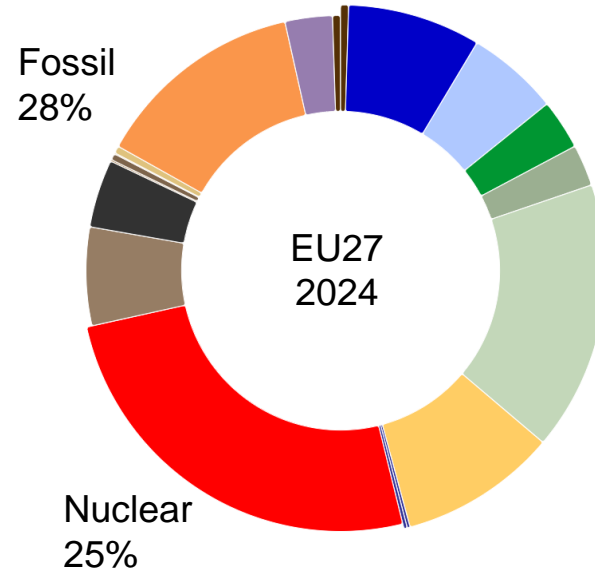
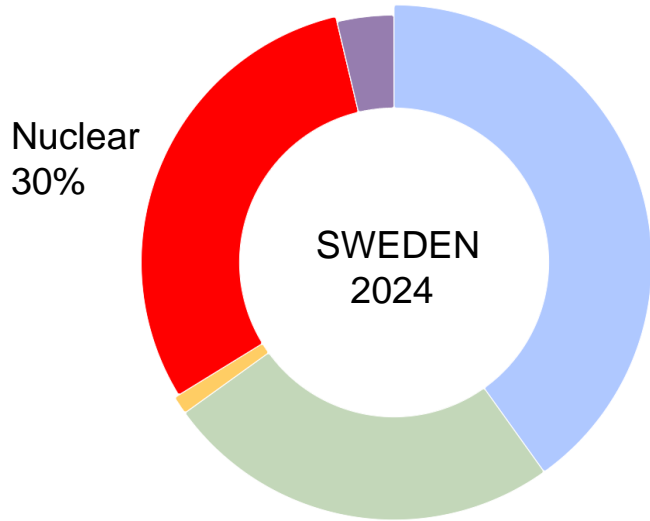


A woman with short dark hair, wearing a beige trench coat over a white shirt and blue jeans, stands with her arms slightly outstretched. She is looking towards the camera with a slight smile. The background shows a wide body of water, likely a bay or harbor, with a city skyline visible in the distance under a cloudy sky. The text 'Perspectives on Nuclear Power in Sweden' is overlaid in large white letters.

# Perspectives on Nuclear Power in Sweden

Anders Johansson

# Nuclear Power is Essential !



# Lise Meitner.

30 km North in the city of Kungälv

1938, taking a Christmas walk, she formed the revolutionary **hypothesis that nuclear fission occurs when uranium is exposed to neutron irradiation.**

Lise Meitner worked 22 years in Sweden



The image shows a circular control room with a curved wall of green control panels. Each panel is densely packed with various electrical components, including switches, buttons, and analog meters. In the center of the room, there is a light blue console with a small screen and a wooden chair. The floor is a polished, light-colored material that reflects the overhead lights. The ceiling is dark with several bright, rectangular light fixtures. The overall atmosphere is that of a mid-20th-century industrial control room.

# 80 MW<sub>th</sub> District Heat and Power in a Stockholm suburb

500 km northeast - Ågesta NPP  
1964 - 1974



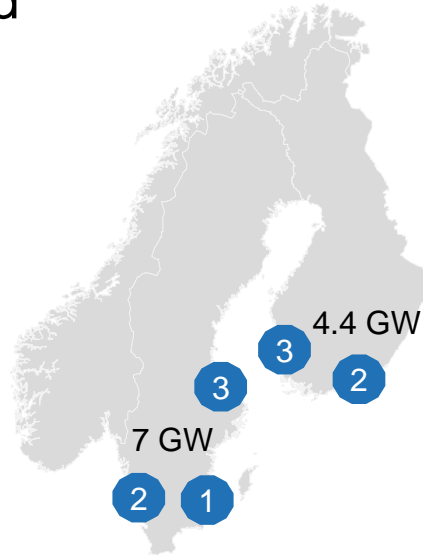
1000 TWh  
Abated 700-million-ton CO<sub>2</sub>  
15 years of Sweden's emissions

70 km to the South – Ringhals NPP station  
Started operation 1975

# Nordic Nuclear power 0 to 90 TWh in 22 years

1963-1985

16 reactors constructed  
and put in operation



In operation

2 VVER-400



6 ABB BWR



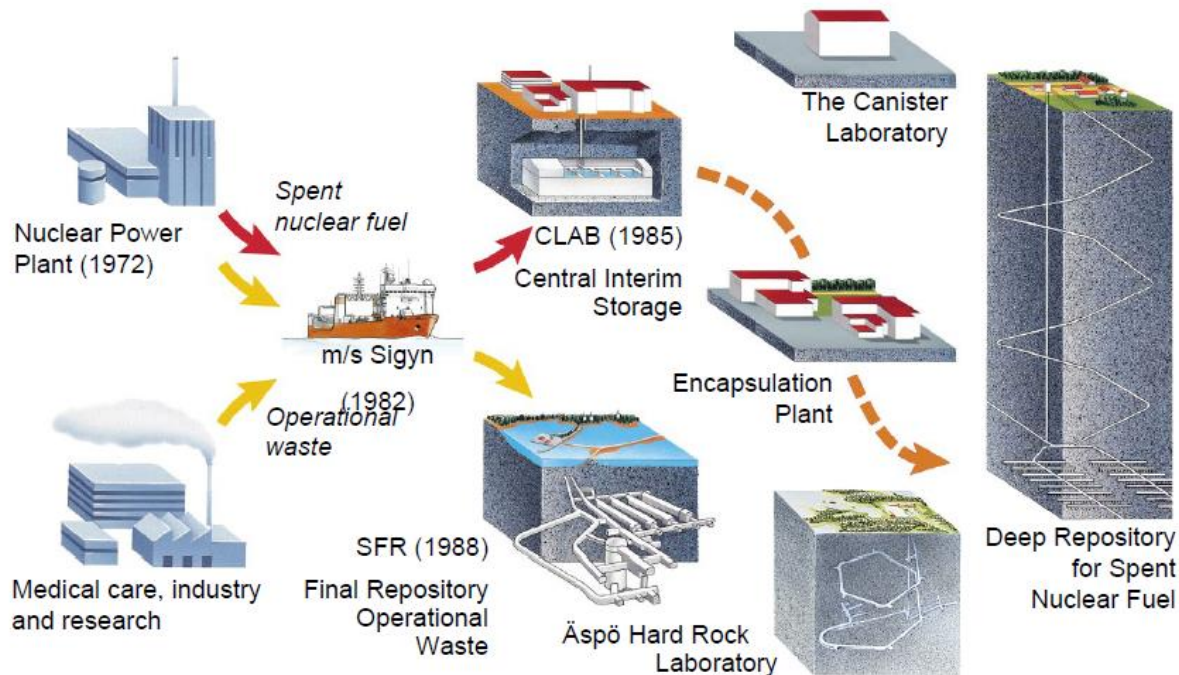
2 W-house PWR



1 EPR

# Complete backend program

## Similar in both Sweden and Finland

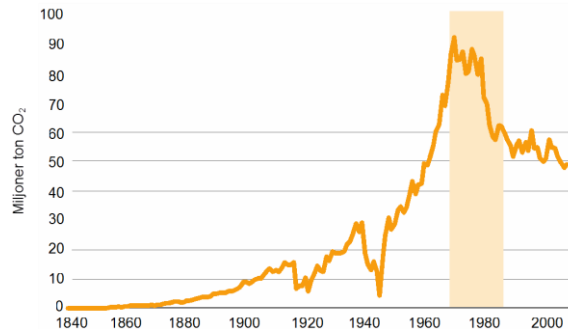
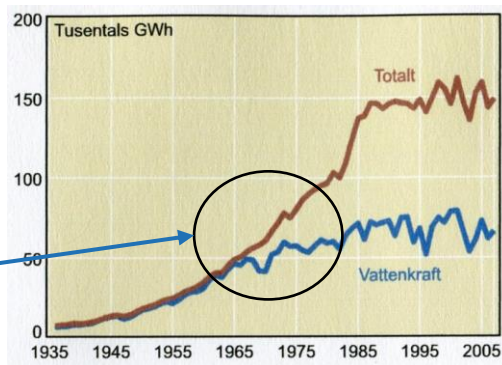


# Shaped by long-term national decisions



1900

1970



# Looking ahead – The existing Swedish Fleet – is it halfway?



## Forsmark

3 BWR, 3x1100 MW

Start 1980-1985

Planned life 60 years



## Ringhals

2 PWR, 2x1100 MW

Start 1980-1982

Planned life 60 years



## Oskarshamn

1 BWR, 1450 MW

Start 1985

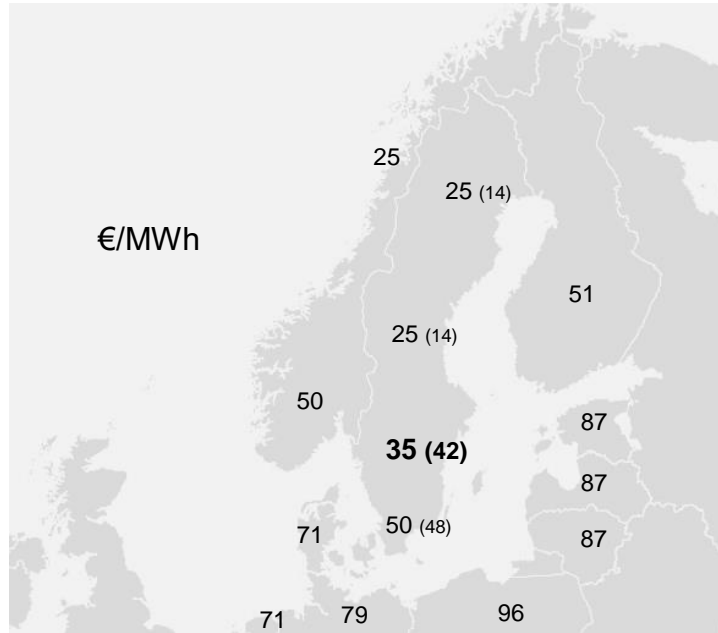
Planned life 60 years

# Looking ahead

## Market Prices vs Cost

Sustain present power plants – but not newbuild

Price volatility is challenging



Full year 2024 (Jan-Sep 2025)

Operating plants



33-40 €/MWh



15-25 €/MWh

Based on public annual reports for 2024

# Looking ahead

## Already utilising 'full' potential of hydropower Sweden

**Operates between 2 – 13 GW**



Potential for some power upgrades  
Potential for some pump storage  
No increase in energy

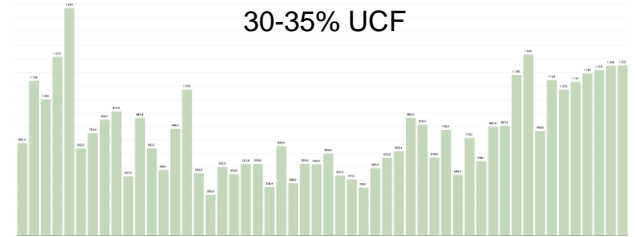
19 GW



2.5 GW



Good fit with demand  
30-35% UCF

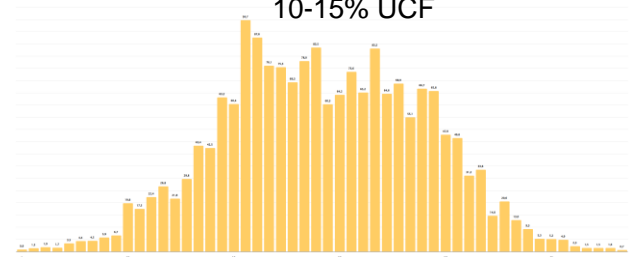


23GW

Demand

8 GW

Poor fit with demand  
10-15% UCF

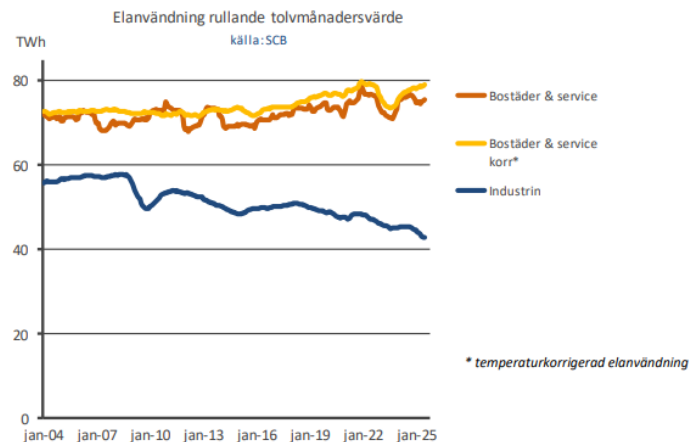


# Looking ahead

## Electrification

### How, when and where?

### 65% or 165% more\* electric power consumption?



133 TWh consumption  
33 TWh export

# Looking ahead

## Nuclear in Sweden

### Government Roadmap for new nuclear



2.5 GW – 2035  
10 GW – 2045

Financial model, Risk charring  
Adapt laws and regulations  
Promote industry/local awareness

### Vattenfall – investigating newbuild



Shortlisted two SMR  
Public consultation initiated at Väröhalvön  
Final investment decision expected 2029

Kärnfull Next<sup>™</sup> and others



‘SMR Campuses’  
Potential sites identified  
Interacts with municipalities  
District heat reactors



BLYKALLA

# Looking ahead

## New build at Värö peninsula



BWR

300 MWe

5 reactors

Natural circulation



PWR

470 MWe

3 reactors

Boron-free operation

<https://group.vattenfall.com/se/nyheter-och-press/nyheter/2025/vattenfall-har-valt-leverantorer-pa-resan-mot-ny-karnkraft>

# Summing Up



BLYKALLA

