

Sonnendorf is a sustainable residential neighbourhood under development in the rural village of Schwoich, home to 2,300 inhabitants and set in the middle of Austria's alpine region of Tyrol. Once finished, it will consist of 33 buildings with 46 residential units, of which half of the units will be given away to locals at extremely favourable conditions, while the other half will be sold at market price. The unique affordable housing project also paves the way for a modern planning concept in rural areas, focusing on economical land use and a low degree of sealing.

SONNENDORF

POSITIVE ENERGY DISTRICT PROFILE

LOCATION **SCHWOICH, AUSTRIA**

SIZE **2 HA**

FUNCTION **RESIDENTIAL**

TYPE **NEW BUILD**

DURATION **START DATE: 2020
END DATE: 2024**

STATUS **50% CONSTRUCTED
50% IN DEVELOPMENT**

WEBSITE **WWW.SONNENDORF.TIROL**



ENERGY HIGHLIGHTS

CONSTRUCTION

All houses will be built as timber constructions on a concrete base. The wooden walls and the roof are insulated with recycled cellulose, the ceilings are made of solid wood. Houses have excellent thermal insulation values and a very low construction CO₂ footprint. Local sourcing further reduced energy demand during construction.

HEAT

With its alpine location, heat is a particularly critical factor for the project's energy balance. Each house features a geothermal probe - interconnected to form Sonnendorf's geothermal park, supplying thermal energy for heating and cooling. The application of uniform technology in all units will substantially reduce maintenance costs.

RENEWABLE ENERGY

PV panels are widely applied at Sonnendorf. They are installed on rooftops and incorporated into the façades of each house. In the privately financed houses, the solar panels are supplemented by battery storage (5.4 kWp solar panel system and 6.4 kWh battery storage).

OTHER ENERGY-RELATED IMPACTS

MOBILITY

Sonnendorf will feature an e-car sharing system for its residents in order to reduce mobility-based emissions. Part of the required loading energy comes from the neighbourhood's PV-generated energy surplus.

LAND USE

High land prices, the ambition to reduce sealed surfaces, and the aim to increase social cohesion in Sonnendorf resulted in a high build density, usually unheard of in rural areas. In contrast, green common spaces have been maximised.

SMART NETWORKING

Public participation played an important role throughout the development process. It was critical to ensure a rich social and cultural mix, combining affordable housing for young local families with excellent opportunities, e.g., for expats working for nearby international firms.

TRANS PED

TRANSFORMING CITIES
THROUGH POSITIVE
ENERGY DISTRICTS



PROJECT SETUP

The land prices in the federal state of Tyrol are amongst the highest in all of Austria, mostly because of the region's attraction for tourists and the strong international demand on the local real estate market. This makes it increasingly difficult for locals to find affordable housing. The Tyrolean "Bodenfonds" (land fund) is a unique public institution aimed at providing affordable housing in rural communities and strengthening rural areas.

At Sonnendorf, the Tyrolean land fund purchased the land at favourable conditions before it was converted

into building land. While Kleboth&Dollnig won the international architecture competition, no contractor was willing to take on the risk of developing Sonnendorf with its high sustainability targets. As a result, Kleboth&Dollnig, the Tyrolean land fund, and a local carpenter founded a development company to realise Sonnendorf. About half of the units are affordable housing units allocated to young families by the municipality. The remaining buildings, however, are sold by the new development company at market prices. This funding setup allowed for cross-financing the high building and energy standards of all units.

OPPORTUNITIES

REPLICATION

Sonnendorf is a unique project, combining affordable living goals with a new approach to land use and extraordinarily sustainable buildings. This comes on top of having successfully experimented with a new funding model for such developments. There are plans to replicate and upscale the substantial learnings from the Sonnendorf project in other municipalities and regions.

CHALLENGES

SHARING ELECTRICITY

The project was unable to find a solution that would enable local electricity sharing among residents of Sonnendorf, but also with residents of nearby settlements.

ANERGY NETWORK

An anergy network was planned for Sonnendorf to enable sharing of electricity, heat, and cooling for the entire development. While a lot has been learned by the project team during the planning process, in the end it could not be realised due to unresolved (legal) issues concerning the ownership and management structure of such a network.