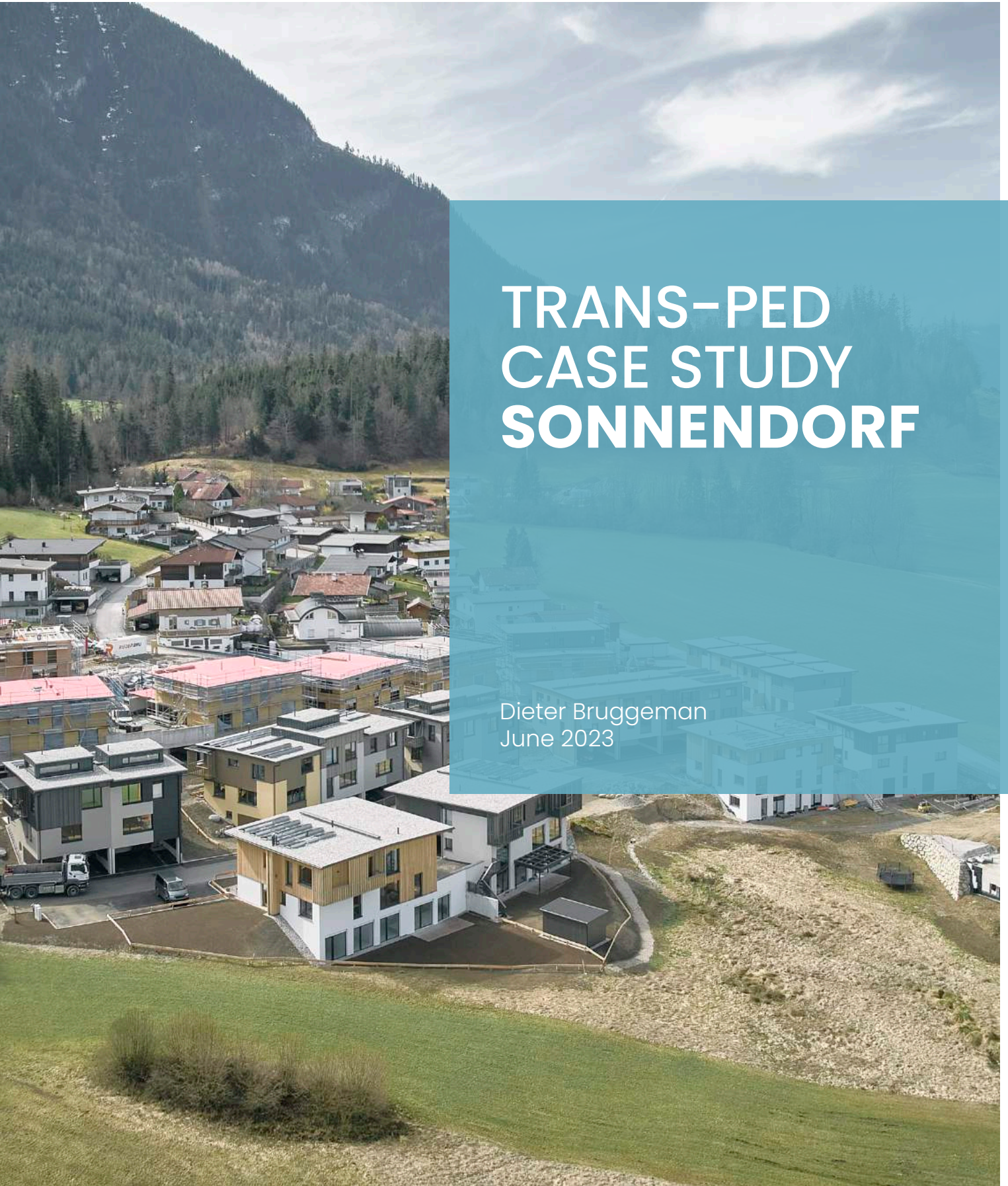


TRANS PED

TRANSFORMING CITIES
THROUGH POSITIVE
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TRANS-PED CASE STUDY SONNENDORF

Dieter Bruggeman
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TRANS-PED CASE STUDY SONNENDORF

Sonnendorf is a sustainable residential project under development in the rural village of Schwoig. The village is in the middle of Austria's alpine region of Tyrol and is home to 2,300 inhabitants. Upon completion, the project will consist of 33 buildings and 46 residential units. Half of the residential units will be sold to locals at favourable conditions, while the other half will be sold at market price. This unique affordable housing project serves as an innovative planning approach for rural areas by emphasising economical land use and minimal impervious surfaces.

DIMENSION 1

TIME

PROJECT HISTORY

The land prices in the federal state of Tyrol are amongst the highest in all of Austria due to a robust tourist economy and strong international demand for local real estate. This makes it increasingly difficult for locals to find affordable housing. The Tyrolean Land Fund (*Tiroler Bodenfonds*) is a unique public institution that provides affordable housing in rural areas to strengthen communities.



figure 1: the Sonnendorf project site in 2015, before construction (Tiroler Bodenfonds)

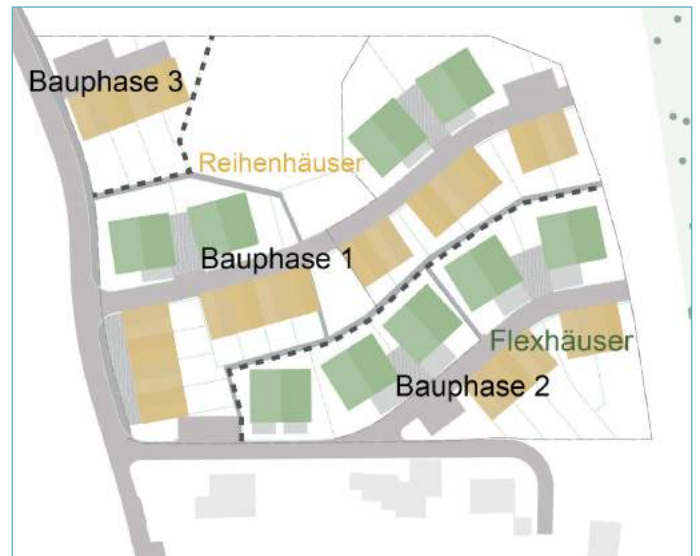


figure 2: map of the Sonnendorf project site showing the three building phases and the two building types (terrace houses in brown and flex houses in green, see section 2) (Sonnendorf GmbH)

At Sonnendorf, the Tyrolean Land Fund purchased the land at favourable conditions before it was converted into building land (see figure 1). The fund then launched an international design competition which was won by the architecture office Kleboth & Dollnig. After some initial struggles to find a developer for the project (see section 5), the neighbourhood was constructed in three phases (see figure 2).

MAIN REFERENCE(S)

- [Sonnendorf GmbH website](#) (in German)
- [Kleboth & Dollnig's Sonnendorf project website](#) (in German)

DIMENSION 2

SPACE

GENERAL SPATIAL CHARACTERISTICS



figure 3: general map of the Sonnendorf project site (Sonnendorf GmbH)



figure 4: model of the Sonnendorf project (Kleboth & Dollnig)

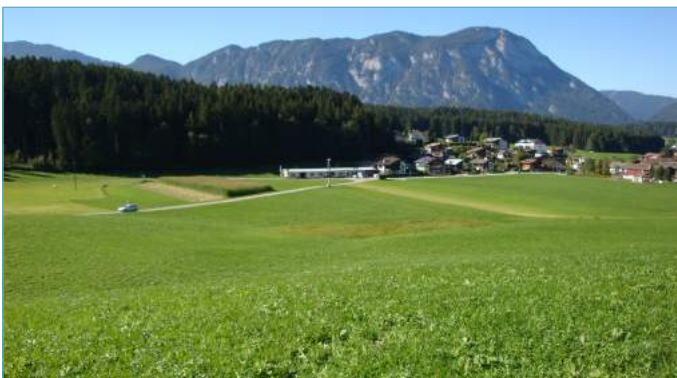


figure 5: view of the Sonnendorf project site before construction towards the Schwoig village centre, 2015 (Tiroler Bodenfonds)



figure 6: map showing the distance between the Sonnendorf project and the Schwoig village centre (Kleboth & Dollnig)

The Sonnendorf project is located approximately 1500 meters from the village centre of Schwoig. The village lies on a sheltered plateau on the east side of the Inn valley and south of the town of Küfstein. The area between the project and the village is mostly farmland and the project itself is a literal 'greenfield development' with houses constructed on a former meadow of a nearby farm.

BUILDING TYPOLOGY

There are two housing types in Sonnendorf: compact and carefully designed terraced houses (Reihenhäuser) and the flex houses (Flexhäuser) that can be designed in a variety of ways, with a choice of two or three residential units. These housing types provide for different living options and a social mix. All houses have two parking spaces per residential unit and large terraces and gardens.



figure 7: an axiometric drawing showing the relief of the site and the location of the houses (with flex houses in dark green and row houses in light green) (Kleboth & Dollnig)



figure 8: render of the row houses (Kleboth & Dollnig)



figure 9: render of the flex houses (Kleboth & Dollnig)

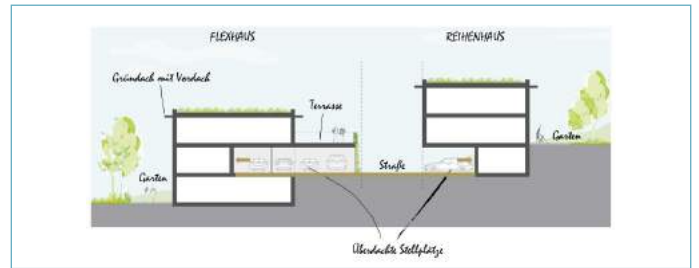


figure 10: typical cross-section through a Sonnendorf street showing the interaction between the different types of housing and the resulting streetscape (Kleboth & Dollnig)



figure 11: The Sonnendorf construction site in April 2022 (David Schreyer)

MAIN REFERENCE(S)

- [Sonnendorf GmbH website](#) (in German)
- Kleboth & Dollnig's [Sonnendorf project website](#) (in German)
- Sonnendorf GmbH, [Sonnendorf \[powerpoint presentation\]](#), 17 January 2022. (in German)

DIMENSION 3

SOCIAL**SOCIO-ECONOMIC PROFILE**

The Tyrolean Land Fund was established to support the municipalities in taking care of local land use planning matters. The main task of the fund has always been to acquire, develop and transfer land to a respective local municipality. Through its activities, the Tyrolean Land Fund has made a significant contribution to the implementation of subsidised housing projects, to land-efficient or dense construction projects and to the relocation of businesses to inter-municipal industrial estates.

As a public actor, the Tyrolean Land Fund can buy land that is not on the public market (e.g. farmland) and adapt it for development. A prerequisite for the acquisition of a 'Bodenfonds plot' for residential purposes is an identified housing need. The acquisition of land for capital investment is excluded. As such, the Bodenfonds can provide affordable housing to locals in a region under severe pressure from the real estate market.

In Sonnendorf, the Tyrolean Land Fund is one of the developers and the organisation makes it possible for about half of the housing units to be affordable to young families while the remaining housing units are sold at market prices. This funding setup allows for cross-financing of high building and energy standards for all units.

MAIN REFERENCE(S)

- [Tiroler Bodenfonds website](#) (in German)

ENERGY-RELATED ASPECTS

Energy poverty affects those people who, because of their high electricity and heating costs, have a higher risk of falling into poverty. In Austria, this is about 3% of all households. In Tyrol, this corresponds to about 10.000 households. To support these people, the DoppelPlus initiative was launched in 2016. At the heart of DoppelPlus are over 90 volunteers who have been trained as energy and climate coaches. They provide tips and tricks to low-income residents throughout Tyrol to adopt a resource-conserving lifestyle.

These residents save costs and make an active contribution to climate protection - a 'double plus' for everyone. Due to its sustainable impact and multiple benefits, the Tyrolean provincial government extended the project until April 2022. To date, the initiative has been financed by the LIFE Fund of the European Union with support from the Province of Tyrol and Stadtwerke Wörgl.

MAIN REFERENCE(S)

- [DoppelPlus website](#) (in German and English)
- Statistik Austria, *Erweiterte Betrachtung der Energiearmut in Österreich, Hohe Energiekosten bzw. Nicht-Leistbarkeit von Energie für Wohnen*. Vienna: Statistik Austria, 2021. (in German)

DIMENSION 4

ENERGY (AND OTHER METABOLIC FLOWS)

ENERGY FLOWS

The small scale and residential focus of the Sonnendorf project meant that the technologies used to realise its PED ambitions were fairly standard and easy to install and use. Technologies implemented in Sonnendorf include PV panels (see figure 12) and geothermal heat (see figures 13 to 15). Additionally, a hub for an electric car-sharing platform is planned for the future. The thoughtful application of well-known technologies resulted in a good energy balance and this straightforward energy concept can be easily be replicated at other sites. Sonnendorf serves as an exemplar for other rural PEDs in Tyrol and beyond.



figure 12: PV panels on the roofs of the completed houses, April 2022 (David Schreyer)



figure 13: (schematic) distribution of the geothermal heat probes over the project site (Stadtwerke Wörgl GmbH)



figure 14: an installed heat pump at one of the houses
(Kleboth & Dollnig)



figure 15: an installed heat pump at one of the houses
(Kleboth & Dollnig)

MAIN REFERENCE(S)

- Sonnendorf GmbH, *Sonnendorf* [powerpoint presentation], 17 January 2022. (in German)
- Stadtwerke Wörgl, *Energieversorgung von Morgen* [powerpoint presentation], 7 November 2018. (in German)
- Ingenieurbüro Pollhamer, *Erschließung „Die gute Adresse“ – Stöffl-Siedlung* [powerpoint presentation], 7 November 2018. (in German)

DIMENSION 5

GOVERNANCE AND POLICY CONTEXT

PROJECT'S GOVERNANCE STRUCTURE

In 2017, Kleboth and Dollnig's design proposal was selected in an international architecture competition hosted by the Tyrolean Land Fund. However, they could not find a building contractor who was willing to take on the risk of developing the project due to its aggressive sustainability targets and rural location. As a result, Kleboth & Dollnig created a development company with the Tyrolean Land Fund and a local builder in 2019 to realise Sonnendorf.

MAIN REFERENCE(S)

- [Sonnendorf GmbH website](#) (in German)
- *Jury Protokoll* [minutes of the jury meeting], 9 February 2017 (in German)

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Resources for PED practitioners & researchers

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Check out the Trans-PED [website](#) for details on the project, the international consortium of partners, as well as the participating PEDs.



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