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Client Alert

Global Transactions Practice Group

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The (further) Global Rise of District Energy: The United Nation's push for District Energy in World Cities

Three years ago, we predicted the global rise of the district energy sector.[1] The key drivers at the time were energy efficiency savings of up to 70% and reductions in greenhouse gas emissions. However, there were no policy initiatives at a global level to drive district energy, rather it was left to developers, local councils, cities, governments and countries to push their own agendas.

Fast forward to today and district energy has received a huge global boost by the United Nations Environment Programme (UNEP) in their new 2015 report: "*District energy in Cities: unlocking the potential of energy efficiency and renewable energy*".

The UNEP report calls for governments all around the world to rapidly develop modern and affordable district energy systems to reduce carbon emissions and to keep global temperature rise to within 2-3 degrees Celsius by 2050.

But why should district energy systems be adopted in cities and how can district energy achieve such lofty goals? A few statistics help crystallize the need for development of this sector:

- cities account for over 70% of global energy use and up to 50% of greenhouse gas emissions worldwide;
- 50% of energy consumption in buildings is used for space heating and cooling (this rises to 70% in some cities in the Middle East). If you are involved in the power sector, stop, and read that statistic again;
- we are in a period of rapid urbanization - the world's cities are growing: [2]
    - 54% of the world's population lives in urban areas. By 2050, this figure will rise to 66%; and
    - in 1990, there were 10 'mega-cities' (ie 10 million+ inhabitants). In 2014, there were 28 mega-cities and by 2030, the world is projected to have 41 mega-cities.

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So with rapid urbanization globally and with energy use primarily concentrated in buildings in cities, any solution for the climate and energy transition must address sustainable urban heating and cooling as well as electricity. One of the least-cost and most efficient solutions in reducing emissions and primary energy demand is the development of modern district energy in cities.

The UNEP's report is a roadmap to facilitate this energy transition and to achieve 'sustainable energy for all' (or 'SE4ALL') through accelerating district energy projects in cities around the world. It is arguably the first report, at least at the global level, to provide concrete policy, procurement, finance and technology best practice to governments (and their local councils, cities and master developers) seeking to deliver energy efficiencies and to reduce their carbon footprints.

There are some heavyweights behind the initiative. These go right up to the UN Secretary-General, Ban Ki-moon, who launched the initiative at the Climate Summit in New York in September 2014. They also include the President of the World Bank, dozens of public and private sector participants and 45 'champion cities', from Aberdeen to Terevan, who have collectively installed in excess of 36 GW of district heating capacity, 6 GW of district cooling capacity and 12000 kms of networks.

The UNEP report promotes "energy efficient and climate resilient" district energy systems. These combine heating and cooling with thermal storage, heat pumps, and renewable sources of energy such as geothermal, solar and wind together with waste to energy and waste heat recovery technologies. These are 'smart' systems which are truly integrated for maximum environmental and economic efficiencies.

The report offers guidance to cities (but also to local councils and developers) at different stages of development of their district energy systems. They call these:

- consolidation cities (50%+ of district energy systems);
- refurbishment cities (some refurbishment of systems is required);
- expansion cities (15-50% penetration of district energy and growing interest); and
- new cities (0-15% penetration of district energy and early days of consideration).

To assist these cities and other stakeholders, one section of the report is dedicated to providing advice to on how they can participate: as (i) planner and regulator, (ii) facilitator, (iii) provider and consumer and/or (iv) coordinator and advocate. Until now, governments, cities, local councils and developers have been left to their own devices to achieve their climate goals and to develop their space heating and cooling needs.

Now, there is a global framework with best practice guidance which each city can consider and tailor for themselves. The UNEP will be supporting cities globally, starting with China and India.

Another section of the report is dedicated to exploring the various business models that may be used to developing district energy systems. The models put forward are not dissimilar to the business models that regions like the Middle East, Asia and the US have developed for district energy projects over the last decade: from the 100% public ownership model, to the 100% private ownership model to the 'hybrid' joint ownership model.

There are, however, some differences in each jurisdiction, but these are too specific for the UNEP report to cover. We cover these and other models in previous articles and publications. [3]

Other sections of the UNEP report cover risks, costs and financing issues associated with the development of district energy systems. The final section provides a decision tree - a 'why / when / what / how' analysis - to help cities and developers navigate through the various stages in district energy development.

Since the UNEP report, there have been other positive steps pushing further for district energy systems in global cities. A recent example was on 27th August 2015 in South Korea, where a memorandum of understanding was signed between the International District Energy Association, the Korea District Heating & Cooling Association, the China District Heating Association, Euroheat & Power, and the Ministry of Energy of the Mongol Government. The MOU is intended to provide a framework to increase district energy systems in their respective countries and also globally with the aim of "increasing energy efficiency, reducing emissions and strengthening local and regional economies".[4]

In a world where two-thirds of the world's population will live in cities by 2050, it is incumbent on governments everywhere to address sustainable urban heating, cooling and electricity demand. The industry has known for some time that one of the least-cost and most efficient solutions in reducing emissions and primary energy demand is to develop modern district energy systems. Now we have the United Nations lending its voice to the debate.

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King & Spalding's District Energy Practice involves lawyers specialize in transactions relating to district cooling and heating, co-gen, tri-gen and other "centralized energy" schemes. The team has structured, documented and negotiated 40 major district energy schemes since 2008. For more information, please contact us at DistrictEnergy@kslaw.com or view our Global District Energy Brochure.

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[1] "*The global rise of district energy*": http://www.kslaw.com/imageserver/KSPublic/library/publication/2012articles/10-19-12IDEABurburry.pdf
[2] World Urbanization Prospects by UN DESA's Population Division 2014
[3] See http://www.kslaw.com/people/Tim-Burbury and articles and presentations by the author including: "*Structuring District Energy Projects*", "*A New Delivery Model for District Energy Projects: Public-Private-Partnerships*"; "*Future of District Cooling: Business & Legal Perspectives*"
[4] See http://www.districtenergy.org/blog/2015/09/02/idea-signs-mou-for-enhancing-international-collaboration-on-district-heating-cooling-and-chp/?utm_source=rss&utm_medium=rss&utm_campaign=idea-signs-mou-for-enhancing-international-collaboration-on-district-heating-cooling-and-chp