VALUE OF ADDITIONAL FLEXIBILITY

Community storages and their future possible impact

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InDEED

Supported by:

Federal Ministry
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German flexibility options in 2035

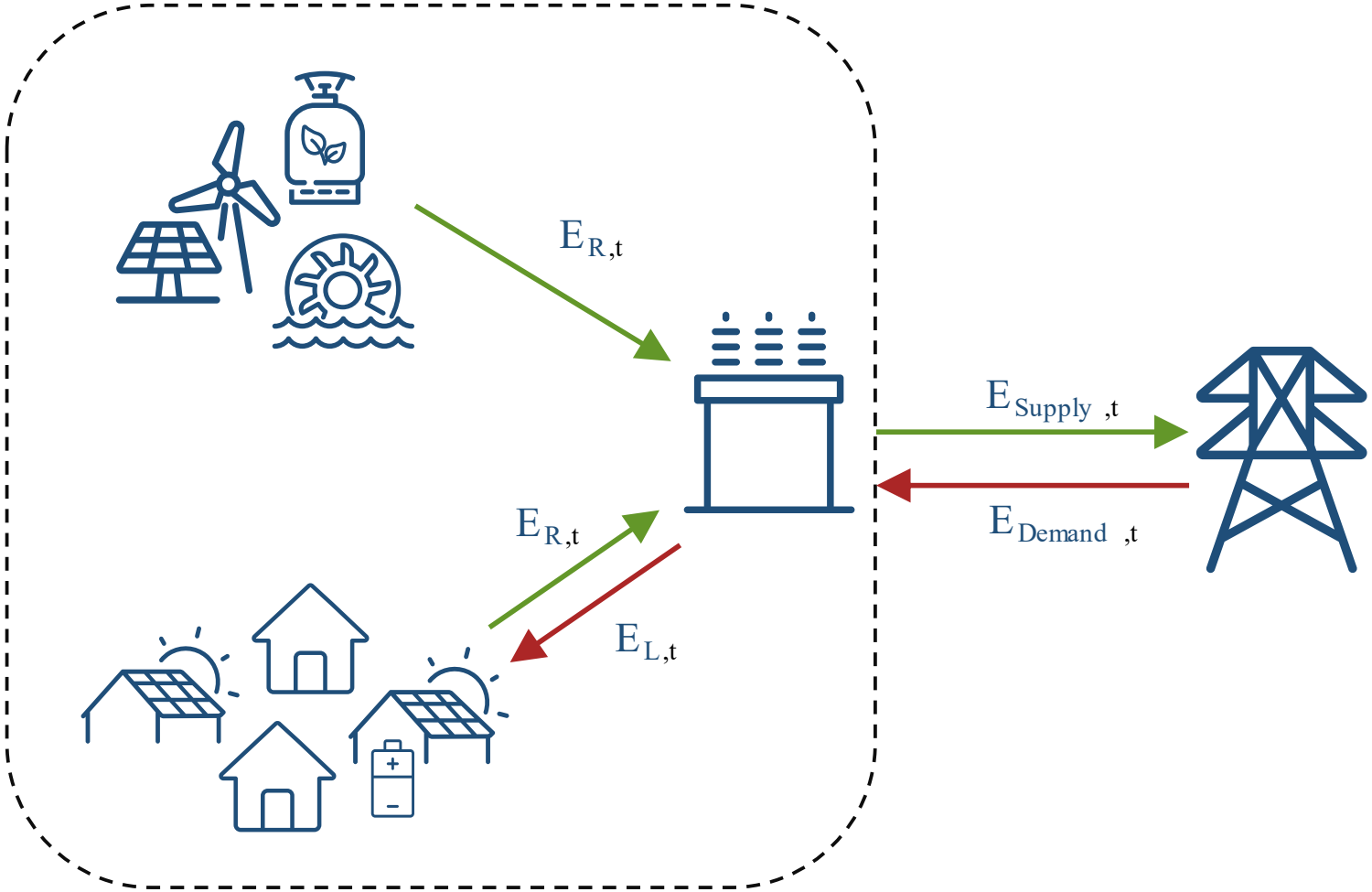
7 GW from pumped-storage power plant

2,45 GW from home-storages

6 GW from large scale battery storages*

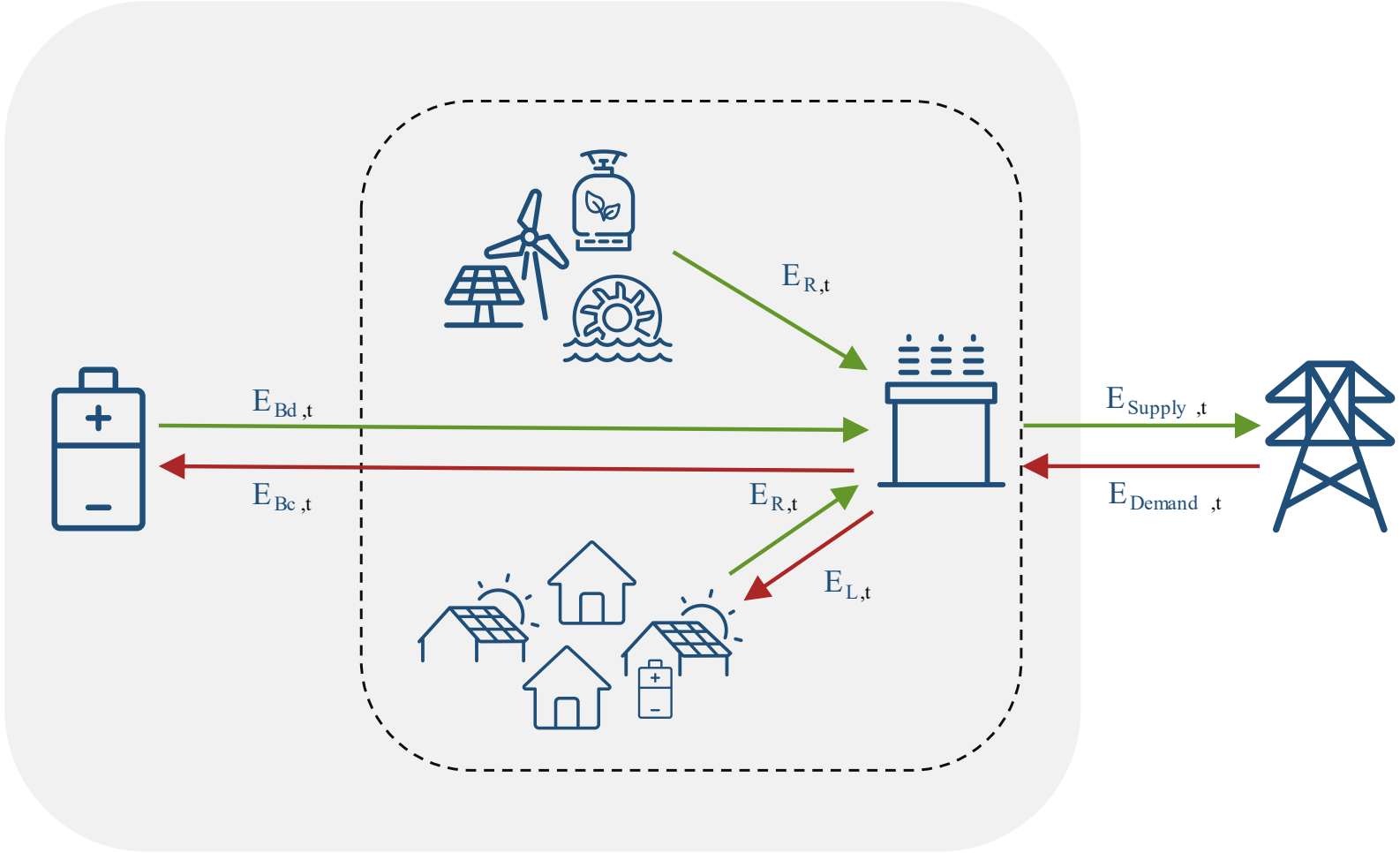
Municipality model

Delivering residual loads for all German municipalities



Extended municipality model

Additional community battery storages reshape the residual load



Regional distribution of storage capacity

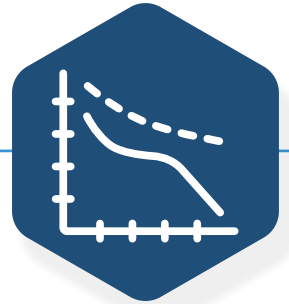
Three different heuristic approaches

Reg1

The **installed capacity** of wind and solar power plants is used to distribute the storage capacity among the municipalities.

Reg2

The yearly **production of electricity** from volatile renewable energy sources wind and solar is used to distribute the storage capacity.



Reg3

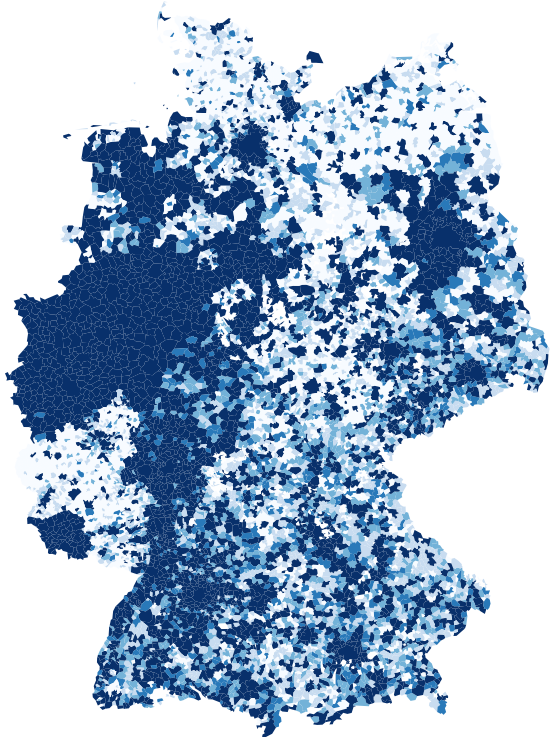
The **peak load** of the household sector from each municipality is used to distribute the storage capacity.

Regional distribution of storage capacity

Installed Capacity (Reg1)

Renewable energy production (Reg2)

Peak Load (Reg3)

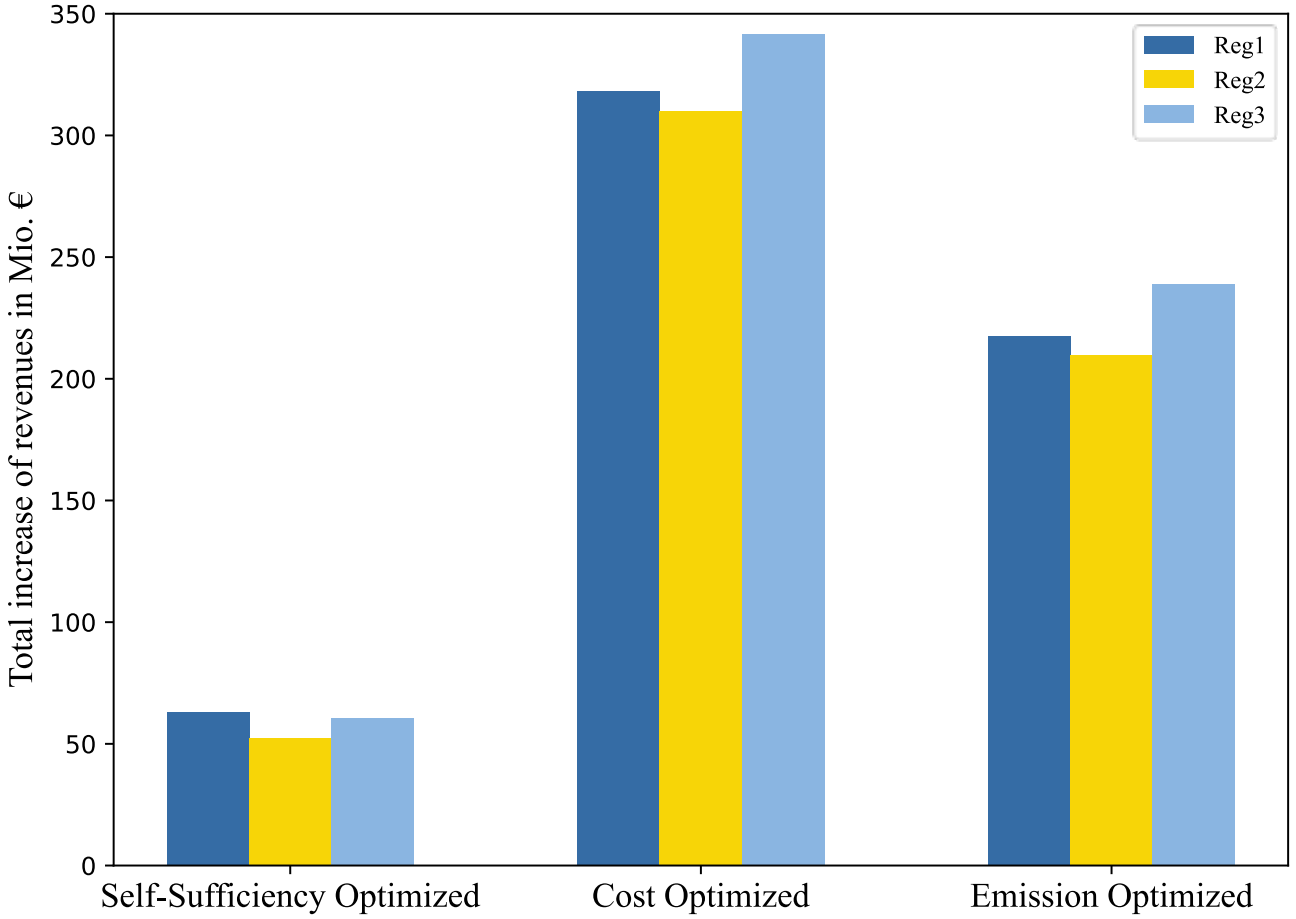


Storage Capacity in kWh

0 - 100 | 100 - 200 | 200 - 300 | 300 - 400 | > 400

Impact on the German electricity system

The impact on the German electricity system mainly depends on the battery's operation strategy



Cost Optimized

- Increased total revenues by 54 %

Emission Optimizes

- Increased total revenues by 34 %

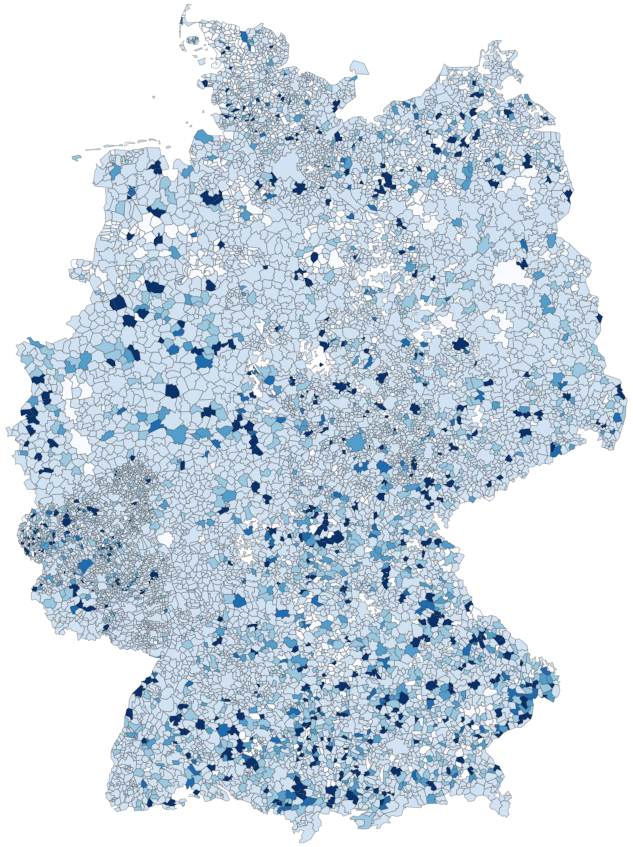
Self-Sufficiency Optimized

- Increased total revenues by 10 %

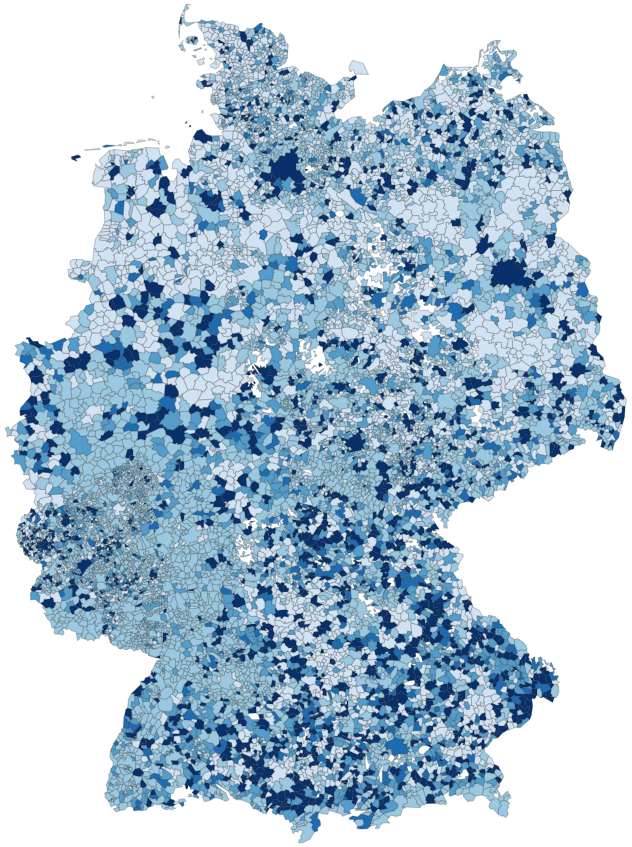
Local added value

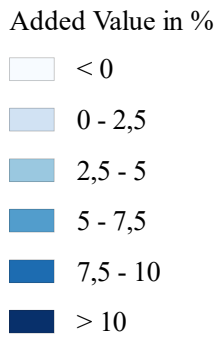
Local differences on the value added can be recognised across whole Germany

Self-sufficiency optimized



Cost optimized





Conclusion

Value can be added in most cases

The impact of the regional distribution is lower than the impact of the operation strategy

Analysed regional distribution methods leave self-sufficiency optimized storage capacity unused in some municipalities

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