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This webinar presents the fundamentals of policy development in DES planning, including:

• The importance of integrating DES in urban planning process
• Key steps of policy development to integrate DES in urban planning
• Best case practices, strengths and limitations
• Lessons learned & recommendations
**ISKANDAR MALAYSIA**

- Iskandar Malaysia is located in the main southern development corridor in Johor.
- Total area: 2,217 sq km (12% of Johor State); 3 times the size of Singapore.
- Iskandar Malaysia covers **FIVE Local Authorities**
  - MPKU
  - MDP
  - MBPG
  - MBIP
  - MBJB

- Iskandar Regional Development Authority (IRDA) is a Malaysian Federal Government statutory body tasked with the objective of regulating and driving various stakeholders in both public and private sector towards realizing the vision of developing Iskandar Malaysia into a strong and sustainable metropolis of international standing.
- IRDA's statutory powers and functions are designed to achieve the above objective with core functions to **plan, promote and facilitate** developments in Iskandar Malaysia,
On 17 Dec 2009, Malaysian 6th Prime Minister committed to a voluntary reduction of up-to-40% in terms of emission intensity of GDP by the year 2020 compared to 2005 levels.

At COP 21 Paris – The commitment is renewed to a reduction of up to 45% in terms of emission intensity of GDP by 2030 compared to 2005 levels.

At COP 19 Doha – Iskandar Malaysia launched Low Carbon Society Blueprint for Iskandar Malaysia 2025. The Blueprint was subsequently endorsed by the Prime Minister of Malaysia in December 2012.

- Low Carbon Society Blueprint for Iskandar Malaysia 2025 presents comprehensive climate change mitigation policies and detailed strategies to guide development of Iskandar Malaysia.
- The LCSBPIM – a quick reference for all policymakers in both public and private sectors as well as IRDA.
In Malaysia, district energy system is based on the market demand and supply, which currently, there is no regulation, standards, planning and coordination body is established to monitor development of this facility. Malaysian district cooling market is more developed than other countries in South East Asia.

However:

i. DCS is not the standard cooling technology for dense urban areas

ii. Most DC projects are greenfield and not much of the existing buildings consider to have retrofitting for this facilities.

iii. Innovative technologies are not being piloted or promoted

iv. Major customers groups are not being connected (residential, education, data centres)

v. DC being led privately and not by cities – limiting potential
Case for Action

Malaysia’s voluntary commitment to the Paris Agreement (2015) to reduce up to 45% emission intensity of GDP by 2030 compared to 2005 level.

Demand for electricity in Peninsular Malaysia is expected to increase by 50% from 2018 to 2035

Power sector emissions (2015): 25% of total emissions or 88MtCO₂

Current emissions from space cooling: 9% of total emissions or 22MtCO₂ (estimated)

Iskandar Malaysia targets 12% of its energy requirement from renewable energy with 24% energy consumption reduced by 2025 through efficient energy management.

Cooling of buildings is estimated to consume 25% of total power demand in Malaysia.

Montreal Protocol HCFC Phase-out Management Plans (HPMPs)22 – Stage 1 focus on compliance with the 2013 freeze and 2015 reduction targets. Subsequent stages, focus on HCFC phase-out in compliance to future reduction control targets.
Benefits of District Cooling Implementation

- **Economy of Scale**
  - Building owners - save investment and maintenance costs
  - Utility operators, the initial capital cost can be spread over longer period

- **Energy efficient and Lower Green House Gas (GHG) emission.**
  - DCS can operate with 20-40% less electricity consumption than conventional air conditioner systems. Energy and fuel are conserved which simultaneously reduce the carbon emission

- **High system reliability**
  - In standard operation, the cooling equipment and backup chillers are installed in standby mode.
  - Thus, when an emergency happens, operation is not interrupted and will still perform normally

- **Minimal environmental impact**
  - The quantity of refrigerant used to serve a district is less than the total amount of refrigerant used for in-building AC system.

- **Better utilization of building space**
  - The removal of individual cooling facilities from a building allows more space saving, and Green space can be designed on the building roof which was initially used to place the exterior mechanical parts of AC system (compressor etc.)
Vision

To provide its residents and industries with energy choices that are affordable, reliable, diverse, safe and environmentally acceptable.

5 Thrusts

1. Strengthen the institutional framework
2. Provide conducive environment for RE, EE and Green Technology Development
3. Intensify Human Capital Development in RE, EE and Green Technology
4. Intensify RE, EE and Green Technology Research and Innovations
5. Promotion and public awareness

3 Main Elements

Economy

Environment

Social
Existing and Potential DCS in Iskandar Malaysia

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<thead>
<tr>
<th>Category</th>
<th>No</th>
<th>Name/ Area</th>
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<tbody>
<tr>
<td>Existing</td>
<td>1</td>
<td>DCS Kota Iskandar- Jana DCS</td>
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<td></td>
<td>2</td>
<td>DCS Puteri Harbour- UEM</td>
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<td></td>
<td>3</td>
<td>Galleria@Kotaraya</td>
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<td></td>
<td>4</td>
<td>Hotel Selesa Pasir Gudang-inactive</td>
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<tr>
<td>Potential (not limited to these area)</td>
<td>5</td>
<td>MedinI Township</td>
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<tr>
<td></td>
<td>6</td>
<td>Kulai Sedenak Data Exchange</td>
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<td>7</td>
<td>Iskandar Halal Park</td>
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Other established DCS in Malaysia

Gas District Cooling Kuala Lumpur International Airport (KLIA) Plant, Sepang, Selangor.

KLCC District Cooling in January 2014 with As Syakirin Mosque and Petronas Twin Towers to the left

And the potential to expand in other townships and Central Business Districts (CBD) in Malaysia are LIMITLESS!!
THE IMPORTANCE OF INTEGRATING DISTRICT ENERGY SYSTEM IN URBAN PLANNING PROCESS

Planning authorities have the ability to implement planning policies that will encourage, or even mandate, new developments to incorporate district cooling where certain conditions are met.

**LEVEL OF PLAN**

**National Level**

- Shows commitment to the development of the facility and provides certainty for investors
- The integration of district cooling considerations into national building codes and specific green building codes, could also be used to encourage district cooling in new building developments.
- E.g. To prepare Act at National level covering consumer and operator protection, fair and transparent tariffs, licensing of operators, and technical standards, whilst also supporting and encouraging innovation and development.

**Regional Level**

- District cooling should be listed as a separate infrastructure in the Development Plans, similar to the approach taken with power, water, sanitation.
- This could include an overview of the potential role(s) of the city government, in developing district cooling as an infrastructure. For example, the city may seek to play a role in being a promotor of district cooling and in facilitating private sector investment, or may choose to play a more active role as an investor / asset owner.
THE IMPORTANCE OF INTEGRATING DISTRICT ENERGY SYSTEM IN URBAN PLANNING PROCESS

LEVEL OF PLAN

State/ City Level

- State or city level policy has an important role in enabling district cooling, since it sets out the guidance on specific city level planning.
- **Urban design guidelines** also set at city level could also be used for setting specific district cooling related requirements, such as:
  a. Requiring new developments to connect to district cooling networks
  b. Setting minimum floor space requirements for connecting to district cooling

Township Level

- New development/ township can incorporate the requirement of connecting buildings to district cooling system.
- For example: Certain township or new development in Iskandar Malaysia has its own masterplan for the whole township to ensure the township planned well throughout the whole development. E.g. Iskandar Sustainable Living
KEY STEPS OF POLICY DEVELOPMENT TO INTEGRATE DES IN URBAN PLANNING

STEP 1
Assess current regulatory framework

Description of existing and planned policy and regulatory frameworks and funding mechanism at government levels

STEP 2
Assess policy and regulatory barriers

Assessment of the policy and regulatory barriers and solutions to overcome these, drawing on international best practices

STEP 3
Policy and regulatory recommendations

Recommendations for new policies, regulations, standards and funding mechanisms

STAKEHOLDER ENGAGEMENT
Among studies done on feasibility of DCS in Iskandar Malaysia:

The mapping exercise shows that Medini has substantial potential for district cooling. Multiple zones show potential for district cooling that should be explored, keeping in mind that the price of land there is at a premium and that energy centre locations are likely to be one of the largest constraints.

*studies done by UN Environment and Carbon Trust"
District Cooling System in Kota Iskandar, Nusajaya

Owner: Johor State Government
Developer: Cahaya Jauhar Sdn Bhd
DCS Operator: Jana DCA Sdn Bhd

Coverage:
- Johor Administrative Centre in Kota Iskandar (3000RT); and
- Various private sector developments in Puteri Harbour (3000RT); Traders Hotel, The Little Red Cube, Jen Hotel, Marina Walk

Strength
- The contractual agreement between JanaDCS and Johor Administrative Centre make this business could sustain since there are activities happened there everyday.
- Many retails/ commercial centre nearby need the cooling load for their business operation (strategic location).

Limitation/ challenges
- Many retails./ commercial units has been downsizing or closed operation due to Covid pandemic- e.g. Hello kitty and hotels
- Pandemic situation - hard to move the projects and forecast future market
- Low occupancy rate of buildings (commercial) and the development happened by phases.
LESSON LEARNED

Government intervention is crucial/essential to speed up the development of DCS nation-wide by policies.

Regulatory and standard is important to guide the investors, building owners and regulatory/co-ordination body for DCS.

There is need/requirement to list the DCS as part of main enablers-as important as other enablers such as electricity, water etc to ensure this facility incorporated well in the masterplan at national, state and regional level.

A lot of awareness and matchmaking business potential between developers/building owners with the district energy services providers need to be conducted to ensure more building owners understand the concept of DCS and how it works.
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<tr>
<th><strong>Create a centralised coordination body</strong></th>
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<td>A coordination body would play an important role in providing technical assistance and training, as well as supporting the development of projects. Such coordination is best placed at a national level, where it can provide a standard that will be applied across the country.</td>
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<th><strong>Establish national district cooling policies</strong></th>
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<td>Following the example of Singapore and its District Cooling Act, a comprehensive regulatory framework should deliver consumer and operator protection, fair and transparent tariffs, licensing of operators, and technical standards, while ensuring innovation and development is supported and encouraged.</td>
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<th><strong>Developing national district cooling standards</strong></th>
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<td>National standards can be used to set minimum standards for developers of district cooling networks and therefore ensure standards across the industry. Standards can cover all stages of the development of a district cooling network from feasibility through design, construction, commissioning, and operation.</td>
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<th><strong>Carry out energy master planning</strong></th>
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<td>This can be done at regional, city or at a local level to help to develop a vision of the future of the energy system and specifically to investigate and develop the potential for a district cooling network.</td>
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<th><strong>Raise awareness of district cooling across all stakeholders</strong></th>
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<td>The established coordination body need to developed training packages aimed at different stakeholder to build knowledge and understanding of district cooling.</td>
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THANK YOU

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