Case Study

MF Case 19: Kalundborg, Denmark
Kalundborg Sustainable City/symbiosis

In 1961 the world's most well-known example of an Industrial Symbiosis and Eco-Industrial Park was constructed, located in the Danish small town of Kalundborg, a city 50,000 inhabitants. The ongoing development of the cluster demonstrates that growth and climate-friendly solutions need not be in contradiction to one another, but can actually go hand in hand and create new jobs. In 2012 alone, 230 new private-sector jobs were created in Kalundborg Municipality, which is exceptional in a time when employment in other regions of Denmark was going in the opposite direction.

Policy

The initial cooperation was relatively ''bottom-up'' but its success has been supported by the city. Kalundborg City is now setting its focus on renewable energy and resources. Asnaes Power Station has recently pledged a 50% switch to renewables by 2020. Another future goal is to facilitate more collaboration where public and private enterprises buy and sell residual products, resulting in mutual economic and environmental benefits.

Industrial symbiosis has now become part of the overall Danish strategy for developing business. The Danish Business Authority supports activities all over Denmark to identify and start potential systems of resource exchange. (http://we-economy.net/case-stories/kalundborg-symbiosis.html)

Preconditions

The local scarcity of water was the motivation factor behind the project and led to cooperation among the different economic players. By using surface water from a nearby lake for a new oil refinery, the limited supplies of groundwater were saved. The reduction of costs led to even more innovative approaches. The focus was especially on how to income-produce uses for "waste" products

Funding and finance

To address the water shortage, the City of Kalundborg built a pipeline financed by the refinery. Starting from this initial collaboration, a number of other collaborative projects were subsequently introduced and the number of partners gradually increased. All investments were private sector financed. Institutions and management

Encouraged by the City government through its ‘’Environmental Club’’ established in 1988, companies in physical proximity studied potential uses of their ‘’waste’’ products. Among the companies participating in the symbiosis are the world’s largest producer of insulin (Novo Nordisk), the world’s largest enzyme producer (Novozymes), the largest sewage treatment plant in Northern Europe (Kalundborg Forsyning A/S), the largest power plant in Denmark (DONG Energy) and the largest oil refinery in the Baltic Region (Statoil).

In recent years, the municipality realized that the symbiosis project has become an important factor in the local economy; to keep the large companies and factories, and to attract new activities and talents to an otherwise somewhat distant part of Denmark. In 2011 the official Symbiosis Center was established: It focuses on education and courses in creating resource exchange systems, and the center also works pro-actively on identifying potential candidates for new, similar exchange projects in the region.

Lessons learned

Such initiatives need to grow naturally around a common core issue (eg water) or sector. Local governments can encourage such activitiy by BOTH providing support AND enforcing pollution regulations, and if possible using more sophisticated incentives as exterded polluter pays schemes as in the EU (see SWM Position paper) and/or using emissions trading schemes as in Tokyo.

The basis of the Industrial Symbiosis cooperation in Kalundborg is open communication and mutual trust between the partners. The diversity of businesses, the relative geographical isolation of the companies and the awareness of the economic value added of the synergies facilitated the emergence of the network.

Cooperation between companies in Kalundborg Symbiosis has occurred from the bottom-up, initiated by the companies themselves with continuous support from the Kalundborg Municipality.

Industrial Symbioses in Kalundborg

Source: http://www.symbiosis.dk/en/lokalomraadet

References and more information:

http://www.symbiosis.dk/en

http://www.dac.dk/en/dac-cities/sustainable-cities/all-cases/waste/kalundborg-industrial-symbiosis---waste-makes-resource/

Kalundborg Symbiosis – 40th Anniversary publication https://greenexchange.earth/wp-content/uploads/2016/07/Kalundborg-Symbiosis-40th-anniversary-publication.pdf retrieved 2 Nov 2017

Credentials

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