

The Project



Heat from renewable energy sources in Germany


Households in Germany use the greatest share of their energy requirement for heat. In 2011, around 66 % of final energy was used for heating and 16% for warm water. Approximately 90 % of the energy comes from fossil fuel sources (gas, oil and coal). These figures show that the German heat sector offers significant potential for reducing CO₂ emissions, not only through energy savings, but also through the substitution of fossil fuels with renewable energy sources.

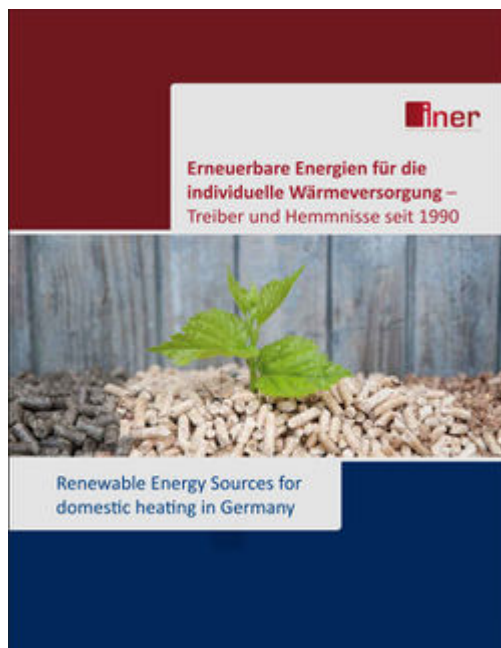
The German "Energiewende" so far is focused on electricity. However, more than 80 percent of the energy demand of households is used for heating and hot water, and this energy mainly comes from gas, oil and coal. But obviously it is difficult to mobilize the large CO₂ reduction potential of the heat sector. One reason for this is that the renewable heat policy cannot achieve dynamic increases without the successful implementation of energy efficiency strategies (insulation and efficient heating systems). The residual heat demand should then be covered by the highest possible proportion of renewable heat.

The brochure "**Renewable Energy Sources for domestic heat in Germany**" summarises the main results of a project on "Heat from renewable energy sources in Germany" in a streamlined and abridged version of the **Innovation Report "Erneuerbare Energien zur individuellen Wärme- und Kälteversorgung"** (German only). It provides an in-depth examination of the innovation process of technologies for heat generation with renewable energy sources (wood, solar power, ambient heat) over the past 25 years. The focus was placed on system sizes that are suitable in particular for one- to two-family homes and smaller multi-family homes. During the innovation phases examined, the technological innovation process and the dissemination of the technologies (market entry, marketability) were subject to both overarching framework conditions and technology- and industry-specific factors. These include political impulses, legal regulations and financial incentives, but also stakeholder interests and impacts of the respective technology on the environment. The interaction of these factors was a significant factor for the course and the dynamics of the process.

The brochure outlines the main steps of the innovation process since 1990 for wood-fired heaters, solar collectors and heat pumps, each in the low power range. For the category of wood-fired heaters, the brochure outlines the starting point and development of modern, automatically fed boilers (pellets, wood chips) and identifies the main drivers, but also the barriers to the dissemination of this technology. Furthermore, it examines how the market for solar collectors revitalised itself in the 1990s, and also looks at old and new challenges that the technology was faced with. Finally, the brochure focuses on the return of heat pump technology against the backdrop of the current climate and energy policy objectives.

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