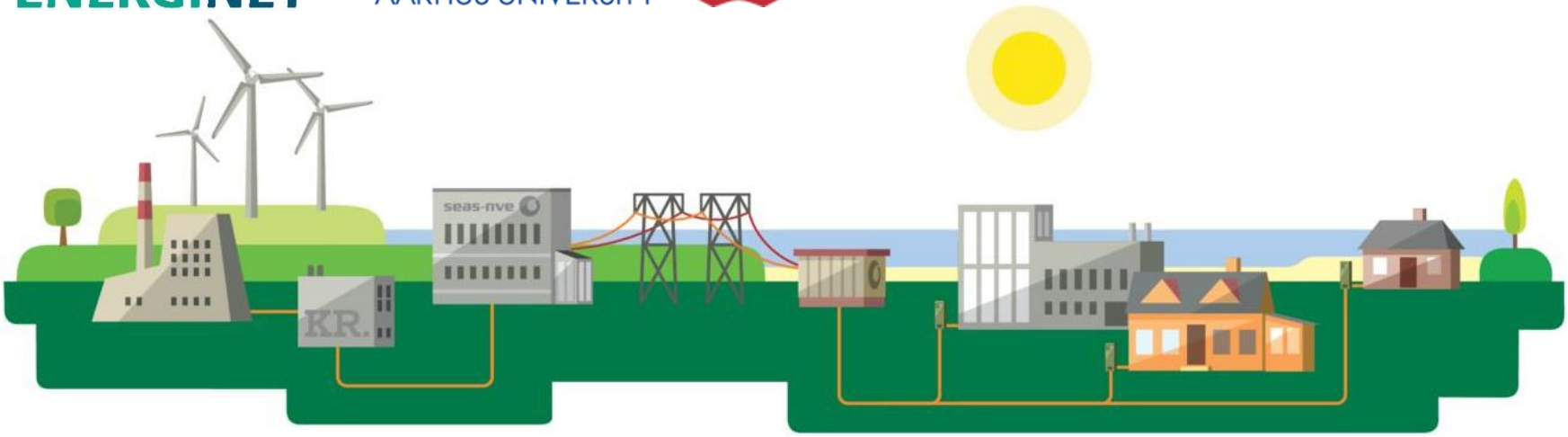
The High Temperature Thermal Energy Storage Project

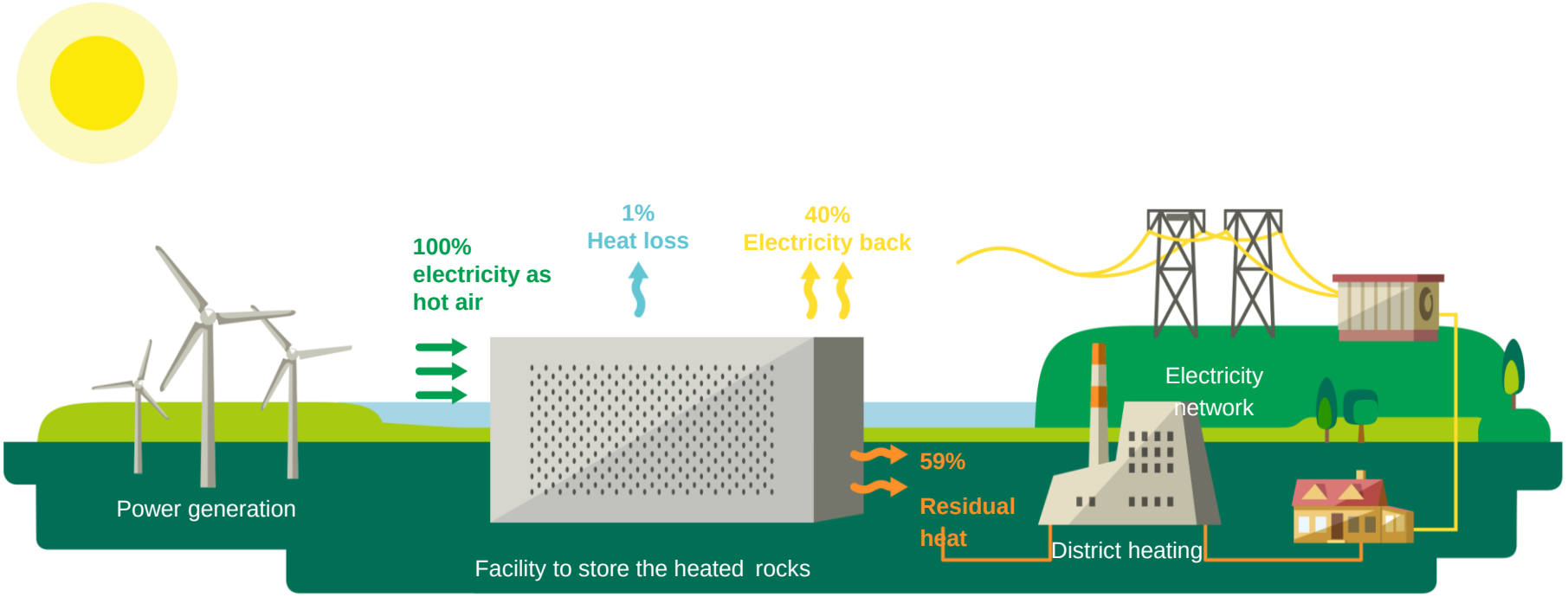
By Eva Sass Lauritsen



Energiteknologisk udvikling og demonstration

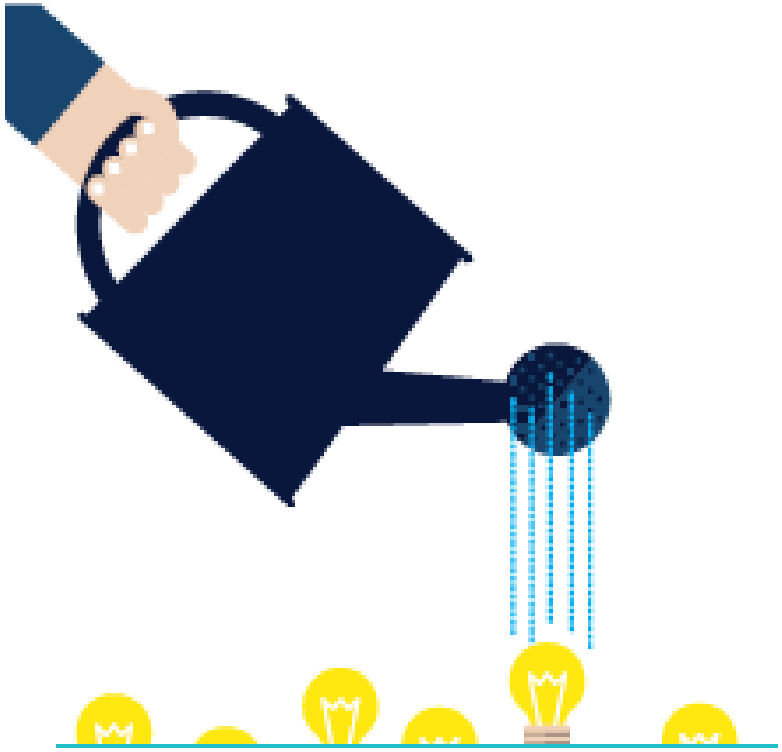

It looks simple
https://youtu.be/m-vVIPjZ4Aw

Principle behind the storage

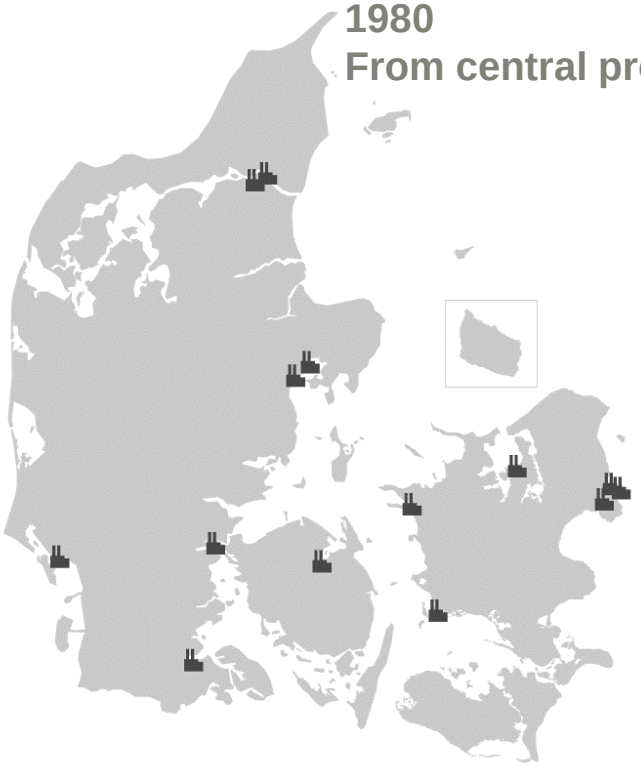


The philosophy behind the project

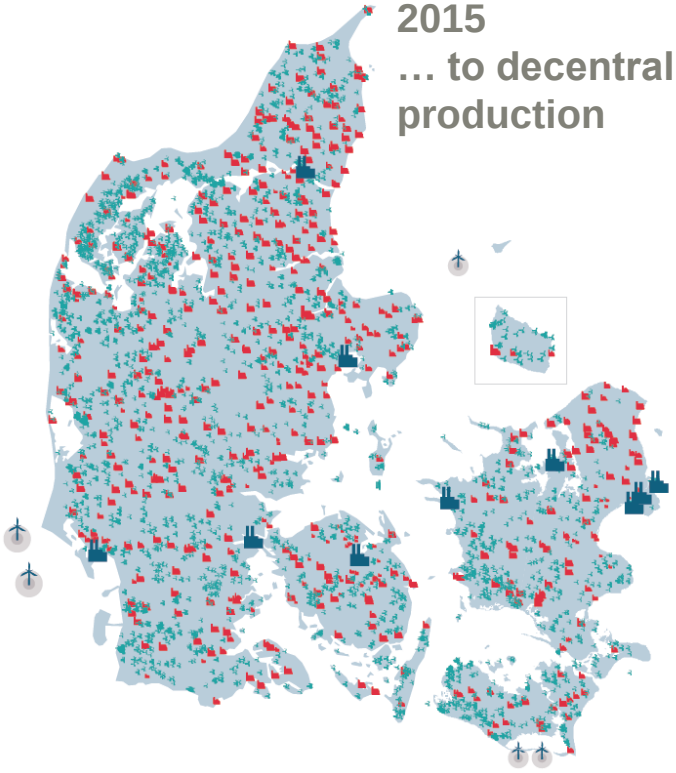
- Known charging and discharging systems.
- Cheap, sustainable and abundant materials.
- Suitable for long term storage (days-weeks).
- Integration of energy systems that supports the DK Strategy.
- Can be combined with retiring thermal power plants, district heating, CAES or waste heat.



The History of the Danish Energy System



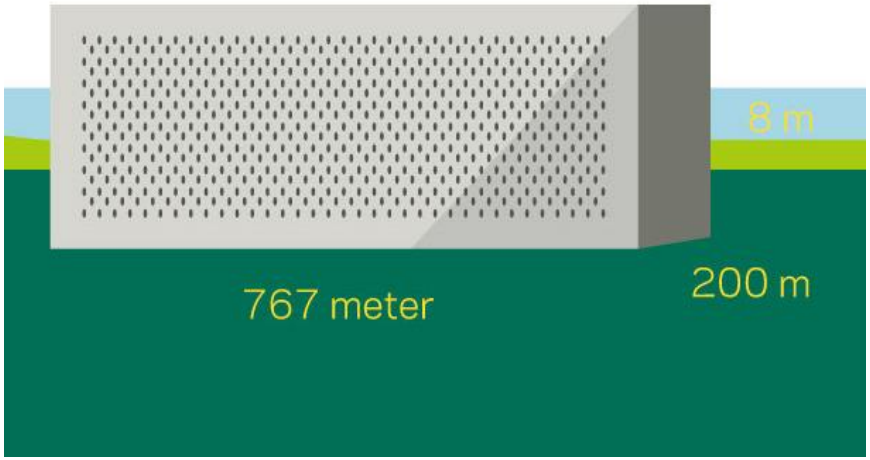
1980
From central production



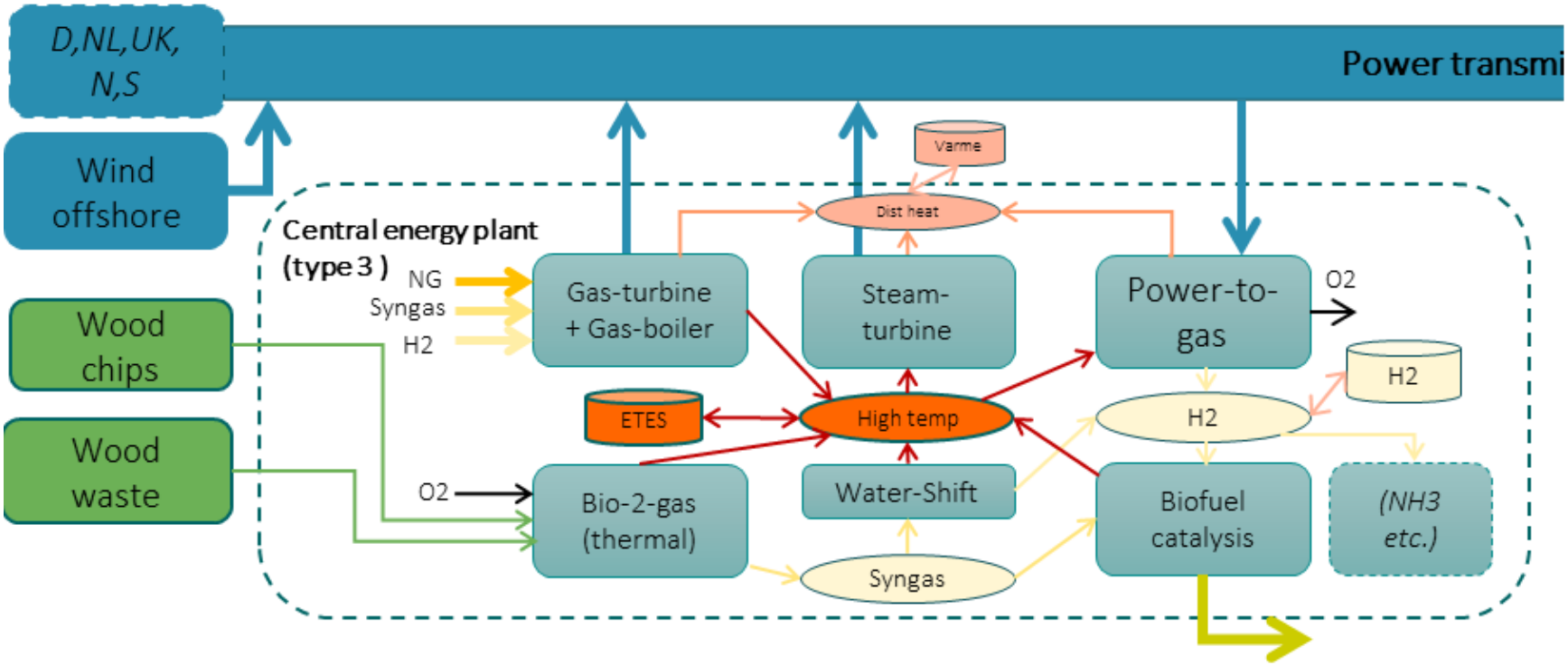
2015
… to decentral production

Future theoretical storage needs

- DTU master project has identified future storage needs of 10% or 1.4 GW in 2035.
- 830 hours per year at full capacity.
- Storage requirements are equivalent to 1 storage solution of 1.227 million m3.
- The storage solution may be designated as a nature reserve.



Further potential



Combination with HT industries such as green fuel production plants

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Lessons learned

- Overwhelming interest from stakeholders.
- It is possible and cheap.
- It is difficult to control the airflow precisely.
- The final construction is not ready yet.
- Not every rock can be used.
- The level playing field is not ready yet .
- It is difficult to make a feasibility study in a complex future.

Next step

Implement non-discriminatory market incentives and regulatory frameworks across the EU for flexibility solutions

Long term stress test at rocks and constructions material are needed.

1 MW demonstration plant in 2019

Thank you !

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