



# Gebäude-PV: Welches Potenzial bieten Schweizer Dächer tatsächlich?

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- Berner Fachhochschule | Labor für Photovoltaiksysteme

# Sources

- Hügi et al., Meta-study of potential for photovoltaic installations in Switzerland, <https://doi.org/10.1016/j.egyr.2025.08.035>
- PV-Parometer 2026 [www.pv-barometer.ch](http://www.pv-barometer.ch)

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Review article

Meta-study of potential for photovoltaic installations in Switzerland

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ABSTRACT

Numerous studies have been conducted to evaluate the potential of photovoltaic systems in Switzerland, considering roofs, facades, infrastructure, or free land installations. These studies differ by the datasets used, their methods, the assumptions on the system performance, and the installation details, but more importantly, by the conclusions drawn. This review article summarizes the results of these studies and provides a critical study review on the critical elements of these studies, especially for roofs and facades, and their influences on the potential value. The system integration and grid aspects are not taken into account. It is observed that the system performance alone, given mainly by the considers module efficiency, does not permit to unify the results. The details of the methods, especially in the case of the analysis based on machine-learning techniques and data reduction to account for seasonal or historical effects, are also discussed. The potential values for the different cases range from less than 10 TW<sub>h</sub>/a to more than 40 TW<sub>h</sub>/a. From these values can be inferred from the most recent studies, while a minimum potential of more than 20 TW<sub>h</sub>/a from other surfaces (infrastructure, lakes, algae, and agrovoltaic) could be excluded. A conservative potential of 70 TW<sub>h</sub>/a is sufficient for the realisation of the Swiss Energy Strategy.

1. Introduction

Heinrich et al., 2023). Possible other renewable sources have limited potential or acceptance in the Swiss context. Additional hydro sources are limited due to the already extensive use of the existing resources. Due to relatively poor acceptance, wind energy has been extremely difficult to deploy in Switzerland. Biomass is an interesting source but rather expensive and difficult to scale up. Furthermore, its resources are limited and can only contribute to a minor share of the required electricity production (Bauer et al., 2019). PV is thus the renewable source that offers the highest potential at the most competitive cost (Tartakoff et al., 2020; IEA, 2022).

The growth of PV is global, taking a growing share of the renewable energy source, and is expected to be the major source by 2050 (IEA, 2022). For that reason, it deserves to be analysed in detail. The growth of PV in the energy mix has been driven by the rapid decrease in PV electricity costs. The latter is due to a sharp reduction in material costs, upscaling of the technology, and improvements in solar cell efficiency. Solar cell efficiency has steadily increased over the years across all technologies (see Fig. 1). The best monocrystalline cells, which are the most common type on the market, show a lab efficiency of more than

Abbreviations and nomenclature: Agri-PV, Agrovoltaic or Agri-Photovoltaic; PR, Performance ratio; PV, Photovoltaic; Roof 260°, Roofs without orientation restrictions; Roof -1°–90°, Roofs with orientation from -90° to 90° azimuth; Roof south, Roofs with south orientation.

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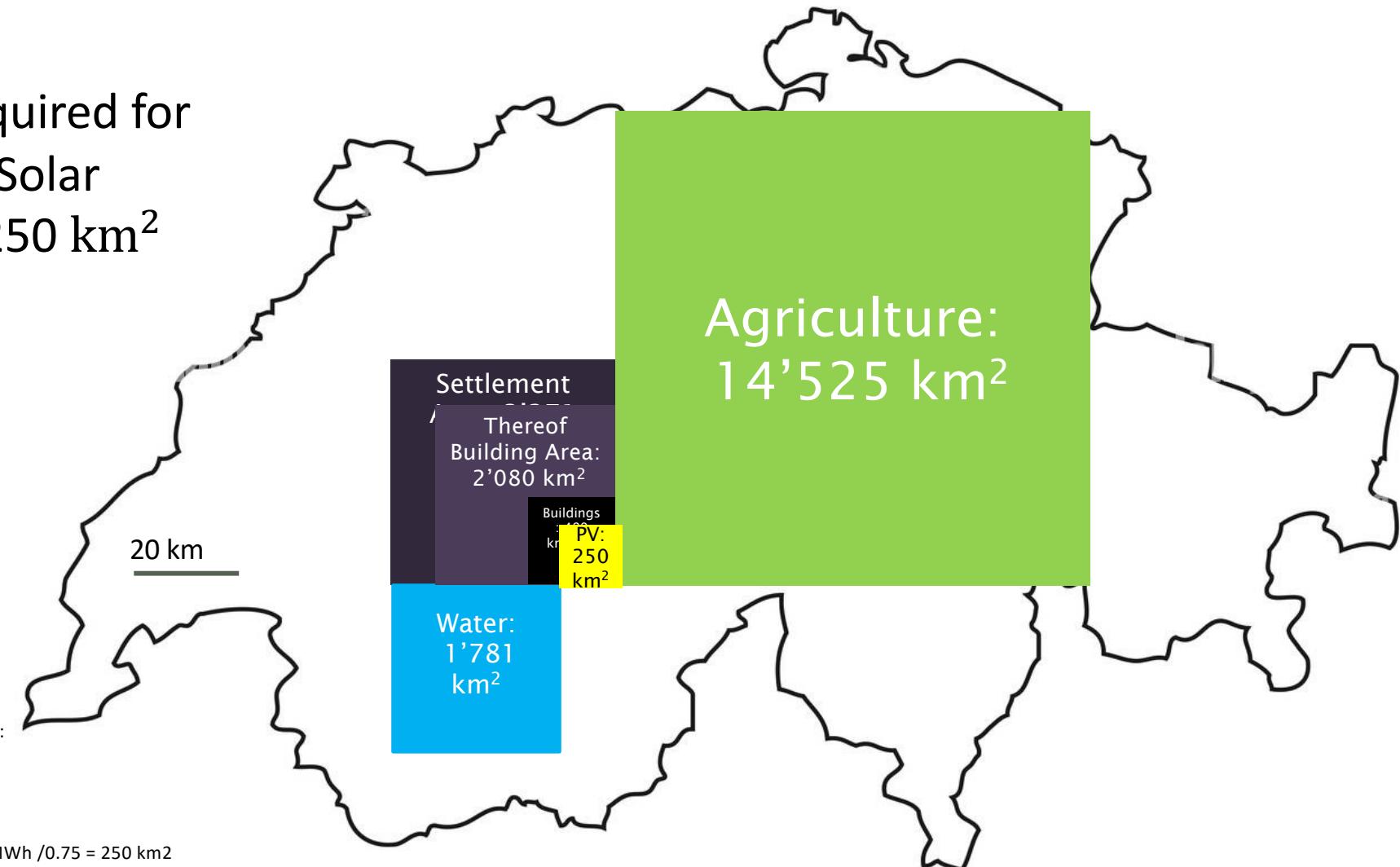
## Photovoltaik Barometer 2026: Trends und technische Daten aus der Solarbranche

31. Januar 2026



FH  
Fachhochschule  
eturnity

Area Required for  
45 TWh Solar  
Power: 250 km<sup>2</sup>

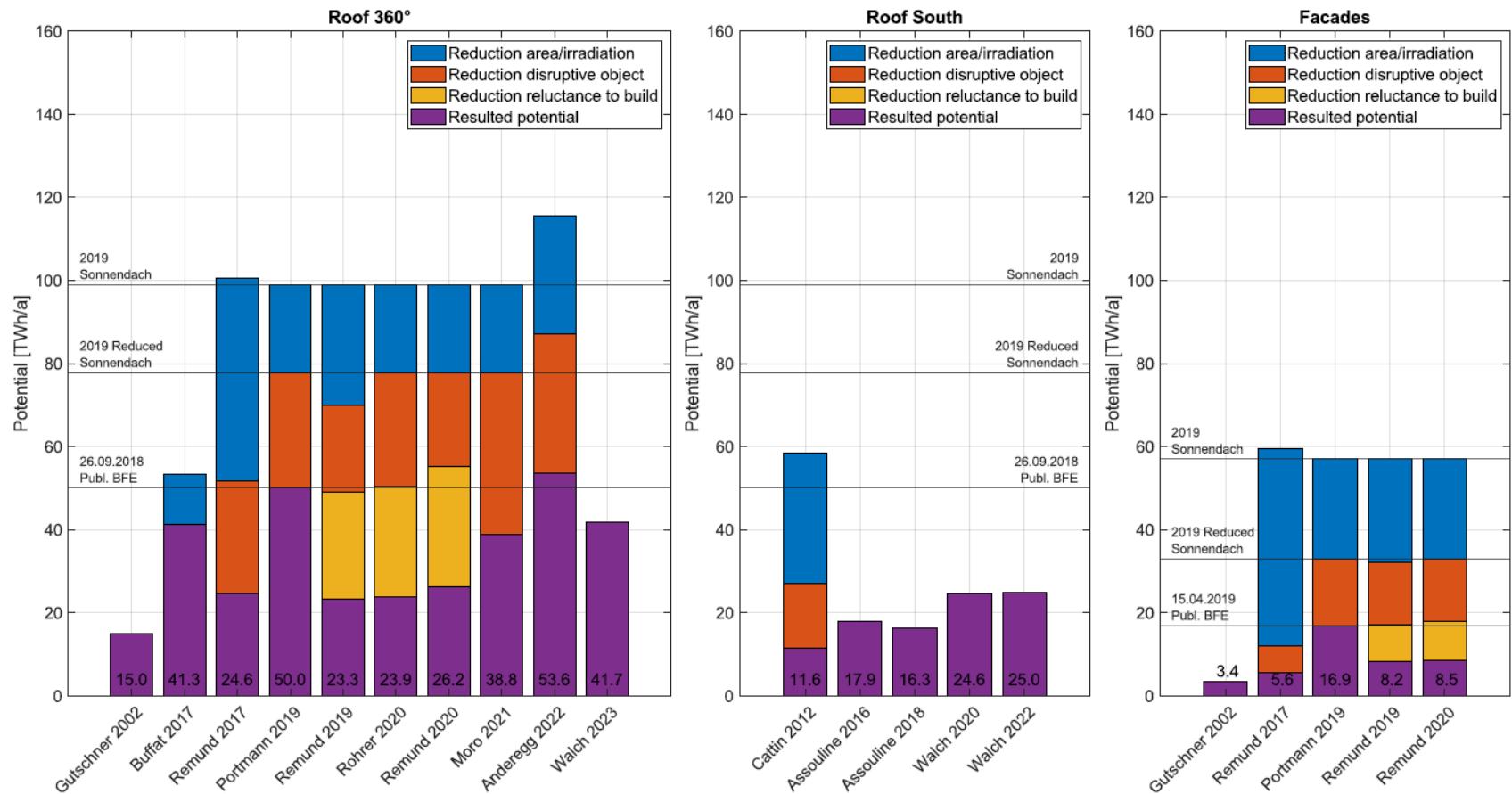


Annahmen für 45 TWh Solarstrom:

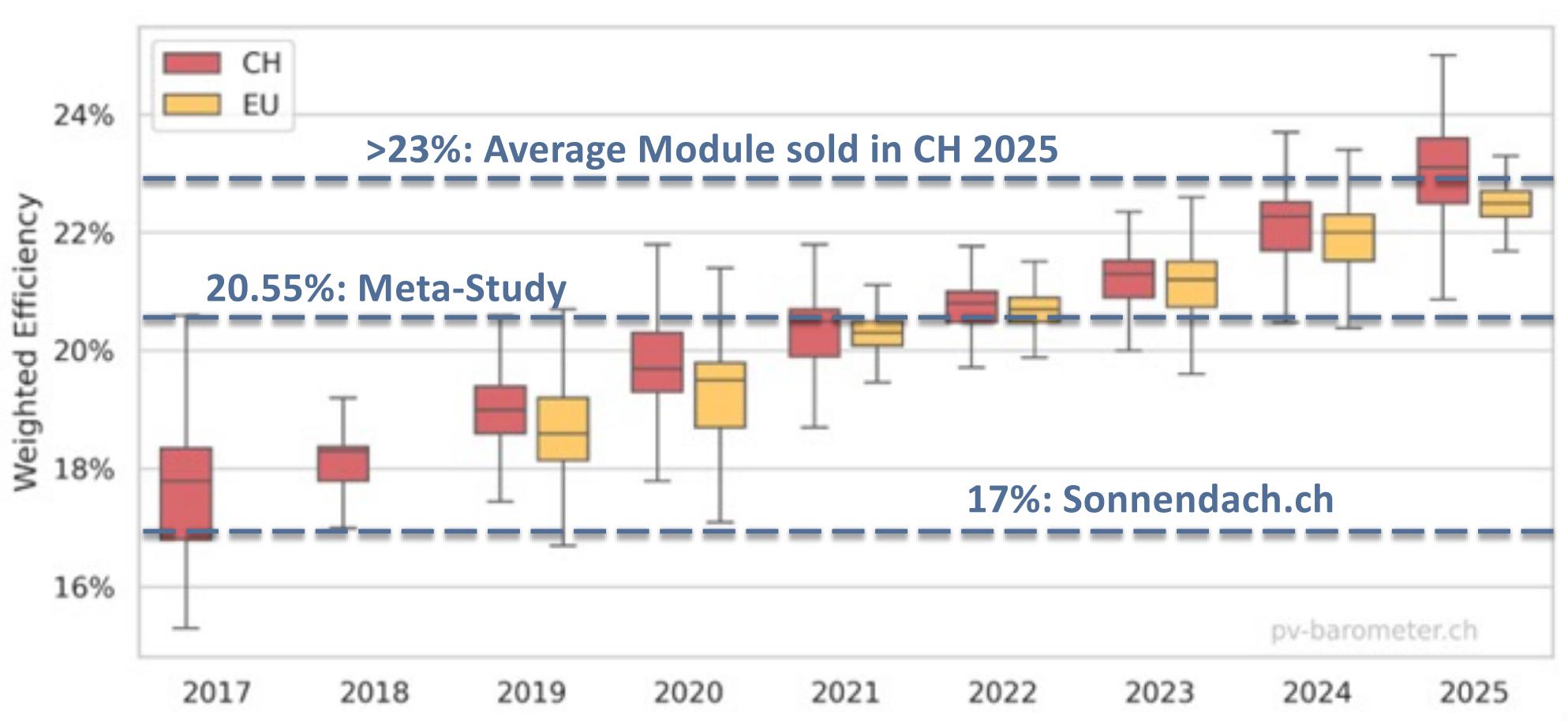
- Modulwirkungsgrad 24%
- 1 kWp benötigt 4.2 m<sup>2</sup> Fläche
- 1 kWp liefert 1 MWh/Jahr
- Belegungsgrad: 75%
- Berechnung:  $45 \text{ TWh} * 4.2 \text{m}^2/\text{MWh} / 0.75 = 250 \text{ km}^2$
- Quellen: Arealstatistik

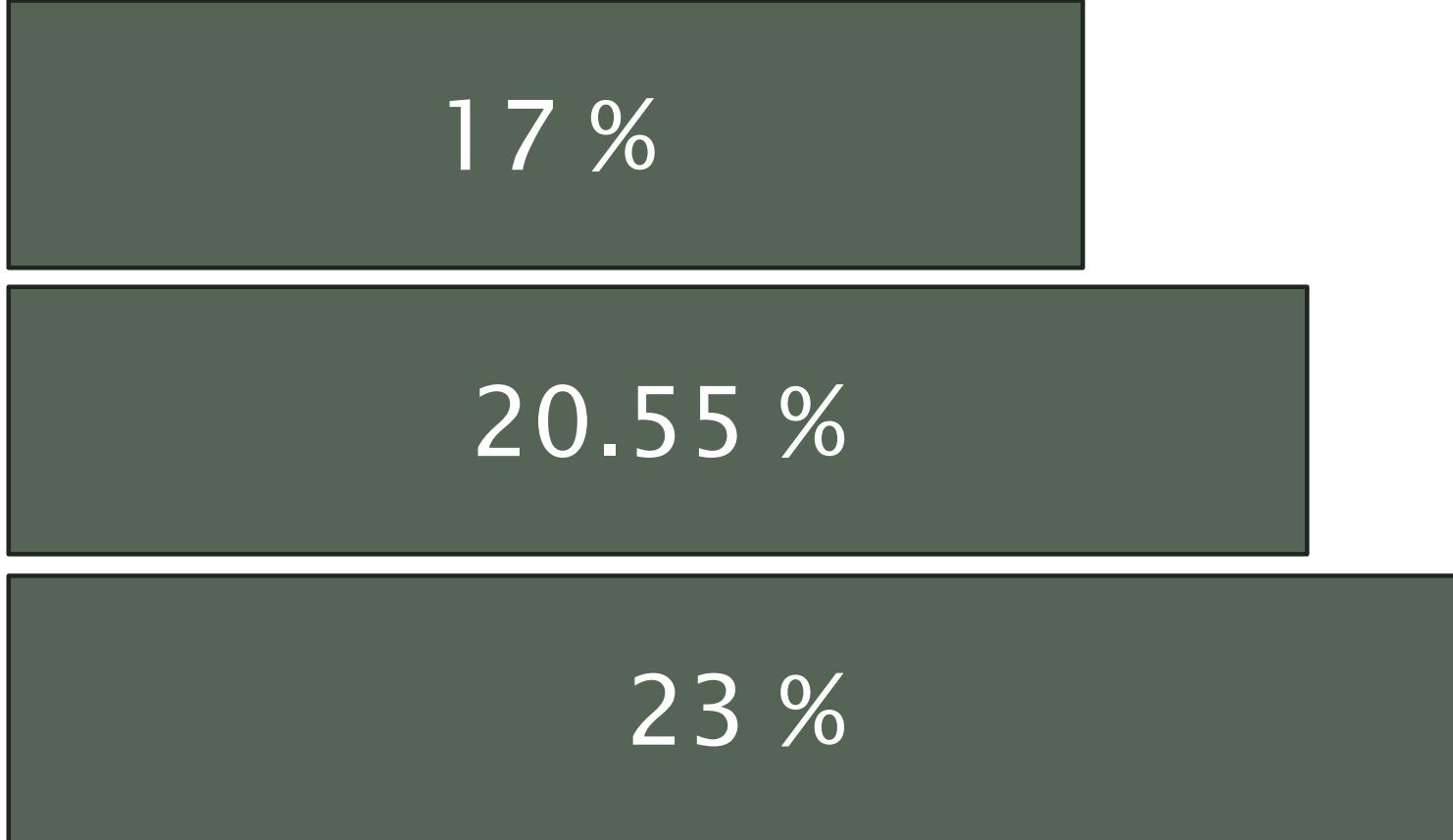
# Meta Study – PV Potential on Buildings

Numbers as



# Development of PV Module Efficiency





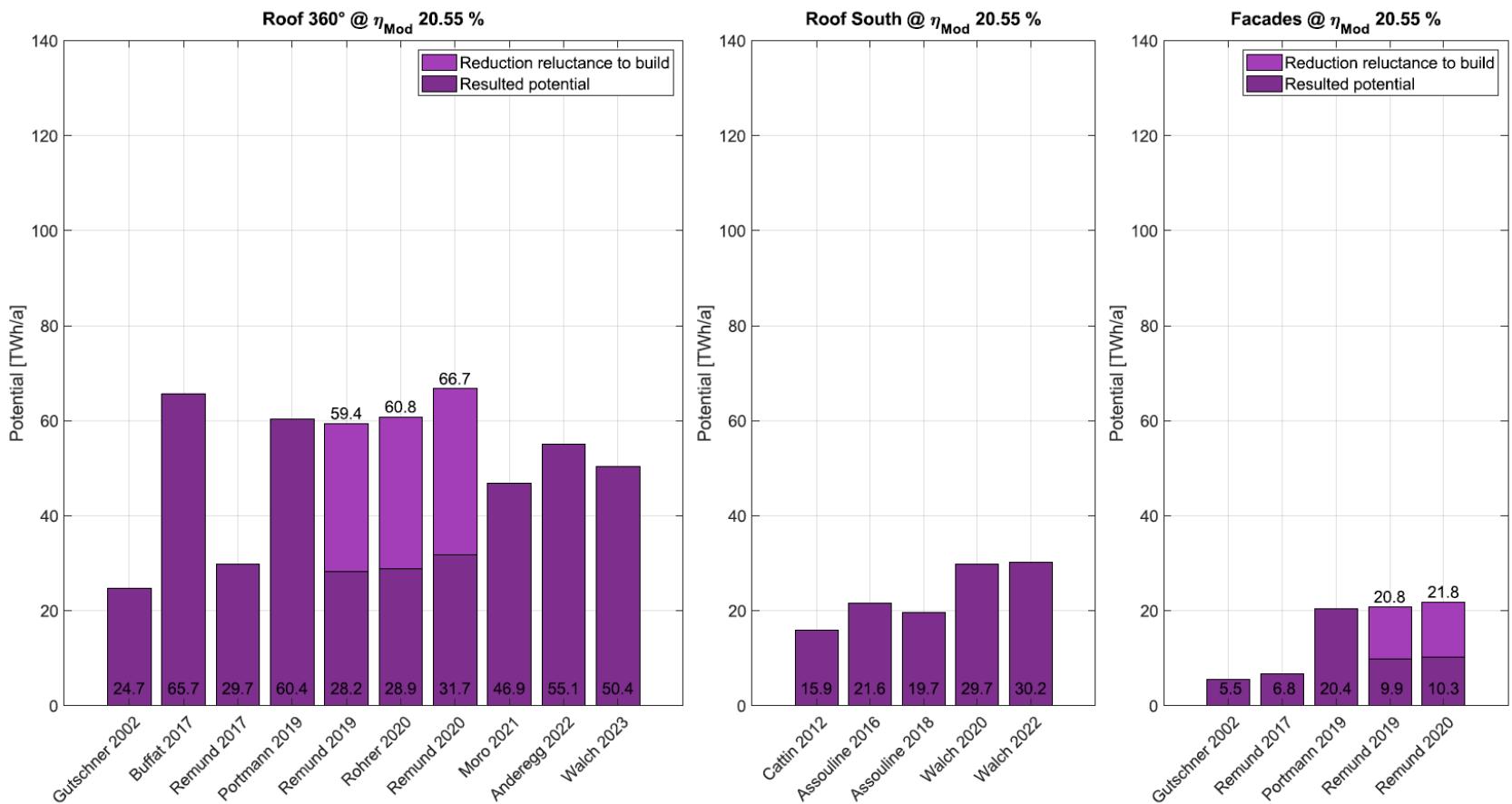
17 %

20.55 %

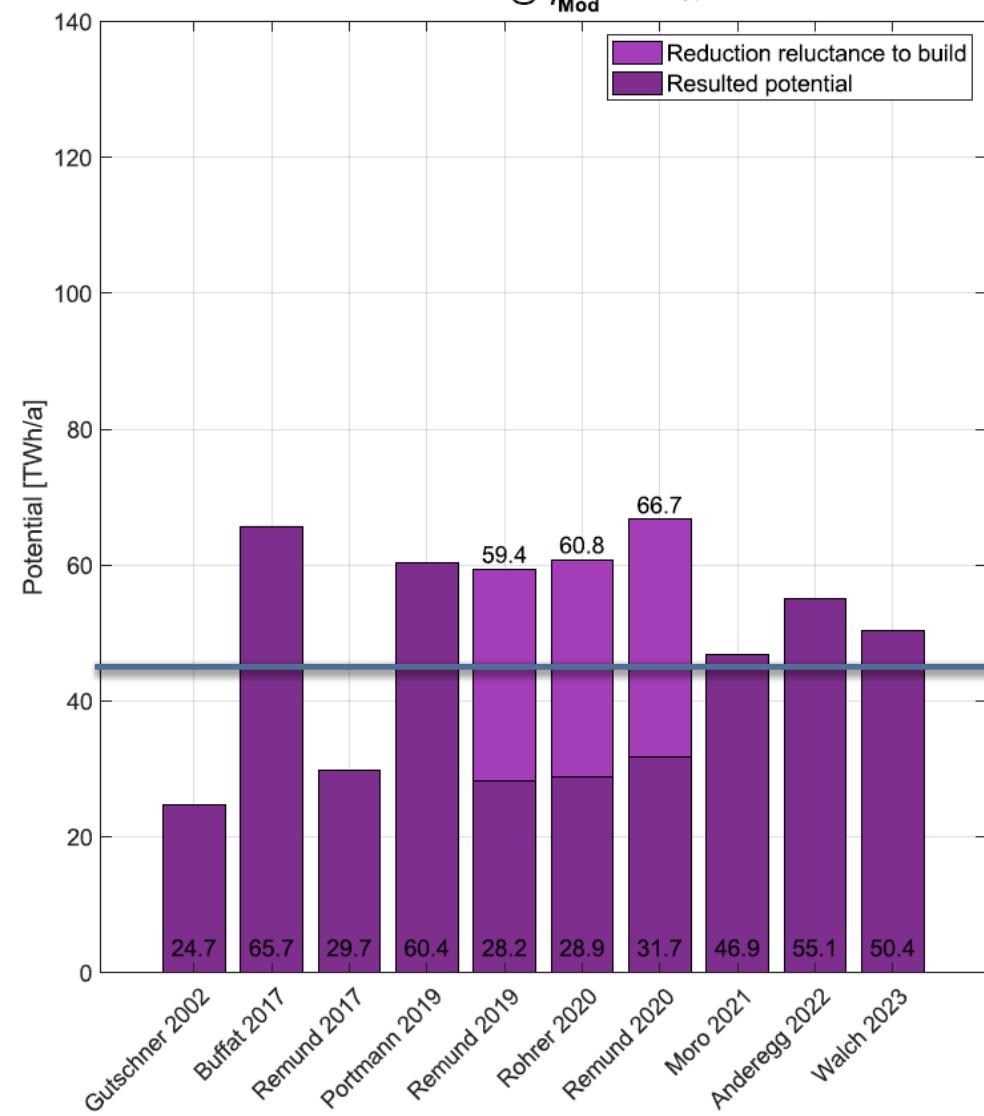
23 %

# Meta Study – PV Potential on Buildings

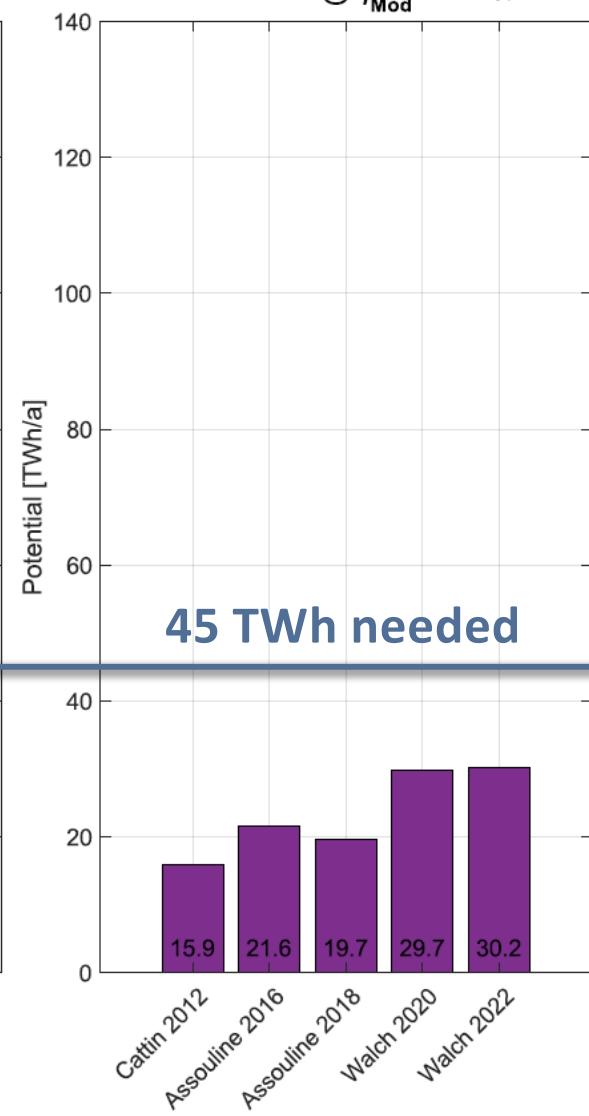
Efficiency corre



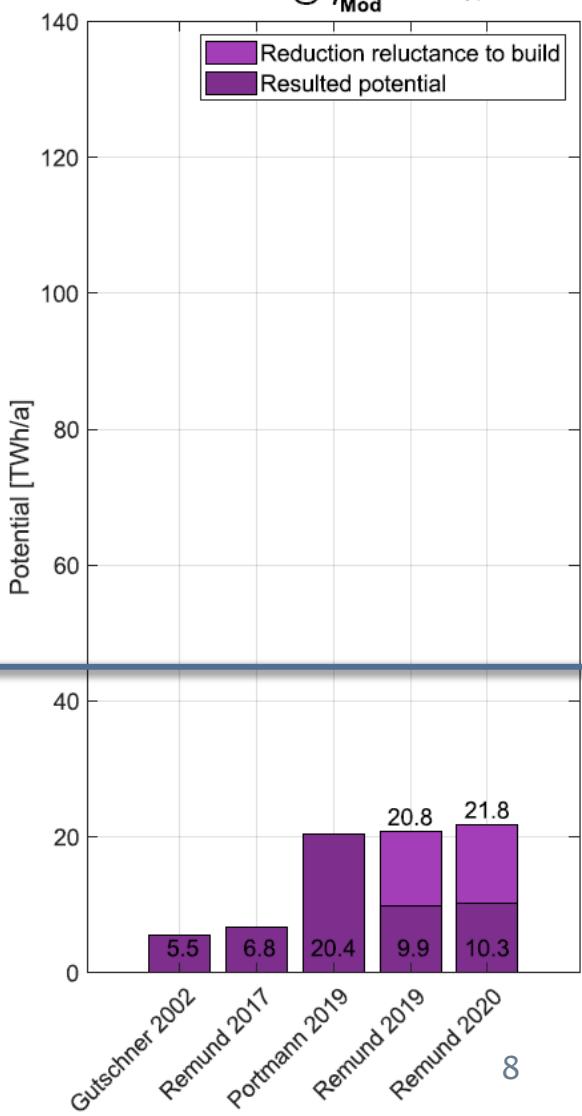
**Roof 360° @  $\eta_{Mod}$  20.55 %**



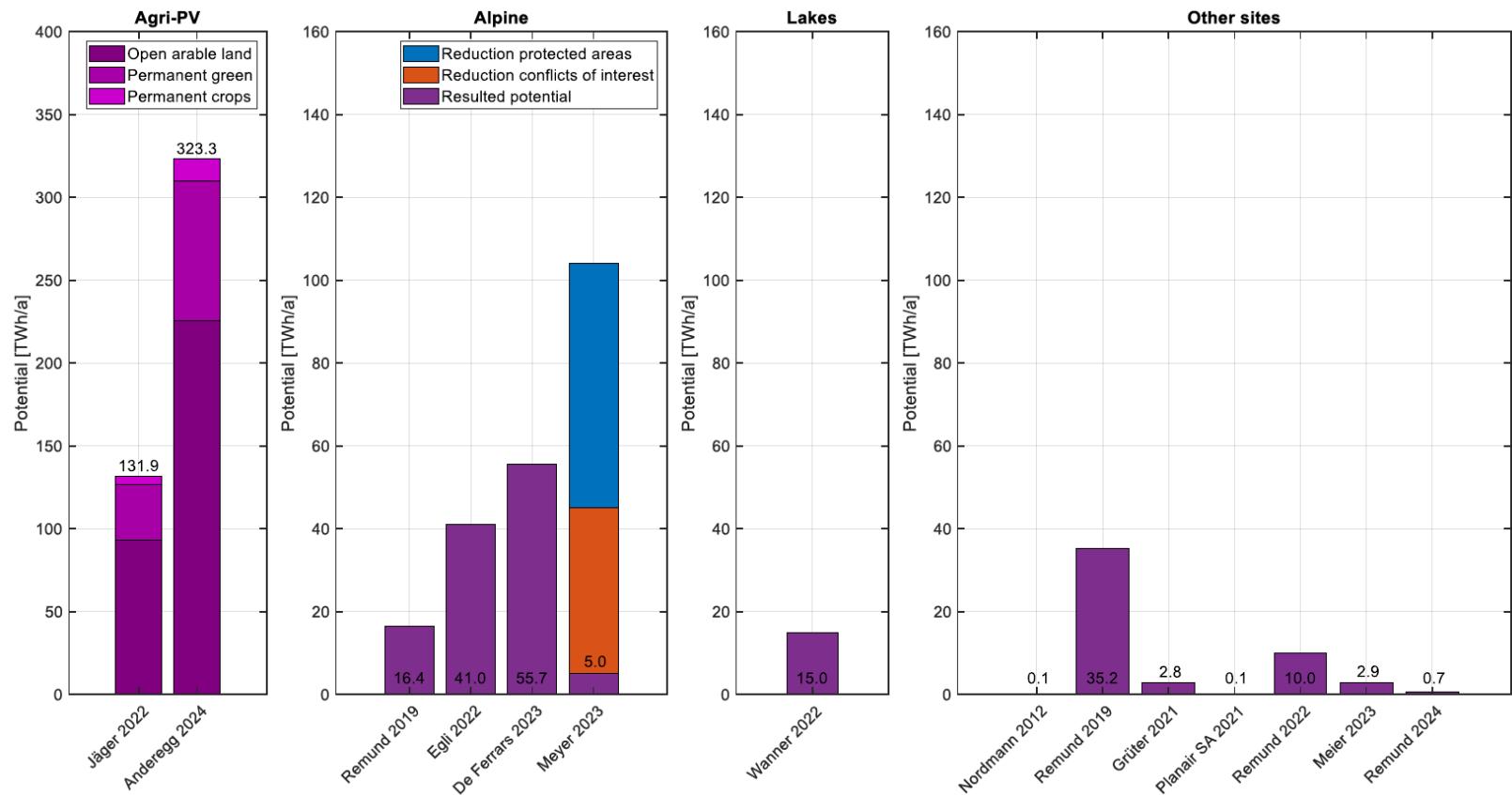
**Roof South @  $\eta_{Mod}$  20.55 %**



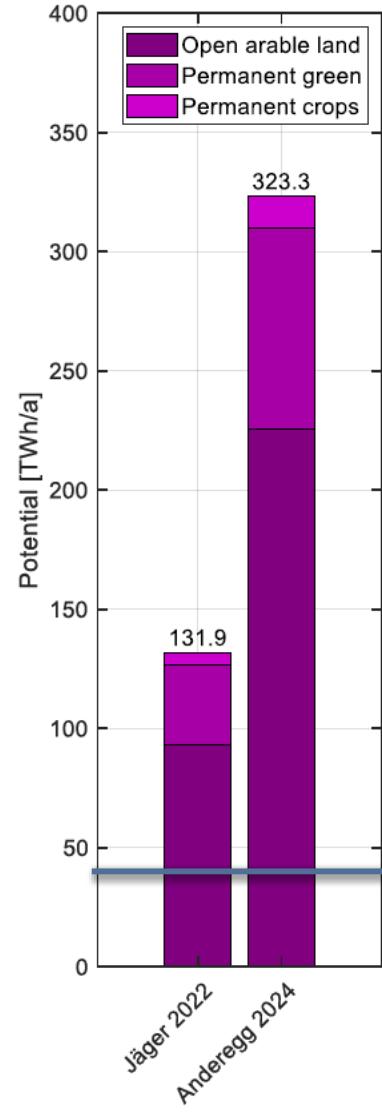
**Facades @  $\eta_{Mod}$  20.55 %**



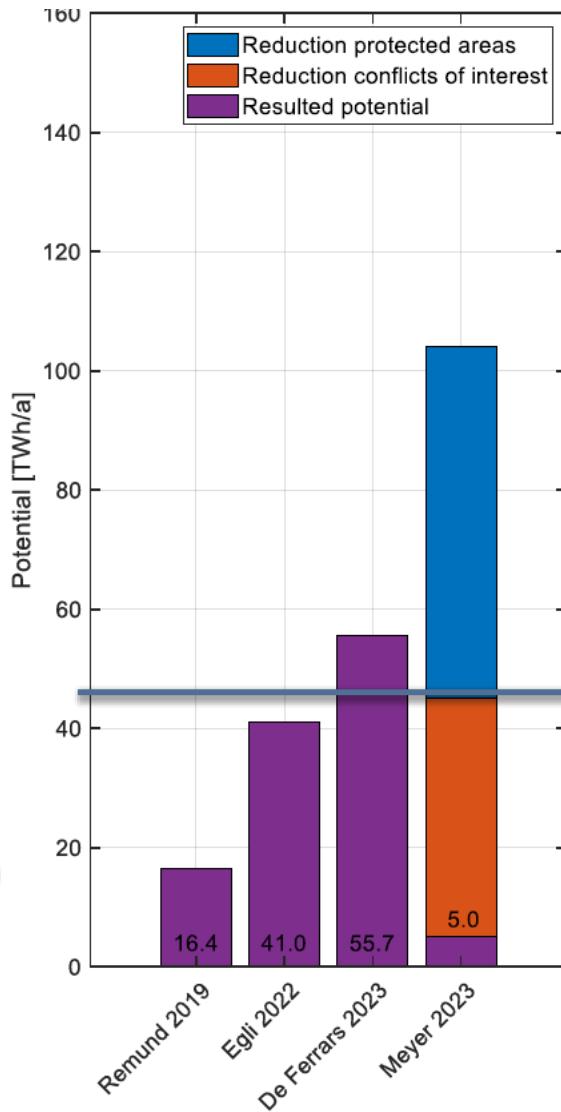
# Meta Study – additional PV Potential



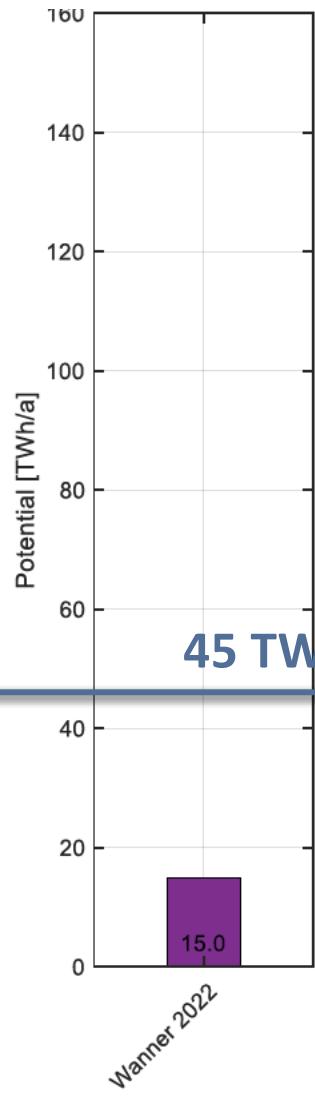
### Agri-PV



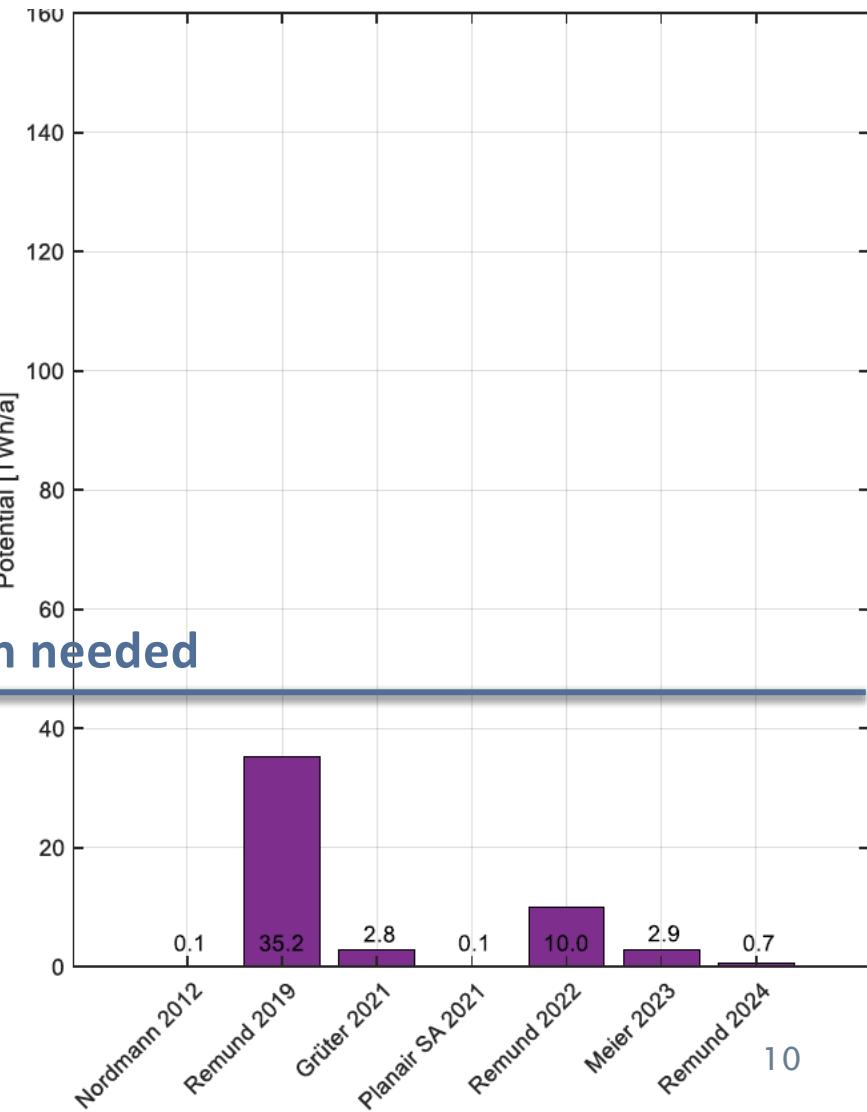
### Alpine PV



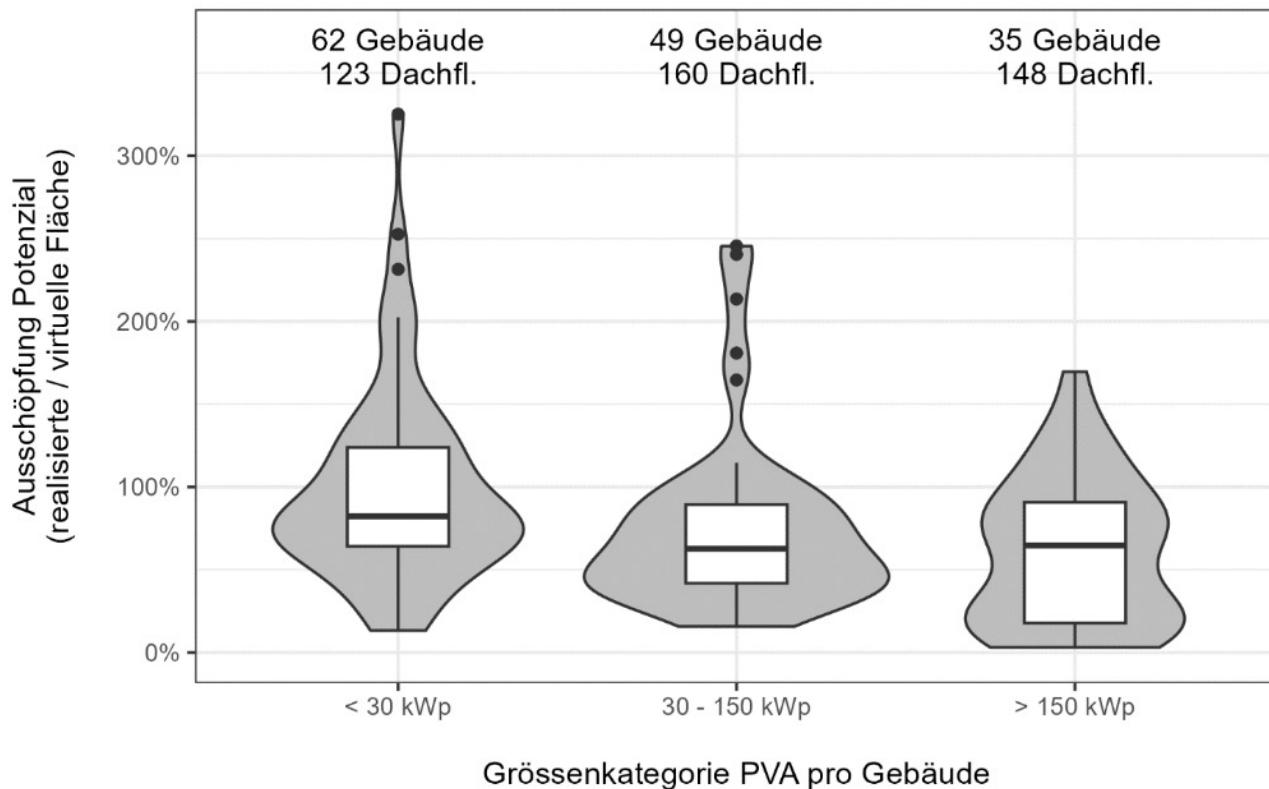
### Lakes



### Other



# Nutzen wir das Potenzial?



Anderegg et al., Ausschöpfung der Photovoltaik-Potenziale auf Schweizer Dachflächen bei Anlagen mit Inbetriebnahme ab Januar 2023, DOI 10.21256/zhaw-2647

## Fazit 1

- Haben wir ausreichend PV-Potenzial auf Gebäuden, um die Energiewende umzusetzen?

Ja, knapp

# Fazit

► Sind wir auf Kurs? Nutzen wir das Potenzial?





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Haute école spécialisée bernoise  
Bern University of Applied Sciences

# Herzlichen Dank für Ihre Aufmerksamkeit!

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