International Case Studies; Regional Energy Transitions

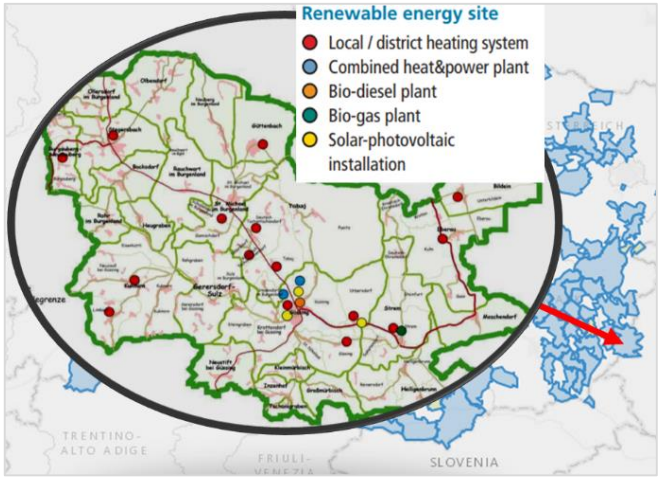
Güssing, Austria

Population; 27,000

Timeline / Milestones;
1988 - 100% Fossil Fuel Imports, €6 million fuel debt
1990 – Vision for energy independence launched
1996 - European Centre for Renewable Energy founded
2001 – City achieved energy independence
2010 - Regional self-sufficiency

Technologies;
Solar Thermal 13.8 TJ
Solar PV 312 GJ
Biomass Plants 787.4 TJ

Local Champions;
Mayor; Peter Vadasz
Electrical Engineer; Reinhard Koch



Prior to 1990, this region was one of the poorest in Austria, because of the geographically unfavourable location. This resulted in a scarcity of jobs, 70 % weekly commuters (as far as Vienna, a 160 km journey), and a high rate of migration to other regions. In addition, through the importing of energy (oil, power, fuels) a significant amount of capital left the region, while existing resources (e.g. 45 % forestland) remained largely unused.

In 1992, Mayor, Peter Vadasz, appointed an Electrical Engineer, Reinhard Koch, to produce a plan for the region to achieve energy independence replacing fossil fuel imports with regionally available sustainable sources. This partnership of political will and expertise was a crucial driver behind the project.

Today, having achieved the ambition of energy independence the region of Güssing has been rejuvenated. Home to the European Centre for Renewable Energy, it is estimated to have welcomed a weekly average of 400 “energy tourists” during 2015. While some of the energy initiatives have been reported to lack in financial success, the region has experienced invaluable social impacts through the strengthened local economy, not only providing an increase in local jobs but also reviving the community spirit.

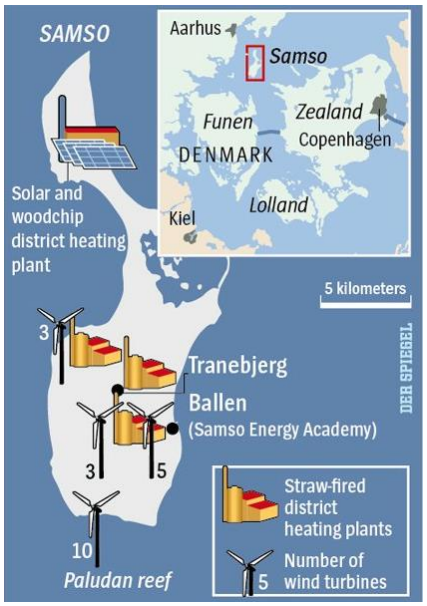
Samsø Island, Denmark

Population; 4,100

Timeline / Milestones;
1996 - Danish Ministry of Environment and Energy, Energi21
1997 - 87% fossil fuel, 10-year plan created
2005 - 100% renewable electricity & 70% renewable heating

Technologies;
Onshore wind turbines 11 (1 MW each)
Offshore wind turbines 10 (2.3 MW each)
Woodchip district heating system & wood pellet boilers 36 TJ
Solar thermal district heating 4 TJ
Straw-based district heating systems 69 TJ

Local Champions;
Farmer; Søren Hermansen



In 1997, local Søren Hermansen won a national competition to receive funding from the Danish Ministry of Environment and Energy to develop a 10-year plan for the Island to achieve 100% renewable energy. Initial scepticism from the Islanders was overcome by proposing it as a social relations undertaking, an opportunity for the community to work together on something they could be proud of.

In 2000, 11 one-megawatt (MW) onshore wind turbines supplied the island’s 22 villages with enough energy to make it self-sufficient. The additional 10 offshore added in 2002, generate electricity for export. The Municipality of Samsø finances five of these turbines; 3 are “commercial” owned by larger investors, and the last 2 are owned by smaller shareholders, altogether about 1,500 people.

The district heating systems received grants from the Danish Energy Authority’s ‘From the ground up’ funds, and have been setup as a number of cooperatives.

Samsø residents can now boast a carbon footprint 18.2 tonnes less than the Danish average at negative 12 tonnes per person per year, compared with a national average of 6.2 tonnes in 2015.

International Case Studies; Regional Energy Transitions

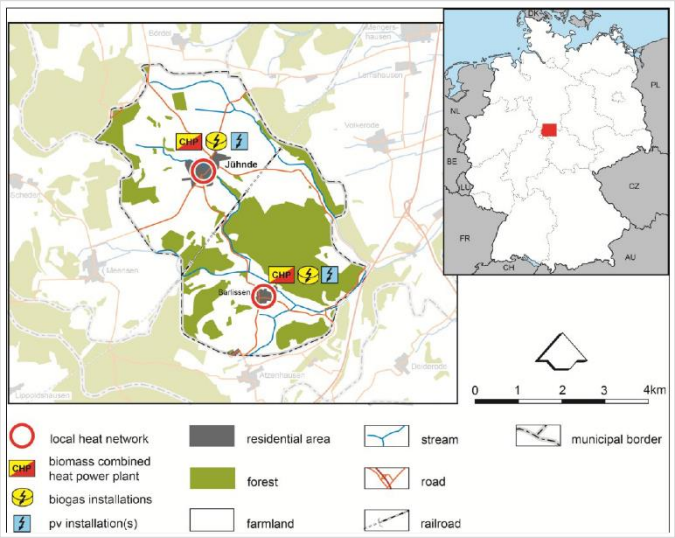
Jühnde, Germany

Population; 800

Timeline / Milestones;
1998 - University of Göttingen drafted idea
2000 - German Ministry for Food, Agriculture and Consumer Protection (BMELV) accept proposal
2000 to 2002 - national competition, Jühnde chosen as pilot
2002 to 2004 - infrastructure installed
2006 - energy self-sufficiency

Technologies;
Biogas CHP plants 680 kWe and roughly 970 kWth
Biomass Boiler (wood chips) provides 550 kWth

Local Champions;
Mayor; August Brandenburg



Interestingly, the proposal came from a transdisciplinary team of researchers in the University of Göttingen. Having initially been ignored, in 2000 the German Ministry for Food, Agriculture and Consumer Protection (BMELV) accepted the proposal as it appreciated the project's potential to provide sustainable rural development. Through a national competition run between 2000 to 2002, Jühnde, was selected as the model village as it had the best prerequisites for the transformation into a bioenergy village.

Between 2002 and 2004, an extensive education and engagement programme was launched along with preparations to install the necessary infrastructure. The level of participation from locals was hugely important, residents were not only involved in planning the details of the project but also responsible for the installations themselves.

This created a very open, transparent planning process at different levels within (1) the specific planning groups that were setup around topics like biomass, PV, agriculture, etc. and (2) the central planning group, as well as (3) the regular inhabitants meetings. The decision-making body or central planning group was formed from the heads of the specific planning groups, members of the university team and representation from the local authorities.

Varese Ligure, Italy

Population; 2,400

Timeline / Milestones;
1991 – Municipality devised goal to revive region
1996 - Environmental Education Centre (CEA) founded
1999 - first ISO 14001 certified Italian local authority.
also became first European Eco-Management and Audit Scheme (EMAS) registered local authority.
2001 – 100% of electricity from renewables
2004 - won "Best rural EU-local authority for the promotion of renewable energy" at a European conference in Berlin.

Technologies;
Wind Turbines (4 x 0.75MW) 8 GWh annually
Solar PV 17.3 MWh annually
Wood Pellet Stoves & Boilers

Local Champions;
Mayor; Maurizio Caranza

With the region deteriorating, in 1991 Mayor, Maurizio Caranza decided to improve the local environment as a chance to promote and resurrect Varese Ligure. In 1994, the municipality devised a self-sustainable development strategy based on 100% renewable energy and 100% organic farming.

One important program they started in 1996 was the Environmental Education Centre (CEA), which educates children of the region about organic agriculture, renewable energy, and sustainability.

In 2001, thanks to it's wind farm, the town was the first city in Europe to achieve 100% renewable electricity supply. With the addition of two more wind turbines in 2006, Ligure now produces about 8 GWh annually, which is more than three times of the town's total electricity demand. The surplus electricity fed into the national grid generates around €25,000 per year and tax revenues from the private operator of the energy network are estimated to add €350,000 in revenue for the municipality each year.

Furthermore, unemployment has decreased by the creation of 140 new jobs directly attributed to the renewable energy sector. While the number of tourists is estimated to have increased six-fold between 1997 and 2007, with many coming just to see its renewable energy network.