

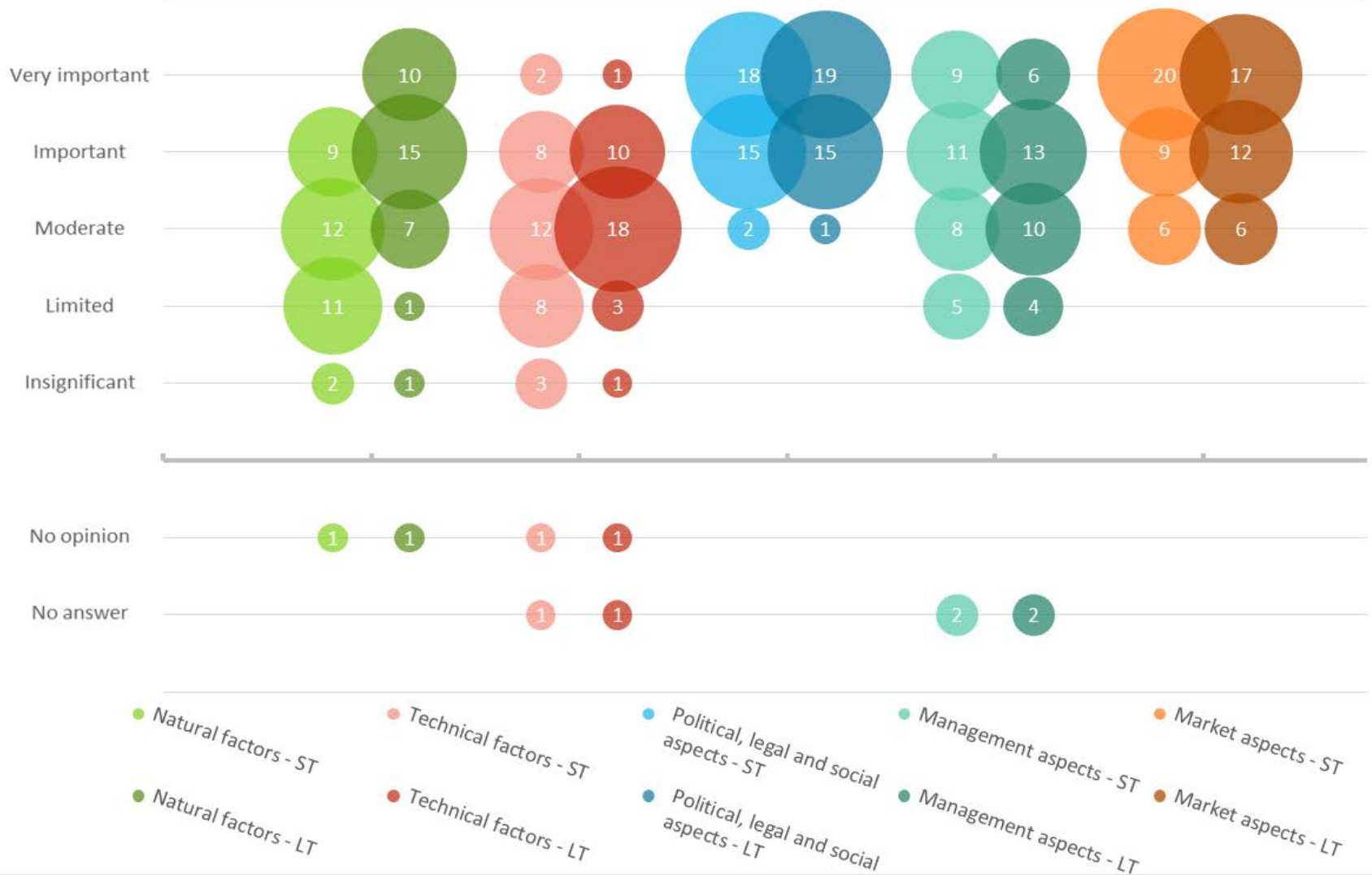
Managing investment uncertainty: Valuing flexibility

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Long term matters

Relative influence of each group of factors on the future development of Swiss HP - short term (ST) and long term (LT) perspective



UNCERTAINTY



Liberalization boosts uncertainty



MONOPOLY



COMPETITION

Consequences change

MONOPOLY

Le prix de l'électricité augmentera fortement en 2015, la faute à Berne

Hausse des tarifs des SIG La hausse, qui sera en moyenne de 14% pour les particuliers, est justifiée par des décisions fédérales.

COMPETITION

La vente des barrages d'Alpiq est imminente

Electricité Des nouvelles sur la Grande Dixence et Emosson seront communiquées au plus tard en mars.

Managerial flexibility

Managing the timing and scale of a project



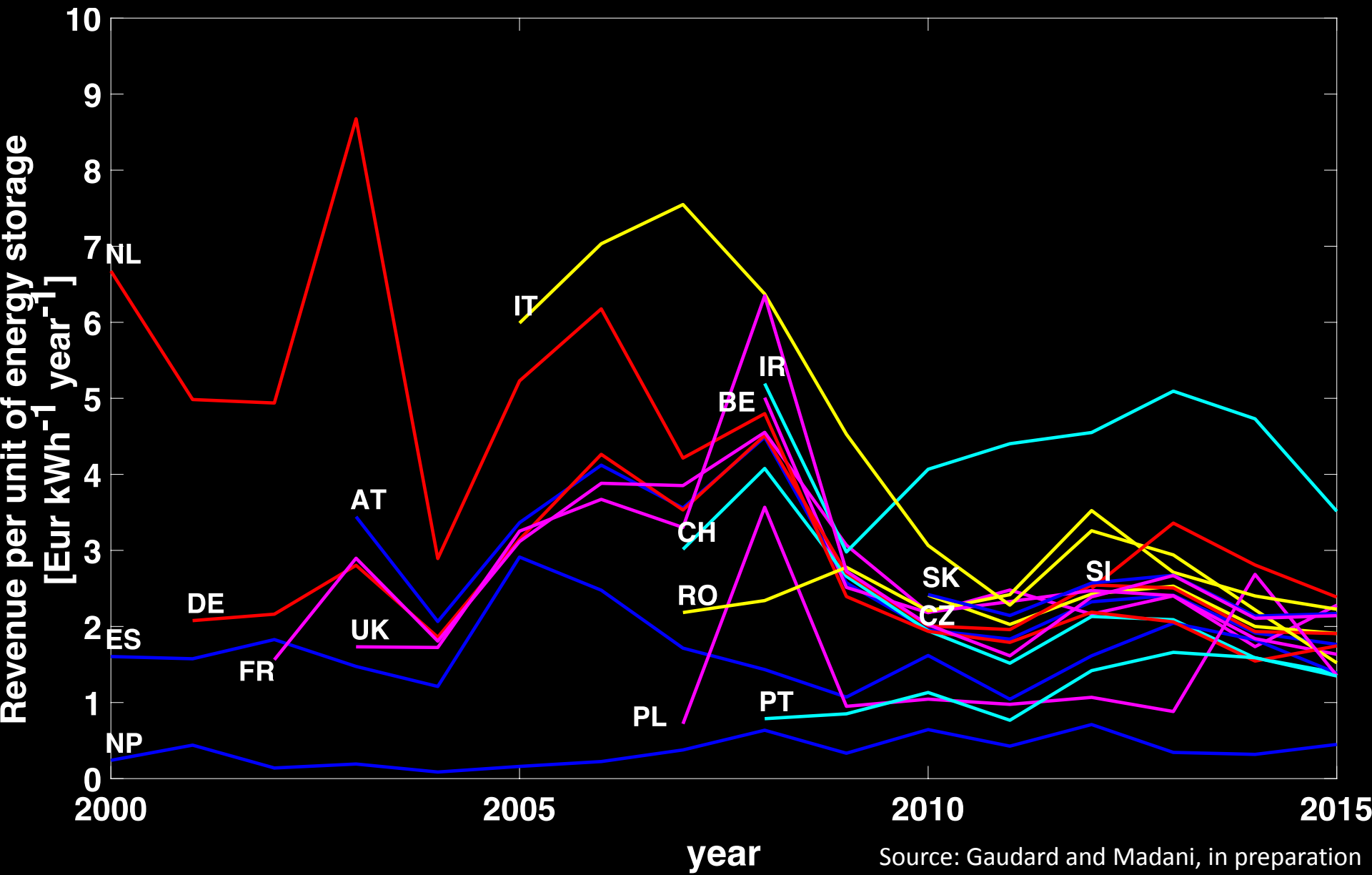
Having real options



Issues investigated

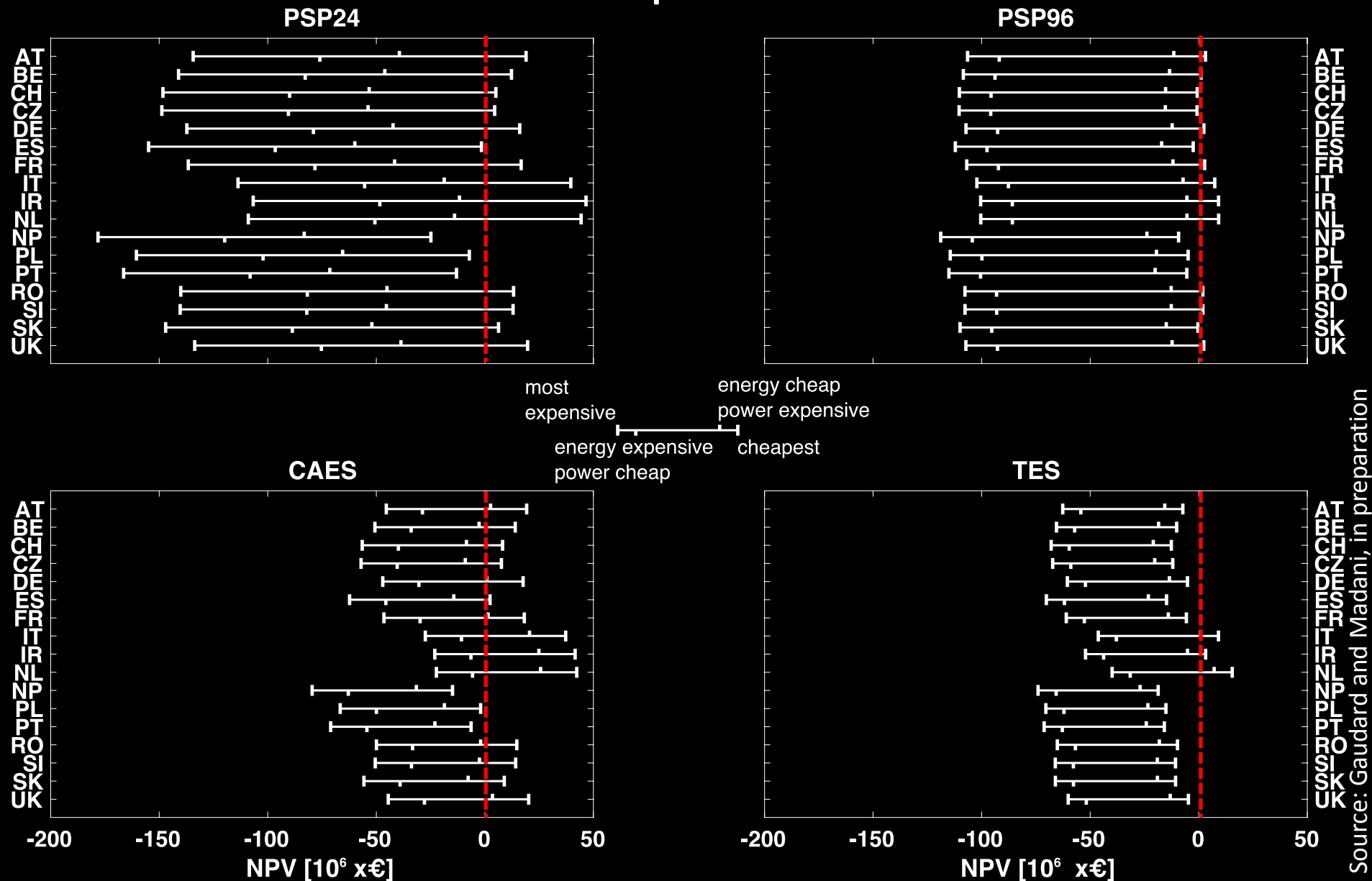
- Competition with energy storage technologies
- Operational versus managerial flexibility in renewable energy
- New strategy for hydropower investments

PSES revenue dropped



Source: Gaudard and Madani, in preparation

New energy storage technologies are getting competitive



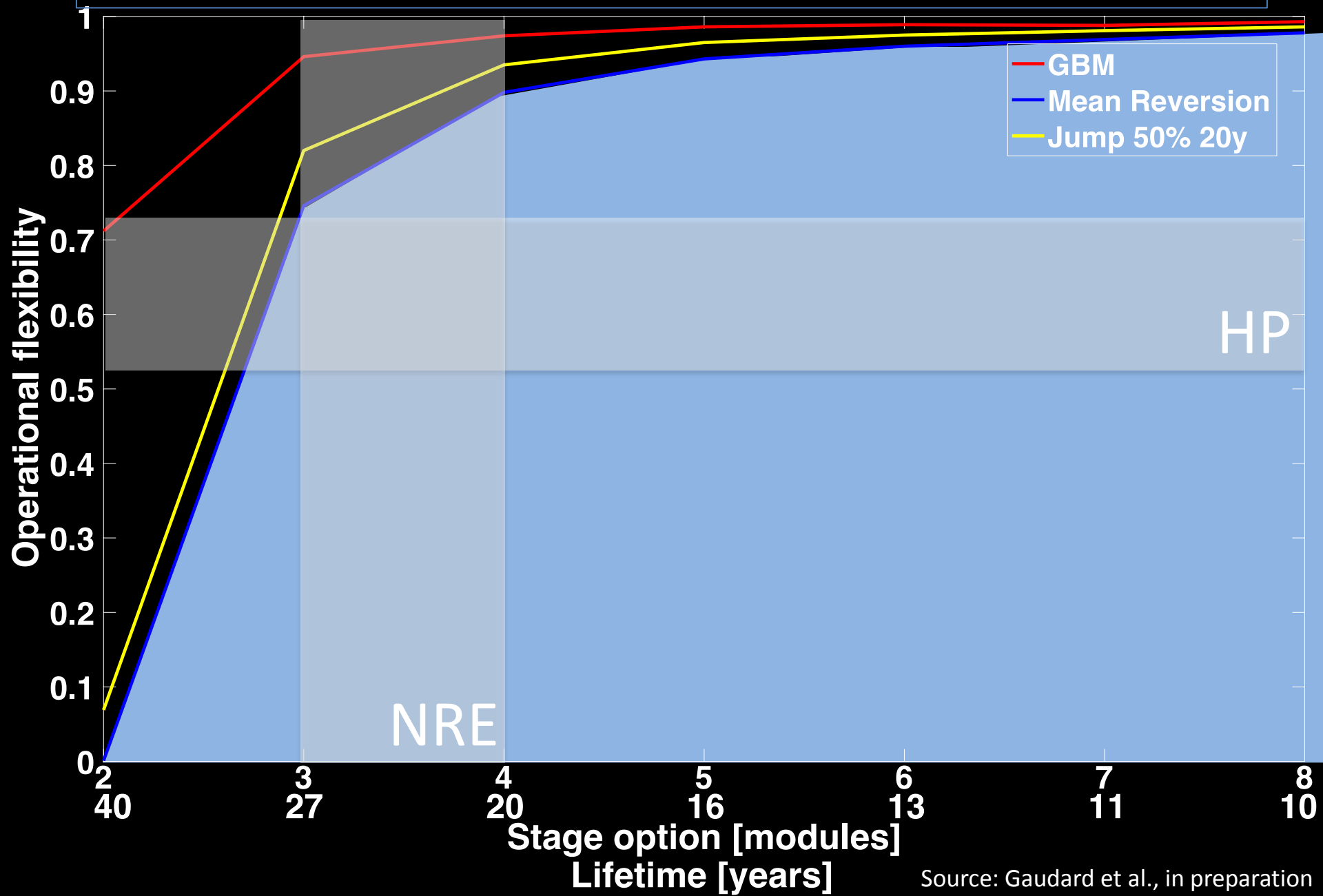


Managerial Flexibility

Operational Flexibility



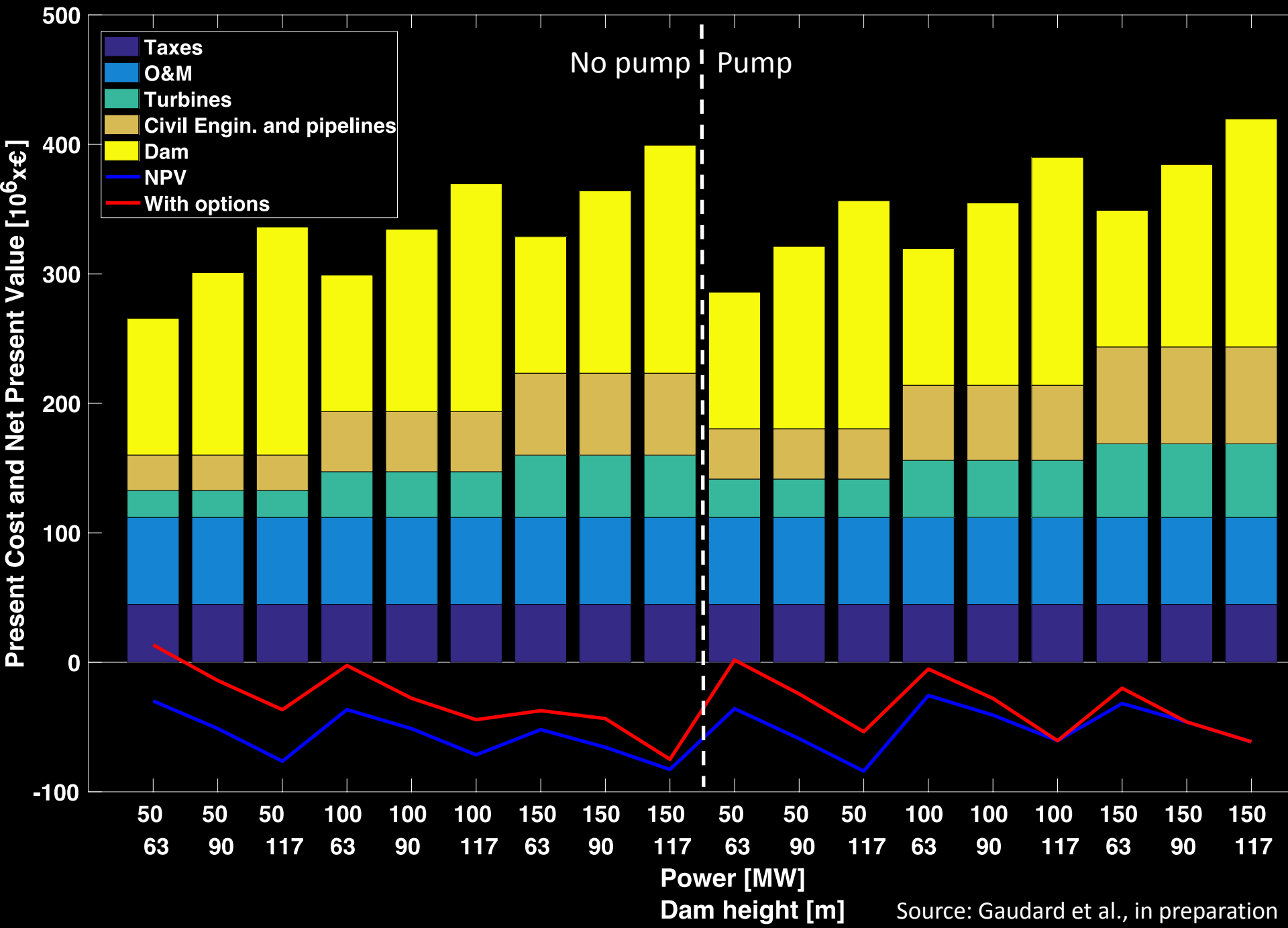
NRE jeopardize HP, thanks to the short lifetime

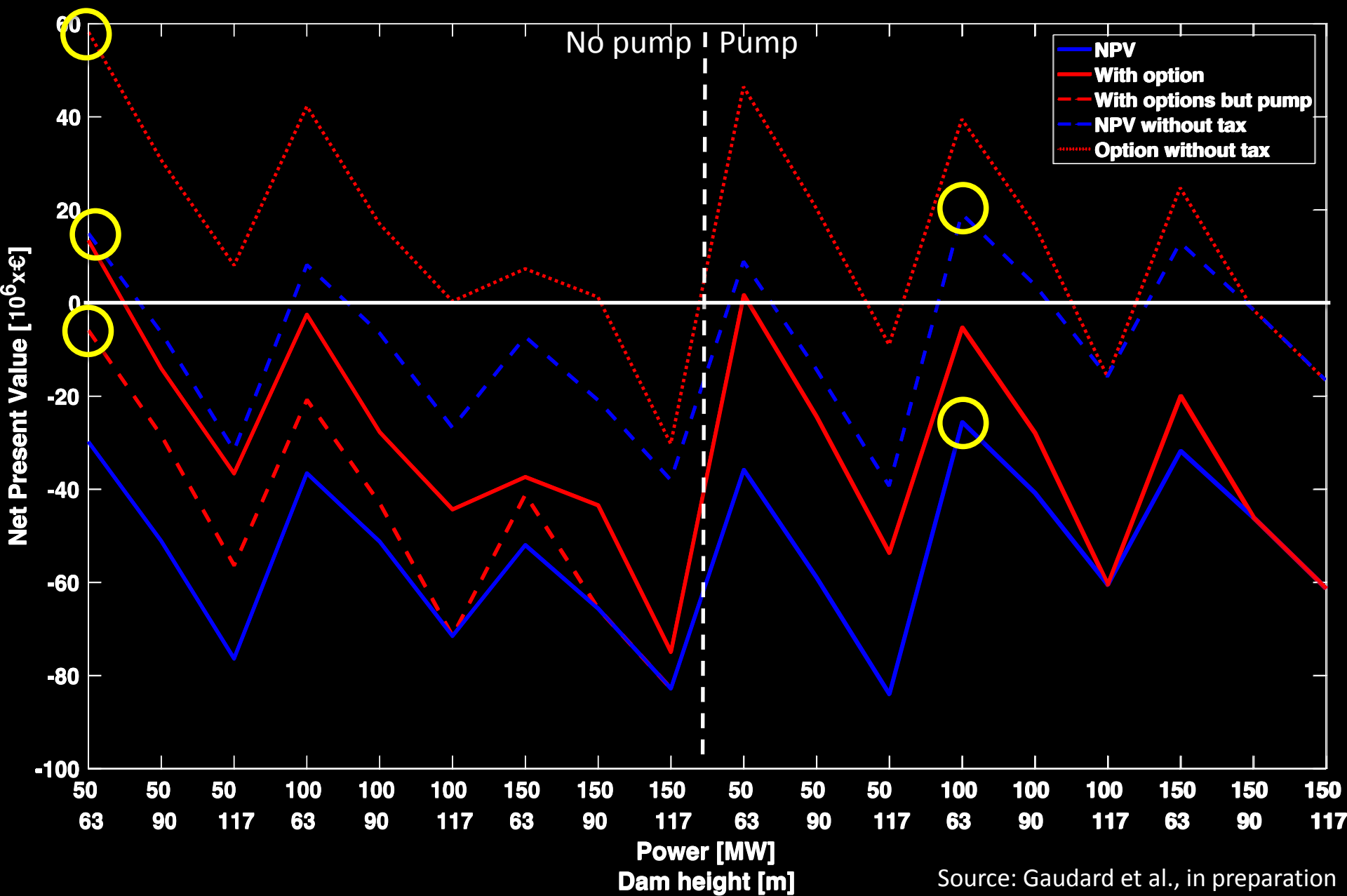


Options for Hydropower

- Increasing the power
- Increasing the size of the reservoir
- Adding a pump

Results for GBM only





Conclusions

- Even if flexibility is rewarded by new market design, HP competitors may catch the profit
- Managerial flexibility of new renewable energy represents a threat to HP
- HP must be more (managerial) flexible, but concession rights should be revised

Thank you



Credit: Wordle.com, based on the Barry et al. [2015]