



Business Models and Financing Options for District Cooling

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المركز الإقليمي للطاقة المتجددة وكفاءة الطاقة

Introduction

Many different models are available but, in all risk, sharing is essential

- Local markets offer various options for the structuring of district cooling projects.
- A large number of well-defined contracting alternatives are available.
- Different market participants may have their own definitions and labels and in some cases, ownerships have become integral parts of the structures.
- District Cooling transaction structures recognize that risks are allocated to the party that manages them in the most efficient manner.
- The structure should maintain the appropriate balance amongst the following trade-offs:
 - Customer cost of cooling services in relation to the profitability requirements for the cooling service provider
 - Life-cycle costs in relation to the quality of the service provided to the customer
 - Real estate developer business interests versus the District Cooling service provider
 - Time, Performance & Profitability for the successful execution of the project
- In order to maximise the return for shareholders the bankability of the transaction needs to be preserved, and benchmark returns on investment need to be maintained.

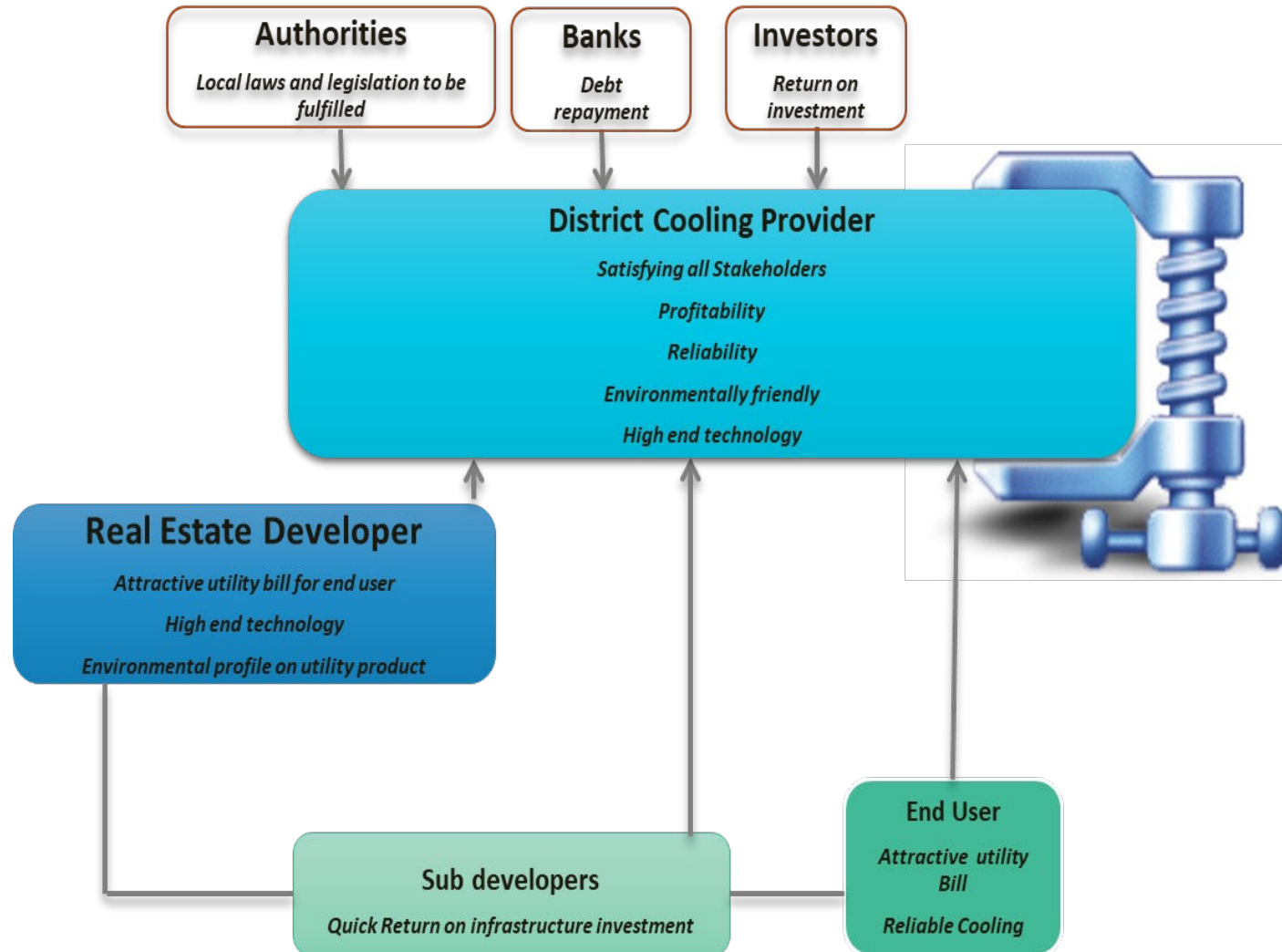
DC Stakeholders

Prior to selecting a business model, the stakeholder needs to be properly addressed

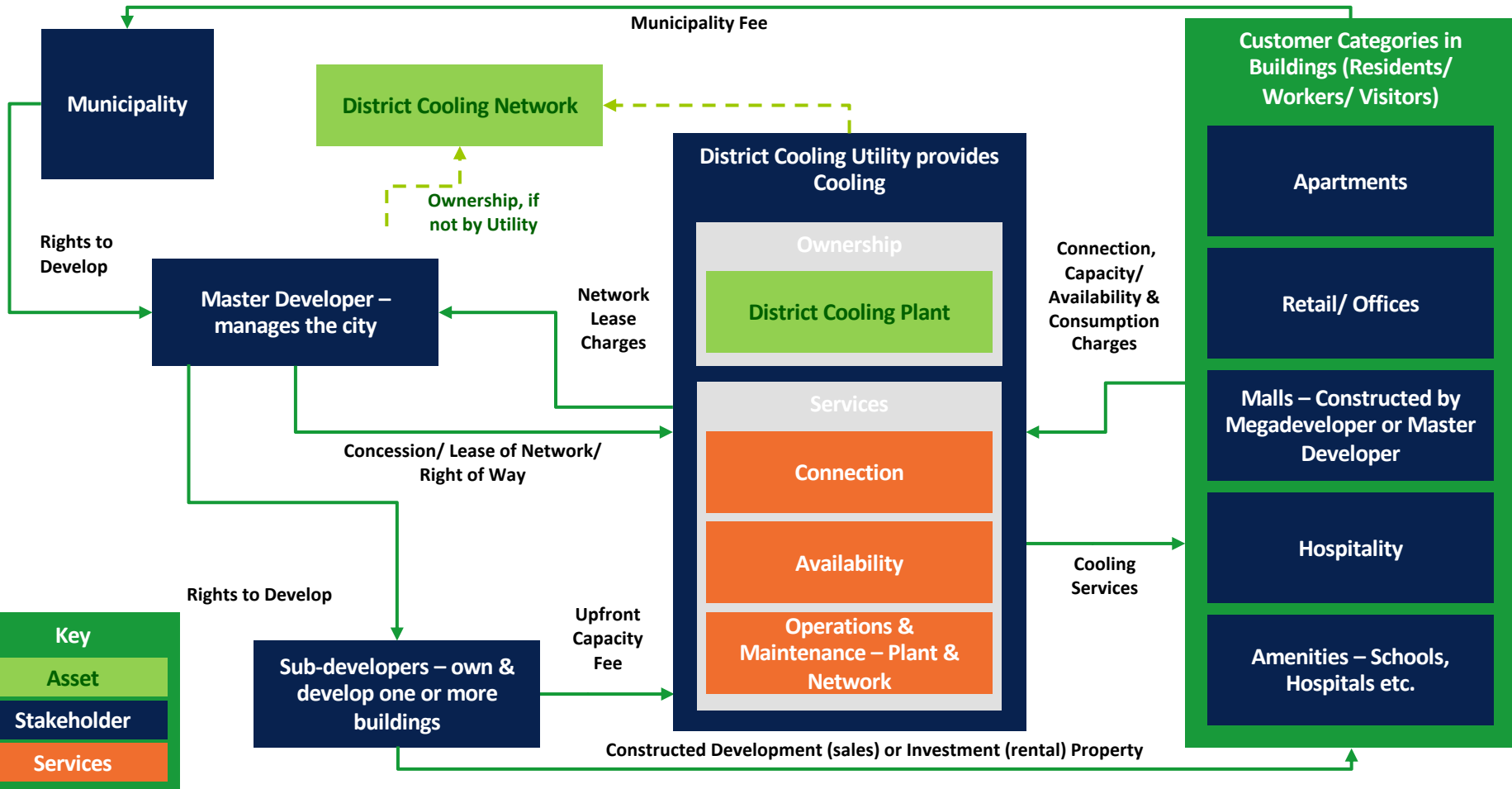
There are a lot of stakeholders in a district cooling project...

- Authorities** and **government bodies**
- Banks** and **lending agencies**
- Private** and **public investors**
- Real Estate Developers**
- Land and city planners**
- End users**
- Utilities** and **service providers**

All have different interests and all need to be satisfied through the Utility Providing entity.



Stakeholders' Relation Map

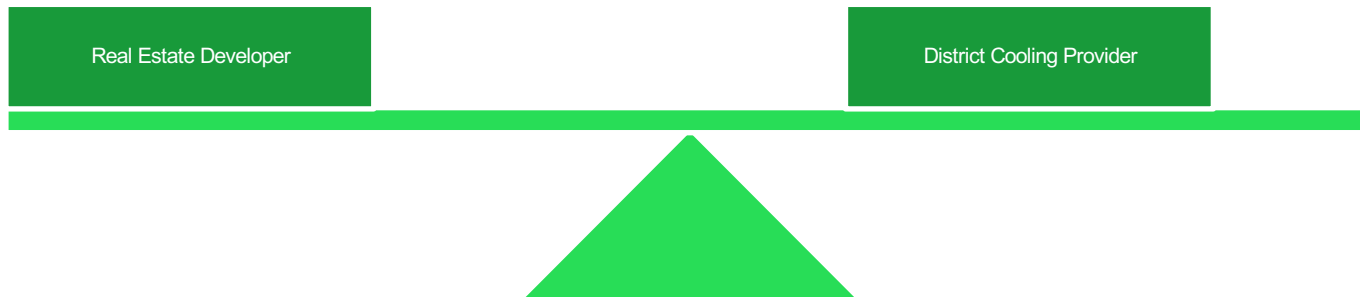


Optimal Distribution of Responsibilities for DC

Real Estate Developers can manage real estate risks more efficiently in comparison with District Cooling Service risks and vice versa, Minimum condition for bank finance is to be maintained while determining risks that are to be borne by District Cooling Provider



Win-Win Situation: Efficient Business Models and Maximum Shareholder Value for both Stakeholders while maintaining market-competitive District Cooling tariffs



Business models

Many different models are available but, in all risk, sharing is essential

Business models organizing the district cooling development and business

- **Non-concession structures**
- **Concession structures.**
- **Ownership**
 - **project developer/city/entity**
 - **external party such as a District Cooling provider,**
 - **operator or EPC contractor.**
 - **a mix, or a shared ownership**
- **Shared ownership advantages**
 - **shared costs and risks**
 - **additional expertise.**
- **Disadvantages**
 - **shared**
 - **more negotiations**
 - **lack of full control**

The choice between a concession and non-concession structure for a district cooling business model often depends on various factors, including local regulations, financing options, the willingness of private investors to participate, and the strategic goals of the government or municipality. Concession models may provide private sector expertise and investment, while non-concession models offer greater public control and ownership. Each approach has its advantages and drawbacks, and the decision should be based on the specific needs and circumstances of the district and its stakeholders.

Business models

Many different models are available but, in all risk, sharing is essential

CONCESSION STRUCTURE

Ownership: a single entity or company (often a private entity) is granted a concession or lease by a government authority or local municipality to design, build, operate, and maintain a district cooling system within a specific area or district.

Financing: The concessionaire is responsible for securing the necessary capital investment for the infrastructure development and operation of the district cooling system. This could involve obtaining loans, private investments, or a combination of both.

Duration: Concessions typically have a defined time frame, often several decades (e.g., 20-30 years or more), during which the concessionaire has exclusive rights to operate the district cooling system in the designated area.

Revenue : The concessionaire generates revenue by selling cooling services to customers within the concession area. They are typically responsible for billing, maintenance, and expanding the system.

Risk and Responsibility: The concessionaire assumes a significant level of risk and responsibility for the success of the district cooling system, including both technical and financial risks.

Ownership and operation of the district cooling system are typically in the hands of the government, municipality, or a public utility. Private entities may still be involved, but they usually do not hold a concession for exclusive operation.

Financing: The financing for a non-concession district cooling system may come from public funds, grants, or a combination of public and private financing. The government or public entity is often responsible for the initial investment and ongoing operations.

Duration: There may not be a defined concession period in a non-concession model, and the government or public entity may retain long-term control over the system.

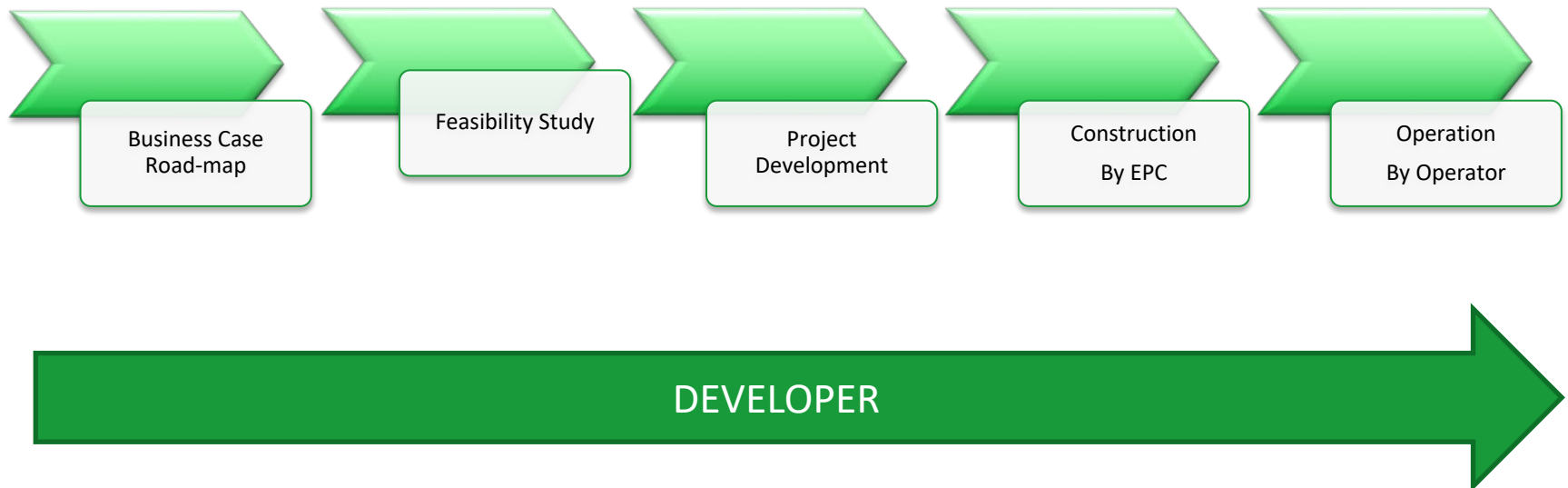
Revenue: In a non-concession model, revenue is generated from the sale of cooling services, similar to a concession structure, but the profits may flow to the public entity rather than a private concessionaire.

Risk and Responsibility: The government or public entity bears a significant portion of the risk and responsibility in a non-concession model, particularly in terms of infrastructure development and financing.

Non-concession structure

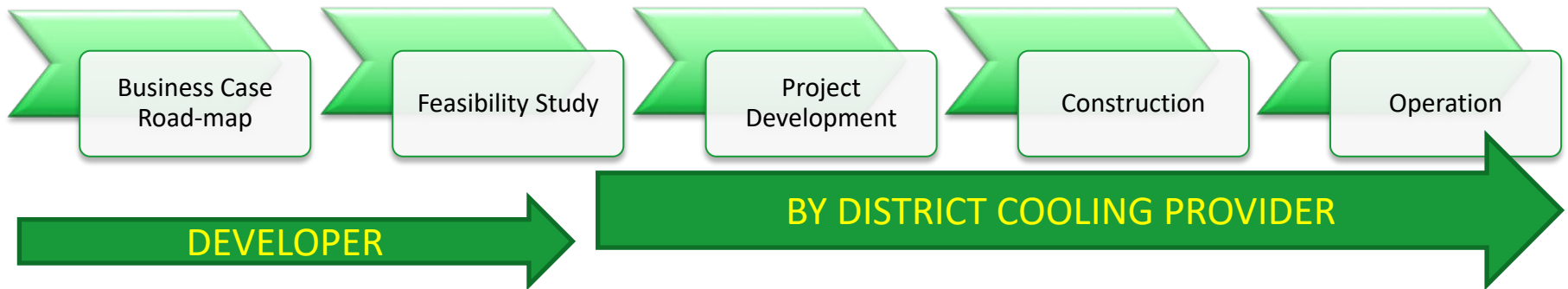
NON-CONCESSION STRUCTURES

- Developer/city/entity
 - maintains the ownership
 - maintains title to the District cooling project through all its development and operation phases.
 - Design and construction under an EPC contract
 - Operation undertaken by a District cooling provider/operator (EPC and Operators models).
- The structure is simple to execute and has relatively short lead times.
- Non-concession arrangements are well known in Canada and UK.



CONCESSION STRUCTURES

- Concession Structures
 - project developer/city/entity issues a guarantee towards a third party and/or Joint Venture/SPV
 - concession agreement
 - guaranteed supply of district cooling to buildings in the development area /city.
 - concession taker owns the district cooling system.
- Procurement
 - Structuring
 - developing
 - negotiating the concession agreement.
- Concession models normally include
 - design, build, finance, operation and maintenance by a District cooling provider or a joint venture /SPV
- District cooling provider to
 - design, build, finance and operate and maintain the District cooling System for a fixed term.
- Benefits
 - considerable risk protection
 - cash savings
 - avoidance of liabilities to the project owner/main project developer.
- The whole scheme hinges on the quality of Off-take Guarantee and consequential pricing.
- Concession models are likely to be found in UK, France, US, the GCC region and coming in China



BUSINESS MODELS OVERVIEW EXAMPLES

– Municipality owned and operated

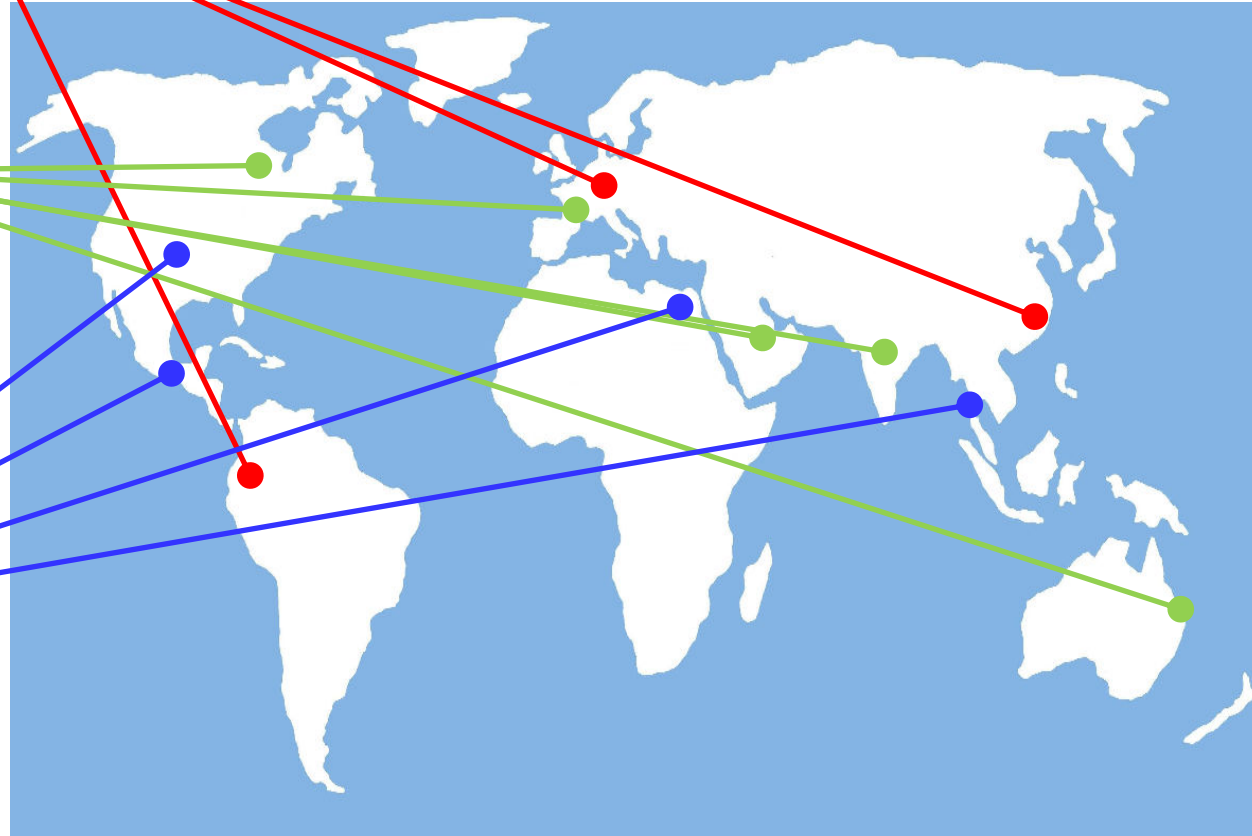
- Europe
- China
- Columbia

– Concession business model

- Middle East (KSA/UAE/Oman/Kuwait)
- France
- India
- Australia
- New Zealand
- Canada

– JV/Public/Private

- US
- Malaysia
- Thailand
- Egypt
- Mexico



In general countries with long history from thermal energy business trend to have municipality owned and operated systems .

Contractual Forms:

Operations and leasing models

Traditional sequential model

Design Build (DB)

Turnkey models

Engineer Procure Construct (EPC)

Build Operate Transfer (BOT)

Construction Rehabilitation

Build Own Operate (BOO)

Build Own Operate Transfer (BOOT)

Design Build Operate (DBO)

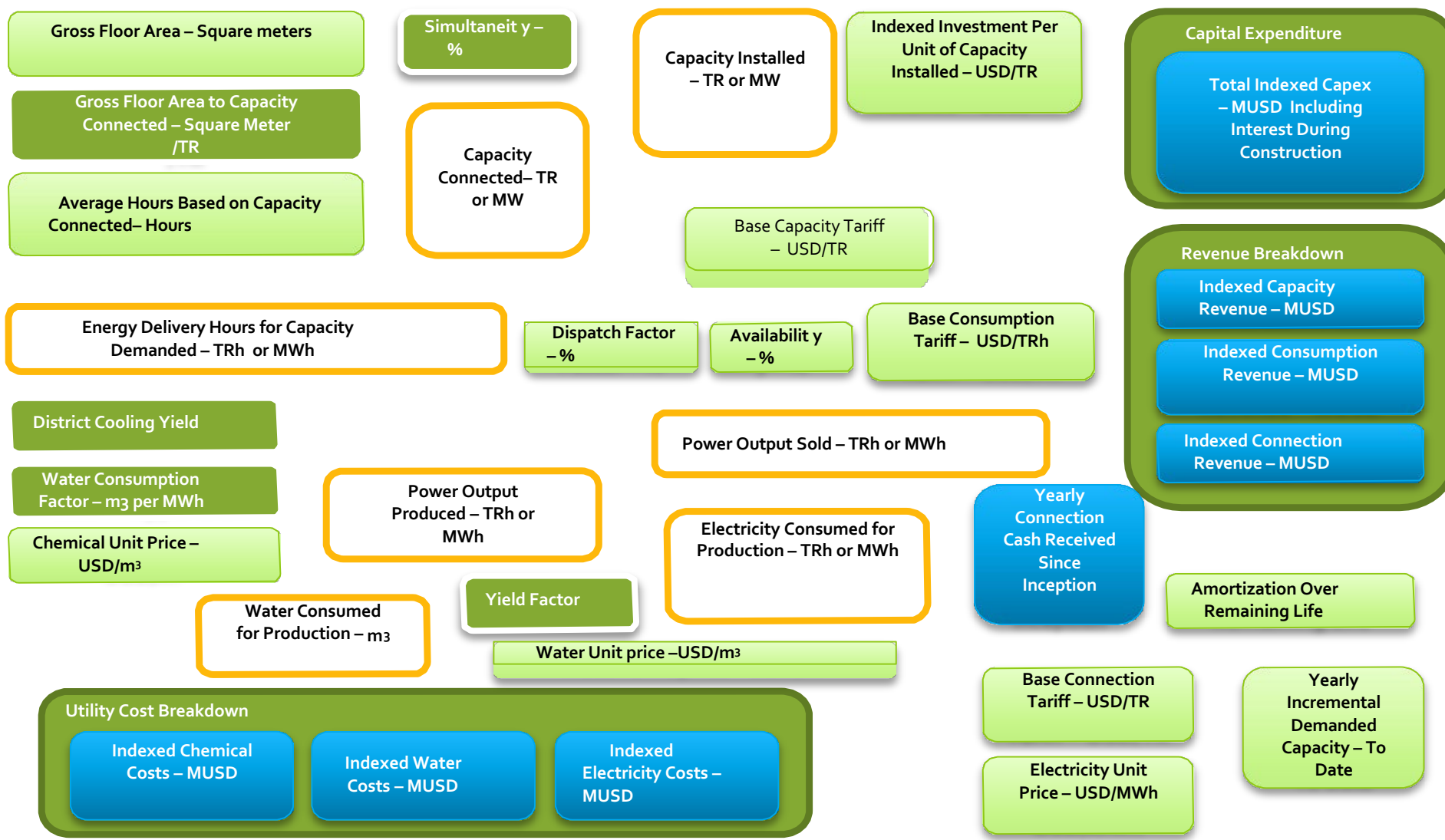
Design Build Operate Maintain (DBOM)

Design Build Finance Operate (DBFO)

Contract Model Options

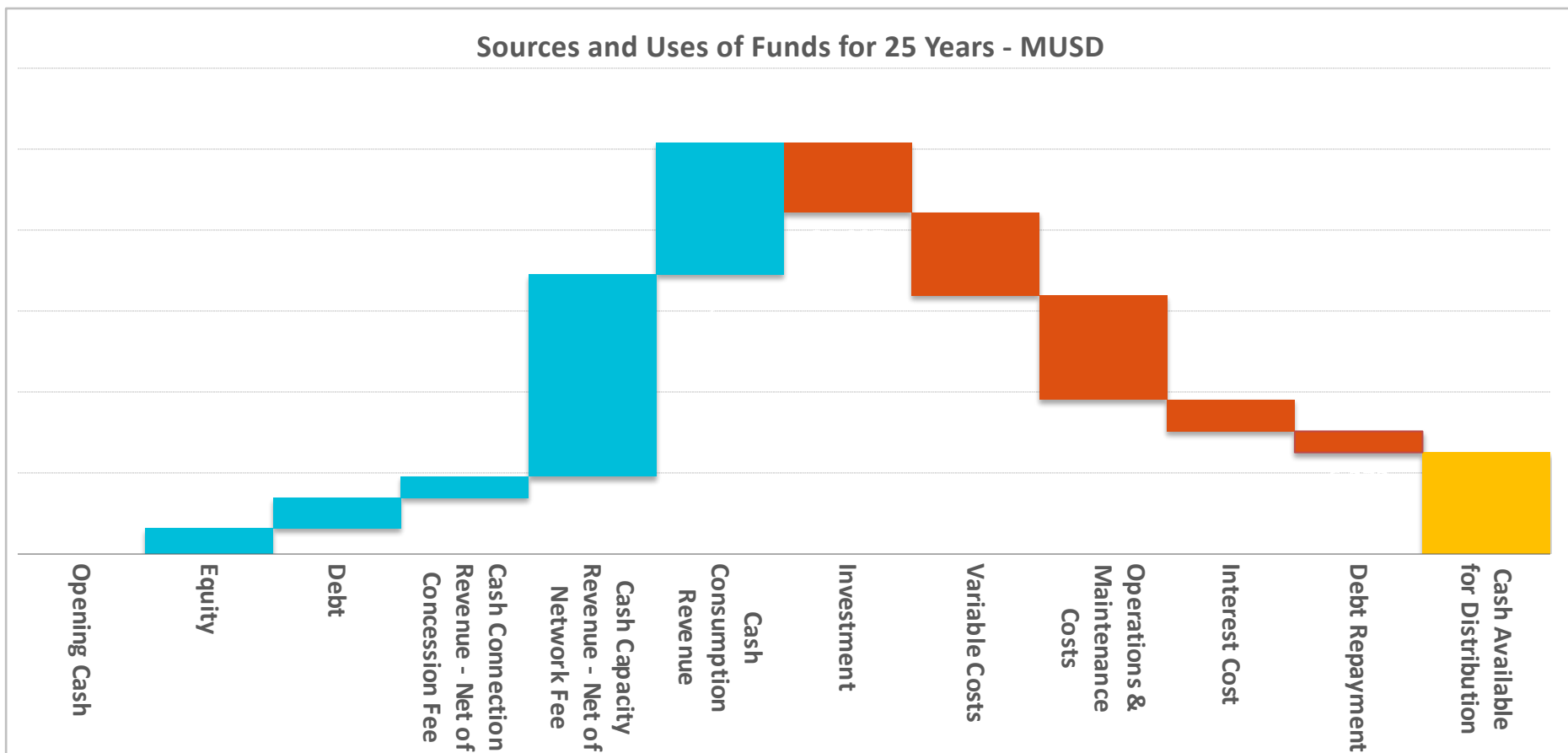
	Main Features	Application example	Key drivers
EPC or similar contracting	Contract with third party to design and built Facility is financed and owned by developer/city	Suited for projects with small operating requirements Suited if developer/city wishes to retain operating responsibility	Transfer of design and construction risk
Built Operate Transfer models	Contract with third party contractor to design, build and operate City/developer facility for defined period and hand back to City /developer The facility is financed by City /developer and remains in City/developer ownership throughout the contract	Suitable for projects with significant operating content Common for water and waste water projects	Transfer of operating risk in addition of design and construction risk
Design, Build, Finance, Operate models	Contract with third party to design, built, operate and finance the facility for defined period after which facility reverts to city/developer The facility is owned by third party for the contract period and recovers cost from City /developer	Suitable for projects with significant operating content Common for water, roads and waste water projects	Utilization of private financing and transfer of design, construction and operating risks
Concession type contracts	As for DBFO except third party recover costs from user charges	Suitable to projects that provide an opportunity for user charging Particular for water, waste and district energy projects	Utilization of private financing and transfer design, construction and operating risks. Potential to partially mitigate end user risk

DC- Revenue and Cost Model



TYPICAL CASH FLOW STRUCTURE FOR A DISTRICT COOLING PROJECTS

District Cooling Cash Flows



Financing Options

Financing Options

Project Finance

- Corporate or Special Purpose Vehicle
- Linked to long term service provisioning including energy supply commitment
- Often used where off-balance sheet solutions are attractive
- Financing structure usually involves equity and debt

Asset Finance

- Can involve a service specific to the asset
- Some performance and residual risk is attached to the asset
- Level of risk transfer determines whether classified as finance or operating lease
- Financing structure usually requires a deposit from the borrower

Corporate Loans

- Term loan to private or public sector clients
- On-balance sheet with bank recourse
- Small developers have limited capacity to provide collateral

Contact us!



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For any inquiries or comments,
please don't hesitate to contact
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