Datei Bearbeiten Ansicht Chronik Lesezeichen Extras Hilfe

Publikationsdatenbank | EfS 2019

https://www.efs2019.uc.pt/projectos/efs2019/index.php?module=sec&id=839

Meistbesucht | www.kreditkarte.at | Erste Schritte | Outlook Web App | http://eeg.tuwien.ac.at/

ENGLISH

EfS 2019

4th ENERGY FOR SUSTAINABILITY INTERNATIONAL CONFERENCE
DESIGNING A SUSTAINABLE FUTURE
24 – 26 July 2019 | Turin, Italy

- HOME
- ABOUT EFS 2019
- AUTHOR AREA
- SCIENTIFIC TOPICS
- PROGRAMME
- COMMITTEES
- CONFERENCE VENUE
- REGISTRATION
- ACCOMMODATION
- PAPERS
- CONTACTS

PROGRAMME

GENERAL PROGRAMME

A plenary lecture will be given by Prof. Kathryn Janda (UCL) on "Beyond Technology: What is (In)visible to Data-Driven Energy Demand Research"

Wednesday, 24 July

8:30-9:00 Registration
9:00-9:30 **Opening Ceremony**
9:30-10:15 **Plenary Lecture**
10:30-11:00 Coffee-break
11:00-12:20 **Parallel Sessions**
12:30-14:00 Lunch
14:00-15:40 **Parallel Sessions**
15:40-16:00 Coffee-break
16:00-17:40 **Parallel Sessions**
18:15 Welcome drink

Thursday, 25 July

8:30-10:00 **Parallel Sessions**
10:00-10:30 Coffee-break
10:30-12:30 **Parallel Workshops**
12:30-14:00 Lunch
14:00-15:40 **Parallel Sessions**

NEWS

EfS 2019 IN NUMBERS | Message from the OC

FORMER EDITION | EfS 2017

AVAILABLE DOCUMENTS

PDF Scientific Programme (2.47 MB)

16:28
09.01.2020

ON THE FUTURE MARKET PROSPECTS OF ELECTRICITY STORAGE

Reinhard HAAS,

Energy Economics Group,

TU Wien

EfS, Turin, July 2019

CONTENT:

1. Introduction: Motivation

2. How variable renewables impact the electricity system

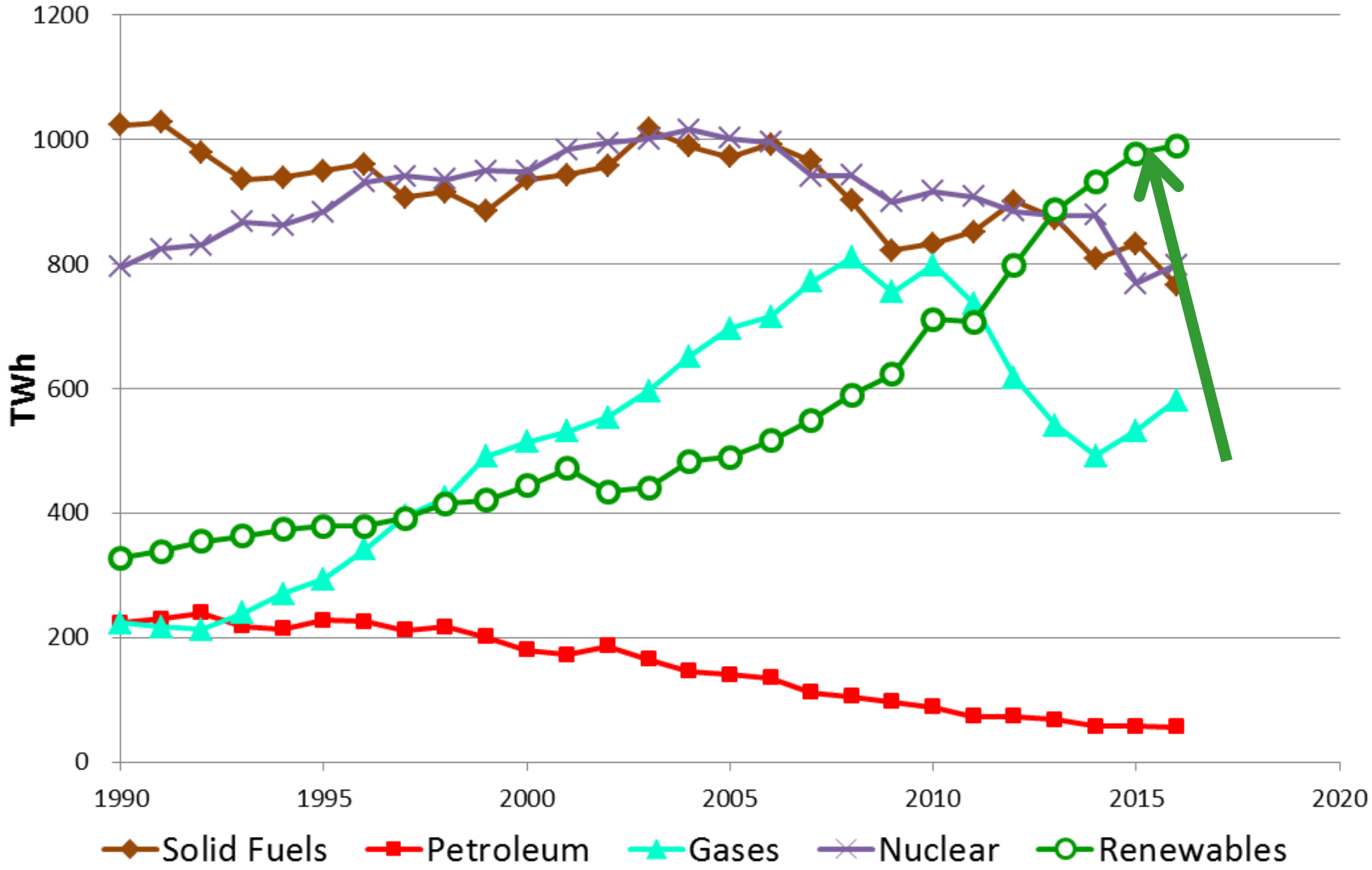
4. Storing every peak?

3. The costs of storage

5. The role of flexibility

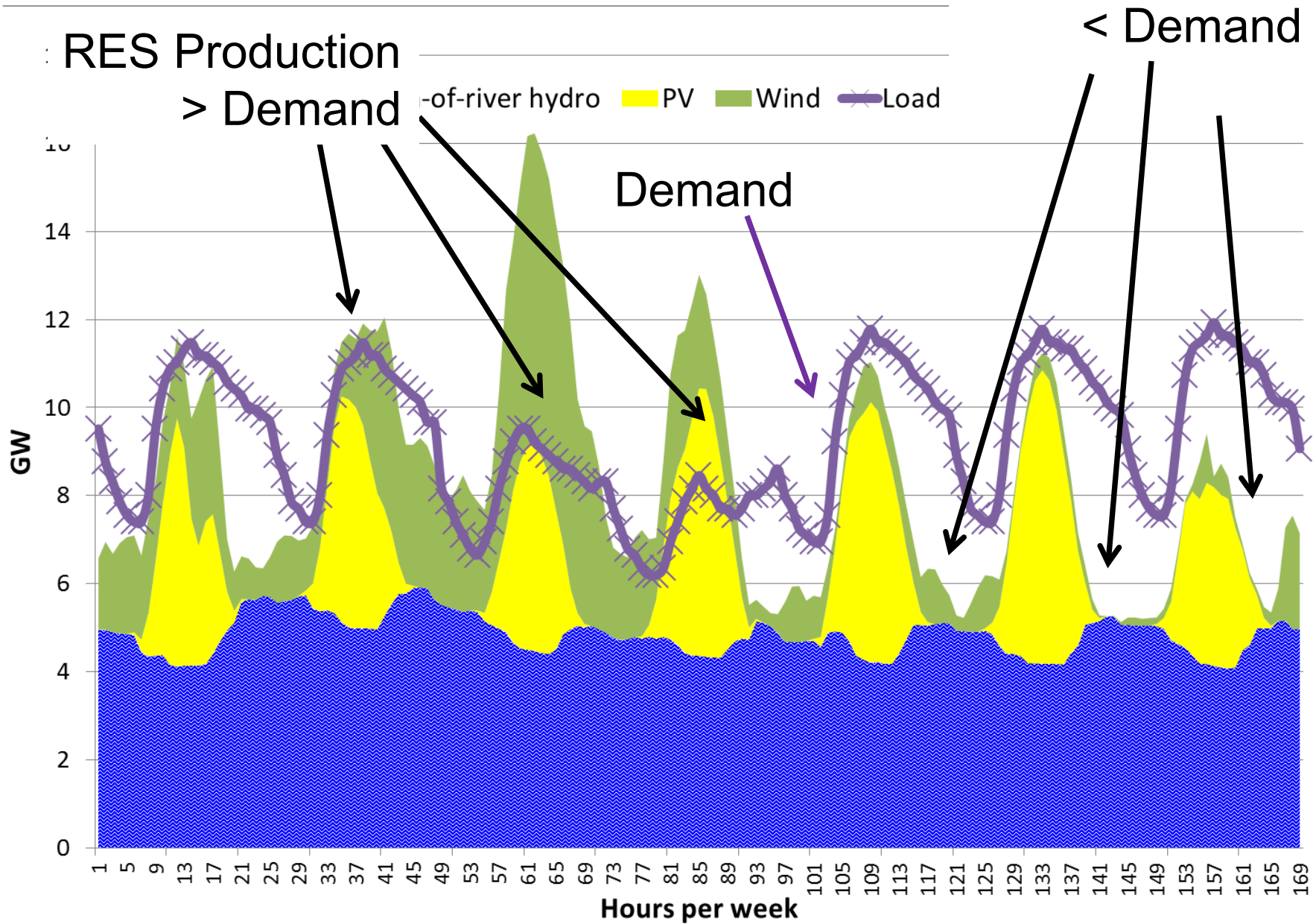
6. Conclusions

Introduction:
Electricity generation EU-28

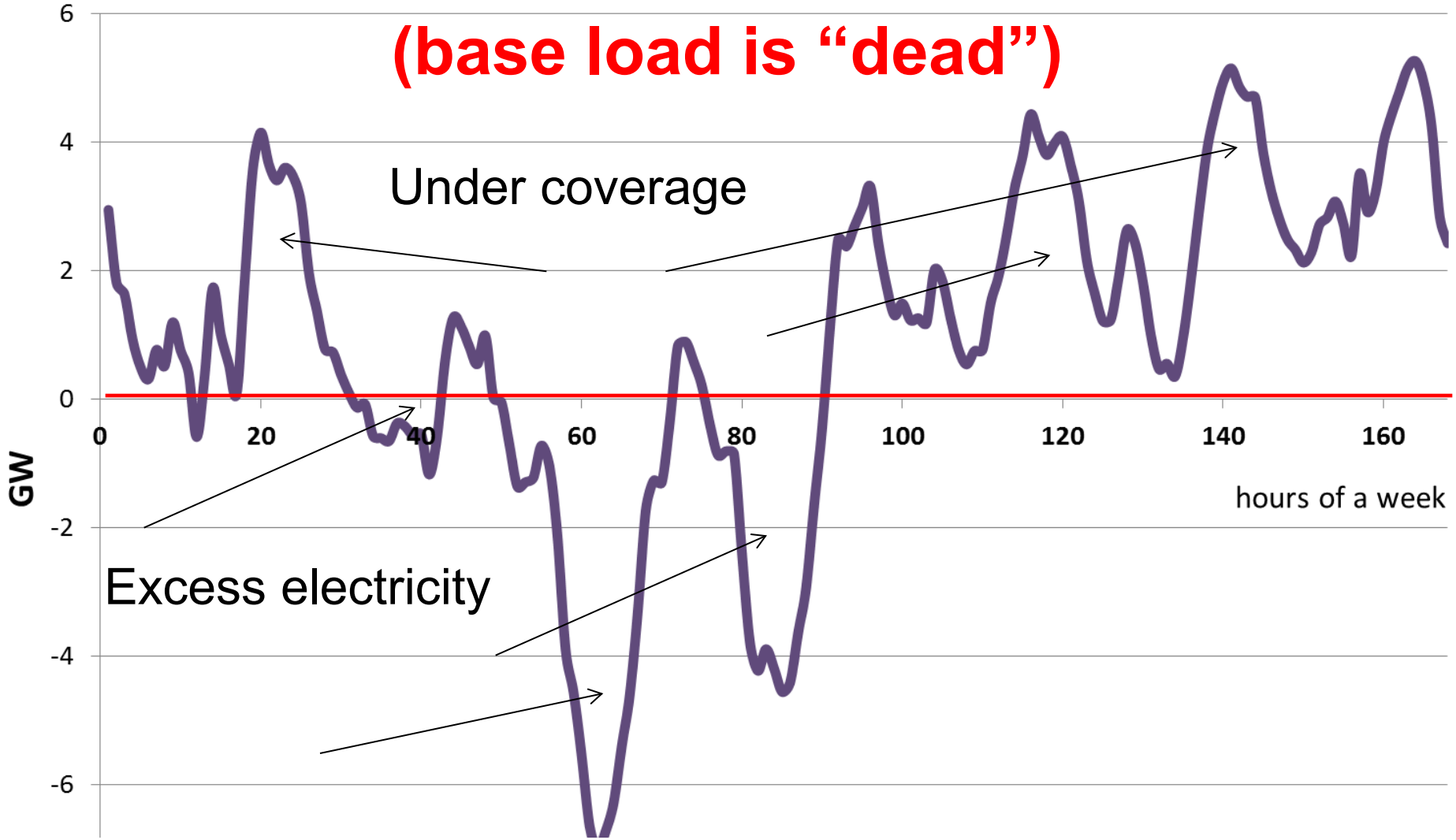


2 HOW VARIABLE RENEWABLES IMPACT THE ELECTRICITY SYSTEM

Supply and Demand

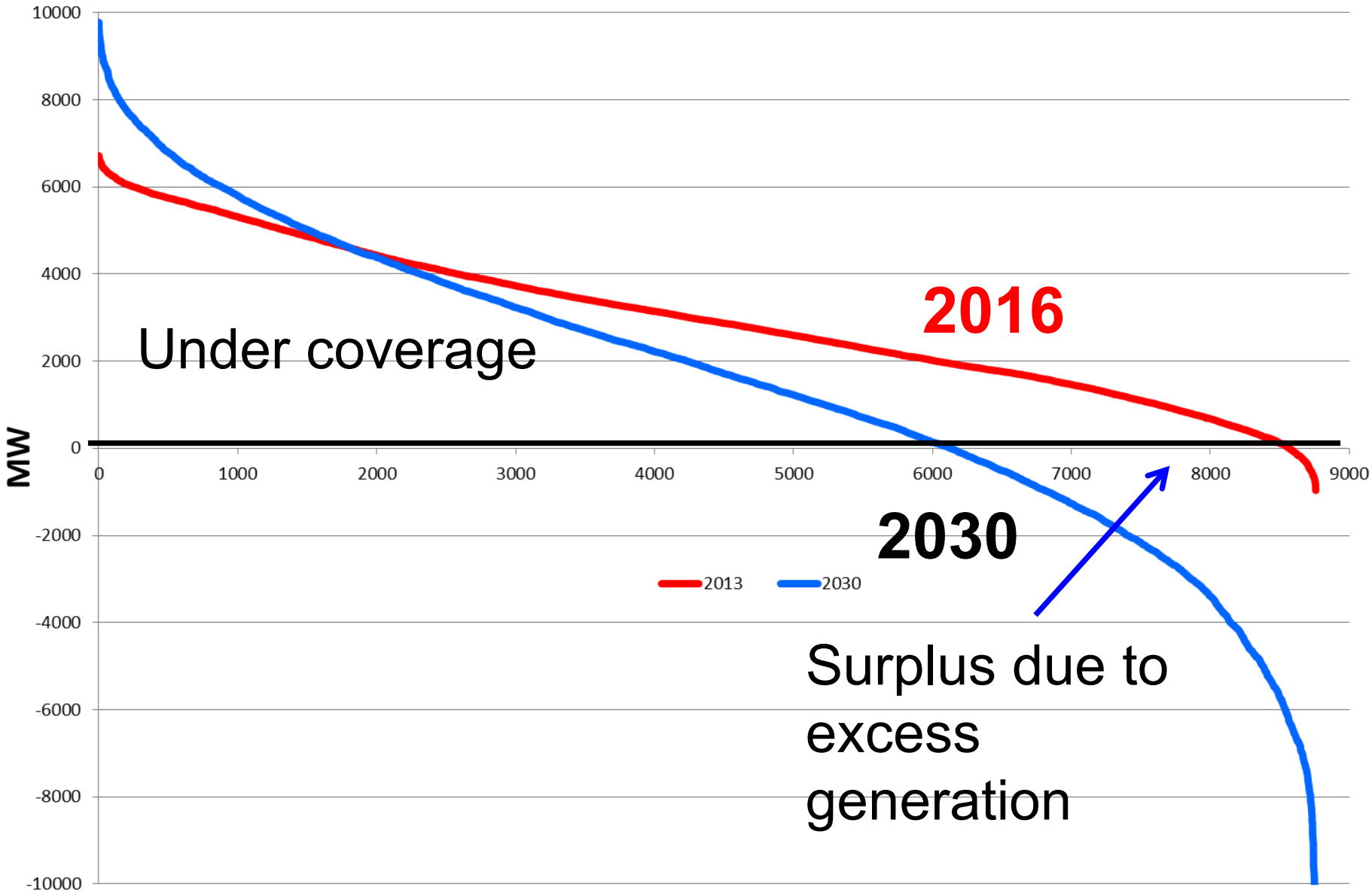


Key term of the future: Residual load (base load is "dead")

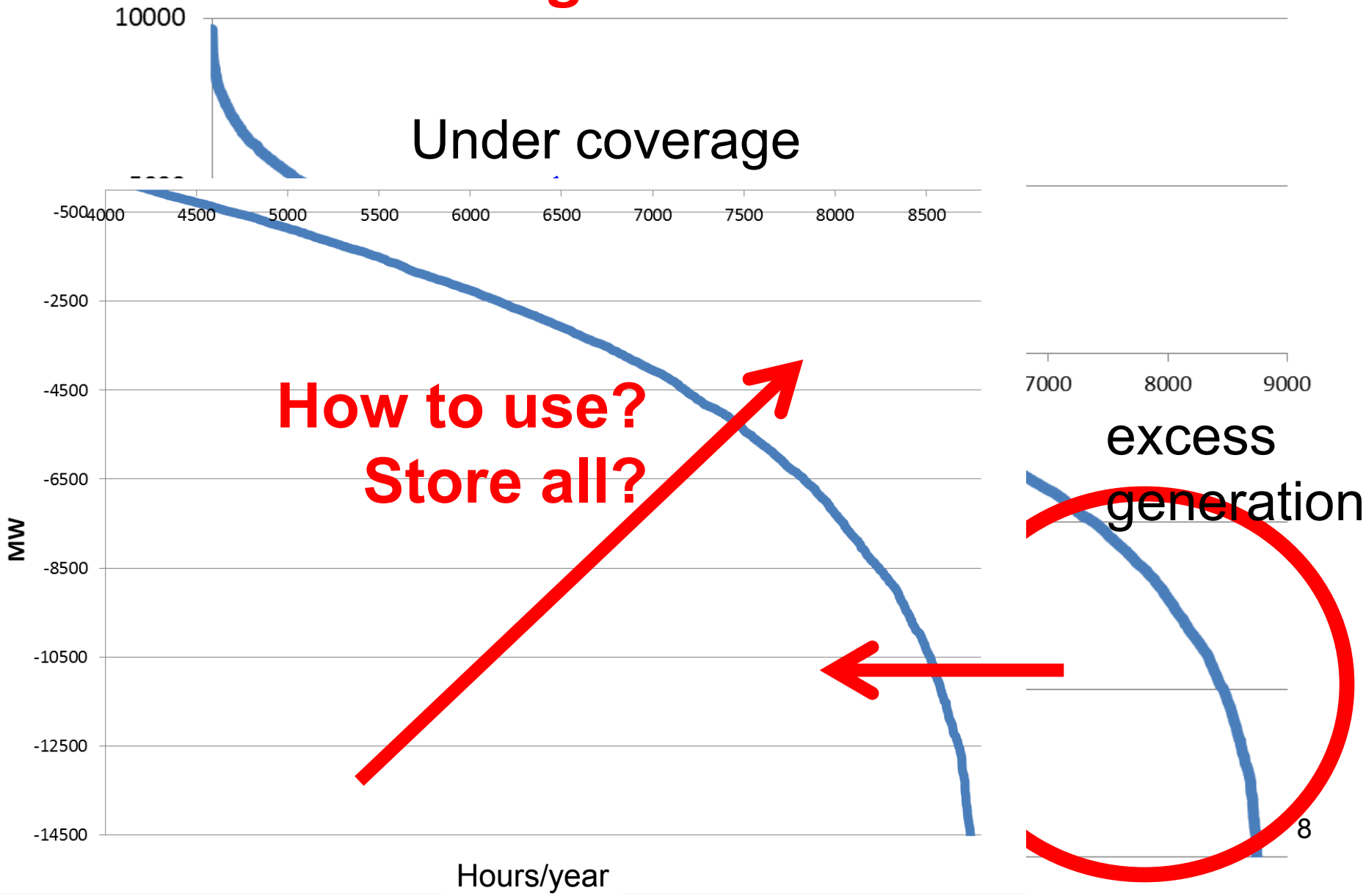


Residual load = Load – non-flexible generation

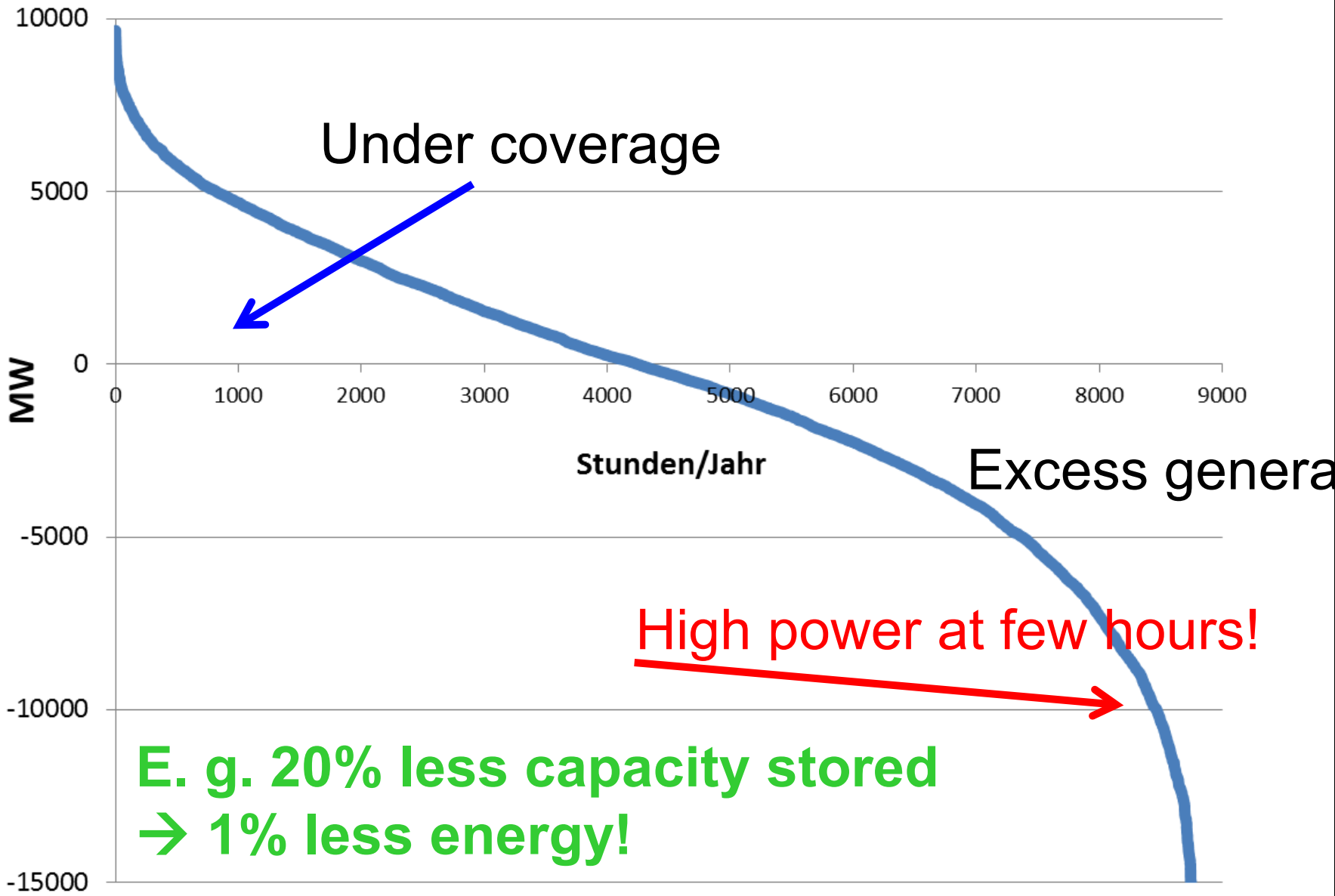
Classified residual load over a year



3. Specific question: How much storage do we need?



Storing every peak?



E. g. 20% less capacity stored
→ 1% less energy!

4. The costs of storage

$$C = \frac{\frac{IC \cdot \alpha + C_{OM}}{T} + C_E}{\eta_{STO}} \quad [\frac{EUR}{kWh}]$$

C … Storage costs (EUR per kWh)

C_E … Energy costs (EUR per kWh)

C_{OM} … O&M costs (cent per kWh)

IC … Investment costs (EUR/kW)

α … Capital Recovery factor

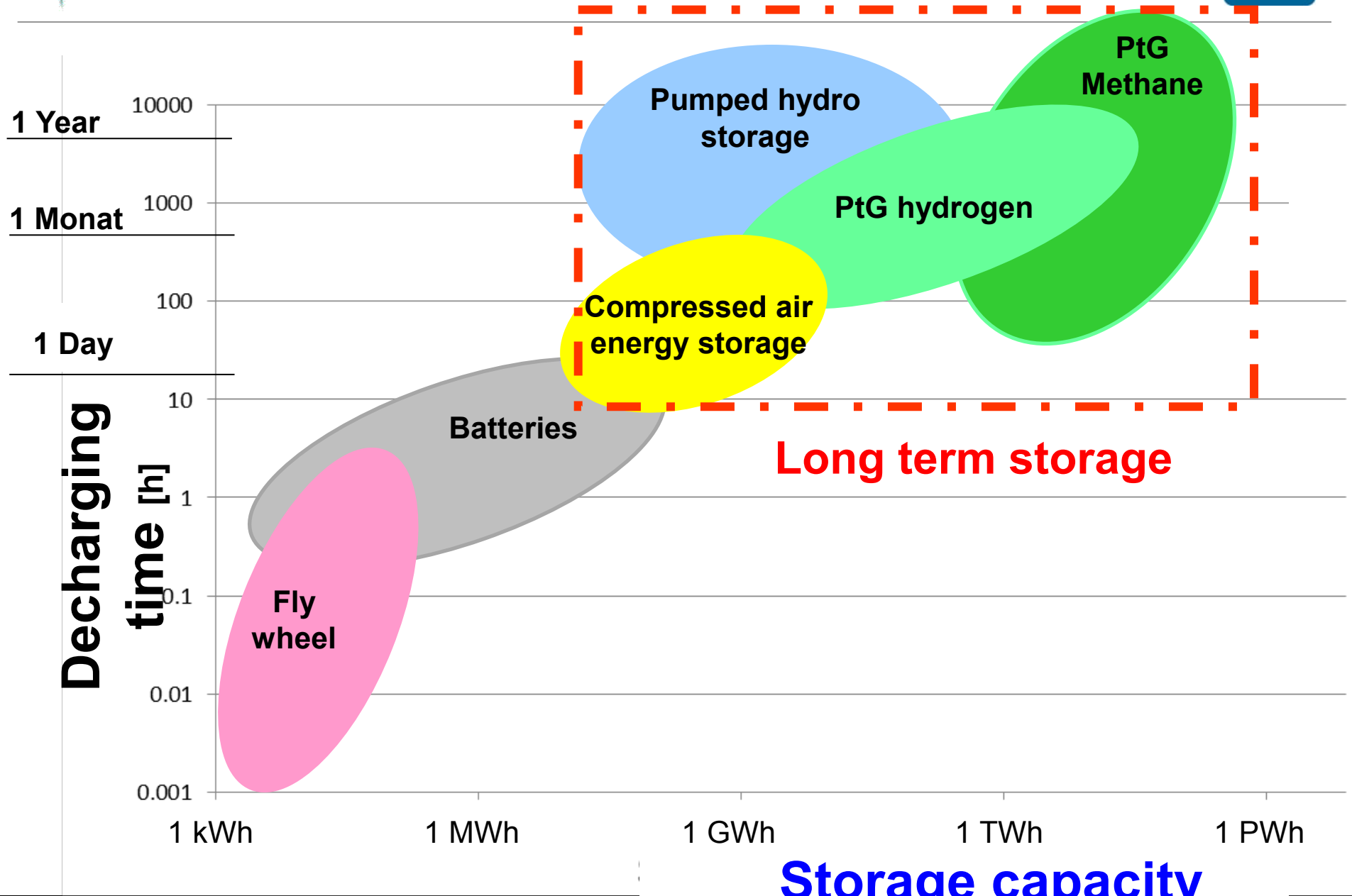
T … Fullloadhours (hours per year)

η_{SP} … Efficiency of storage

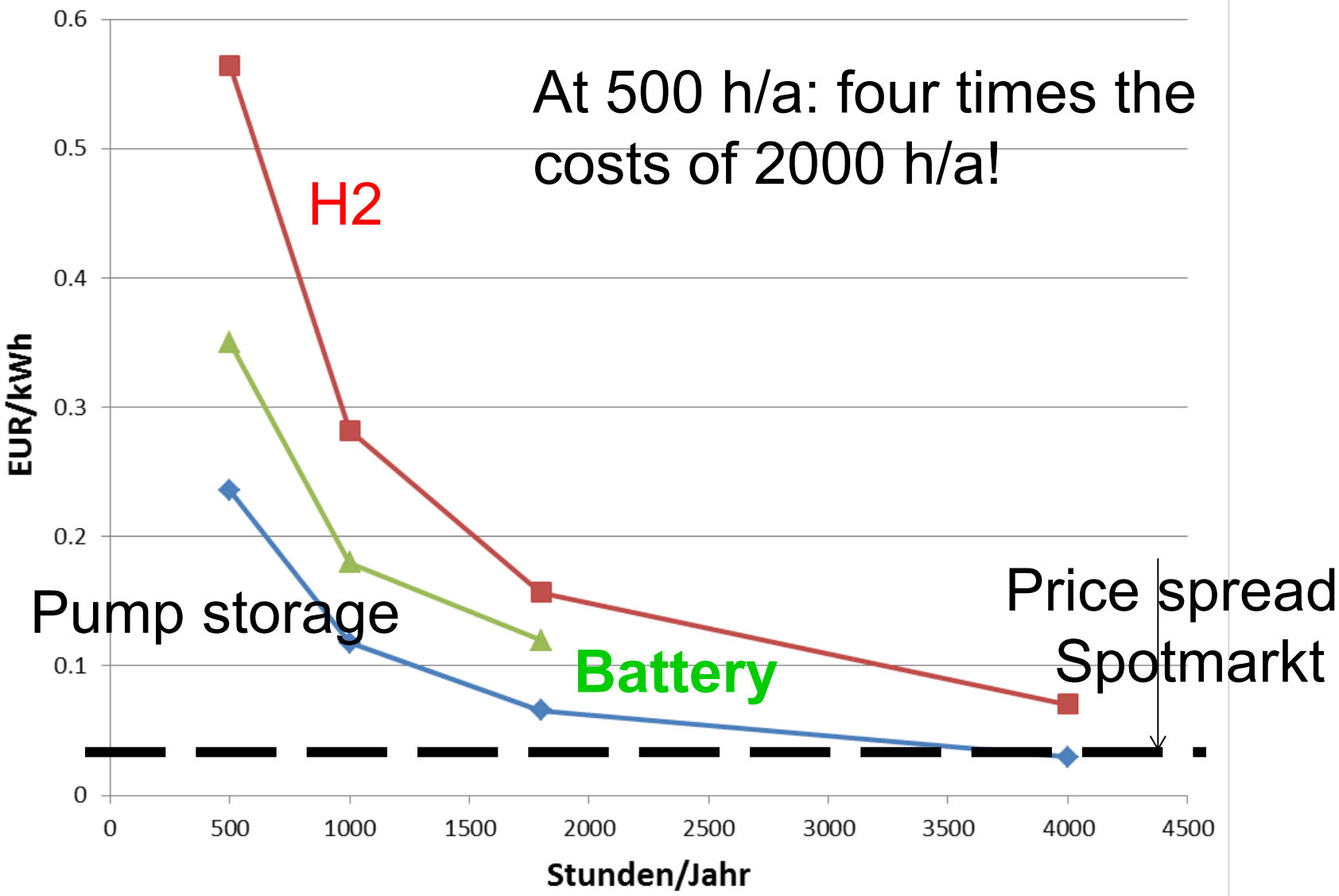
Key factors:

- **T (Fullloadhours)!**
- **C_E (electricity price)**

Short term vs Long term storage



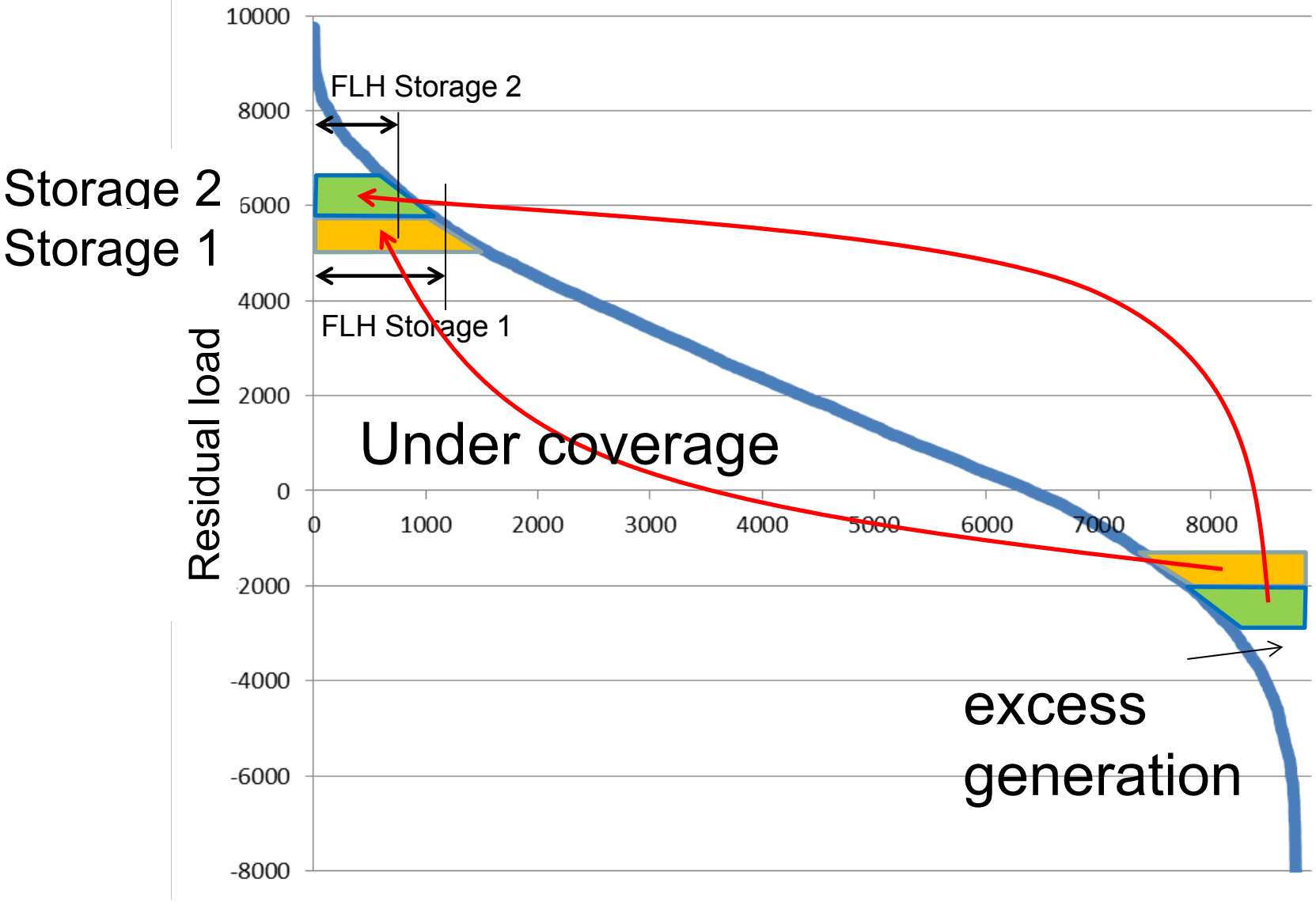
Impact of fullloadhours



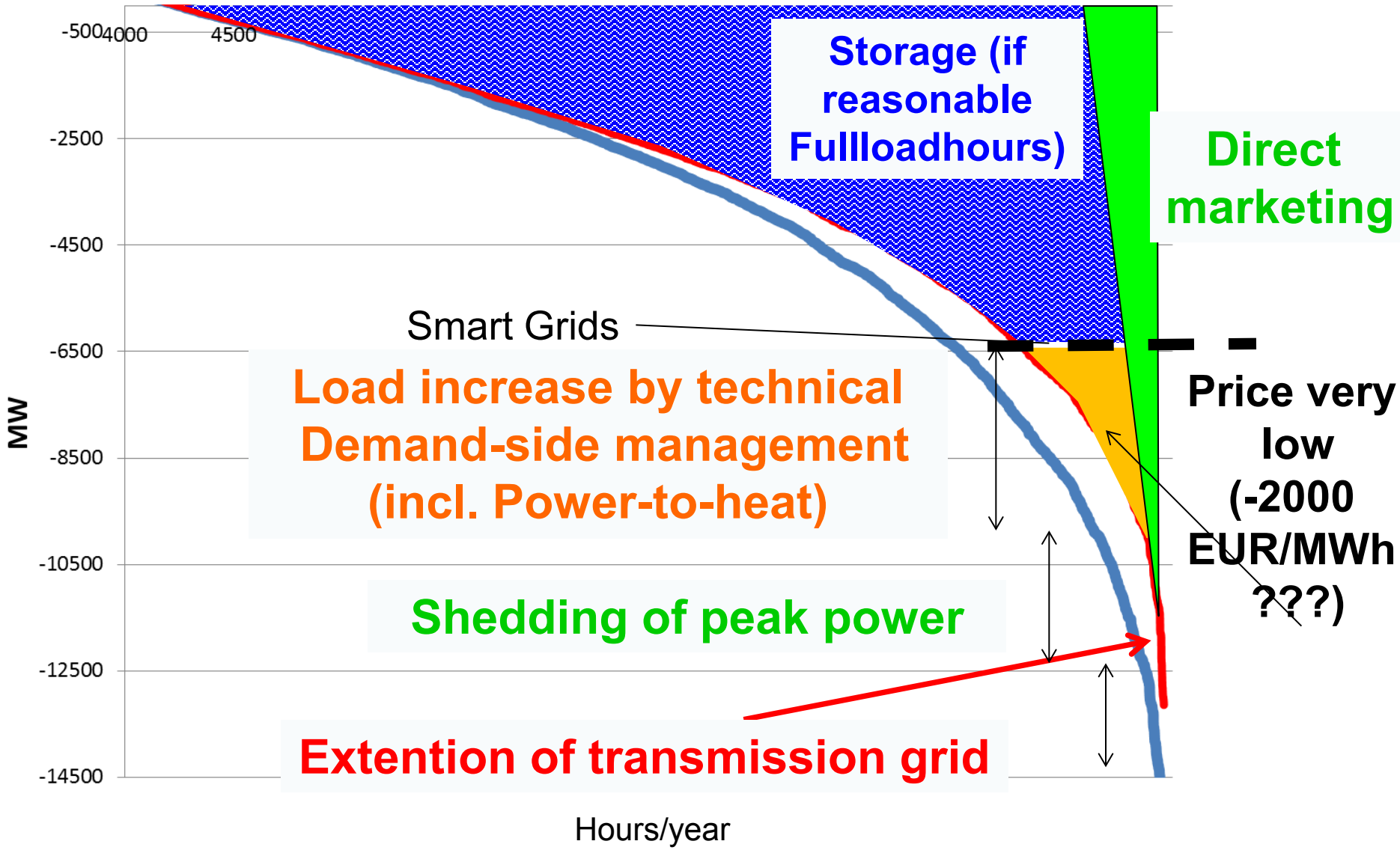
PRINCIPLE OF SELF CANNIBALISM IN ENERGY ECONOMICS:

Example storage:
Every additional storage unit makes this one and every other less cost-effective!

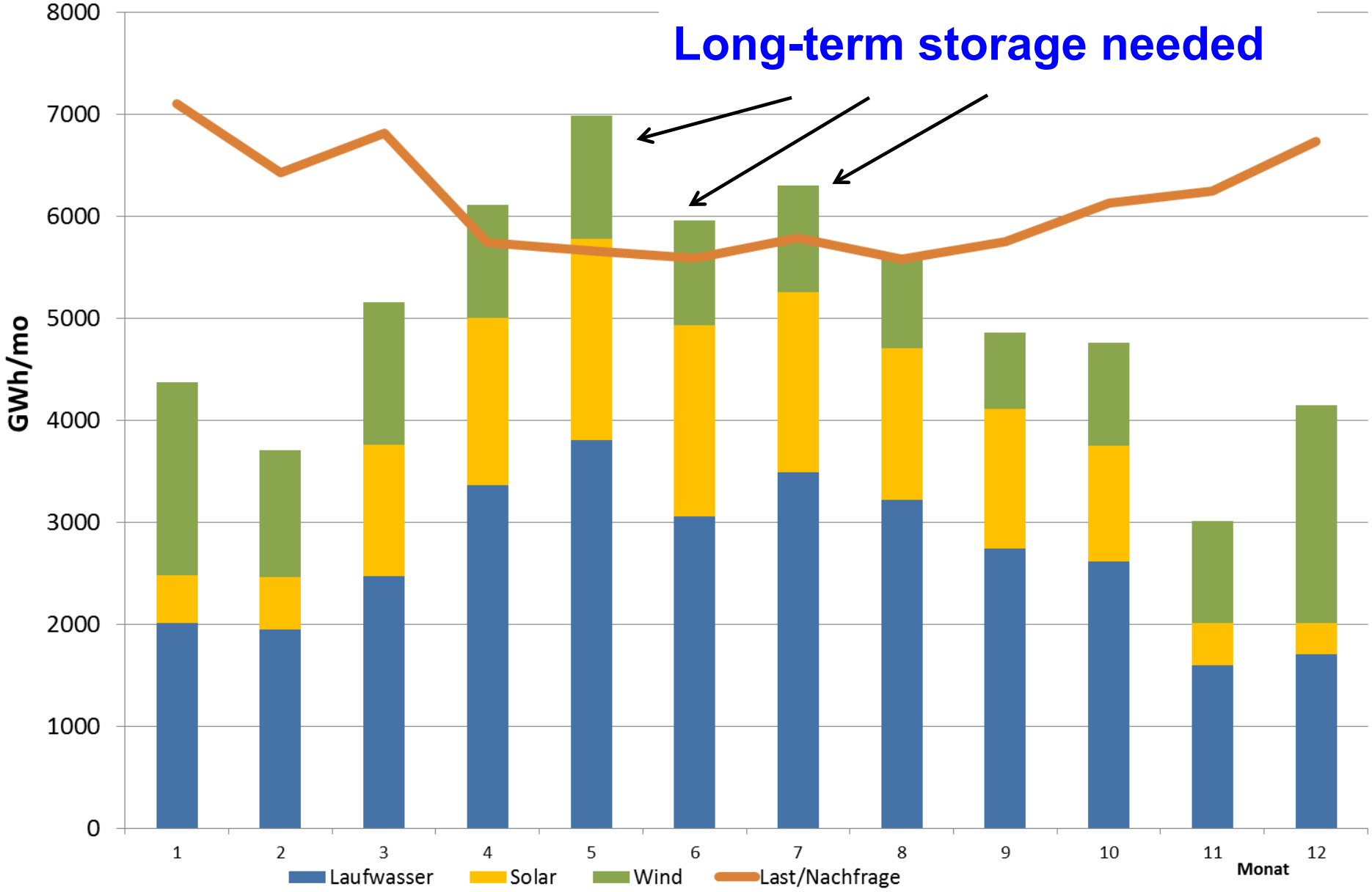
Decreasing full-load hours of storages



5. Flexibility



Demand for long-term storage



Sector coupling / Sector integration

* In times of surplus generation: How to use excess electricity in meaningful way?

Heating/Cooling

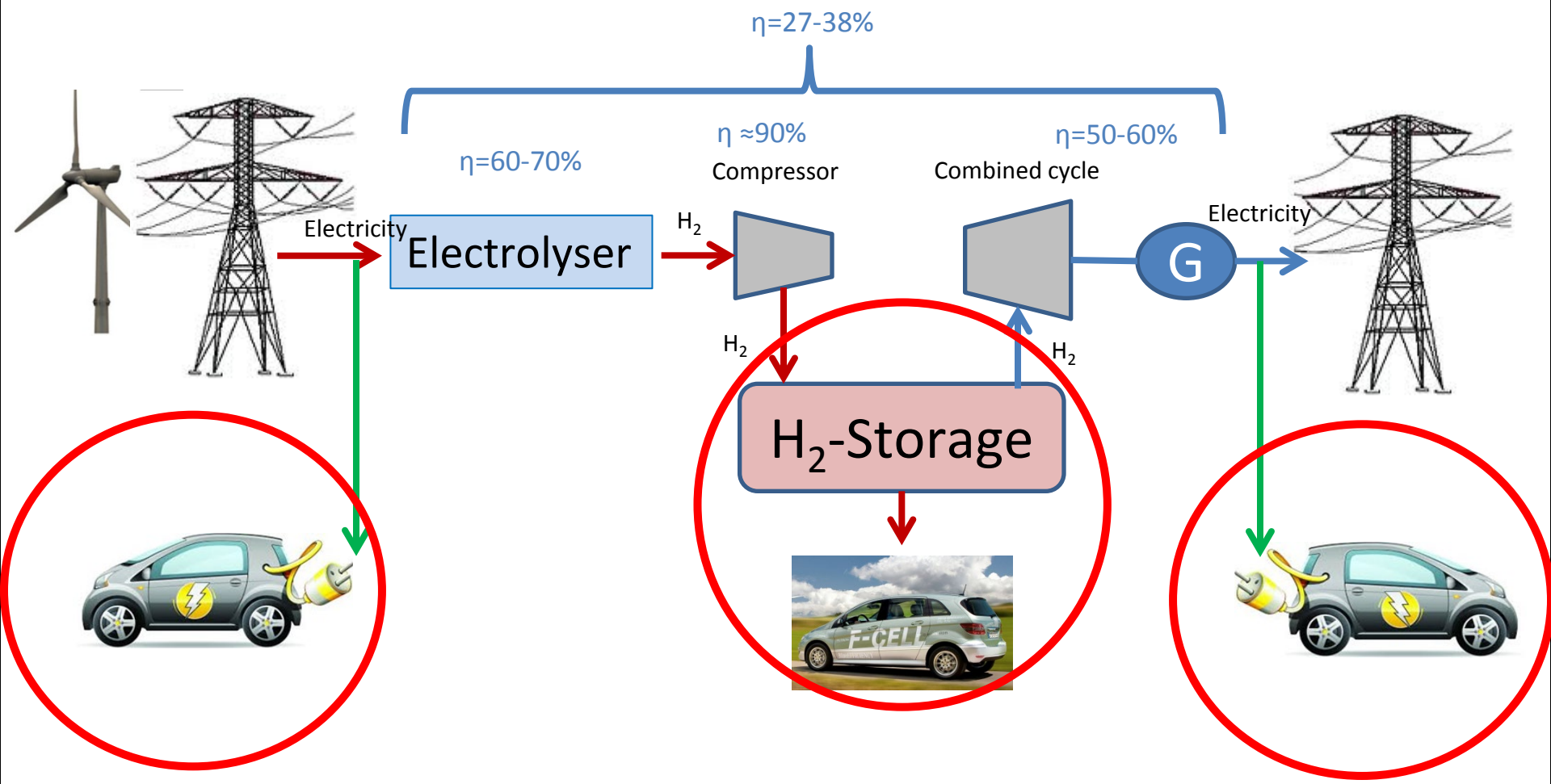
Transport

* Vague simplified suggestions, no convincing long-term solutions

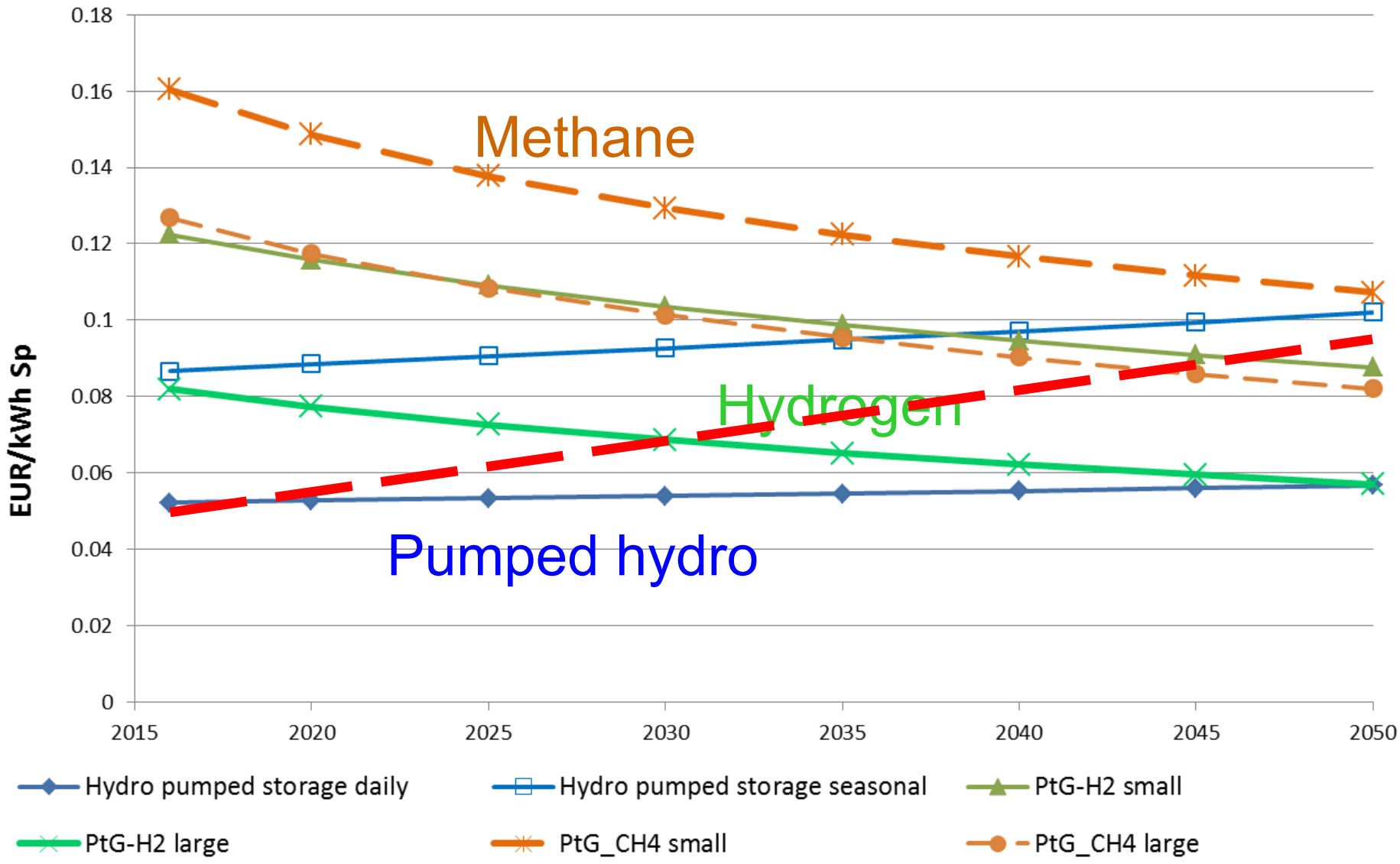
* Central (Ptx approaches, e.g. H2) vs decentral (end user level, E.g. Evs, heat pumps for heating) applications

* How to fit use with time of surplus, e.g of PV for heating ?

Sector coupling hydrogen: Storage and fuel in transport?



Long term scenarios



6. CONCLUSIONS

- Increasing electricity generation from variable RES → need for new long-term storage options
- Economic problem of all storage options: low full-load hours
- Decentralized batteries: major benefit relieve of the distrib grid
- PtG as electricity storage: low round trip efficiency
- Stated storage needs do not comply with economics
- In transport: need for environmentally friendly technologies → Zero-emission vehicles