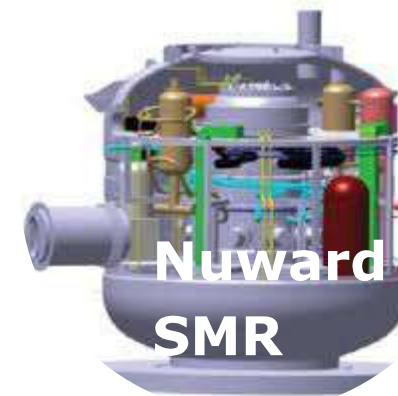


Bent Lauritzen, DTU Fysik

# Høring om atomkraft

Klima- Energi- og Forsyningsudvalget, 16-11-2023

# Overvejelser ifm. atomkraft



## Gevinster

- Forsyningssikkerhed
- Energi-autonomi
- Lavt miljøaftryk

## Perspektiver

- Nye anvendelser
- SMR
- Dansk industri

## Udfordringer

- Befolkningsaccept
- Radioaktivt affald
- Kompetencer

## Usikkerhed

- Dekarbonisering ?
- Økonomi ?



Nord Stream 2

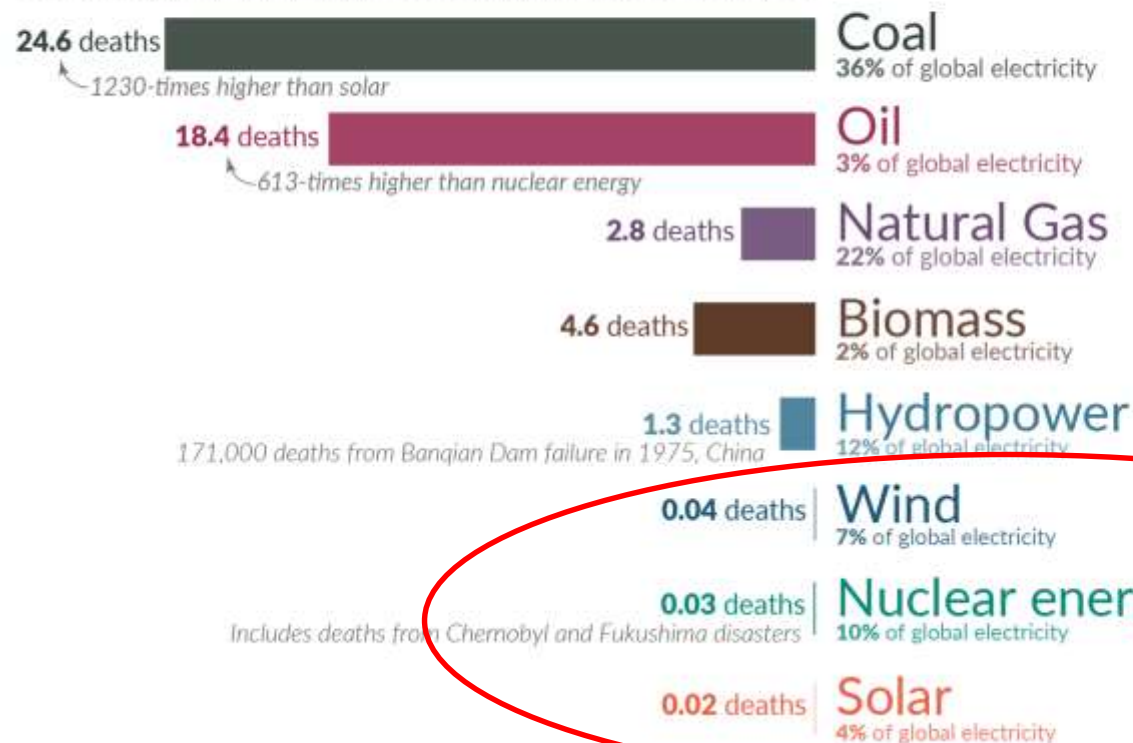
# Sikker og ren energiforsyning

## What are the **safest** and **cleanest** sources of energy?



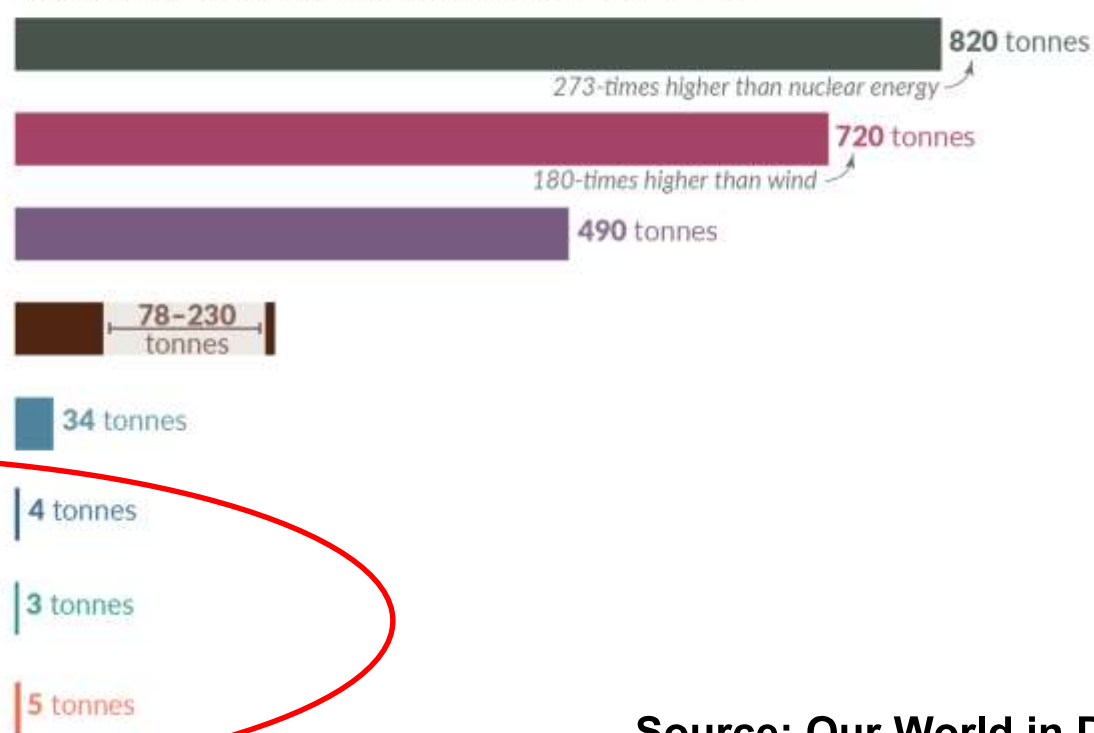
### Death rate from accidents and air pollution

Measured as deaths per terawatt-hour of electricity production.  
1 terawatt-hour is the annual electricity consumption of 150,000 people in the EU.



### Greenhouse gas emissions

Measured in emissions of CO<sub>2</sub>-equivalents per gigawatt-hour of electricity over the lifecycle of the power plant.  
1 gigawatt-hour is the annual electricity consumption of 150 people in the EU.

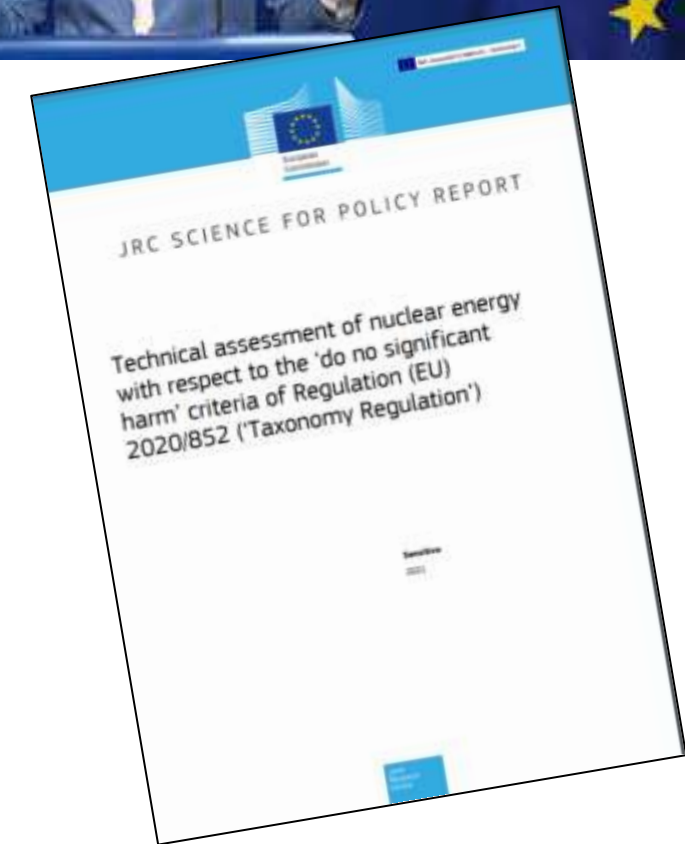


Source: Our World in Data, Oxford University, 2023

# EU Energy Taxonomy includes Nuclear



- Taxonomy: Framework for sustainable investment
- JRC main conclusions
  - **”(There is) not any science-based evidence that nuclear energy does more harm to human health or to the environment than other electricity production already included in the Taxonomy ...”**



**Source: Joint Research Center of the European Commission, 2021**

# Overvejelser ifm. atomkraft



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## Udfordringer

- **Befolkningsaccept**
- **Radioaktivt affald**
- **Kompetencer**

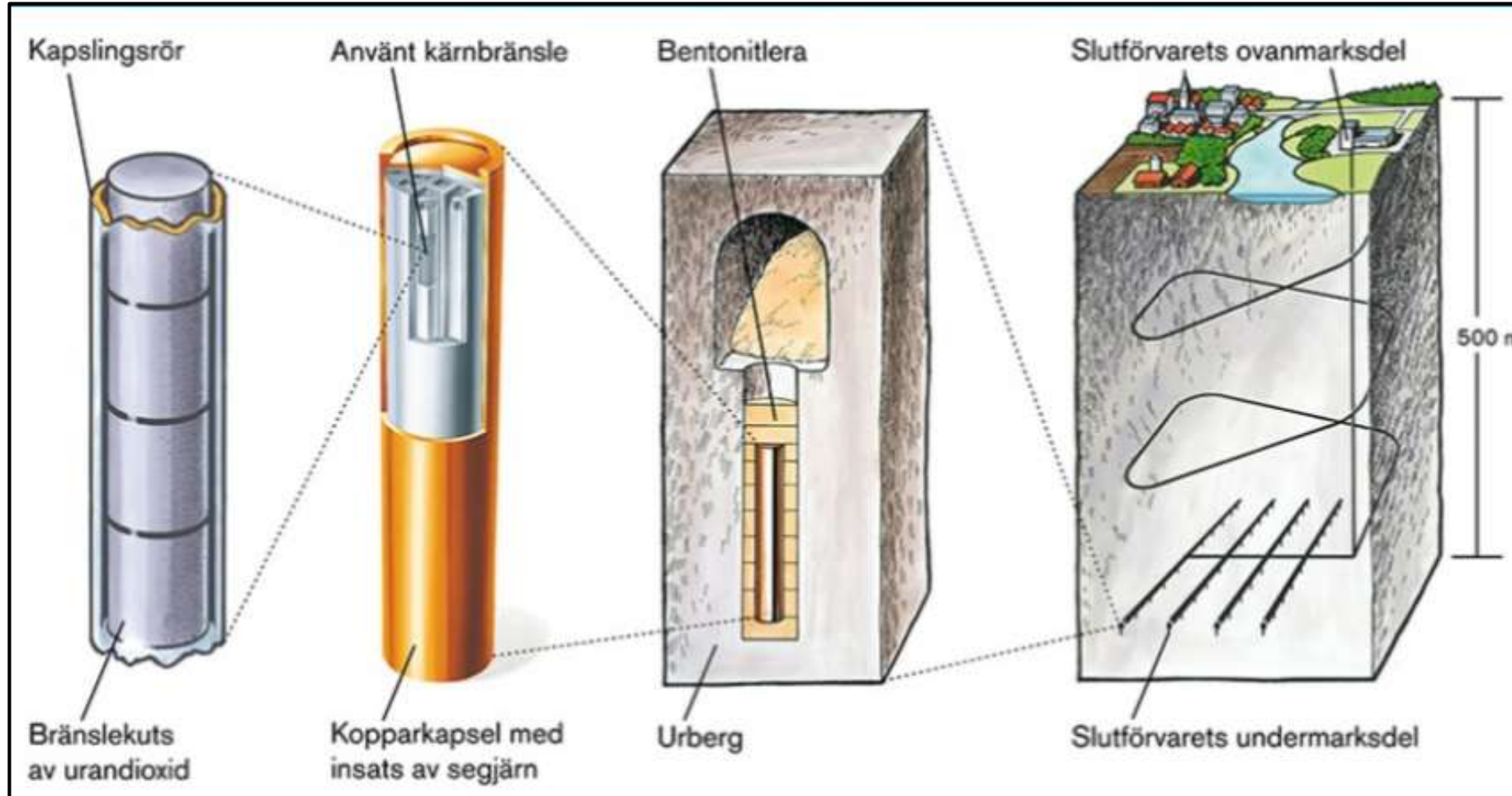
## Usikkerhed

- Dekarbonisering ?
- Økonomi ?





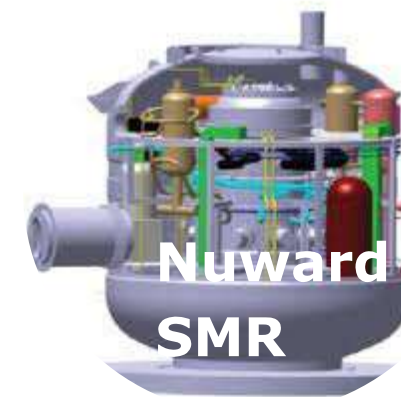
# Svensk/finsk model for håndtering af højaktivt affald



## SKB: Kärnbränsleförvaret

Source: SKB 2022: [Vår metod - SKB](#)

# Overvejelser ifm. atomkraft



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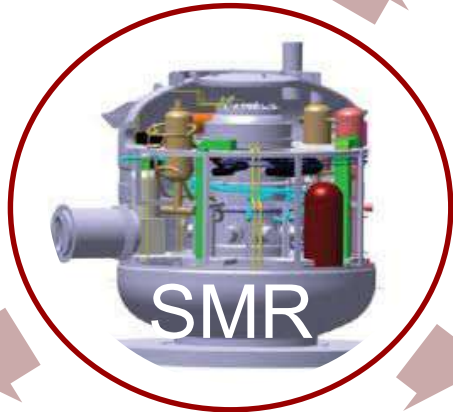


Nord Stream 2

# Små modulære reaktorer – anvendelser

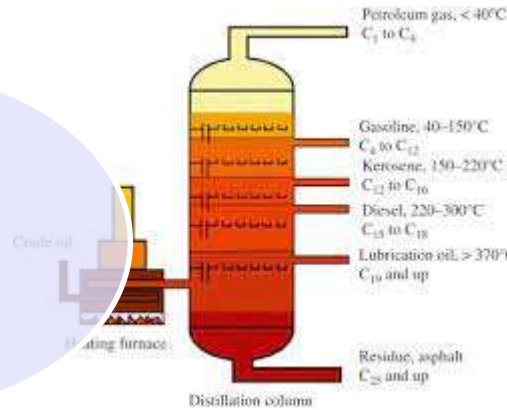


**Flexible electricity**



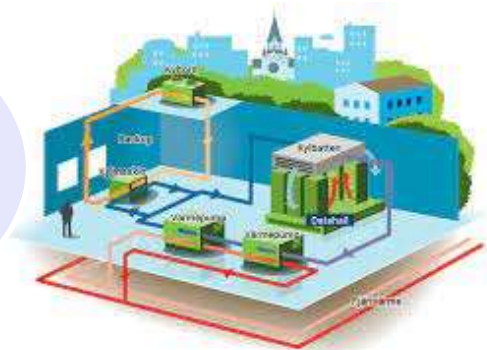
**Hydrogen**

**Process heat**



**Desalination**

**District heating**





# Overvejelser ifm. atomkraft



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Nord Stream 2

# Omkostninger ved elproduktion, med og uden atomkraft

Studie		Estimerede udgifter MED atomkraft er <b>højere</b> / <b>magen til</b> / <b>lavere</b> end udgifterne UDEN atomkraft		
		Højere	Magen til	Lavere
1	Pfenninger & Keirstead (2015)		X	
2	Brouwer et al. (2016)		X	X
3	Pattupara & Kannan (2016)			X
4	Buongiorno et al. (2018)			X
5	Sepulveda et al. (2018)			X
6	Cometto et al. (2019)			X
7	Van Zuijlen et al. (2019)		X	X
8	Zappa et al. (2019)		X	X
9	Kerkhoven et al. (2020)	X	X	
10	Kan et al. (2020)		X	X
11	Fattahi et al. (2022)		X	X
12	Scheepers (2022)			X
13	Veenstra et al. (2022)			X



Source: Raad voor de leefomgeving en infrastructuur, 2022