Brownfield Application - Energy Efficiency Through The Utilization Of Low Carbon Cooling Technology In Small Island Development States (SIDS)



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Background

Trinidad and Tobago, a Small Island Developing State (SIDS) in the Caribbean.

- ✓ Protect the ozone layer
- ✓ Climate change
- ✓ Ozone friendly refrigerant
- Reduce Power consumption
- Reduce Emissions
- Reduce Ozone depleting refrigerants

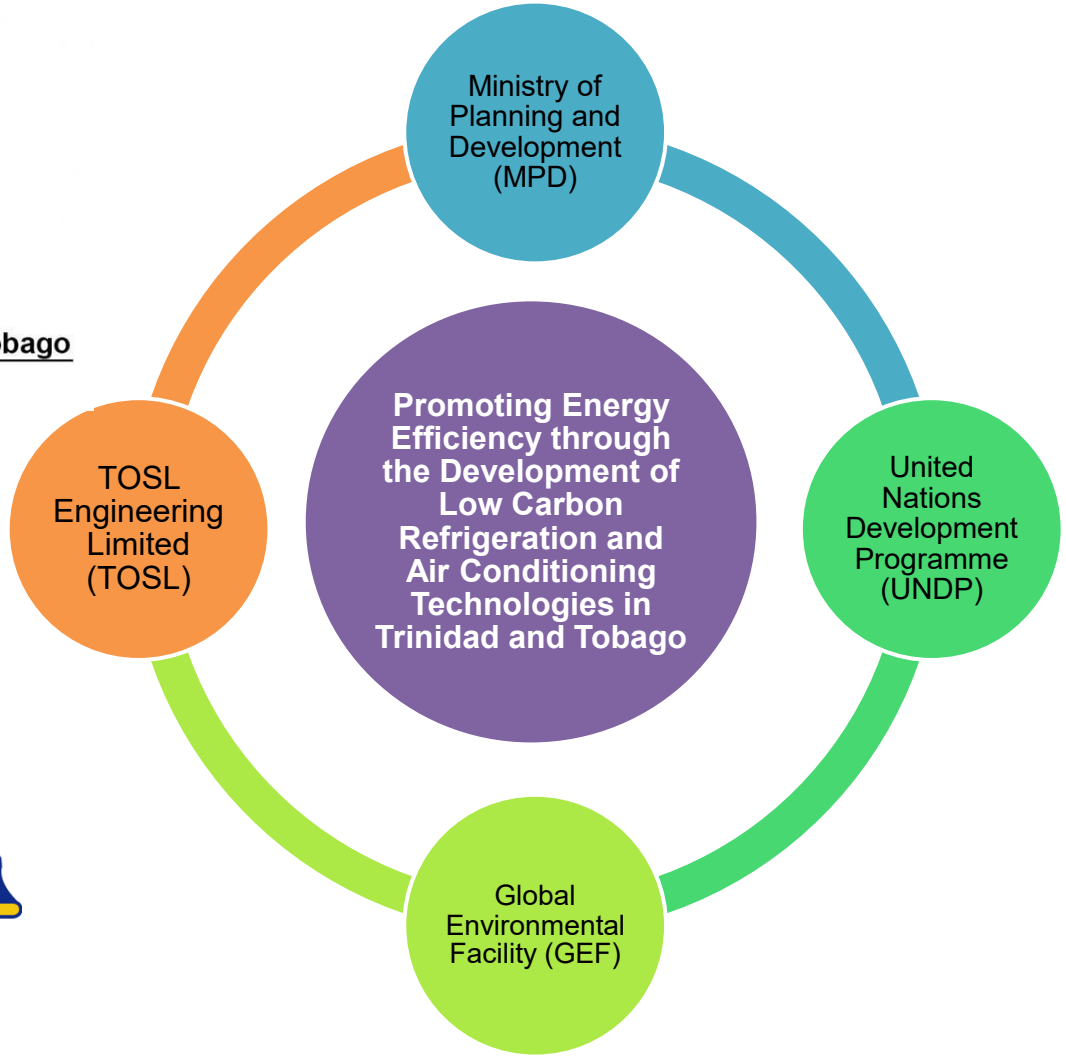


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Partners

Government of the Republic of Trinidad and Tobago

Ministry of Planning and Development



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Introduction to the Innovation

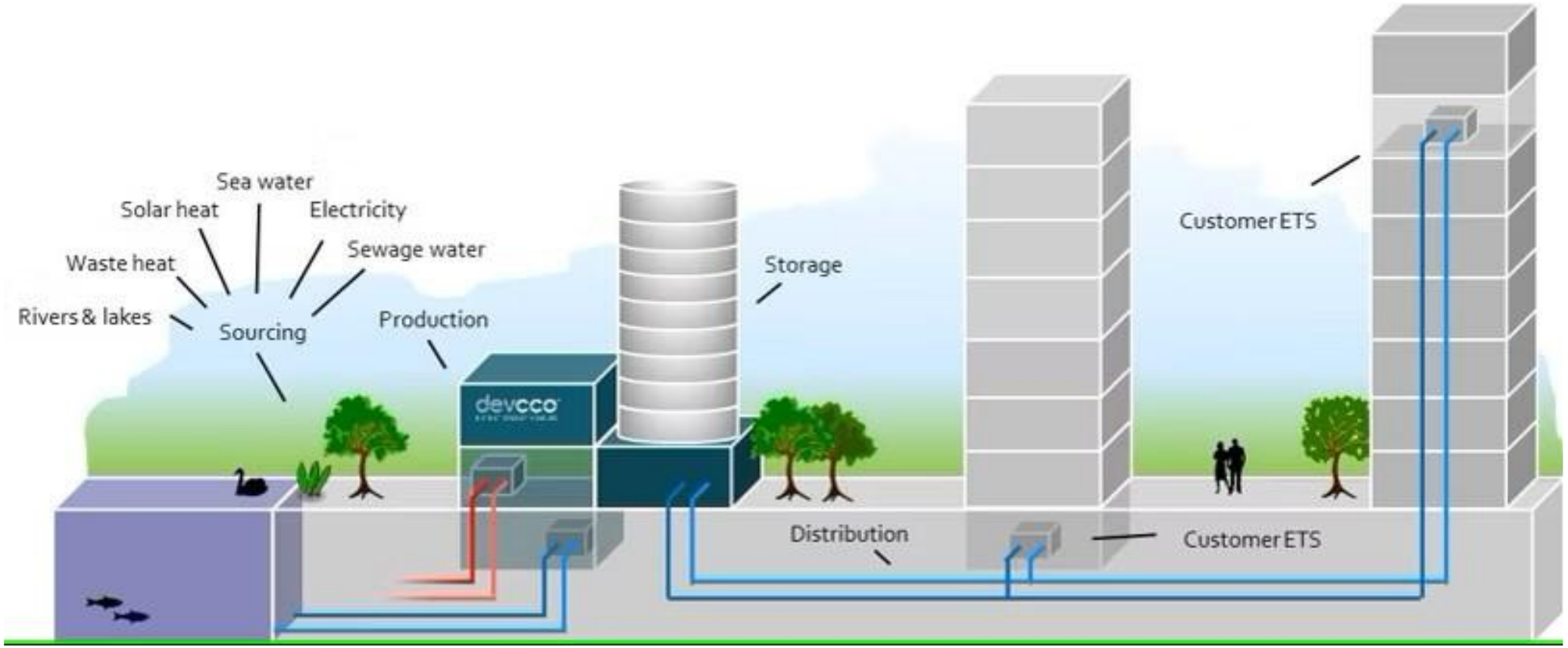


Figure 1. A District Cooling System (*Source: Devcco - District Energy Venture)*

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Relevance to the Energy Sector

Applications:

- Energy efficiency in cooling.
- Electricity distribution improvements.
- Potential integration with renewable energy sources.

Key Benefits:

- Reduces electricity demand by up to **20%**.
- Supports sustainable energy and environmental goals.
- Frees up **natural gas** for other critical uses.

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Problem Addressed

Challenges in SIDS:

- High energy consumption of traditional cooling systems.
- Environmental impact of high-GWP refrigerants.
- High electricity costs
- Natural Gas demands



Solution:

- Centralized system for energy efficiency.
- Low-GWP refrigerants to reduce emissions.
- Financial model to ease adoption barriers.

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Scalability and Market Potential

Scalability:

- Expandable for new facilities.
- Compatible with multiple sectors: hotels, malls, industrial estates, office complexes etc.

Market Potential:

- High cooling demand in tropical regions.
- Applications beyond the Caribbean to other SIDS globally.



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CO_2 Reduction

Methodology:

Indirect emissions reduction via energy efficiency.

Direct emissions reduction by switching to R-1234ze refrigerant.

Quantified Impact:

Projected annual CO_2 reduction: > 200 MT CO_2-eq.

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Alignment with Global Goals

SDG 7: Affordable and Clean Energy.

SDG 9: Industry, Innovation, and Infrastructure.

SDG 13: Climate Action.

SDGs Supported:

Montreal Protocol.

Kigali Amendment.

Protocols Met:

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Next Steps And Future Opportunities

- ✓ Off grid system
- ✓ Potential for trading ITMOs on the voluntary Carbon Market



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Summary

Energy Efficiency

Reduction in our carbon footprint

Elimination of hazardous ozone depleting substances

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Thank you

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