

Sustainable Cities → Case Study Rizhao

China's economy is rapidly growing and today the country is the world's biggest greenhouse gas emitter. However, in the global race to develop green technology in order to tackle climate change the country takes a leading position and accordingly set itself the target to meet 15% of its energy needs through renewable sources by 2020.

One prominent example of the extensive application of renewable energy in China is the city Rizhao. It has around 3 million inhabitants and is located in a favourable geographic location in the south-eastern Shandong province, with a coastline of hundred kilometres and an abundance of resources available. Since 15 years the city has made enormous efforts to promote the large scale and efficient use of renewable energies - with a proven record of success. Today its coastline is spotted with photovoltaic cells and roof tops are for most parts covered with solar panels. Street lights, traffic signals and park illuminations are powered by photovoltaic solar cells and an amazing **99% of Rizhao's households use solar water heaters**.

Role of the government

The strong will of the government of Rizhao and the solar industry to adopt the new solar practice were the essential starting point in the energy restructuring programme. In order to support the development of renewable energy technologies, the provincial government closely works together with the local solar panel industry. It provides subsidies to the industry as well as funds the research and development to make the solar water heater industry more competitive and thus lowering the costs of appliances. Additionally to these incentives, legislations were inaugurated. Today the city mandates that all new buildings incorporate solar panels and also oversees the construction process in order to ensure proper installations. To involve the citizens into the process, measures are in place to convince people of the concept. Open seminars are held on the topic and public advertising are run on television, for example promoting the purchase of cars with small displacement. Also does the government administration take serious action on their behalf to demonstrate their willingness to participate in the scheme: resource-conserving and environmental products are purchased, the use of electricity, paper and water was cut down and air-conditioner settings are adjusted to an adequate level. Rizhao successfully combined incentives, legislative tools and public education in order to encourage a large-scale and efficient use of renewable energy.

Effects

By subsidising research and development, substantial **technological breakthroughs** were triggered, especially in the lesser-known technology of solar water heaters. This measure had a **significant effect on the efficiency** and unit costs of the new technology. While efficiency was drastically increased, the **costs for a solar heater were reduced** so that today their price starts at about US\$ 190 - the same price level of electric heaters.

Another structural effect benefitting the citizens and the environment is the reduction in the use of coal. The total volume of pollutants discharge in Rizhao has dropped and it is estimated that through the utilisation of solar energy, the city can save up to 3,8 billion kWh of electricity each year. So far, Rizhao has effectively reduced its energy consumption by 30% and achieved annual CO₂ savings of 52,860 tonnes from solar water heaters - Rizhao's contribution to the worldwide reduction of greenhouse gas emissions.

Furthermore has the switch to renewable energies brought about great improvements in the quality of the environment of Rizhao. The environmental upgrading also represents the foundation for a green economy, where tourism amongst others is envisaged to play a vital role. Since 2007 a rapid increase in foreign direct investment was observed, which some say is directly linked to the improved environmental conditions.

Lessons learnt

A combination of three distinct factors led to the sweeping changes in the energy sector of Rizhao. Firstly a government policy was introduced, which highly encourages solar energy use and strongly financially supports research and development. Directly subsidising the industry and not the end user is contrary to similar practices elsewhere.

The second factor necessary to bring about a fundamental change in Rizhao's energy supply was the very positive response of the local solar panel industry. It embraced the governmental support and consequently made significant improvements to its products. The result was a steep decrease in prices for solar power installations so that people had an instantaneous payback without having to wait long for the returns on investment. This effect crucially strengthened the support for the switch to renewable energy in the local population. But the possibly most decisive and third factor is the **strong political will of the city's leadership**. The pronounced willingness to adopt to new energy supply systems created a high momentum for change. Taking their function as a role model serious, government buildings and city leader's homes were the first to have solar panels installed.

Sources:

<http://sustainablecities.dk/en/city-projects/cases/rizhao-mainstreaming-solar-energy-on-city-level>, 2010-05-26