Municipalities in Sweden powering cities from renewable energy sources

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By relying on district heating combined with heat and power production, municipalities in Sweden power their cities from renewable energy sources.

Nordic countries have achieved a great independence from fossils because of their widespread district heating systems. District heating is a smart way to avoid using fossil fuels to heat buildings. It is typically based on wood, peat and other biofuels, or household waste. But other non-fossil fuel sources, such as deep thermal heat—sourced from between 100 to 500 meters below the ground—or recycled heat from industries can be used as well.

Two Swedish experts talk to youris.com about ways of removing carbon-based fuels from the heating equation, and what other municipalities can learn from their experience. One of them is Karin Ericsson, a senior lecturer at the Department of Environmental and Energy Systems of Lund's University. Her research field is energy system analysis and bioenergy in Europe. The other is Mats Didriksson, who is director for the business area energy of Kraftringen, an energy company owned by four municipalities in Southern Sweden near the city of Lund.

What is the history of the development of district heating in Sweden?

Karin Ericsson: Overall, district heating represent about 60% of heating

in Sweden. In fact, 85% of all multi-dwelling houses and all public buildings are connected to district heating. Today all towns in Sweden have district heating networks.

It started in the 1950s, when the municipalities saw an opportunity to reduce air pollution in the towns. They wanted, at the same time, to produce electricity efficiently, as the demand was rapidly growing. Efficiency was very important. They opted for combined heat and power production, which is much more efficient than condensed power production.

In Sweden, there is generally a very high acceptance for collective infrastructure solutions; especially in the 1950s, 1960s and 1970s. From the beginning, district heating was organised within the municipalities, which took the initiative to build the systems. Later, they were transformed into municipality-owned companies. During the late 1990s, some of them were sold to national or international companies.

What can cities in other countries learn from Sweden's experiences?

Karin Ericsson: District heating has enabled the Swedish heating sector to become almost completely fossil-free. We use mainly biofuels like wood and peat, but we also burn household waste. When the industrial context in a given town allows it, we can use waste heat from industry.

In the case of Sweden, the policy pressure on the building and heating sector has been quite strong. It is quite easy to operate district heating. This is because you do not have to take the international context into account, as is the case with electricity for example. But building such infrastructures is difficult and expensive. However, municipalities are the most important actors even in other countries, as they are the ones

who have to take up the initiative.

How has a municipality owned company like Kraftringen sourced sufficient renewable energy for district heating?

Mats Didriksson: Sustainability is high on our agenda. In terms of renewable energies, wind and solar power is just one side of the equation. Of course, we also use such power sources, but we also look at the regional perspective of renewables. In Sweden, we talk a lot about biofuels as replacements for coal-fuelled power plants; and thus built bio-fuelled power and heating plants. This shift has been going on in the past 20 to 30 years.

When we planned our new combined heat and power production plant—north of Lund—we assumed that we would buy wood from the middle region of Sweden. But then, we witnessed the development of a local biofuel market in an area of about 60 kilometres in diameter around the plant. It offered very competitive wood prices, and started as early as during the building phase.

What about competition?

Mats Didriksson: There is no competition from other district heating companies. But we have a tough competition from heat pumps. Electricity is expected to remain at relatively low price in the next five or ten years. However, there will be a pressure from the customers, who may switch to these systems.

What can other European cities learn from Kraftringen's experiences?

Mats Didriksson: District heating is not very common in continental Europe. Except in Eastern Europe, where district heating is still broadly based on coal burning. The combined heat and electrical power production method in our plants is today a very economically and financially sound way of producing energy.

The way we are optimising the production and distribution system is something that, I know, other countries could learn from. With our holistic system approach to district heating, we look at the whole environment, not just the production plants nor just the distribution networks. For example, if the system network is efficient, temperature in the plants can be reduced.

Provided by Youris.com

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