

# **Drivers in implementing bioenergy worldwide - ....from a nordic point of view**

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Cato Kjølstad, Managing Director



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2. WORLD BIOENERGY ASSOCIATION
3. DRIVERS IN IMPLEMENTING BIOENERGY  
WORLDWIDE – NORDIC EXAMPLES
4. GOVERNMENT PLANS AND THE STRATEGIC ROLE  
FOR BIOENERGY IN NORWAY
5. NOBIO's POINT OF VIEW

## NOBIO's BUSINESS MEMBERS COMMERCIAL BIOENERGY PRODUCTS

- **Biofuel production** (both for the transport and the stationary sector)
- **Bioheating**; District heating (small/medium/large) and local energy supply (stand-alone systems) based on biomass (wood chips, pellets etc). In the statistics *bioheat* also includes wood stoves and pellet stoves in the households.
- **CHP** (Combined heat and power )
- **Biofuel for the transport sector** (import, domestic production and distribution)
- **Biogas**

## The Norwegian Bioenergy Association - facts

- **How we work:**
- Influencing governmental policy on relevant issues (lobbyism)
- Information (communication) to the members, the public and other stakeholders ([www.nobio.no](http://www.nobio.no))
- Cooperation through sector network, arranging relevant seminars etc.

**Main goal: Profitable production and distribution of climate-based bioenergy that provides an increased share of the energy market**

**NOBIO : Approx. 300 members along the (different) chain of values:**

- Forest owners
- Forest-based industry
- Producers of wood chips and wood pellets
- Equipment manufacturers and Norwegian agents/importers
- **Producers and distributors of bioheat**
  - both large-scale and small-scale companies
- Biofuel companies (import, production and distribution)
- Consulting firms/energy consultants
- Other (industrial) companies taking position in the bioenergy market

**Main goal: Profitable production and distribution of climate-based bioenergy that provides an increased share of the energy market**

# Production of energy in Norway - Year 2008

Energy sources	Domestic production and export of energy (TWh)	Domestic consumption of energy (TWh)	Percentage
Bioenergy, including biomass in the district heating	14,4	13,8	6,1 %
Fossile energy (oil, gas, coal)	2488,9	100,0	43,9 %
Hydro power	142,6	114,2	50,0 %
<b>Total</b>	<b>2645,9</b>	<b>228</b>	<b>100,0 %</b>



Source: Statistics Norway 2009



# Stationary, land-based energy supply in Norway

- Historically, hydroelectric power was available in abundance at low prices for many decades (120 TWh) up to 2003
- The price of electricity increased between 2003 – 2008
- Prices dropped at the end of 2009 and by the end of 2009, prices were low
- Price on el raised during the winter (Q1 2010) and we had to import coal-based power from Denmark and other countries.
  - A dominating part of the heating market is still based on el (hydroelectric power)
  - Approx 30 TWh electricity used for heating & hot water in households
  - The total market for heating solutions represent approx .55 TWh (when we include industry, public sector etc.)
  - Energy for the rest of the heating market is provided from oil, gas and bioenergy



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# World Bioenergy Association (I)

A global non profit NGO with 2 main purposes:

1. **Spread information** about the possibilities being available by utilization of the great amount of biomass resources. These possibilities could for instance be used for growing multipurpose crops, which produce food, feed, energy, medical purposes, etc.
2. **Spread knowledge** and technology by BioenergyConnect, a web-Based portal where paying subscribers have virtual meetings, discussions, share information and start projects. WBA bring our networks of buyers and sellers of bioenergy equipment and fuels together with investors and researchers.

# World Bioenergy A.(II)

World Bioenergy Association's message to COP 15

## ***Global Potential for Bioenergy Sufficient to meet Global Energy Demand***

A position paper by World Bioenergy Association (WBA) based on a report by the Department of Energy and Technology at the Swedish University of Agricultural Sciences (SLU) shows that the maximum global potential to produce biomass for energy in a sustainable way is sufficient to meet global energy demand.

There is a lack of awareness of the **enormous potential of bioenergy** worldwide both among politicians, media and the public.

# World bioenergy A.(III)

Key factors to substantially increase the renewable energy share of the global energy system

The sustainability criteria will when they are fulfilled guarantee

That renewable energy:

- could be supplied in sufficient amounts
- could be supplied without threatening food supply
- could be supplied without threatening water supply
- could be supplied without threatening the rain forest and the biodiversity
- could be supplied without threatening the economical growth

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# Drivers in implementing bioenergy at different levels

- Local
- National
- Regional (European regions / regions world wide)
- World wide
- But there are also barriers .....on different levels

Obama – impact on all levels and an important driver for new investments.....

**OBAMA : THE WORLD REQUIRE  
RENEWABLE ENERGY .....(IT IS NOT THE  
FIRST TIME HE SAY SO, BUT.....THIS TIME.....)**

[www.nobio.no](http://www.nobio.no)

# National level – an example

## Background - the Swedish development

1. No domestic fossil energy sources
2. No industry propagating for oil or coal
3. Efficient forest industry sector
4. A common view - free market and market conditions - general incentives.

## Background - the Norwegian development

1. Large domestic fossil energy sources
2. A large industry working with oil and coal
3. Efficient forest industry sector
4. A common view – free market and market conditions – general incentives

# Production of energy in Norway - Year 2008

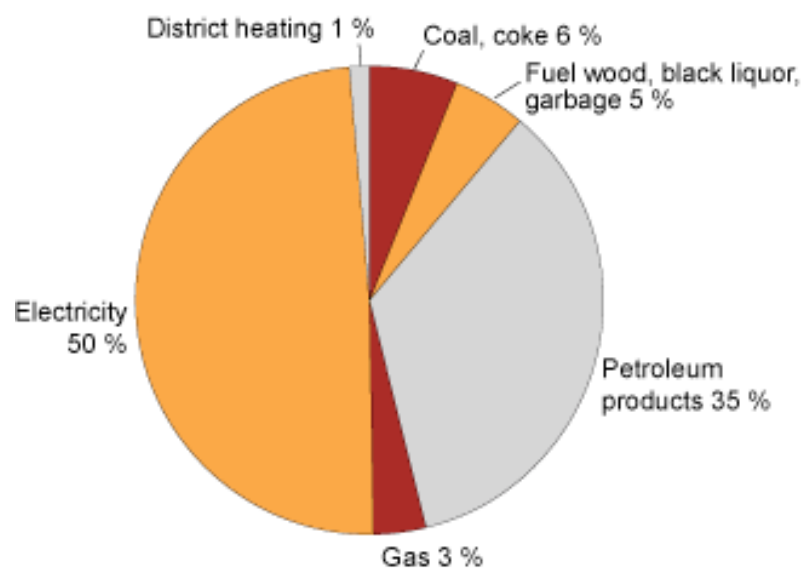
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Source: Statistics Norway 2009

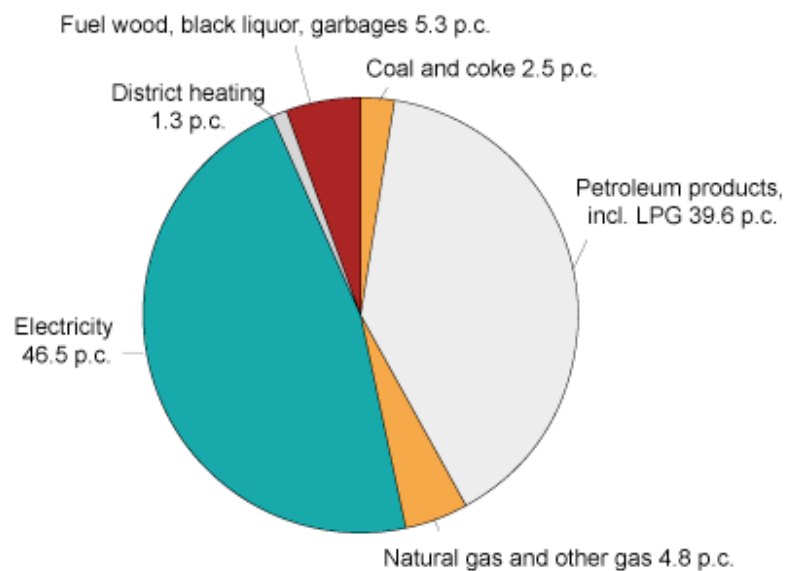


# Use of energy in Norway – 228 TWh

Total net domestic energy consumption, by type of energy. 2008. Per cent



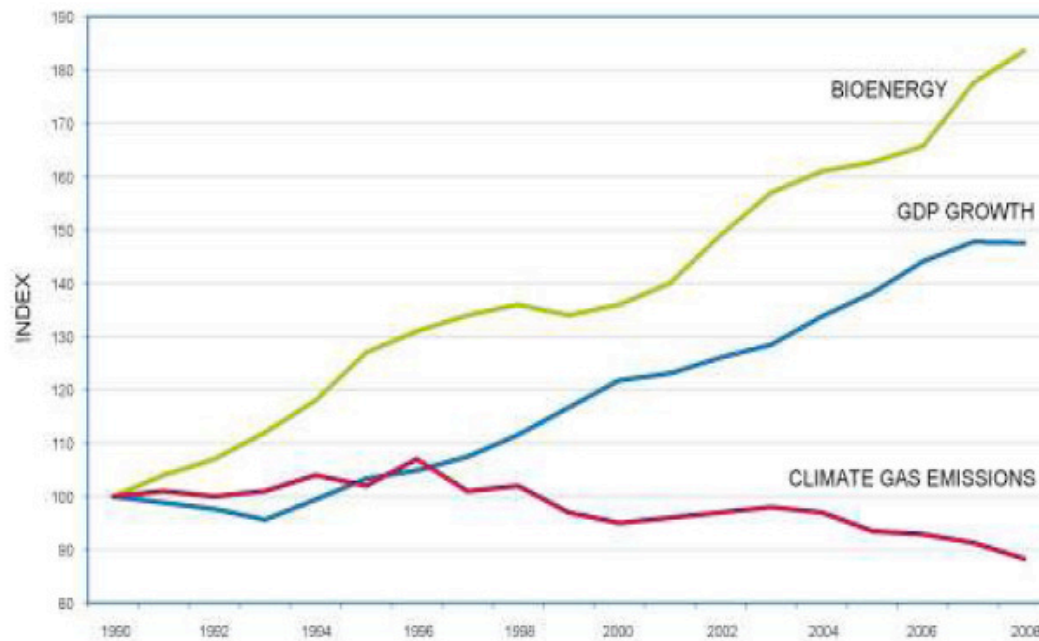
Total end consumption of energy, by energy commodity, incl. non-energy use. 2009. Per cent



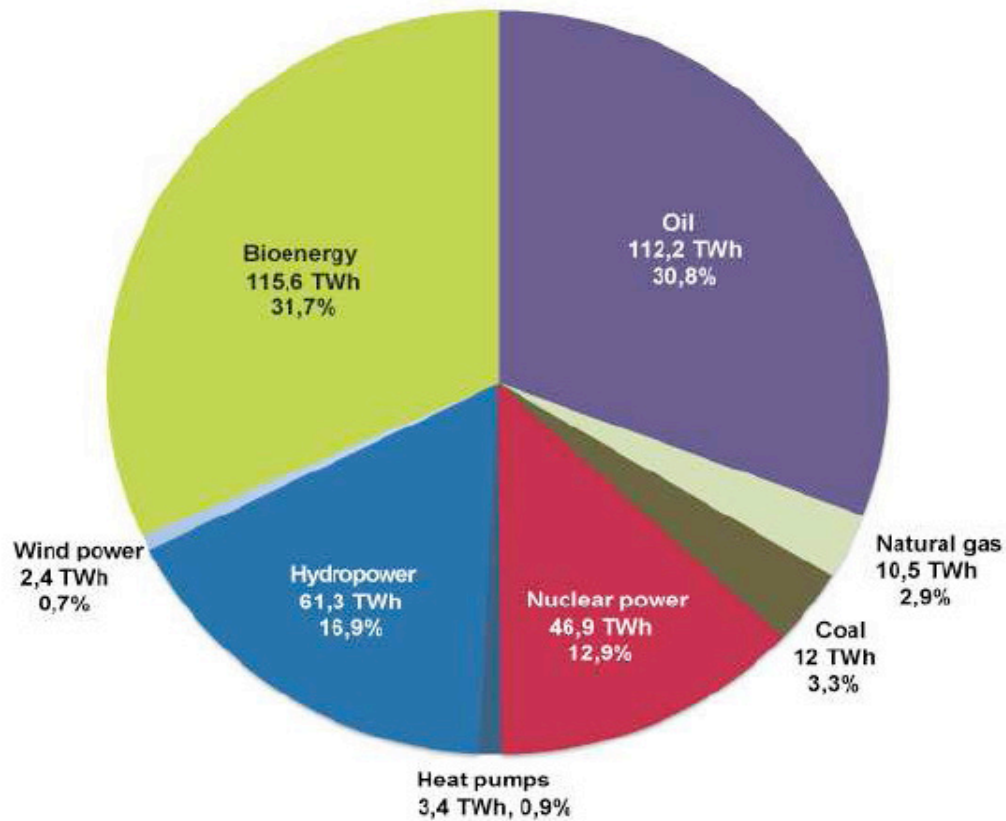
The use of bioenergy today is approx .14,5 TWh

Source: Statistics Norway 2009

## Economic Growth and Carbon Reduction

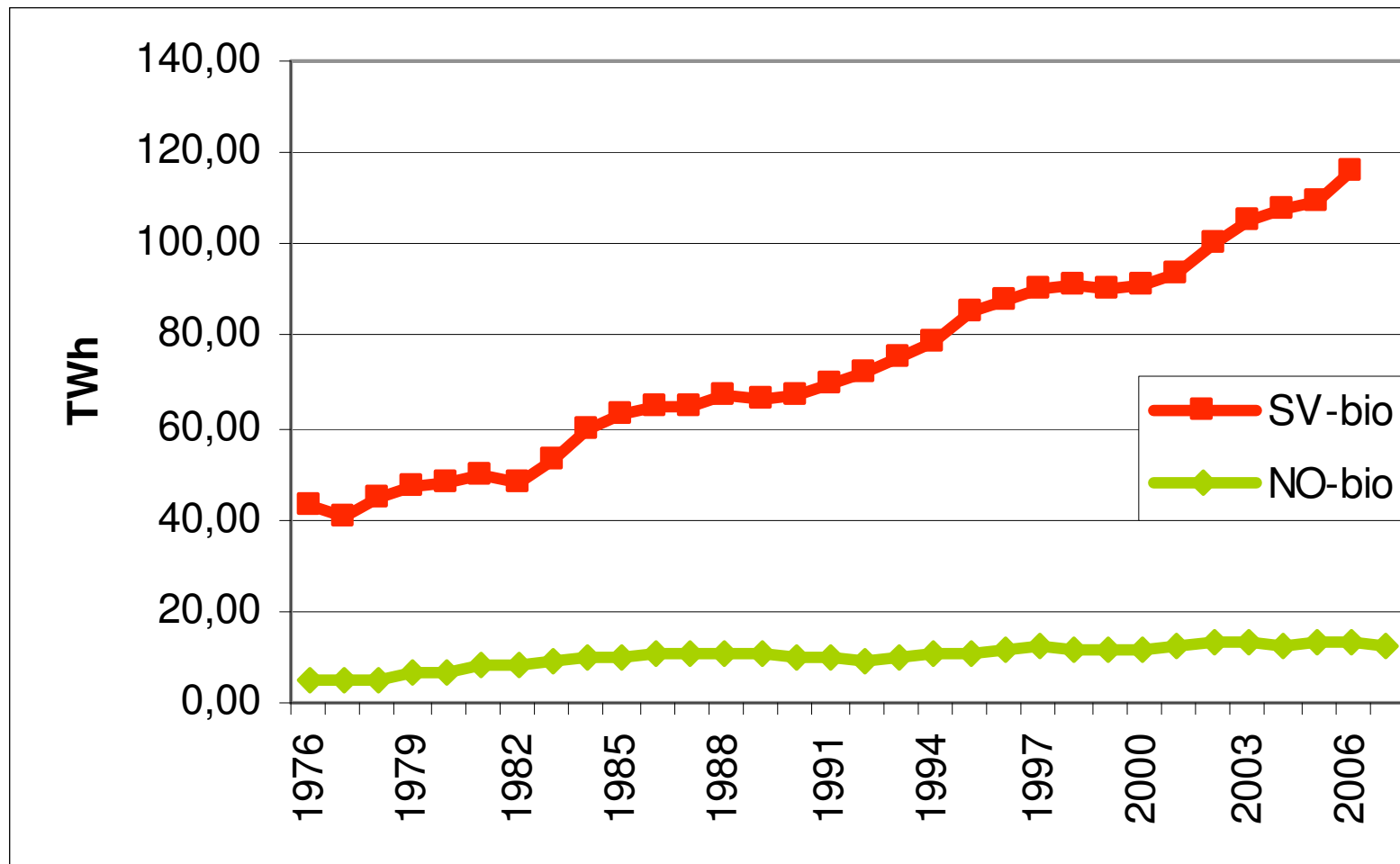


## Share of final energy use in Sweden 2009



*Slutlig energianvändning fördelad på energikällor. Svebios beräkning grundad på Energimyndighetens kortsiktsprognos mars 2010.*

# Use of bioenergy<sub>(stationary)</sub> Sweden compared with Norway

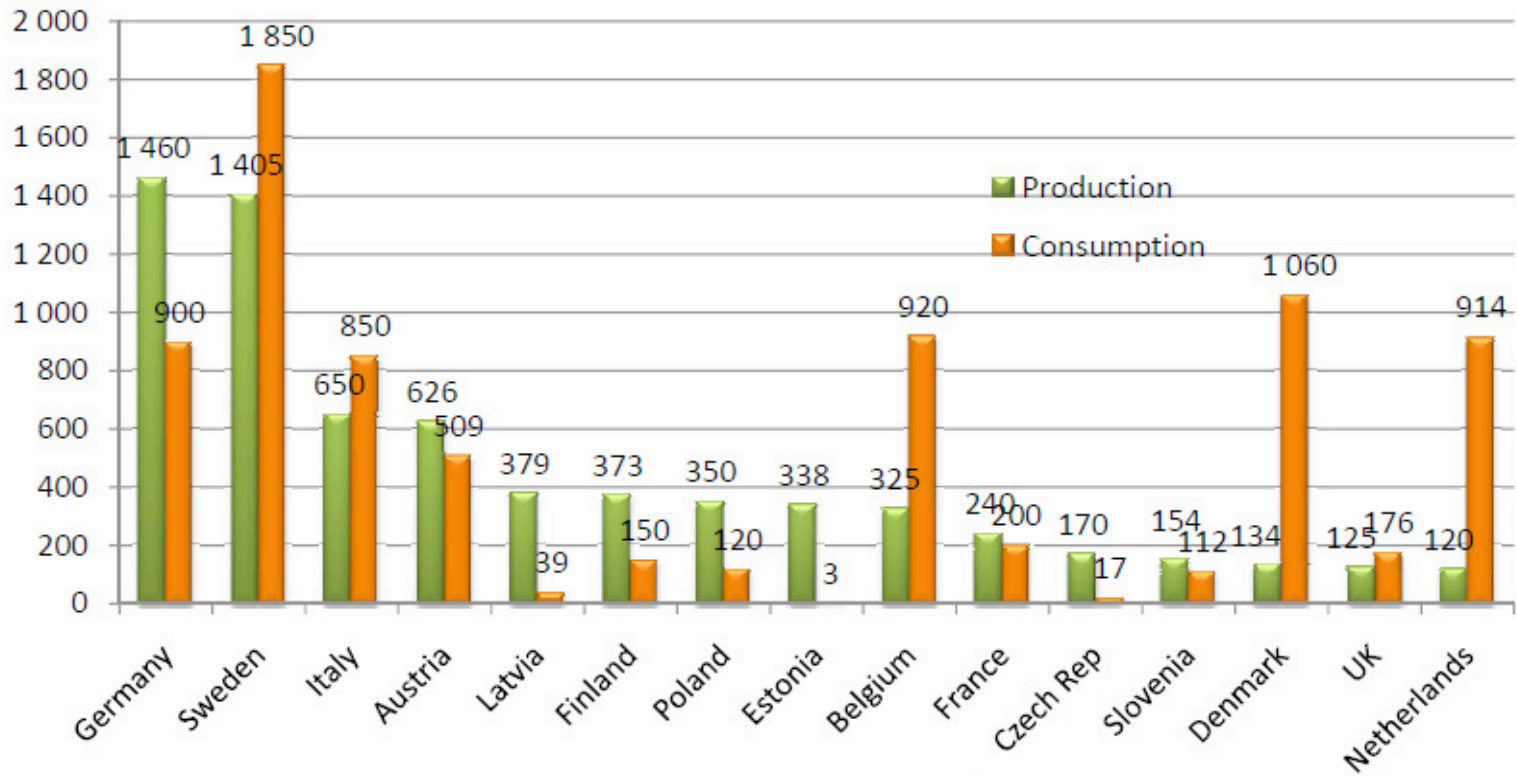


- EU climate and renewable energy policy opens up new markets across Europe
- Bioenergy will play a key role for RES in 2020



## The RES Directive

Pellets production and consumption in 2008, leading countries in EU27 (kt)



Source: PelletsAtlas, AEBIOM



# How EU legislation impacts market

- RES Directive
- Sustainability criteria
- Standards
- ETS (Emissions Trading Scheme – ETS)
- European Bioenergy Industrial Initiative

# EU – stakeholders involved.....

- Bioenergy industry (electricity, heat, cooling and biofuels)
- Energy producers and distributors
- Trade associations and consultancies
- National policy/decision makers
- Public Relation Companies
- Project Developers
- Education- , Science-, Research-Institutes
- Export, import services
- Business developers
- Energy regulators
- Financial and funding institutions
- EU institutions
- Consultants
- Engineering companies
- Media & Communication companies
- Transport & Mobility companies
- Agencies

- RES Directive – important elements:

Very strong driving force for RES

National mandatory targets for RES

National Renewable Energy Action Plans

# The RES directive

## Status:

- 10 MS are planning to overshoot their targets
- 5 MS expect a shortfall
  
- Overall excess, only few flexibility mechanisms expected
- National Renewable Energy Action Plans
- The RES Directive
- Transparency platform  
([http://ec.europa.eu/energy/renewables/transparency\\_platform\\_en.htm](http://ec.europa.eu/energy/renewables/transparency_platform_en.htm))
  
- To be submitted by end June 2010 ??????
- Targets and measures
- Biomass supply measures, import/export

# Sustainability criteria

- What impact on market ?
- Voluntary initiatives from power producers
- Higher costs and administrative burdens
- ...
- or better acceptance and confidence by market players ?

# European Standards

- The European Committee for Standardization - CEN - under committee TC335 has published 37 technical specifications (pre-standards) for solid biofuels.
- Now these technical specifications are upgraded to full European standards (EN) - the national standards must be withdrawn or adapted to these ENstandards.
- For example EN 14961-2 for pellets.
- Standards for biomass fuels are supporting market development.
- Initiative for a “EN plus” trade mark in Germany, Austria and other countries, together in a European Pellets Council.

# Emissions Trading Scheme - ETS

- Auctioning system instead of free allocations system – industries will have to buy the rights to emit CO<sub>2</sub> from their governments.
- The biomass use is counted as 0 emissions within the ETS scheme – a strong incentive for biomass use. Pellets for co-firing being an "easy" option for power companies.
- 300 Mio allowances from the "new entrants" reserve (NER) should be allocated to innovative renewable energies and CCS that are not yet
- Emissions Trading Scheme – ETS commercially viable.
- Draft Council decision (26 Feb 2010), calls in two rounds, role of EIB, CCS and RES projects Pellets projects ? (torrefaction, SNG, etc.)

# European Industrial Bioenergy Initiative (EIBI)

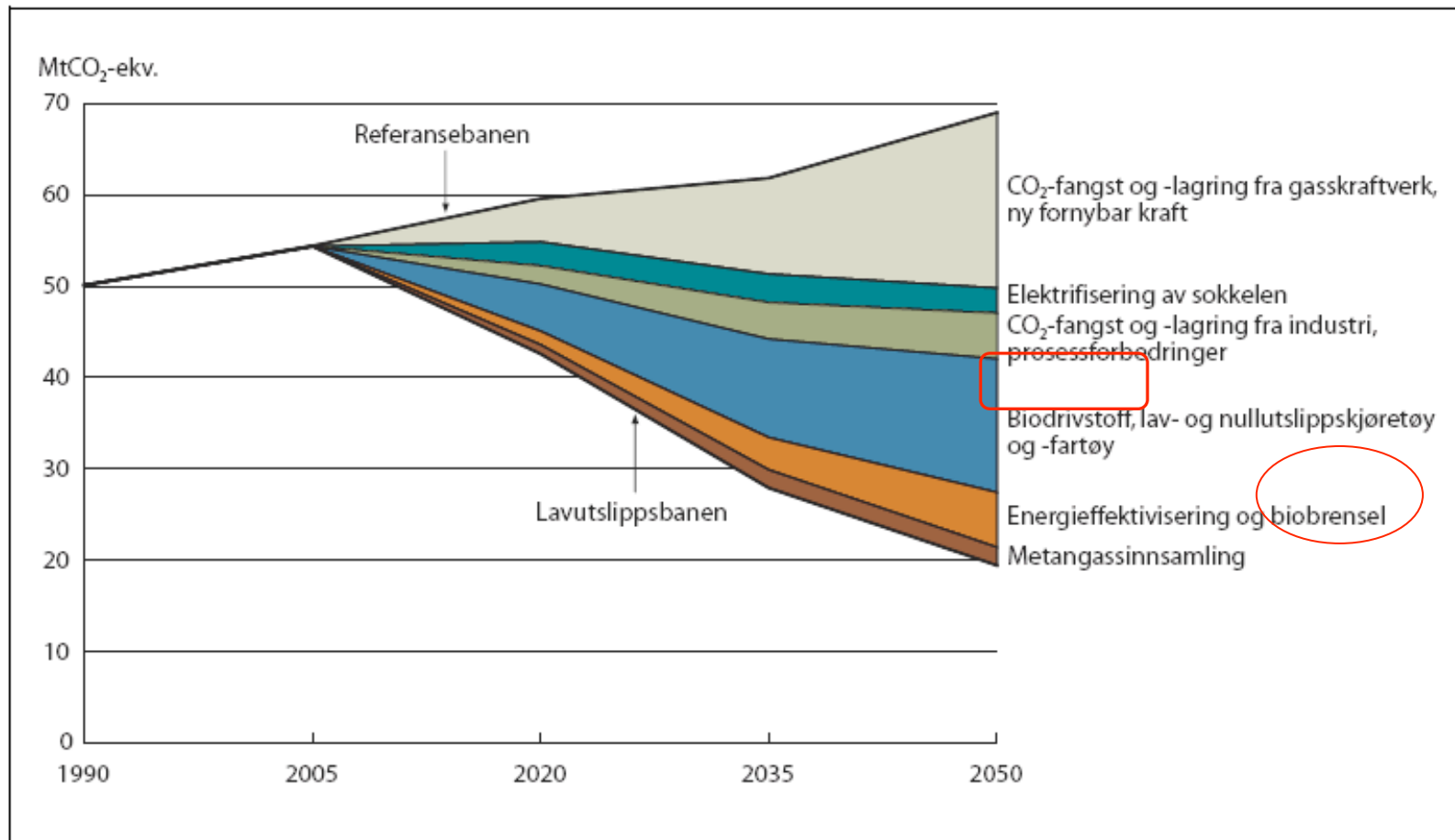
- European Biofuels Technology Platform
- Vision to reach 14% bioenergy in 2020 and 4% of advanced biofuels
- EIBI, 7 key value chains identified :
- European Industrial Bioenergy Initiative (EIBI)
  - Synthetic fuels via gasification
  - Biomethane via gasification
  - Power via gasification
  - Bioenergy carriers via thermochemical processes
- EIBI maybe launched in November 2010, 8 billions EUR, call for 15-20 projects
  - Ethanol from lignocellulosic biomass
  - Hydrocarbon from sugar containing biomass
  - Bioenergy carriers

# AEBIOM (and their conclusion)

- RES Directive national support schemes reinforced, especially for heat.
- Sustainability impact
- Standard support market, EN plus.
- ETS ongoing incentives for biomass, NER projects.
- EIBI call for projects in November
- EU legislation definitely impacts positively for the bioenergy market

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# Strategic role for bioenergy



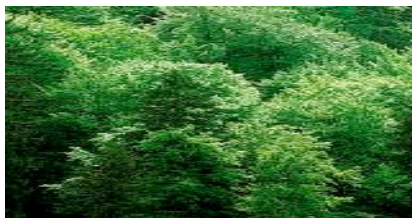
**Source:** The Norwegian Commission on Low Emissions, 2006.

# The Government launched a strategic plan for Bioenergy in Norway (April 2008)

- **Main content in the plan**

- Main goal: 14 new TWh within 2020

- Which gives an estimated new level in 2020: 28,5 TWh (in the land-based stationary energy sector).




# 2010 - Norway and the EU-directive (renewables)

- Calculated percentage renewable energy consumption in Norway is approx 60 %:
  - Consumption renewables (domestic):134 TWh
  - Total energy consumption in Norway: 228 TWh
- The new renewable goal for Norway:
  - Not decided; will be negotiated with the EU
  - If EU's formula decides: –we have to raise the target by approx. 15 % (new target will be 75%).
- Within 2020 this requires;
  - New production of renewable energy = 32 TWh, or
  - Reduced consumption of 44 TWh
  - .....or a combination of new production of renewable energy and reduced consumption
- **NOBIO: Bioenergy has to be a central part of the solution**

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## Hvordan nå et høyt mål?

- Potensialer for ny fornybar energi i 2020
  - Vind- og vannkraft ca 30 TWh – teknisk mulig
  - Økt bruk av bioenergi - 14 TWh (varme)
- Potensialer for redusert energibruk og fossil energi
  - Energieffektivisering i alle sektorer
  - Utfasing av fossil energi til oppvarming
  - Økt innenlands bruk av el i transport- og andre sektorer
  - Økt bruk av varmepumper, fjernvarme
- Høyt krav til Norge innen 2020 vil kreve helt ny energipolitikk!

9 19. mars 2009

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# Short-term plans (stationary sector)

- ENOVA (The national budget for 2010 )
  - NOK 1 800 000 available for financial support : Wind, bioenergy and energy efficiency solutions.
  - Stortinget (The Norwegian Parliament ) increased the energy fund (ENOVA) from NOK 20 billion to NOK 25 billion.
- Introducing the certificate market (agreement signed Sept. 2009 between Sweden and Norway) to be implemented from 2012 (January 1st).
  - Expected price on new renewable el-certificates = NOK 20 – 25 øre/kWh (2,4 euro cent – 3 euro cent)
  - Enova **can** after this shift its focus towards the heating market and energy efficiency
  - NOBIO : The energy fund (Enova) **must** as a minimum be raised to NOK 30 billion from 2011.



# ”Fulfilling” the Government’s strategic plan

## FINANCIAL SOURCES

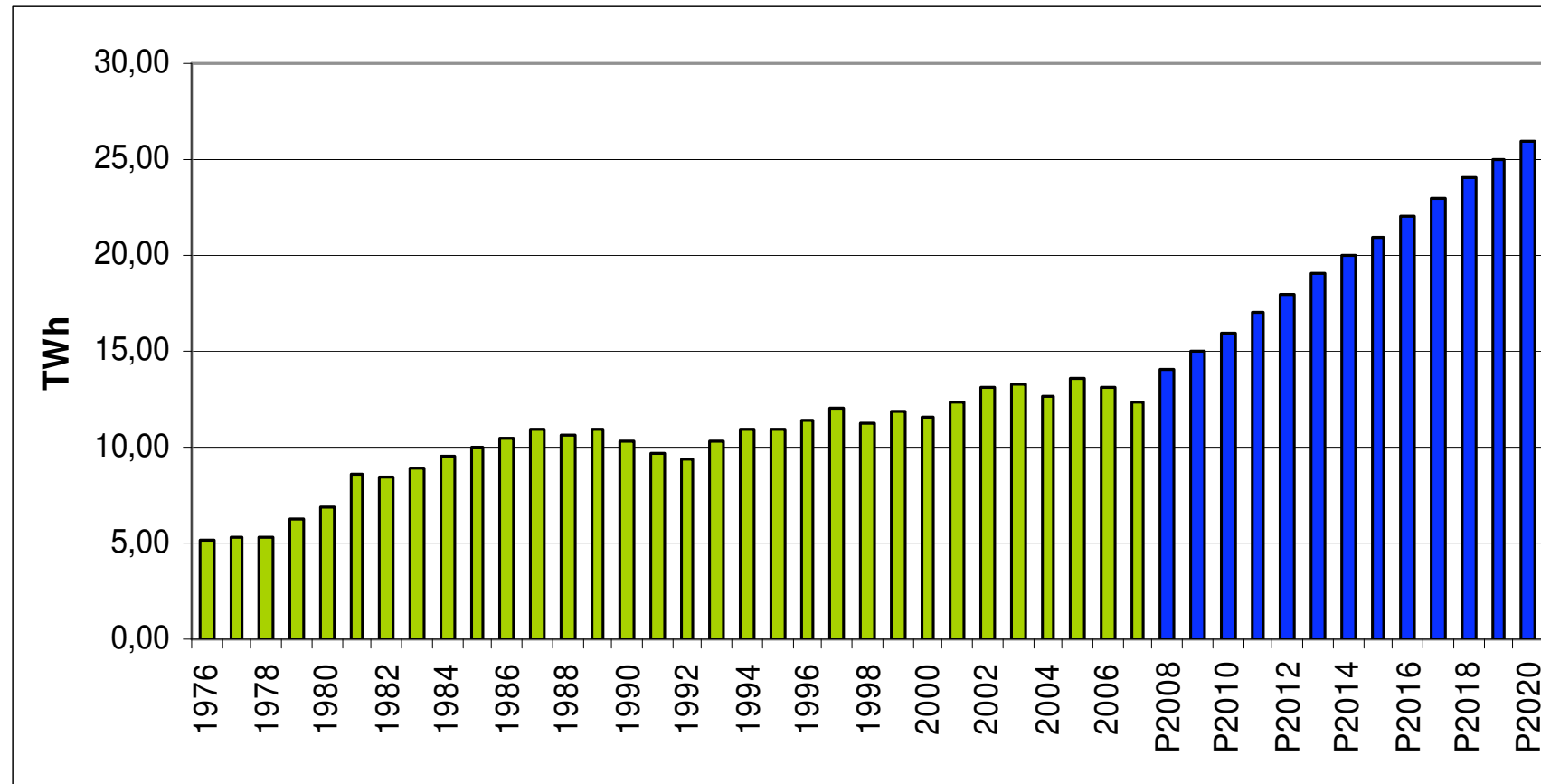
- The financial situation in the market:
  - requires both private capital and
  - financial solutions from the bank sector and
  - support both from Enova SF and Innovation Norway.

## INNOVATIVE POLICY MAKING

- Raise available capital for R & D.
- Set TWh-goals (14 TWh) for bioenergy investments.
- Increase the **support scheme** from Enova and Innovation Norway for the bioenergy sector.



“Fulfilling” the long-term plan (14 new TWh within 2020 ) requires action.....




# A powerful boost for renewable bioheat

- Terms of subsidies on renewable bioheat must be strengthened by the current 3.5øre/kWh to a minimum of 10 øre/kWh in the short run.
- This can be done through a combination of:
  - Green tax exchange
  - Financial up-front support or feed-in (Enova)
  - Market-based incentives (such as green certificates)

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## EU Renewable Directive - requirements for national action plans

### Background:

- By 2010, Norway has to provide an action plan for the European Commission.
- **The commission requires a detailed plan and specific descriptions of measures to increase the renewable share from 60% to 75% towards 2020.**
- NoBio has given a set of proposals in order to achieve the Norwegian Action Plan on increased use of bioenergy.

# Framework – biofuels in the transport sector

- There was a tax reduction on B5, B100 and E85
  - Starting resolution in 2009; taxes on B5, B30, B100 etc.
  - E85 has no taxation (though it has vat)
  - **NOBIO: Working on reversing the tax resolution**
- Fuel standard:
  - 2,5 percent (volume) bio from Q2 2009 (**exists**)
  - 3,5 percent (volume) bio from Q2 2010 (**exists**)
  - 5 percent biofuels when the carbon- and sustainability-reporting is implemented in Norway – probably from Q1 2011
  - **NOBIO : Main aim is to increase this level in the years to come.**
- NOK 10 000 reduction on vehicle registration tax for E85-cars from Q3 2007
  - **NOBIO: Working on continuing and increasing this support scheme**



# NoBio's long-term plan (2020) - I

## Utilization of biomass

- NoBio suggests that the Norwegian biomass action plan (2010-2020) must require an enormous increase in the biomass utilization, both in the heat sector and for transportation.
- Our demand is to increase the use of stationary bioenergy by 14 TWh, almost doubling the recent domestic use of bioenergy.
- The suggestion complies with the goals in the domestic bioenergy strategy set by the Norwegian Government.

# NoBio's long-term plan(2020) - II

NoBio suggestions will ensure a substantial surplus of electric power in the Norwegian energy system

The power surplus should be utilized:

- in the Norwegian process industries
- in the Norwegian oil industry
- in the transport sector
- In addition, part of the surplus power should be exported to substitute fossil energy in Europe.

# Green tax exchange

Taxes on heating oil, gas and electricity must gradually increase to the same level as in Sweden and Denmark.

# **A claim for more use of renewable heat in the Building Regulations**

A new legislation must be implemented, demanding that 80 % of the energy use for heating of new buildings must be delivered from new renewable energy resources.

# We all require renewable energy



Thank you !