IEA-Advanced Motor Fuels
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DENMARK

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Introduction

Energy Strategy 2050 represents a giant step toward realizing the Danish Government's vision of becoming independent of coal, oil, and gas. Figures 1 through 4 present data on transport energy consumption for various transportation applications in Denmark between 1990 and 2013. In 2010, the Danish Commission on Climate Change Policy concluded that transition to a fossil-fuel-independent society is a real possibility. Energy Strategy 2050 builds on this work. This strategy is the first of its kind in Denmark and in the rest of the world. The strategy outlines the energy policy instruments to transform Denmark into a green sustainable society with a stable energy supply. The strategy is also fully financed and takes full account of Danish competitiveness. In March 2012, a historic new Energy Agreement was reached in Denmark. The Agreement contains a wide range of ambitious initiatives, bringing Denmark a step closer to the target of 100% renewable energy in the energy and transportation sectors by 2050.

In many ways, Denmark has started the green transition well. The Agreement calls for achieving goals more rapidly, with large investments expected in energy efficiency, renewable energy, and the energy system by 2020. In 2020, we expect approximately 50% of electricity consumption to be supplied by wind power and more than 35% of final energy consumption to be supplied from renewable energy sources.

No energy agreement has ever been reached by a larger and broader majority in the Danish Parliament than this one, and no Danish energy agreement has previously covered such a long time horizon. In other words, a solid framework has been established to enable significant private and public investments in the years to come.

Policies and Legislation

Climate Policy

Denmark has committed to meeting an ambitious and binding target for reducing greenhouse gases (GHGs) by 2020. This target is the most ambitious in the European Union (EU). By 2020, Denmark must have reduced GHG emissions from Danish non-ETS (Emissions Trading System) sectors by 20% relative to 2005.

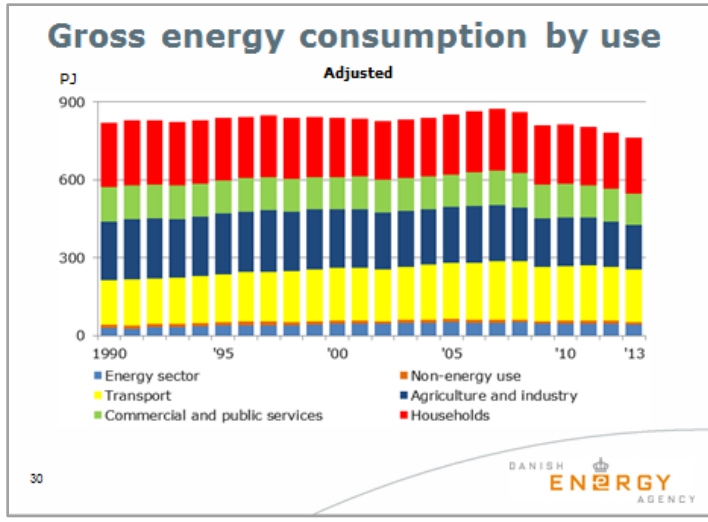

Fig. 1 Gross Energy Consumption by Use in the Period 1990–2013

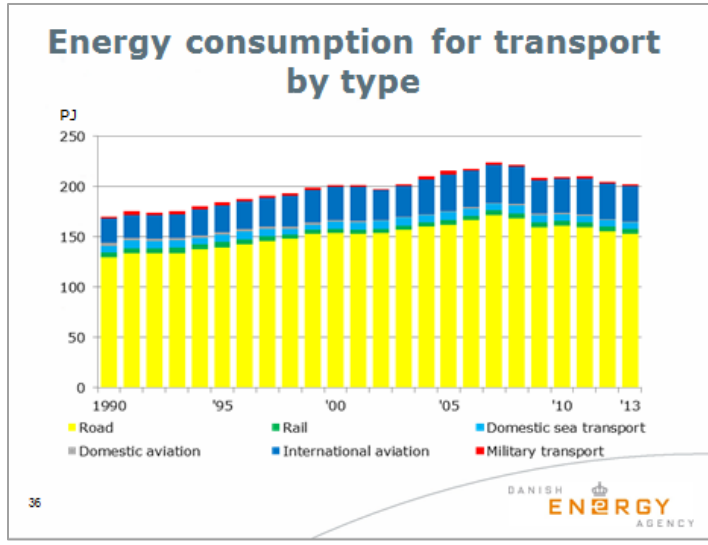

Fig. 2 Energy Consumption for Transportation by Transportation Type in the Period 1990–2013

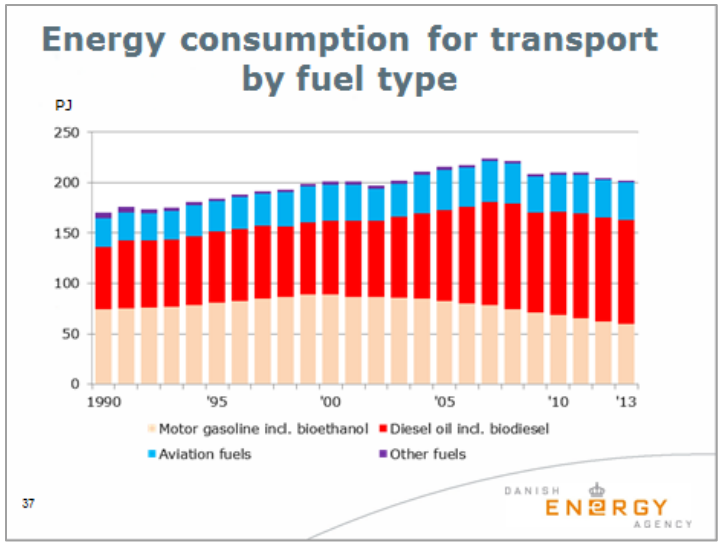

Fig. 3 Energy Consumption for Transportation by Fuel Type in the Period 1990–2013

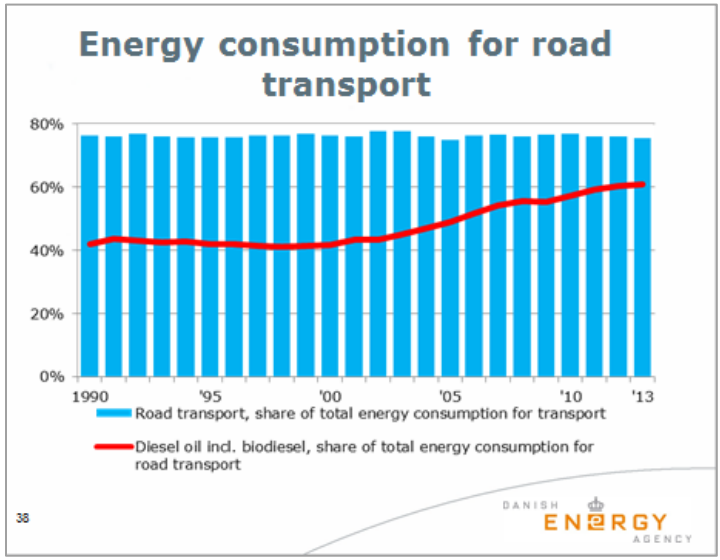

Fig. 4 Energy Consumption for Road Transportation in the Period 1990–2013

Denmark's international commitment to a significant reduction in GHG emissions not covered by the ETS in 2013–2020 poses a special challenge. The Government's climate target is to cut GHG emissions by 40% by 2020

relative to those in 1990. To reach both the total target for 2013–2020 and the target of 40%, the Government presented a climate plan in 2012. The Danish Government's ambitious goals underscore the need for a Danish policy that will give Denmark the highest return on climate and energy investments. A good example of such a climate and energy policy is investing in wind turbines.

Another good example is the electric car. Expanding the current infrastructure to accommodate electric cars is a relatively inexpensive way to reduce carbon dioxide (CO_2) emissions from the transportation sector. The electric car would contribute to the solution of three problems in one, since it would provide energy savings and opportunities for increasing the share of renewable energy in our energy system.

Energy Savings – The Road Forward

Energy savings and energy efficiency are important components of Danish energy policy and contribute to limiting energy consumption. We need significant and cost-effective energy savings within all areas. We need to use less energy in our homes, enterprises need to be made more energy efficient, and we need to focus special efforts on conserving energy in public institutions.

The initiatives agreed on in the Energy Agreement will result in a reduction of energy costs by almost 7.6% in 2020 relative to 2010.

Renewable Energy in Denmark

Along with security of supply, energy savings, and green growth, expanding the use of renewable energy in Denmark is at the core of Danish energy policy.

As a result of the Energy Agreement, renewable energy in Denmark is expected to represent more than 35% of final energy consumption in 2020. This is a major step toward achieving the long-term goal of establishing a green-growth economy with 100% renewable energy in the energy and transportation sectors.

The binding target in the EU is that by 2020, at least 30% of final energy consumption will be renewable energy in Denmark. This target is stated in the EU climate and energy package from 2008. In addition, there is a binding target that 10% of total energy consumption in the transportation sector be represented by renewable energy by 2020.

Security of Supply

The best strategy to ensure the long-term security of the Danish energy supply is to reduce energy consumption through energy savings, increased use of renewables, and closer collaboration among countries in Europe.

Implementation: Use of Advanced Motor Fuels

In Denmark, the transportation sector is still almost entirely dependent on oil. The Government has a goal that by 2050 all Danish energy supply will be met by renewable energy, including that required by the transportation sector. In February 2012, the Danish Energy Agency finalized a report on alternative fuels for the transportation sector, including socioeconomic aspects, energy efficiency, and environmental impact. The analysis indicates that by 2020 and beyond, electricity, biogas, and natural gas could become especially attractive as alternatives to petrol and diesel in the transportation sector. Electricity is the most energy-efficient alternative because of high efficiency in the engine and an increase in the share of wind-generated electricity supply.

Reference

Energistyrelsen, http://www.ens.dk/