJECTIVE

Promote the implementation of Districts Energy in Colombia to improve energy efficiency in buildings  
Replace coolers that work with Ozone Depleting Substances

### Contributions (USD millions)

TOTAL	SWITZERLAND	MADS	EPM
13.15	5.78	0.76	6.60





# PROJECT COMPONENTS

## INFRAESTRUCTURE

- Pilot project
- Construction of District Cooling of La Alpujarra
- Energy efficiency measures for buildings of La Alpujarra
- Learning and replication

## PROMOTION

- Analysis of current regulations
- Identification of business models
- Mapping and development of energy districts in 5 cities
- Renewable energy
- Training and dissemination of information.
- International knowledge sharing





*Empowered lives.  
Resilient nations.*

# Punta Cana District Cooling

- Approval at ExCom 74 in May 2015 of 100.000 US\$ including support cost from the Multilateral Fund (MLF) to conduct feasibility study for District Cooling in Punta Cana



# Potential solution for Punta Cana

Empowered lives.  
Resilient nations.

## Centralized production

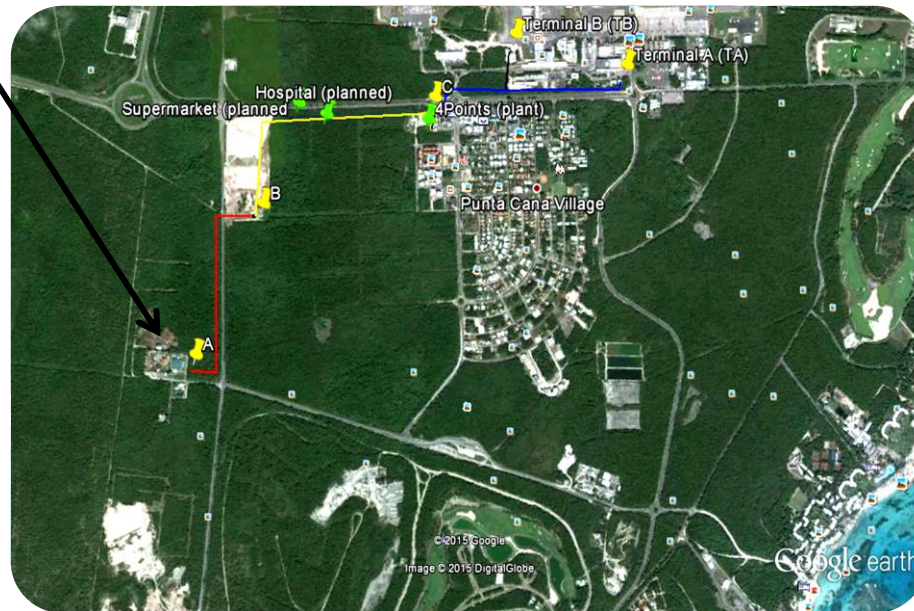
- Located at existing power and steam production site
- Not-in-kind technique; Absorption chillers
- Driven by steam and/or hot water from existing biofuel boilers and/or waste heat sources

## District Cooling Grid

- A 4km distribution pre-insulated double-pipe grid connection the large consumers

## Energy Transfer Stations

- Each building connected to the grid via energy transfer stations



Within the area owned by the Grupo Punta Cana there are several existing and planned buildings with cooling demands such as:

- AIPC Punta Cana Airport including expansion
- Four point Sheraton including expansion
- Blue mall (under construction)
- A new hospital (planned)
- A new supermarket (planned)



# Challenges and opportunities

*Empowered lives.  
Resilient nations.*

- Punta Cana Foundation controls the whole area
- Central AC systems in place in each location
- Oil price initially at 120 US\$ / barrel – Now it is 30-40 US\$ / barrel. However, District Cooling is still profitable even with lower oil price according to initial analysis.
- Proposed system will be scalable i.e. new buildings can be connected to the district cooling grid and new production units can be added.



*Empowered lives.  
Resilient nations.*

# Lessons learned and conclusions 1/2

- District cooling concept goes beyond simple replacement of equipment / chillers
- Change building codes to avoid decentralized systems (split AC systems) in new larger building
- Large potential for District Cooling in Hotel are large buildings, if planned properly from the beginning.



*Empowered lives.  
Resilient nations.*

# Lessons learned and conclusions 2/2

- Construction Synergies with other programmed infrastructure investments
- Introducing a Not-In Kind solution for production i.e. heat driven absorption off-loads capacity from electric power production with a non HFC technique
- Large Potential to reduce use of HCFCs and HFCs in the future but not the solution to everything



*Empowered lives.  
Resilient nations.*

**Thank you !**



*Empowered lives.  
Resilient nations.*