DANISH PERSPECTIVES ON ENERGY IN DEFENSE

LTCOL PER LYSE RASMUSSEN
ASSISTANT DEFENSE, MILITARY, NAVAL, AND AIR ATTACHÉ

U.S. NAVY
ENERGY, ENVIRONMENT AND CLIMATE CHANGE

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About Us

The U.S. Navy is globally postured to secure our homeland and citizens from direct attack and to advance our interests around the world. Our core capabilities of forward presence, deterrence, sea control, power projection, maritime security, and humanitarian assistance and disaster relief create a fast, flexible, and responsive global force for good.

The Navy is committed to improving energy security and environmental stewardship by reducing reliance on fossil fuels. The Navy is actively developing and participating in energy, environmental and climate change initiatives that will increase use of alternative energy and help conserve the world's resources for future generations.

Front Page News

Energy | Environment | Climate Change

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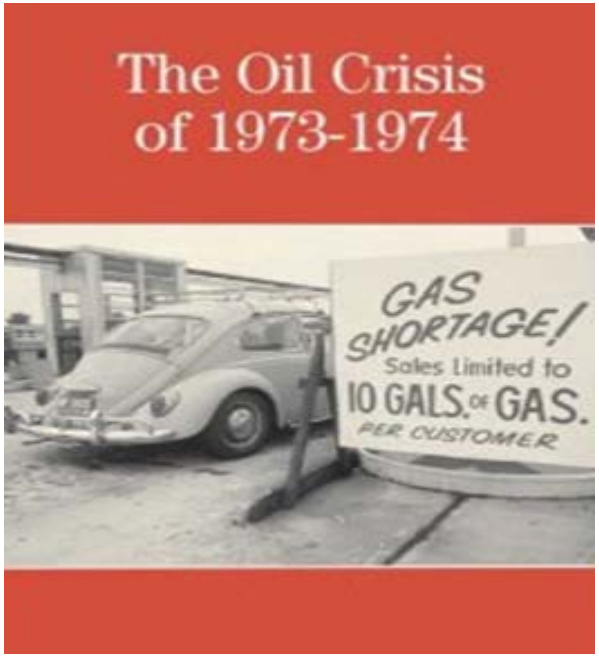
DANISH ENERGY POLICY AND TECHNOLOGIES

"[After the oil 1973 oil embargo] Danes imposed on themselves a set of gasoline taxes, CO2 taxes and building-and-appliance efficiency standards that allowed them to grow their economy — while barely growing their energy consumption — and gave birth to a Danish clean-power industry that is one of the most competitive in the world today."

- Thomas Friedman, August 2008



SHORT-TERM GOALS

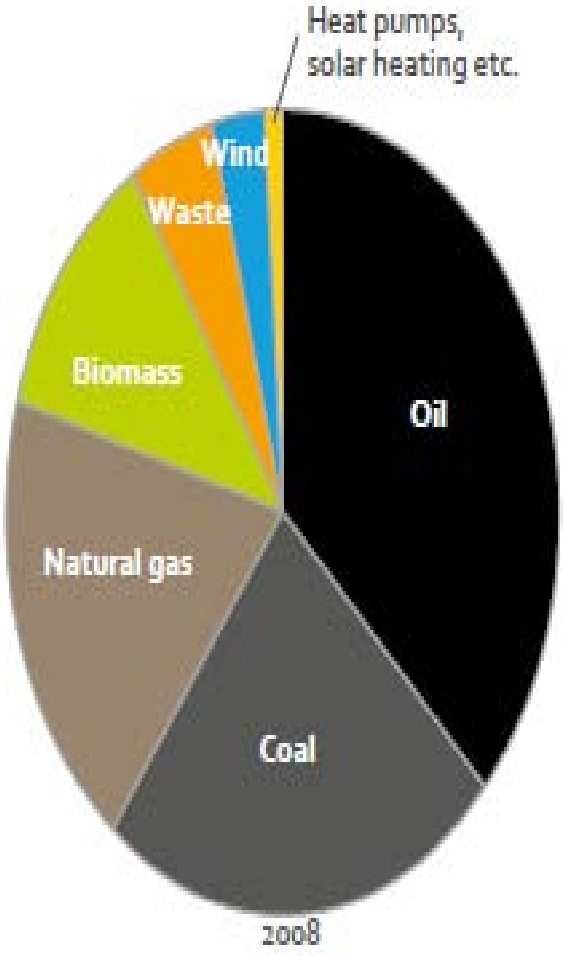
- 40% emissions reduction by 2020
- 50% of electricity from wind in 2020
- 36% Renewables in energy system 2020
- No fossil fuels in electricity or heat production by 2035

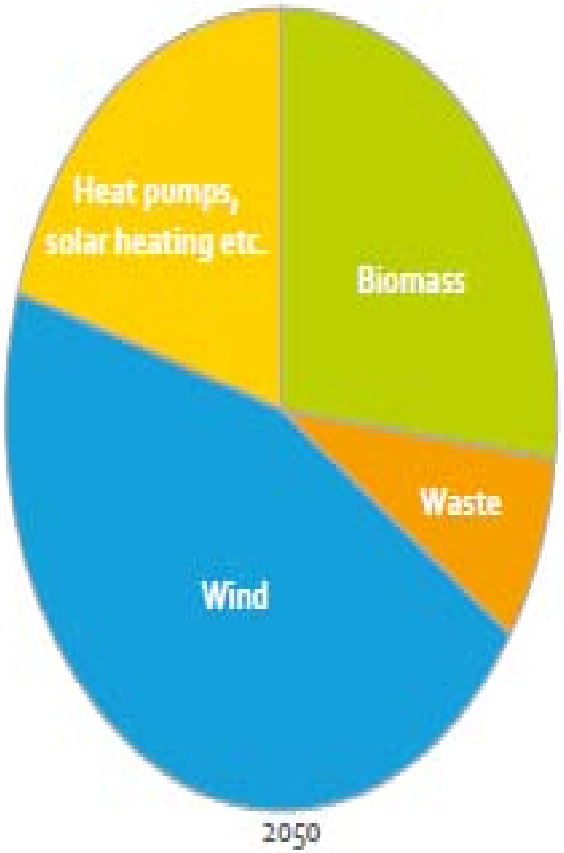
LONG-TERM GOALS

- Independent of fossil fuels by 2050

STRATEGY WITH TWO ELEMENTS

The future energy will come from renewable sources

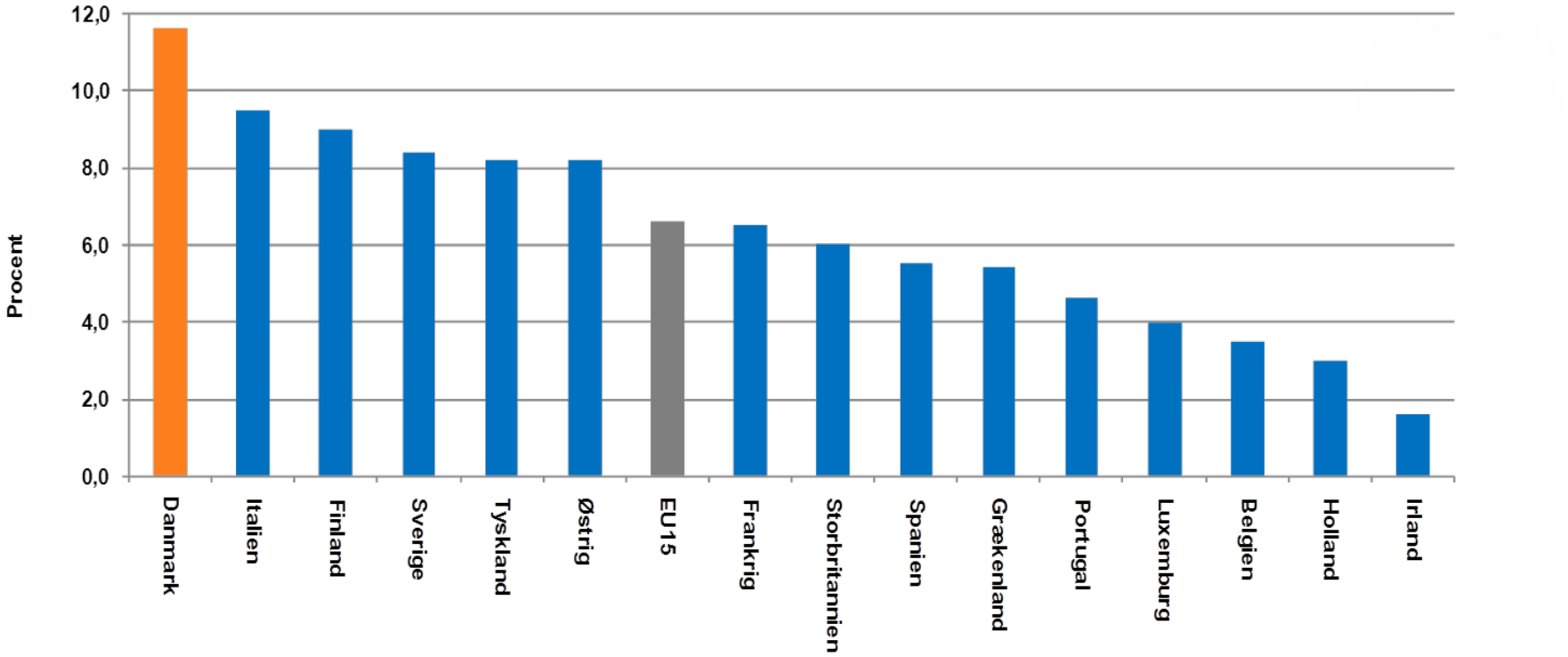




AMBITIOUS WORLD: DK ENERGY MIX 2050

DANISH INDUSTRY IS LEADING IN GREEN ENERGY AND ENERGY EFFICIENCY

Energy technology as % of total export for EU-15 countries, 2009.



CLIMATE AND ENERGY STRATEGY 2012-2015

New climate and Energy Strategy 2012-2015 was launched by Minister of Defense Nick Haekkerup in April 2012.

The strategy builds on six areas of focus:

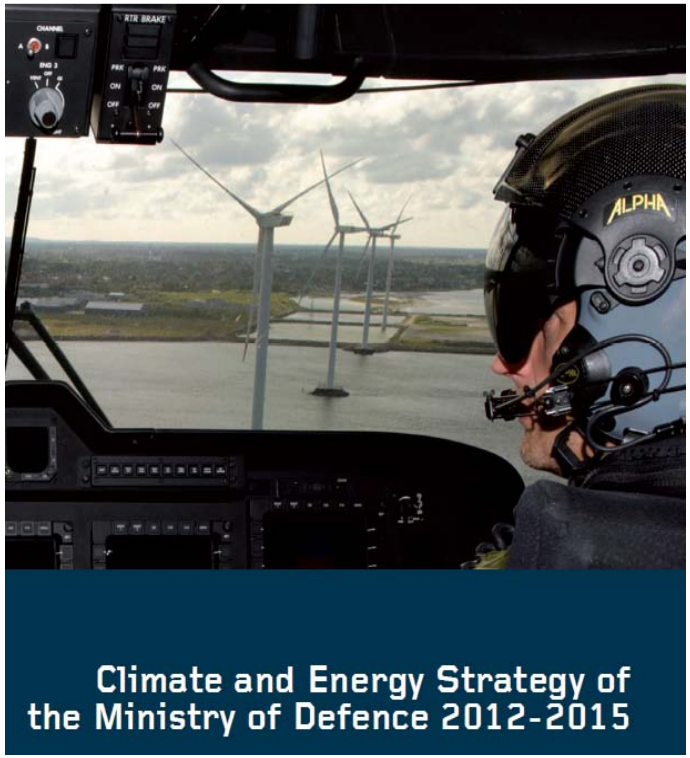
- Energy optimization of buildings
- **Energy and the environment in operations**
- **Renewable energy and energy conversion**
- **Climate-appropriate and energy-appropriate behavior**
- Climate account
- Energy management (ISO 500001)

ENVIRONMENT AND NATURE STRATEGY 2012-2015 WAS LAUNCHED IN JUNE 2012

FORSVARSMINISTERIET
DANISH MINISTRY OF DEFENCE

This strategy also has six areas of focus:

- **Environment and energy friendly procurement**
- Protection of nature
- Ground water protection
- Waste management
- **Noise reduction**
- Environment management



COOPERATION BETWEEN THE US NAVY AND THE DANISH DEFENSE

Spring 20122 Secretary Mabus and Danish Defense Minister Haekkerup met to investigate opportunities for increased US-Danish corporation.

Danish defense has identified possible areas of coorporation:

- **Biofuel** (for use in both aircraft and ships)
- **Sustainable energy**
- **Electrical- and hybrid cars**
- **Fuel cells in fighting vehicles**
- **Personal equipment for the soldier**

As well as lessons learned in the area of cultural change



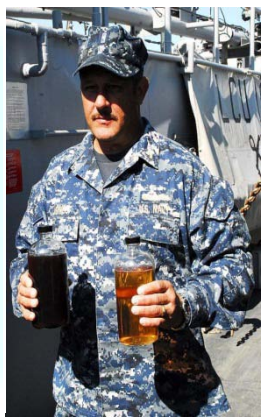


US NAVY AND DANISH INDUSTRY COLLABORATION: THE PARTNERSHIP BETWEEN NAVY AND MAERSK

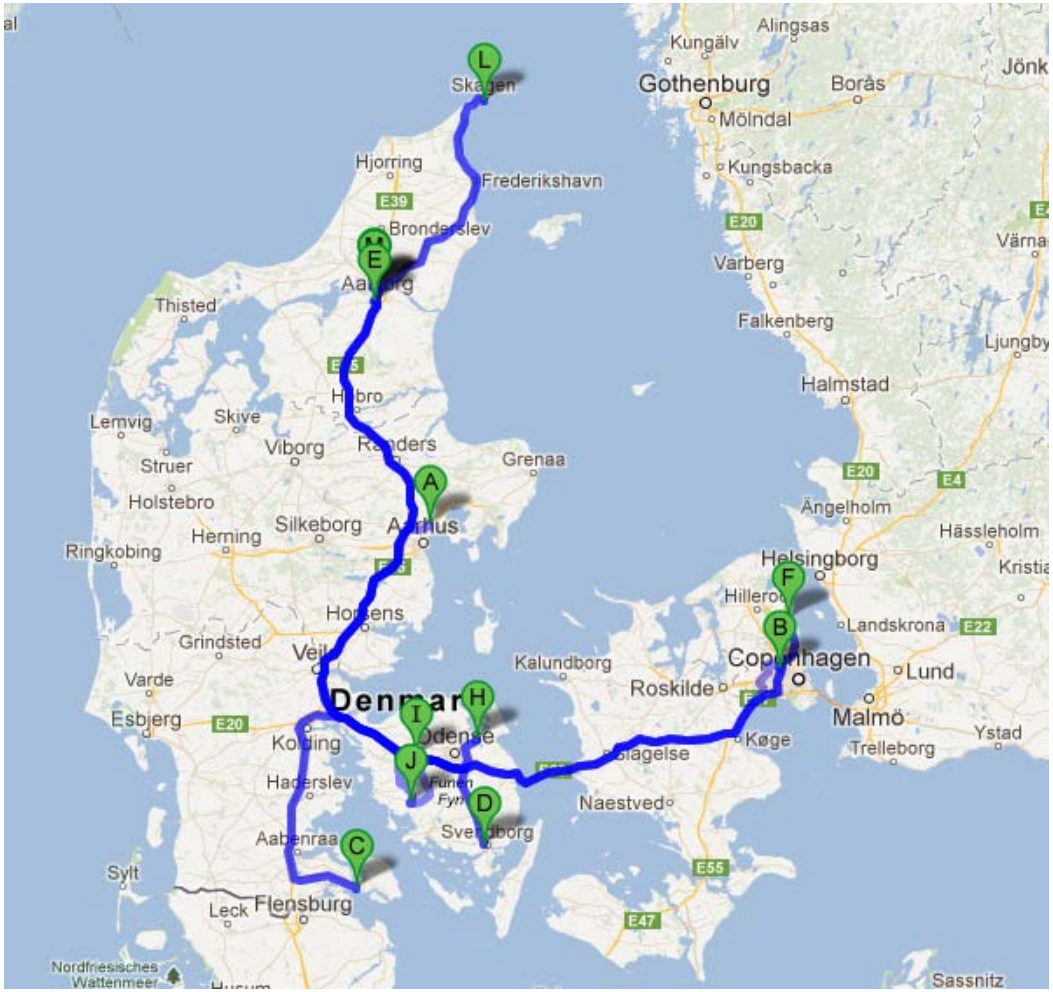
- Maersk and the U.S. Navy are testing **algae-based biofuel** on the container ship Maersk Kalmar.
- Engineers and crew onboard are testing **blends ranging from 7% to 100%.** The team is also analyzing emissions data on NO_x (nitrogen oxides), SO_x (sulphur oxides), CO2 and particulate matter from the fuel use, along with effects on power efficiency and engine wear and tear.

"The shipping industry needs to dramatically reduce greenhouse gas intensity in the coming decades. In the short term, we can gain a lot by focusing on improving fuel efficiency. ***In the longer term, we would like to see sustainable biofuels become a commercially available, low-carbon fuel****,"*

- Jacob Sterling, Maersk



THE DANISH DEFENSE AND THE ENERGY- AND DEFENSE INDUSTRY INVITES FOR CLOSER CORPORATION



MOTIVATION

"We must have a **greener defence**, so we can save money on energy.

A Green defence is a smart defence.

We need a strong defence in Denmark, therefore we can and must operate as efficiently and smart as possible".

– Nick Haekkerup, Minister of Defence

CONTACT INFORMATION

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