Current market status of Solar District Heating systems in Germany and Government support measures

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EFFICIENT, COST EFFECTIVE AND FLEXIBLE HEAT DELIVERY

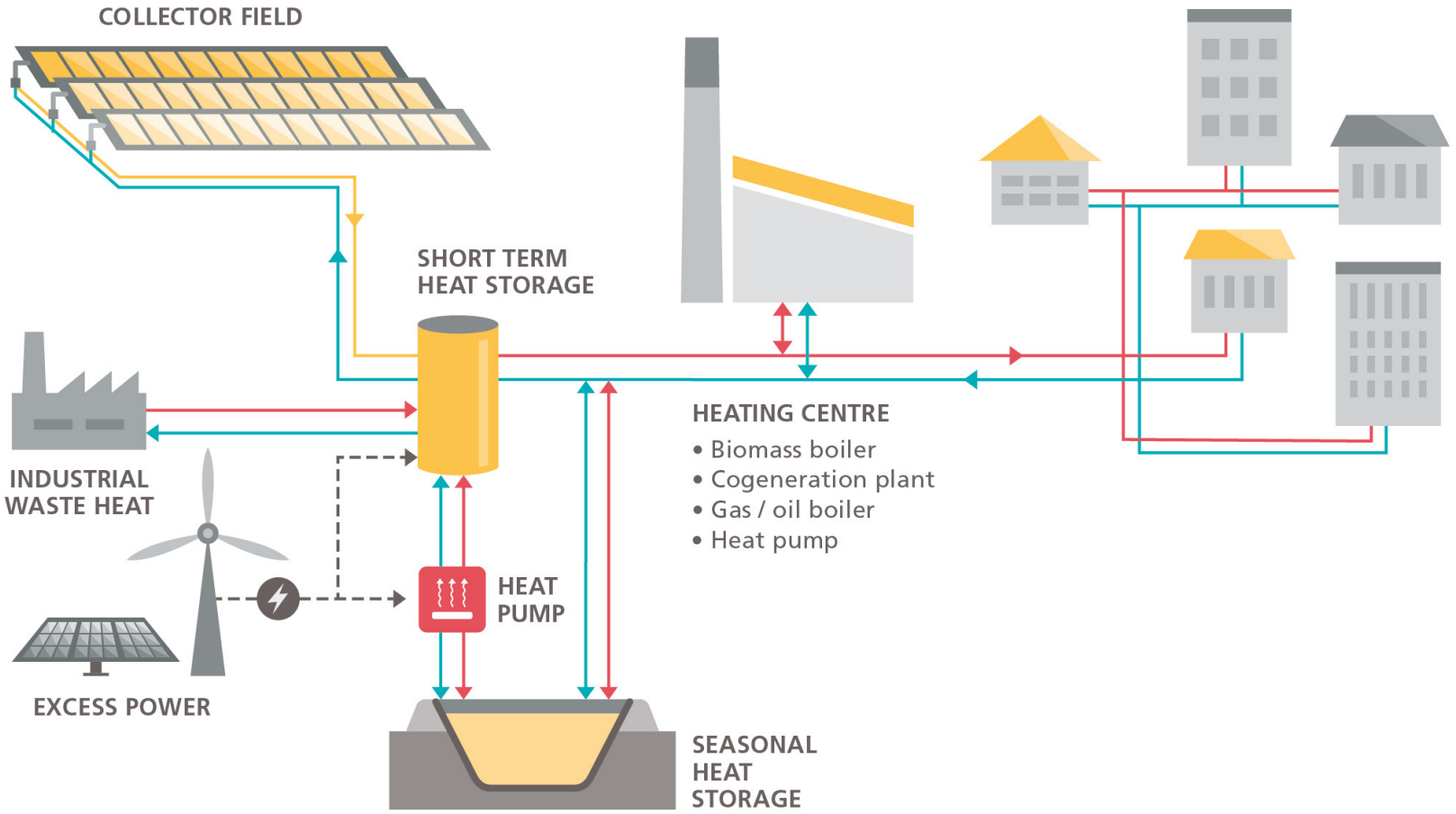

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Foto: Guido Bröer

“SolarHeatGrid” Ludwigsburg

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Decentral solar heat from apartment buildings

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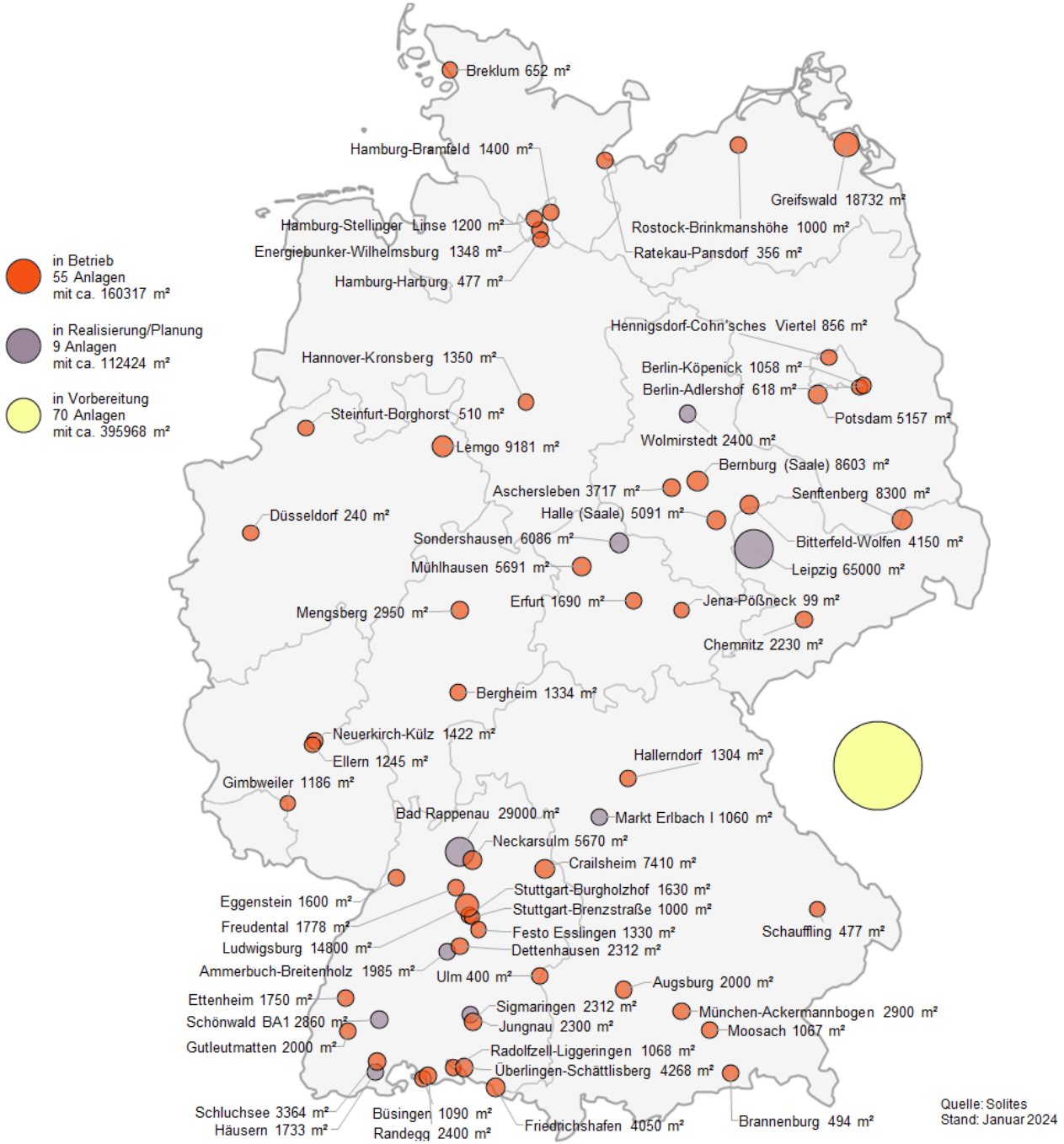

- bioenergy villages with heat from wood and solar
- Small towns
- Urban SDH
- Collectors on buildings

Information material for various target groups
e.g. www.solare-wärmenetze.de

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Success factors for SDH in Germany

- Supporting laws and their ongoing development
- Funding programmes for different renewable heat technologies
- Ongoing R&D activities by long-term national funding programmes
- Finding areas near the heat demand
- Best practice: realised systems are often visited and encourage possible investors
- Know-how transfer, trainings, information material and tools for various target groups
  e.g. www.solar-district-heating.eu, www.solare-wärmenetze.de (German), www.scfw.de (German)

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Supporting laws

Why start today with decarbonisation of District Heating?

- Climate-neutral building stock 2045 (Germany)
- Buildings and plants which are installed now will last until 2050

Local heat planning

➢ National law for all cities since 2023

- Suggestions for energetic refurbishment of buildings
- Areas for district heating
- Areas for single house solutions

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Supporting laws

New national law „Building Energy Act“

Every new heating system of houses that are not connected to DH

1. has to reach a minimum of 65 % of renewable share
2. or get connected to DH.

DH systems have to make a transformation plan for total decarbonisation until 2045 and have to follow this plan.

Provision of subsidies

Ongoing in Germany (EU REDIII)

New laws to support large collector areas and other renewable heat sources and make building permits for them easier and faster

Funding for Solar District Heating

Picture: Guido Bröer; iKWK-System Lemgo (9 118 m²)

- Stable heat cost of 40-70 €/MWh, before funding!*
- German subsidy programme BEW „efficient district heating“ since 15.09.2022
  Funding for invest and operation
  → 50 % of invest possible
- Funding includes different technologies for renewable heat supply in DH

*In most cases: Solar thermal system to cover the summer heat load; grid temperatures < 100 °C

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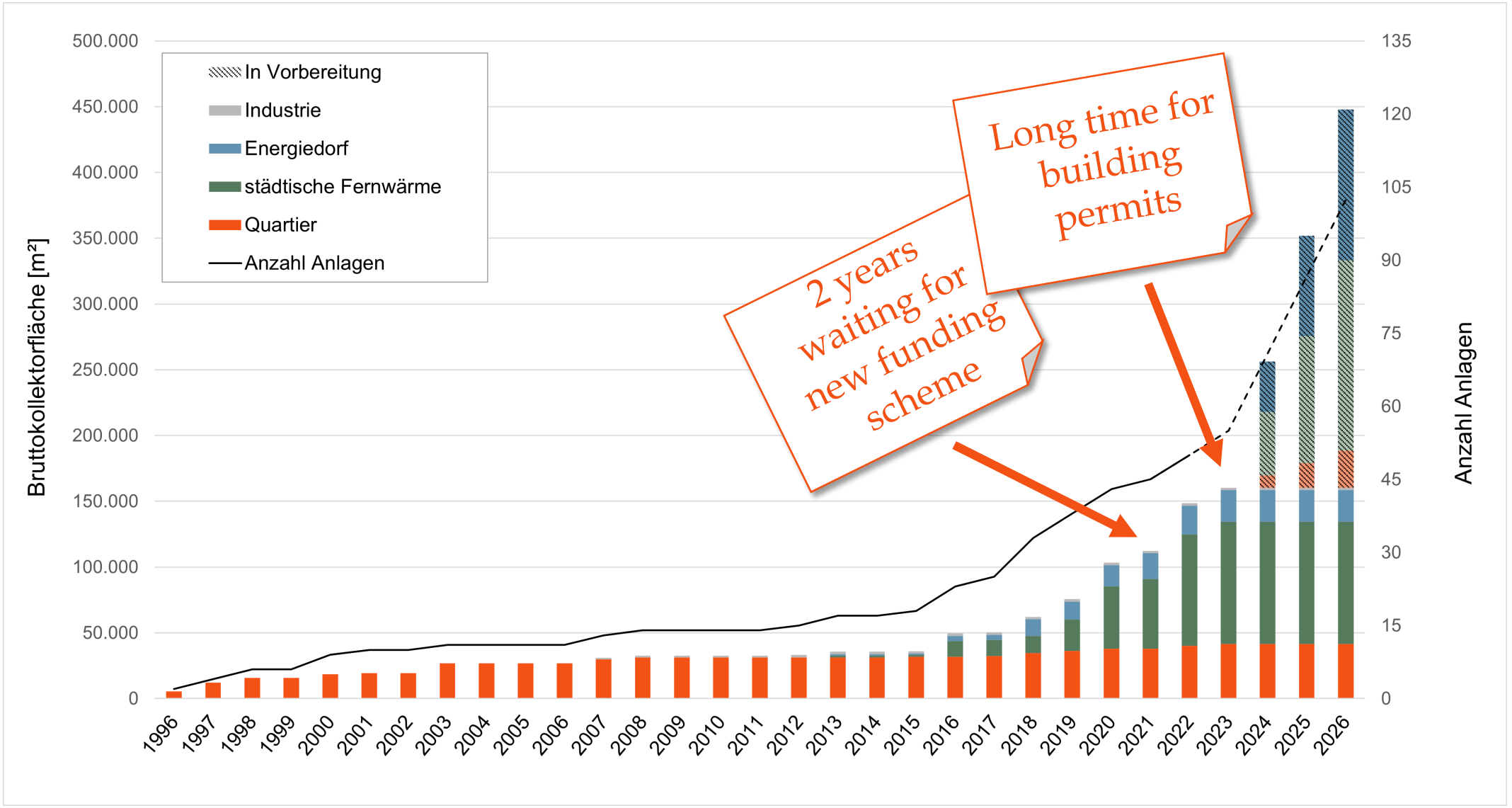
SDH market development in Germany



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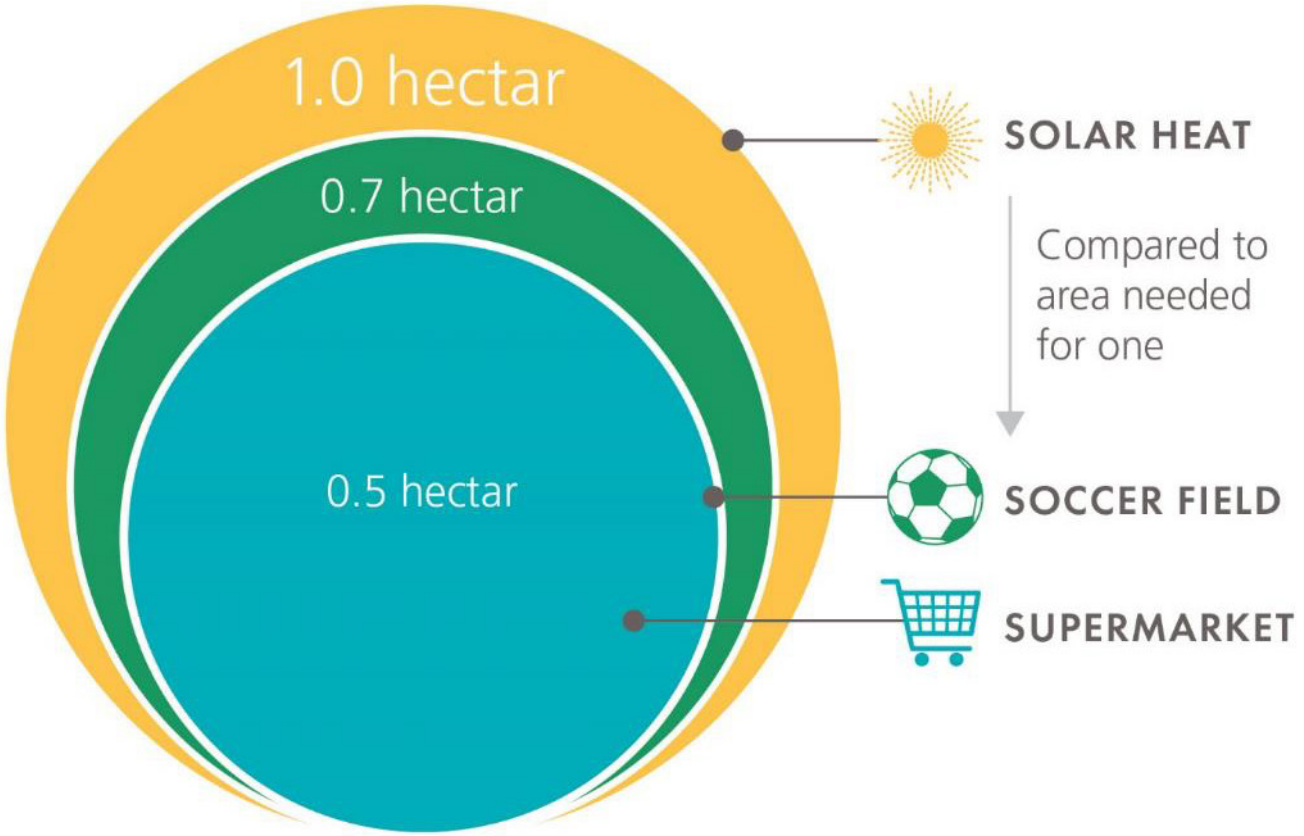
HOW MUCH AREA FOR SDH DO YOU NEED ...

... to meet 20 % of the total annual heat demand from 1,000 households living in old buildings?



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1 MW solar heat capacity requires an area of 1,350 m²

don't forget!

You need around twice as much land as the size of the collector field.

Source: Brochure about solar district heating from BSW Solar, Germany
Photos: Stadtwerke Senftenberg, Stadtwerke Lemgo, Stadtwerke Ludwigsburg-Kornwestheim

Finding areas near the heat demand

- Finding areas is one big task in the project development of SDH
- It is often a long process

✓Communication between utilities / investors and the local authorities are necessary to find solutions

✓Structured analysis of all possible areas

✓Additional areas are better than no area → useful as base for waiting or future projects

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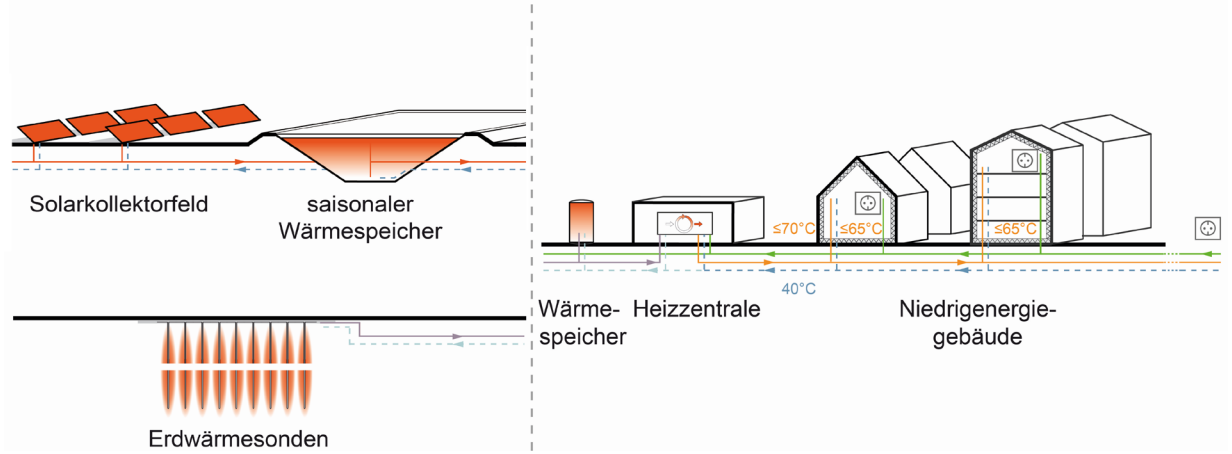
Finding areas / best practice

Randegg: flowering meadow as biotope (Foto: Bröer)

Marstal, DK: sheep run (Foto: Erik Christensen)

Best practice: Energy concept „Killberg IV“ in Hechingen



- New district with 760 appartments
- Heat demand of 4 GWh/a (forecast) in DH with 70 °C supply temperature
- 7 000 m² solar thermal system (70 % of heat demand)
- 18 000 m³ pit heat storage on earth landfill
- 40 ducts with 180 m depths (25 % of heat demand)
- 2 heat pumps
- 95% fossil free district heating

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Outlook: SDH in Sondershausen

6 086 m² Collector area realised in 2023, start of operation in spring 2024

High-vacuum flat plate collectors (TVP Solar)

Various collector products can supply heat with temperatures > 100 °C

→ Interesting for DH in cities

→ Analysis in IEA SHC Task 68

Picture: TVP Solar

Information: https://www.solarserver.de/2022/07/04/aalborg-csp-baut-solarthermie-grossanlage-mit-47-mw-leistung-in-sondershausen/

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Project SolnetPlus

Goal: Increasing the development of large solar thermal systems in local DH networks

Duration: 06/2021-05/2024

Partners:

Newsletter (German):

www.solare-wärmenetze.de/newsletter

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More Information?

IEA SHC Task 68: SDH Info Package for Cities and Towns
https://task68.iea-shc.org/article?NewsID=459

IEA SHC Task 55: Brochure Solar Heat for Cities
https://task55.iea-shc.org/Data/Sites/1/publications/Solar-Heat-for-Cities--The-Sustainable-Solution-for-District-Heating.pdf

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