



Policy Learning and Experiences Industrial Decarbonisation

CONTENT

- About the Danish Energy Agency
- Historical focus on Energy Efficiency
- Framework for Industrial Decarbonisation
 - Strategies and Agreements
 - Stakeholder Dialogue
 - Policy and Regulatory
- European Perspectives

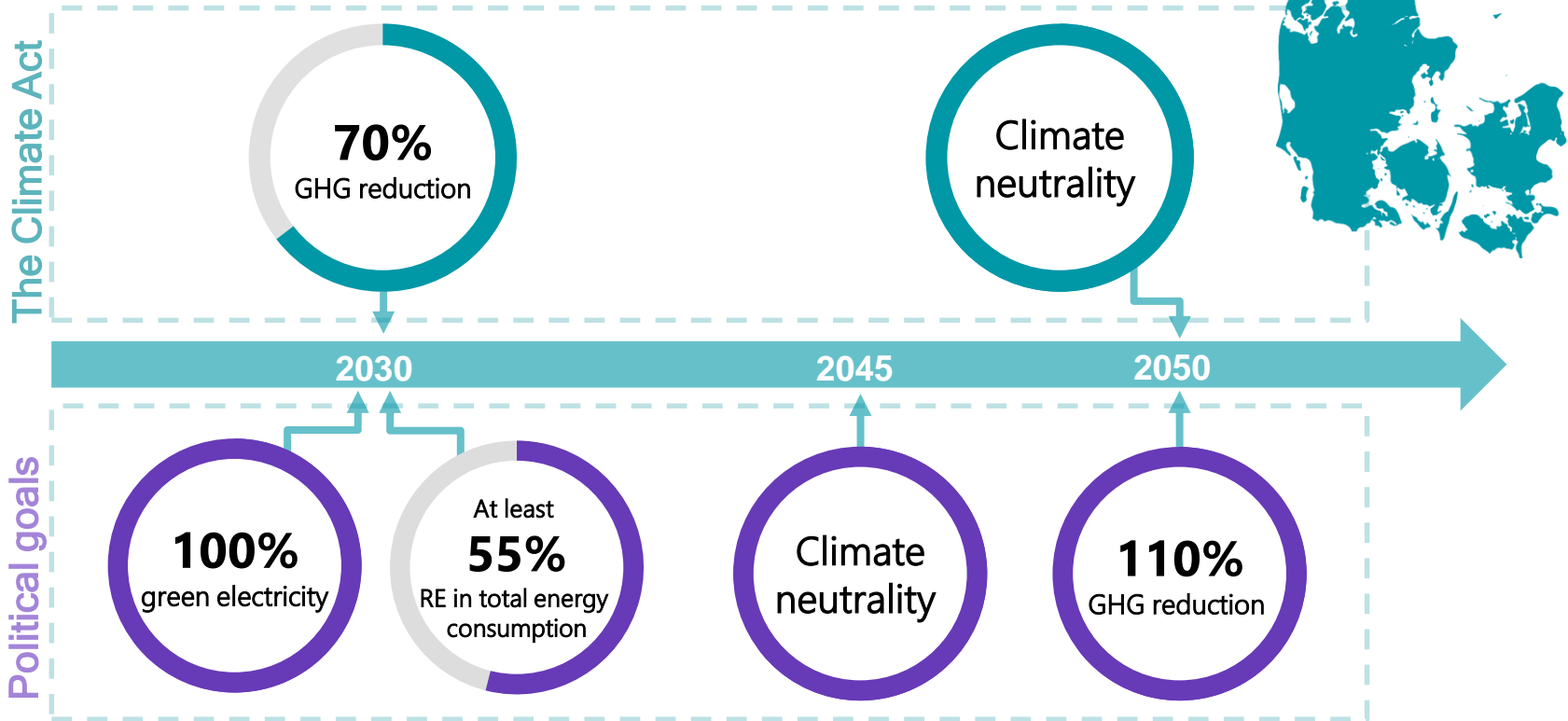




The Danish Energy Agency



VISION OF A CLIMATE NEUTRAL SOCIETY





PART OF THE DANISH ENERGY AGENCY (DEA)

A government agency under the Ministry of Climate, Energy and Utilities



Danish Energy Agency

GLOBAL
COOPERATION

GREEN POWER
PRODUCTION

GREEN UTILITIES

RISK
PREPAREDNESS

GREEN
TRANSITION

RESSOURCES
AND LEGAL

SYSTEMS
ANALYSIS
AND
INNOVATION

SUBSOIL
RESSOURCES

ELECTRIFICATION

ENERGY
ISLAND
NORTH SEA

ENERGY
ADMINISTRATION

ORGANISATION
AND STRATEGY

DANISH CORE COMPETENCIES



Forecasting
and scenarios



Renewable energy



Flexibility and
power plants



Energy efficiency and
district heating

Choice awareness

A least cost energy transition with high
security of supply, a high share of **renewable
energy** and an **efficient** energy consumption



PARTNERSHIP WITH CALIFORNIA

- A MoU since October 2019 between CEC and the DEA on EE in industry and buildings – renewed in 2023
- Accelerate green transition in Denmark and California
- Collaboration and Exchange with CEC
 - Policies and support schemes
 - RD&D projects and technologies
 - Best practices, lessons learned and networking
 - Study tours





THE DANISH EXPERIENCE



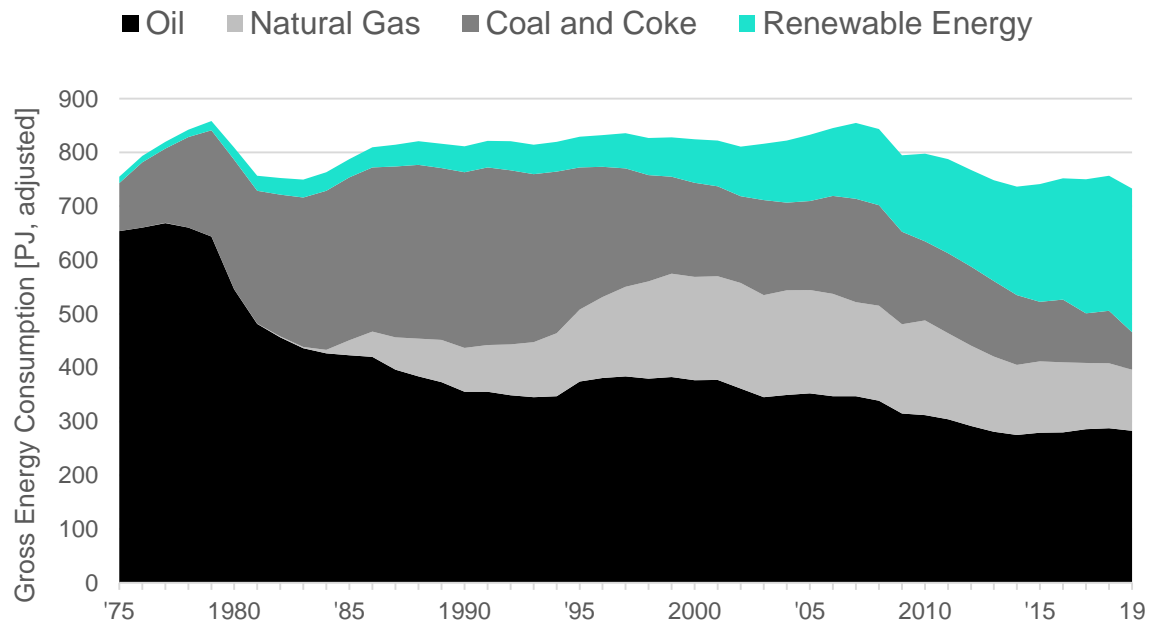
THE BASIS FOR ENERGY EFFICIENCY IN DENMARK

- The oil crises as a starting point start
 - Reduce dependency of oil
 - Energy policy to reduce costs
 - Zoning of heating areas in municipalities
- First Danish target for reduction of CO2 in 1990
 - 20 % reduction in 2005 compared to 1990
 - Introduction of CO2 tax

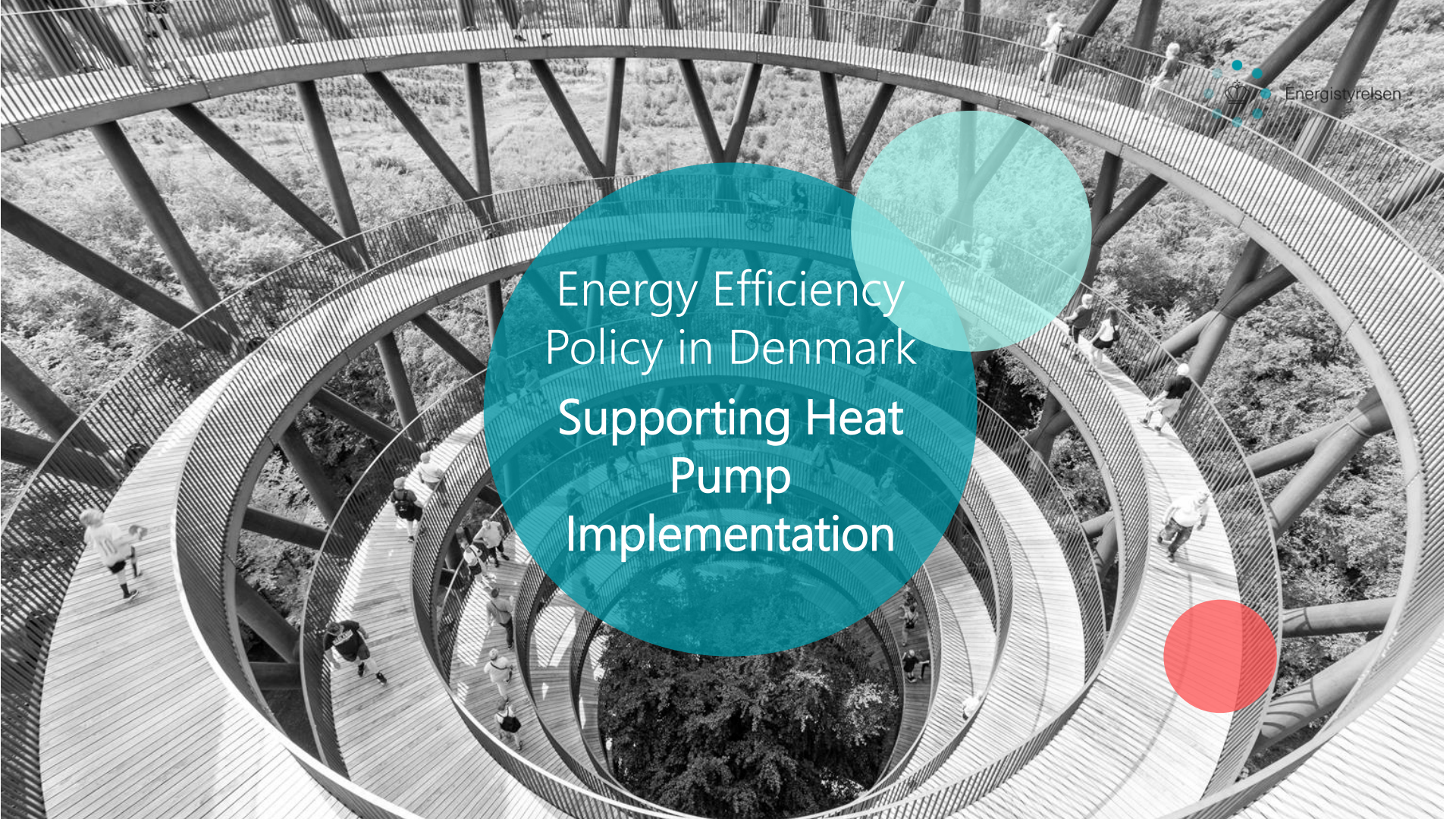




SHIFT OF ENERGY USE IN DENMARK



- Structural change helped to reduce energy consumption - but energy efficiency strong driver
- Food industry – energy use was reduced by 32 % and production value increased by 60 %
- Continue the energy efficiency improvements in the future and shift towards electricity

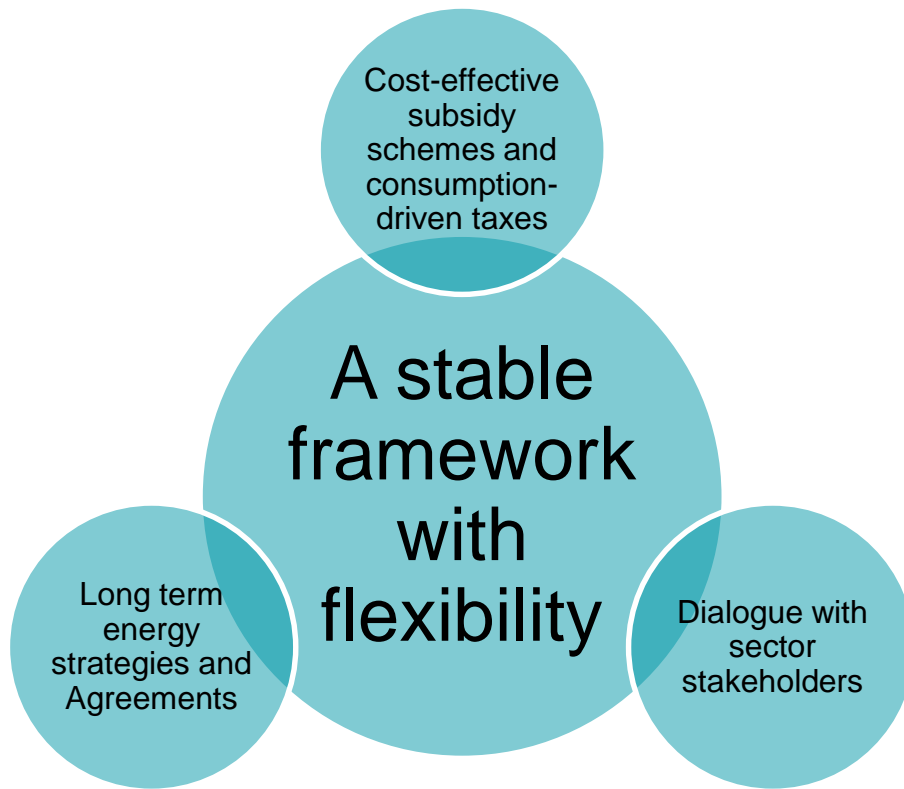


Energy Efficiency
Policy in Denmark
Supporting Heat
Pump
Implementation



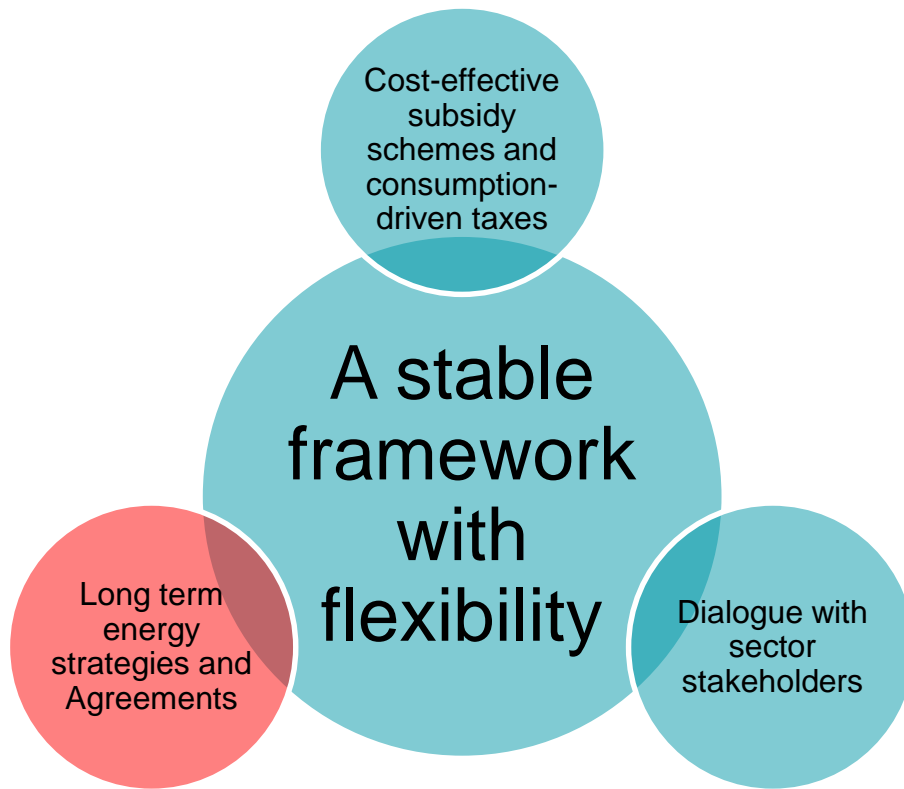


KEY ELEMENTS OF DANISH ENERGY POLICY OVER TIME





KEY ELEMENTS OF DANISH ENERGY POLICY OVER TIME



LONG TERM POLITICAL AGREEMENTS

Danish Energy Agreement (2018)

- Green transition will not happen by itself
- Significant investments to realize the ambition of a low-emission society

Green Tax Reform (2020/ 2022)

- Secure a stable and long-term framework for the green transition

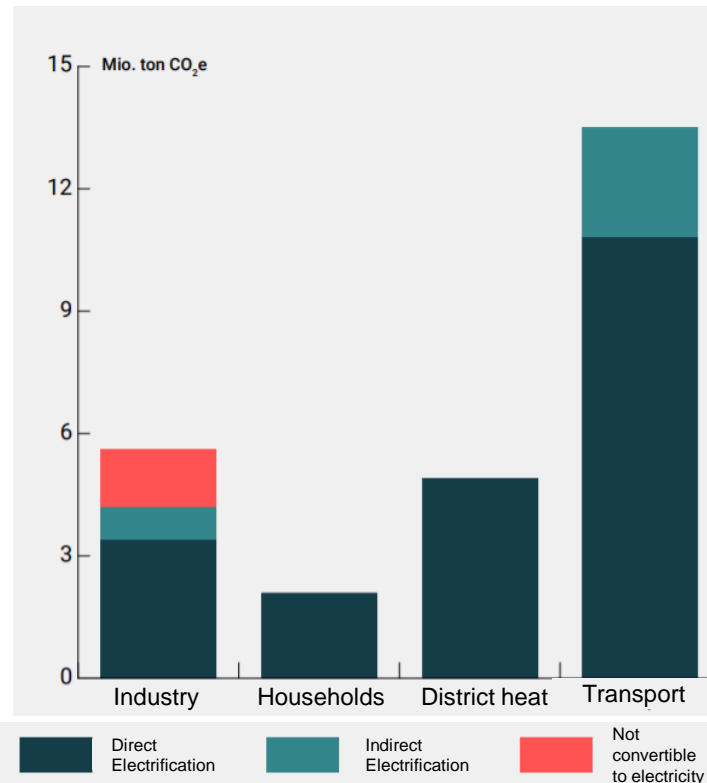
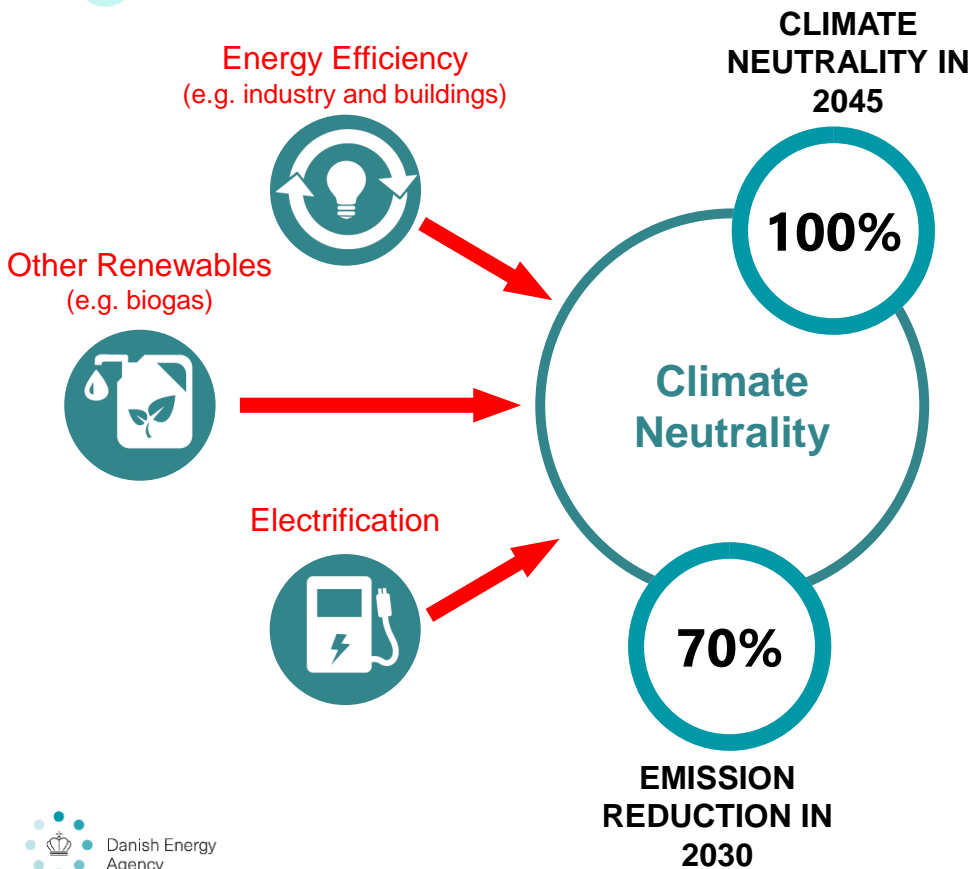
Climate Agreement for Energy and Industry (2020)

- Secure the green transition of the industrial sector
- Promote energy efficiency and substitution of fossil fuels





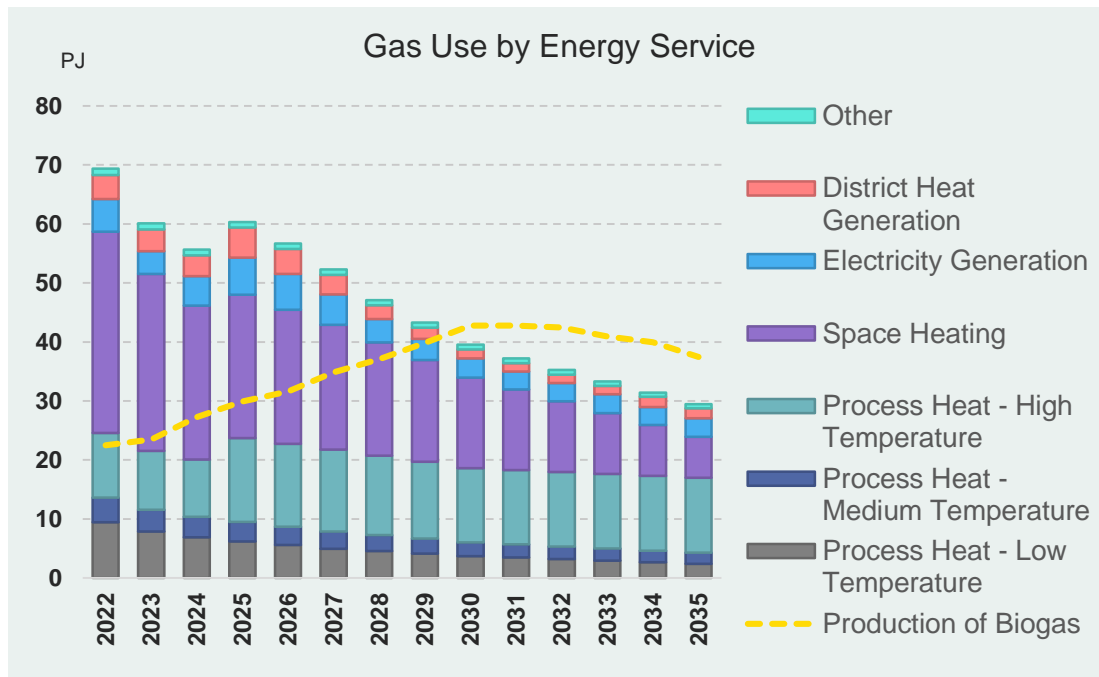
DEFINING THE ROLE OF ELECTRIFICATION





DEFINING THE ROLE OF GREEN GAS

Denmark's Climate Status and Outlook



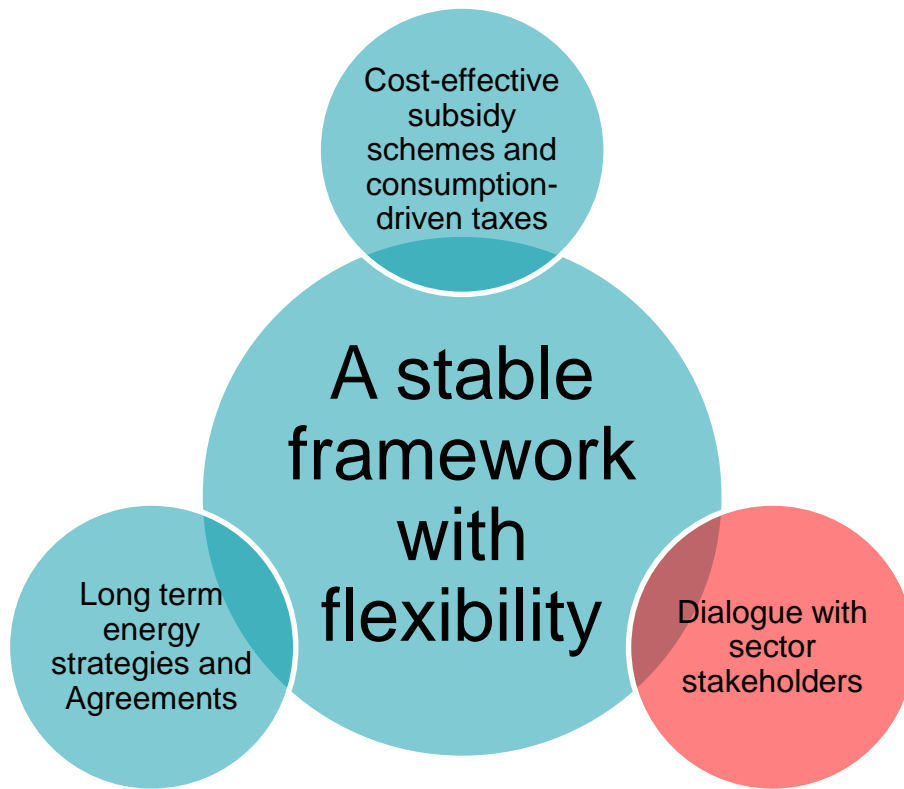
Denmark's Green Gas Strategy

Key Points for Gas Consumption

1. Green gas must supplement the electrification and be used where it has the greatest value.
2. Green gas in industry must support jobs in Denmark for the benefit of development and employment
3. Conversion to green gas must occur with consideration of competitive tariffs and on commercial terms



KEY ELEMENTS OF DANISH ENERGY POLICY OVER TIME





THE CLIMATE PARTNERSHIPS

In November 2019 the Danish government established 14 public-private climate partnership.

Partnerships cover amongst others:

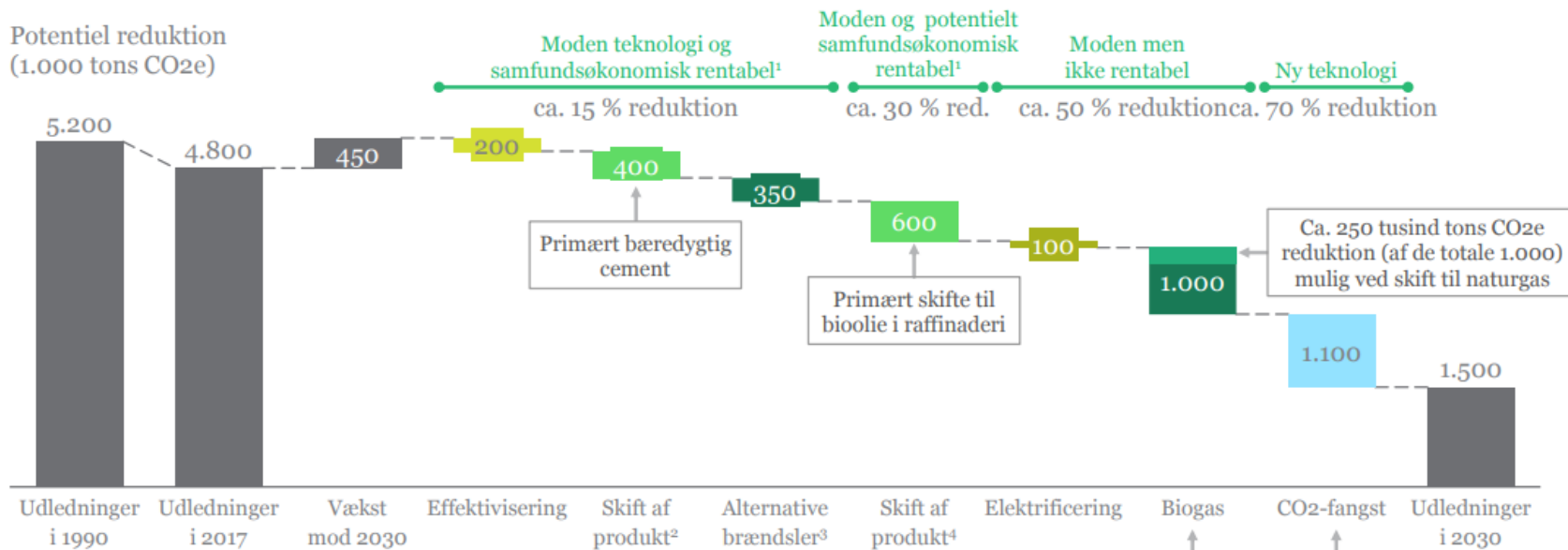
- Manufacturing activities
- Energy and utilities sector
- The Blue Denmark
- Energy-intensive industry
- Food and agricultural sector





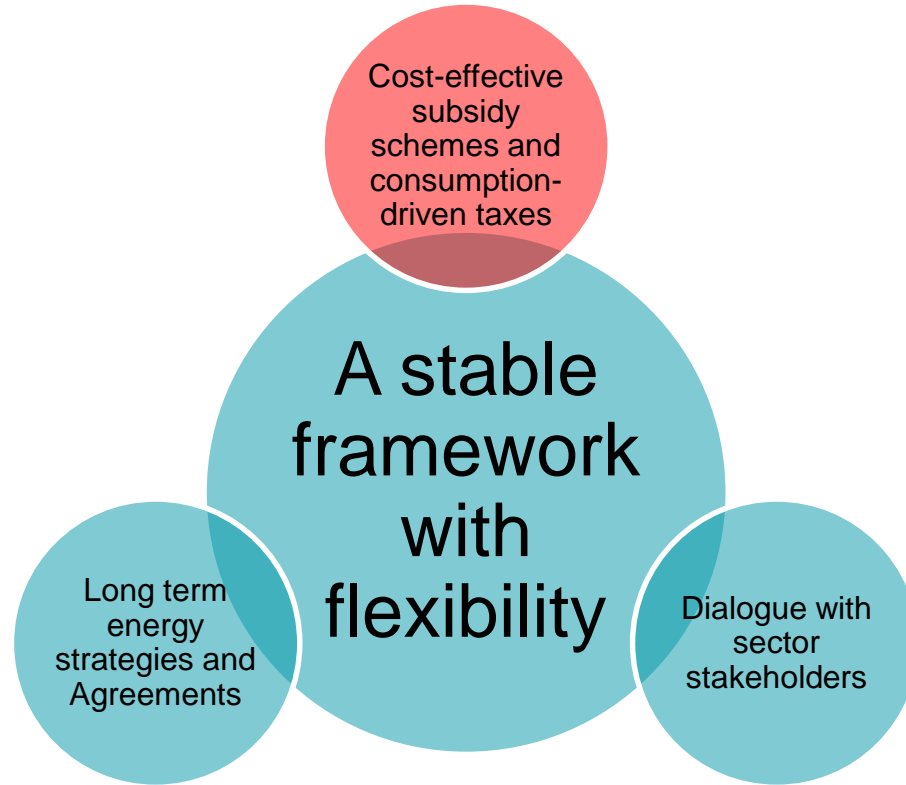
THE CLIMATE PARTNERSHIPS

Example of a partnership for energy-intensive industry





KEY ELEMENTS OF DANISH ENERGY POLICY OVER TIME



INSTRUMENTS FOR ENERGY EFFICIENCY

The administrative setup has not one single instrument:

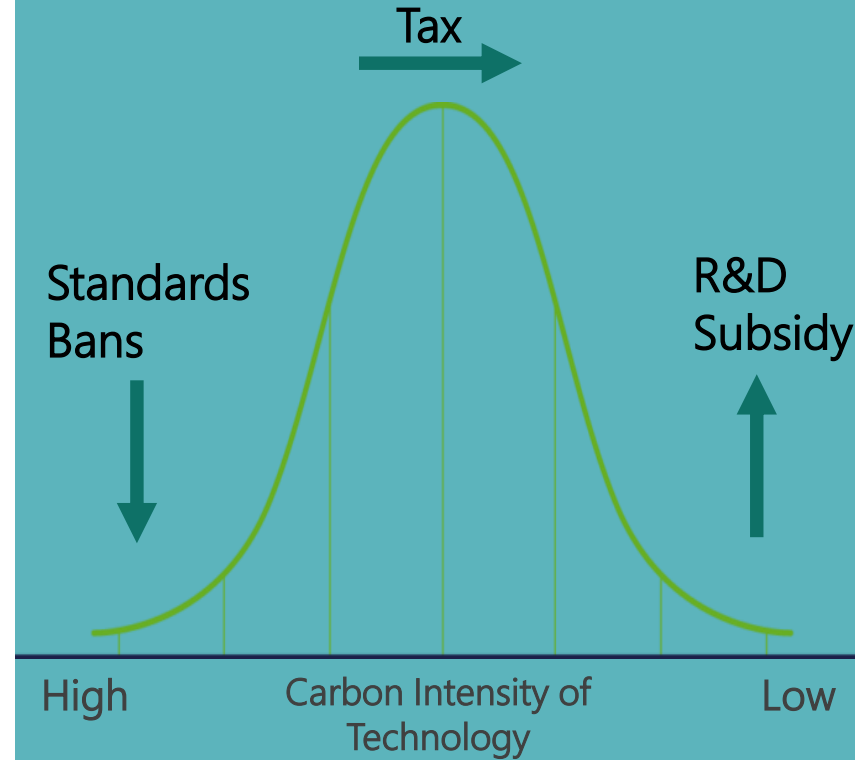
- Energy & CO₂ taxes
- Voluntary agreements
- Subsidies & Grants
- Energy efficiency obligations
- Mandatory energy audits (EU)
- Research & Development
- Qualified energy consultant scheme
- Access to Information



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CONSUMPTION DRIVEN TAXES

Taxes on Energy

- No taxes on energy used in industry before 1993
- Differentiate between heating, production and other uses

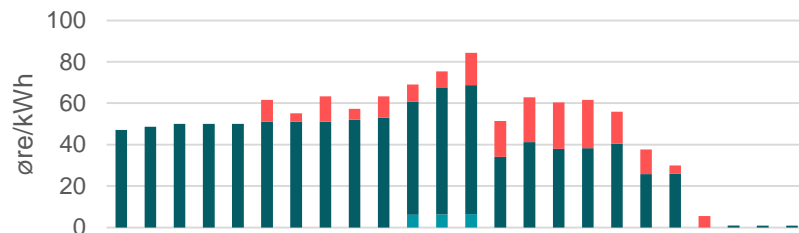
Taxes on CO₂-emissions

- CO₂ tax on industries energy consumption
- EU Emission Trading System
- New Danish CO₂e Tax from 2025

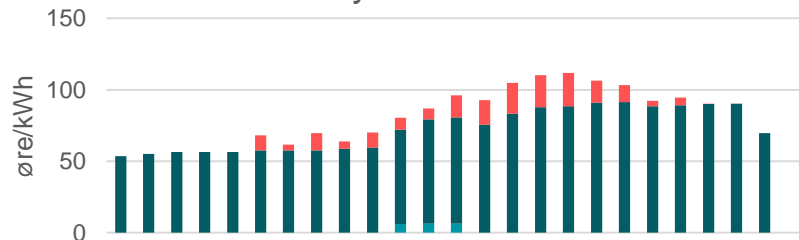
Environmental Taxes on Fuels

- NO_x, SO_x, CH₄ - Taxes

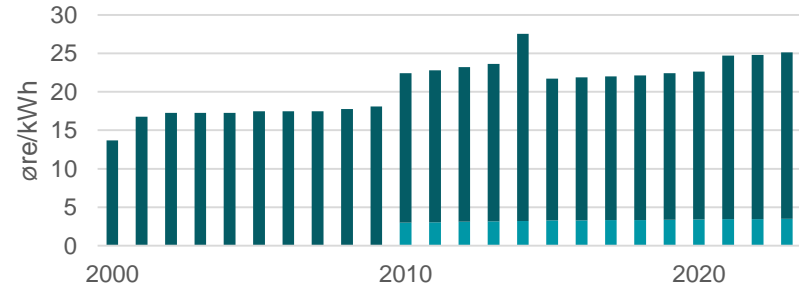
Electricity Tax for Heating



Electricity Tax for Other



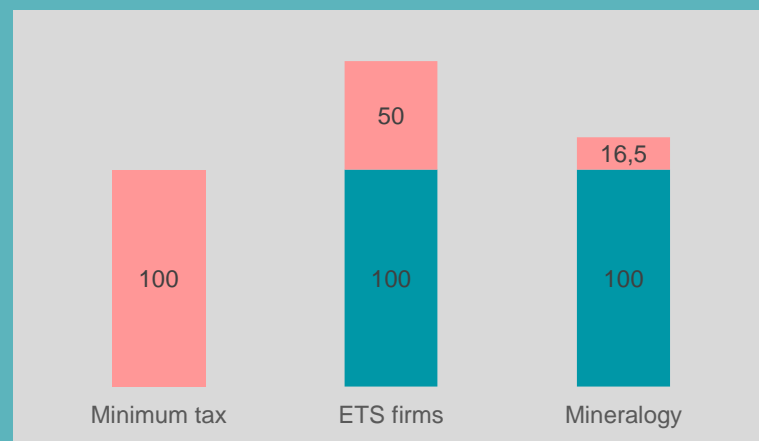
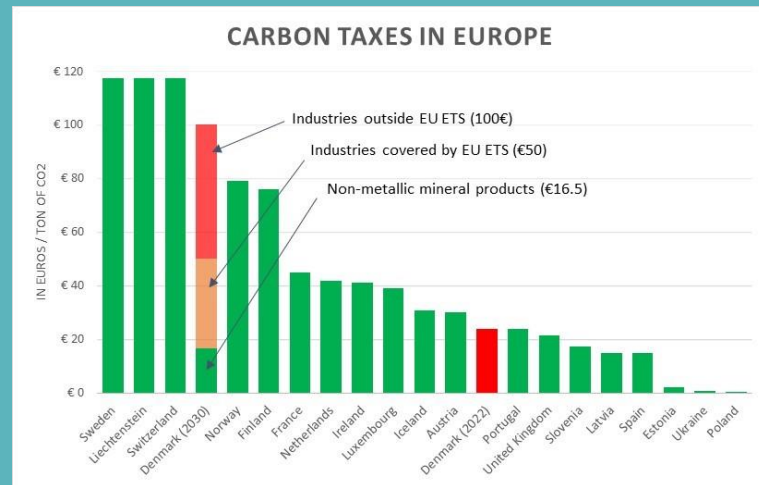
Natural Gas Tax



■ CO₂ ■ Energy ■ PSO

INTRODUCTION OF CARBON TAX

- The CO₂ tax will be gradually implemented from 2025 onwards
- Fully implemented in 2030
- Replacement of Energy Taxes
- Differentiated to avoid carbon leakage through production decline



MANDATORY ELEMENTS IN POLICY

Energy Efficiency Directive (EED)

Mandatory Energy Audits in large companies (EU)

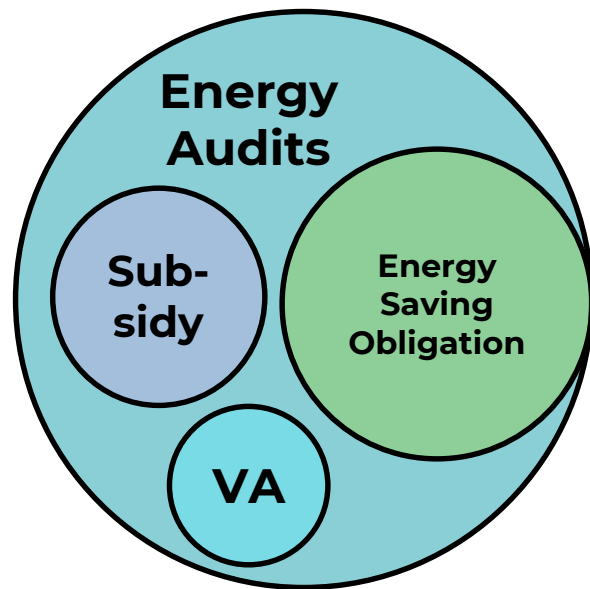
- Article 8, all companies that are not a SME have to make an energy audit every 4 years
- Main objective is to identify energy saving potentials

Energy Saving Obligation Scheme

Phase out of Petcoke

Voluntary Agreement Scheme (VA)

- Mandatory energy management systems
- Mandatory investments into energy efficiency measurements
- Mandatory special investigations





SUBSIDY FOR R&D

Energy Technology Development and Demonstration Programme Frame

- 70% reduction in 2030 and climate neutrality in 2050
- Increased electrification and CCUS

8 Challenges and focus areas, amongst others

2. Energy efficiency
6. Green process energy
7. Flexible electricity use, network expansion and digitization

Example of IHP Project

- Grant year: 2010
- Heat is recovered from the evaporators' cooling towers and used to preheat drying air for one of the spray towers
- Capacity 1.25 MW and Supply Temperature 230 °F





EU

ENERGY SUPPLY AND NATIONAL SECURITY GOES HAND IN HAND



High dependency on imported fossil fuels across Europe



Energy independence can decrease vulnerability to sudden price developments

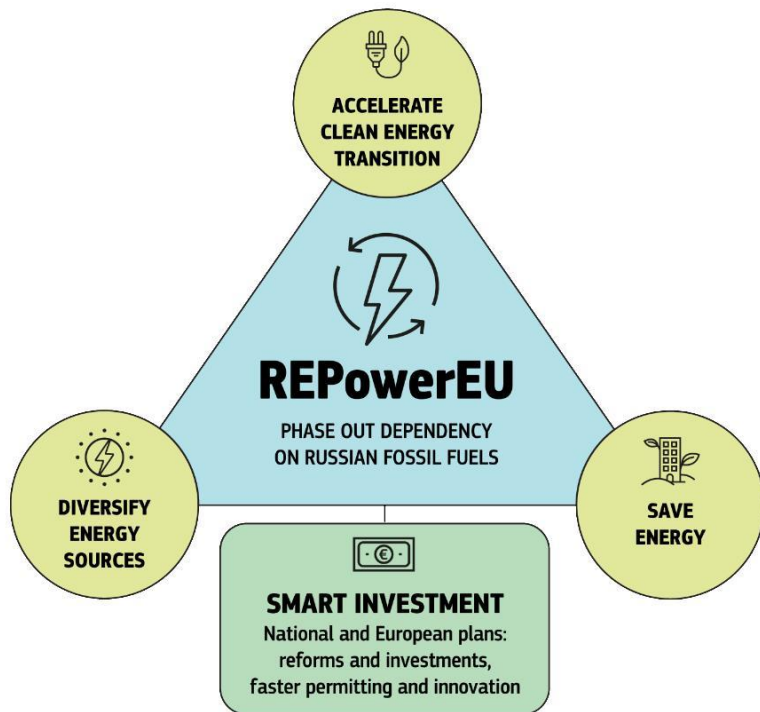


Urgent need to phase out fossil fuels and scale up renewable energy



EU-WIDE TARGETS AND POLICY OBJECTIVES BY 2030

- 55 % cuts in GHG emissions from 1990 levels
- 36 % improvement in energy efficiency
- EU Energy Efficiency Directive
- Fit for 55
- REPowerEU





Thank you

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