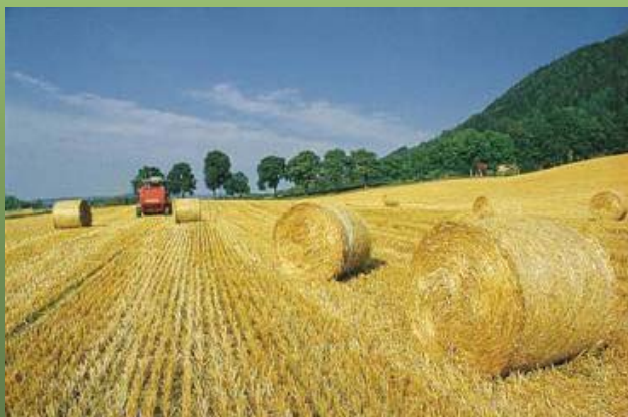




# The position of bioenergy in the regional and national energy policies and energy planning in Norway

IEA Task 29 Conference  
Sanner, 18.June 2010

Erik Eid Hohle, The Energy Farm – Center for bioenergy, Norway





# The Energy Farm in Norway

*- bioenergy in theory and practise*

- Bioenergy Information Center
- Education, training and courses
- Demonstrations and guided tours
- Consulting and project management
- Production of biofuels and bioheat



[www.energigarden.no](http://www.energigarden.no)  
[post@energigarden.no](mailto:post@energigarden.no)

Tel +47 61 33 60 90  
N-2760 Brandbu – Norway



# The Energy Farm – Center for bioenergy

## Target Groups

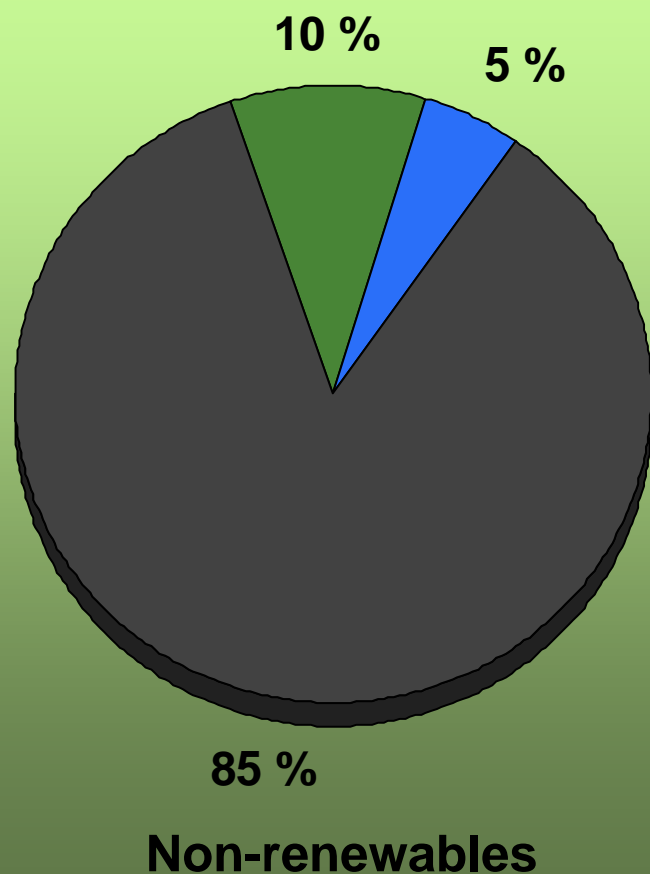


- Biomass and bioheat producers
- Local and central authorities, politicians and decision makers
- The energy sector, companies and utilities
- Small innovative businesses
- Potential users of R&D results
- Schools and students
- The general public



# World energy use

Bioenergy    Other renewables



Annual world energy use is  
116.000 TWh

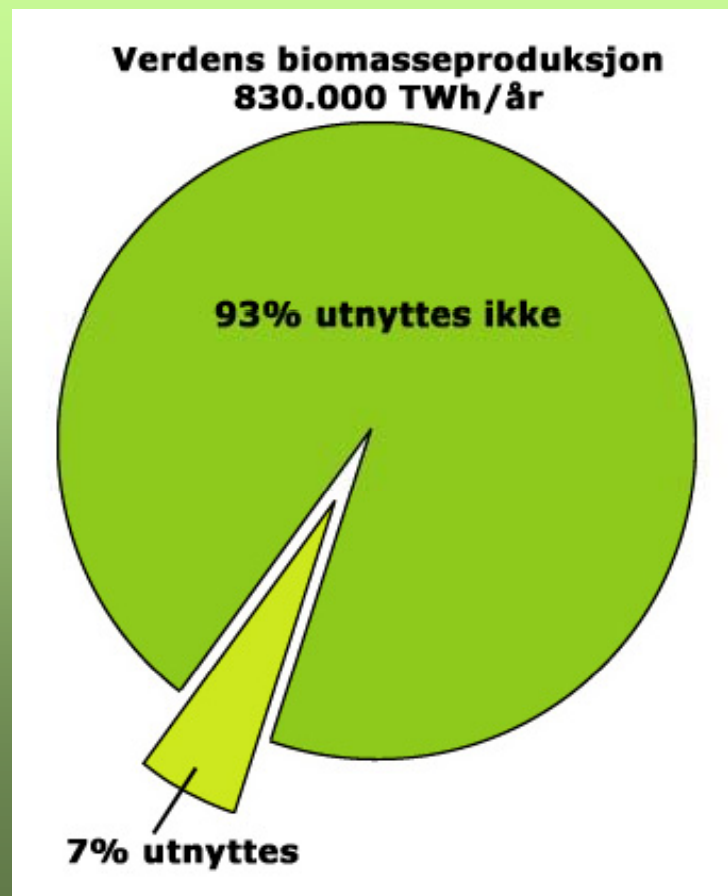
- Bioenergy: 15 %

**Bioenergy is the only or most important source of energy for more than 60% of the world population**



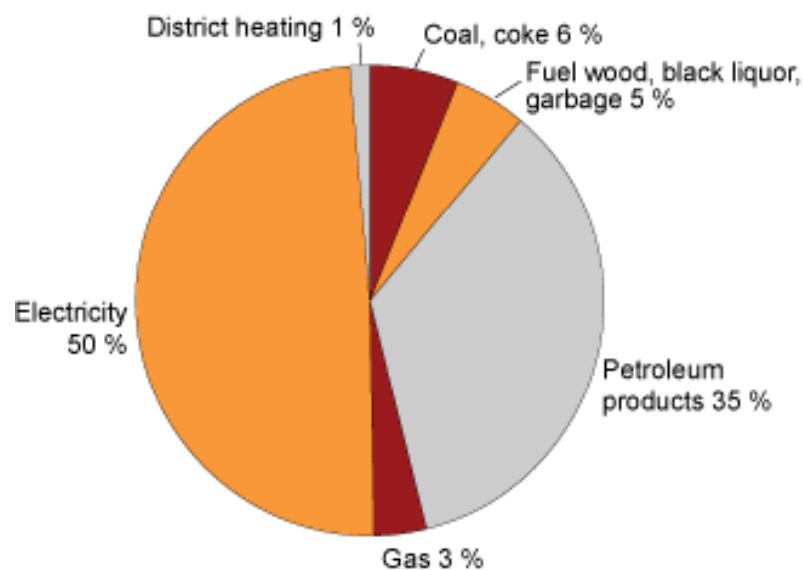
# The global biomass potential

- Annual biomass growth globally is 7 times higher than the energy consumption today.
- Only 2% is utilized as energy today, equal to ca. 14 000 TWh or 15 % of the worlds energy consumption.

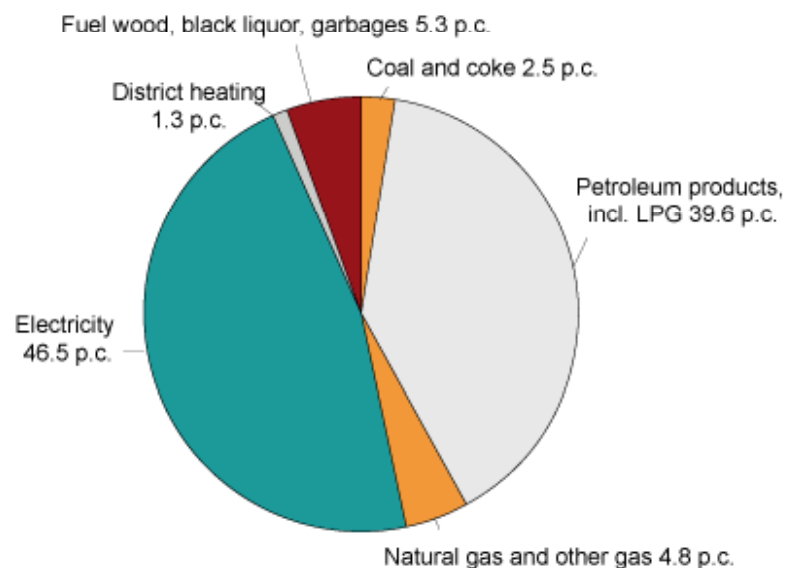


# Use of energy in Norway – 228 TWh

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

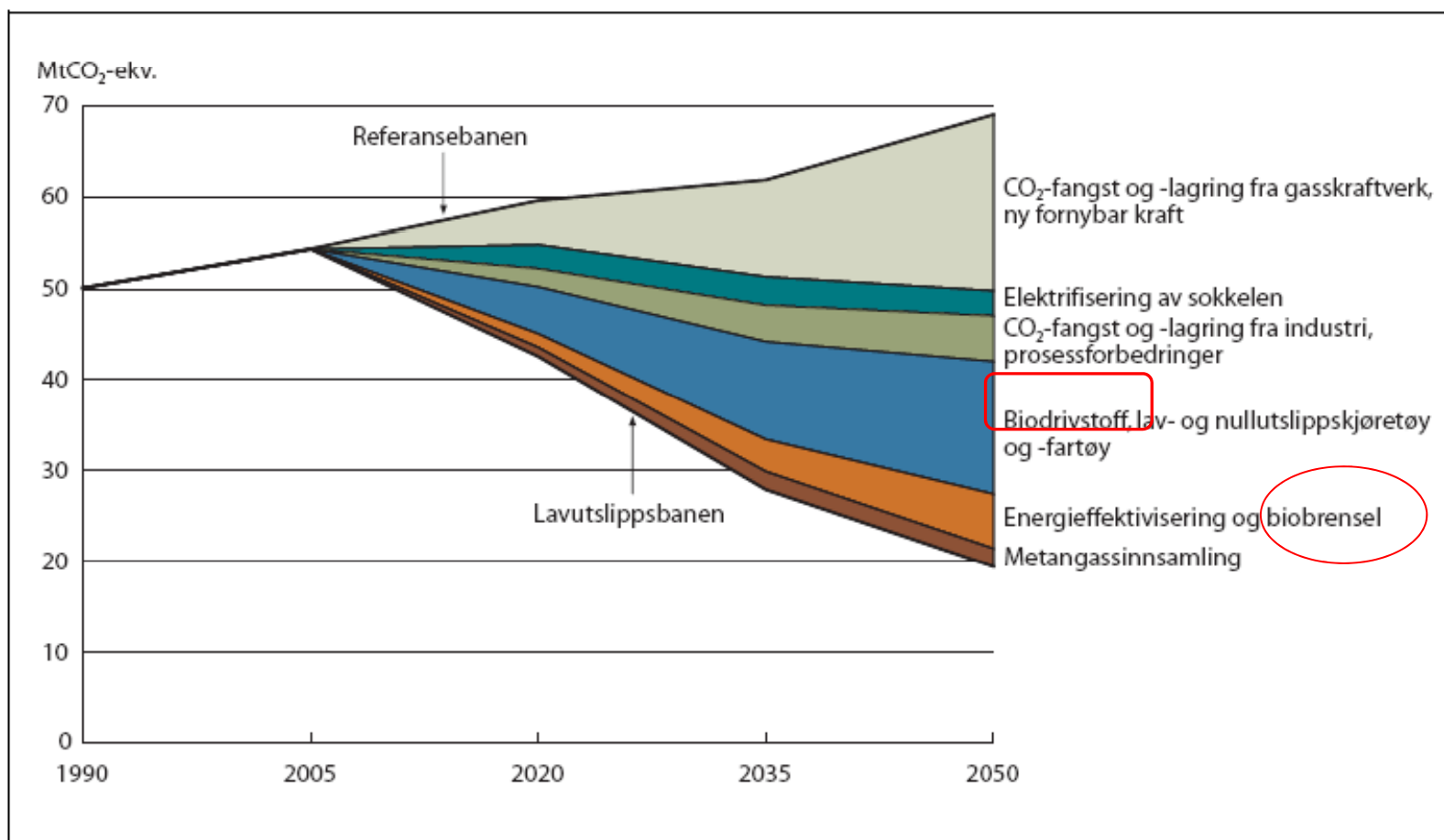


Total end consumption of energy, by energy commodity, incl. non-energy use. 2009. Per cent



The use of bioenergy today is approx 14,5 TWh - or 6% of the total use

# Strategic role for bioenergy



Source: The Norwegian Commission on Low Emissions, 2006.

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

- **Main content in the plan**
  - Main goal: 14 new TWh within 2020
    - Which gives a estimated new level in 2020: 28,5 TWh (in the landbased stationary energy sector).





# The Energy Farm – Center for bioenergy

## The Governments tools:

- Economic support from Enova SF
- Economic support from Innovation Norway
- Bioenergy programs in Dep. of Food & Agriculture
- "Green Energy Municipalities"
- Innovation Norways "Arena Program"
- Economic support from Transnova

**+ Local and regional programs and projects**

Taxation incentives, laws and regulations



Tools and projects – created by  
local and regional initiatives

....supported by governmental  
programs



## Bioenergy Regions in Norway from the eighties and up ...

- Hadeland
- Hedmark and Oppland
- Møre
  
- Østfold
- Agder
- Buskerud/Ringerike



# "BIOREG" - The Bioenergy Region of Hadeland - collaboration on several tasks and fields...



## Kompetanse- og utviklingsregionen

- Bioenergi i teori og praksis
- Informasjon om bioenergi
- Industrilauget
- FoU-programmer
- Studie-programmet
- Bioenergi-guiden
- Brensel- og varmeentreprenører
- Andre lokale bioenergiaktører



## ENERGI GÅRDEN

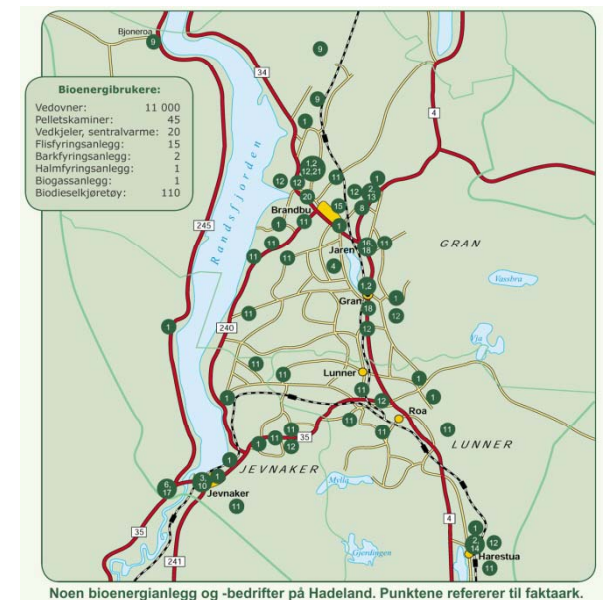
Informasjonssenter for bioenergi



# The Bioenergy region of Hadeland TARGETS

In 2020 the Hadeland region has developed the use of Bioenergy so that the total Energy use is in Balance with the Nature's Sustainability

- Doubling the use of Bioenergy in Hadeland from the year 2003 up to the year of 2015
- Develop further Hadeland's position as a leading region of competence and development of Bioenergy in Norway
- Hadeland, best in coordinating the Bioenergy efforts with Arena Bioenergy Inland





# What has the Hadeland Bio Region achieved in the years 2003 - 2010

## The development of a new business sector:

- Bioenergy fuel production and logistics
- Bioenergy plants
- Suppliers of bioenergy plants and equipment
- Competence suppliers
- Bio fuel (liquid) suppliers and biogas development

## In addition:

- Ensure the forestry and sales of saw mills biproducts
- Vitalize the research and development cooperation
- National Region of bioenergy development and demonstration



# Bio Energy Plants

• Woodchip based Central Heating on farms	15
• Straw based Central Heating on farms	5
• Firewood based Central Heating in homes	35
• Commercial / Public Central Heating	10
• Wood producers, professional	10
• Wood stoves	> 10.000
• Pellet stoves	> 100
• Local Heating system	2
• District Heating system, under construction	2
• Biogas Combined Heat and Power Plant (HRA)	1
• Biodiesel - Company (Habiol)	1
• Biodiesel - cars	100



**more tools...**

## Bioenergy Arena "Innlandet"

**A bioenergy business cluster  
in Hedmark and Oppland**

- Bioenergy companies
- Research and development institutions
- Regional government
  
- Project duration: 2008 – 2010
- Annual budget: 4 mill NOK





# Bioenergy Arena Innlandet

## Business areas and project strategies

### Project management

Cluster development  
and  
networking

Information  
and  
Society

Small scale  
bioheat

Large scale  
bioheat

Bio  
Fuels

Bio  
Waste

Bio  
resources

Innovation  
and  
commercialisation

Competence, education  
and  
R & D



# Bioenergy Arena Innlandet

## Main goals:

- Regional bioenergy business growth
- Increased competence

through:

- Networking – sharing knowledge
- Focus on R&D





Grønne energikommuner

www.klimaviljen.no

# Green Energy Municipalities

## Partnership between:

- Ministry of local Governments and Regional Development
- Ministry of Environment and International Development
- Ministry of Petroleum and Energy
  - and
- The Norwegian Association of Local and Regional Authorities, (KS) (as lead partner)

Green Energy Municipalities



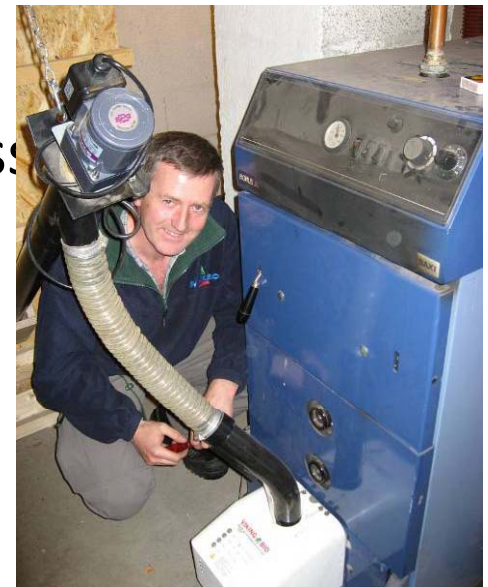
# Target

The target is to commit the Municipalities to

1. Energy Efficiency initiatives
2. Renewable energy use and production, such as Bio energy
3. Take initiatives to reduce Green house emissions

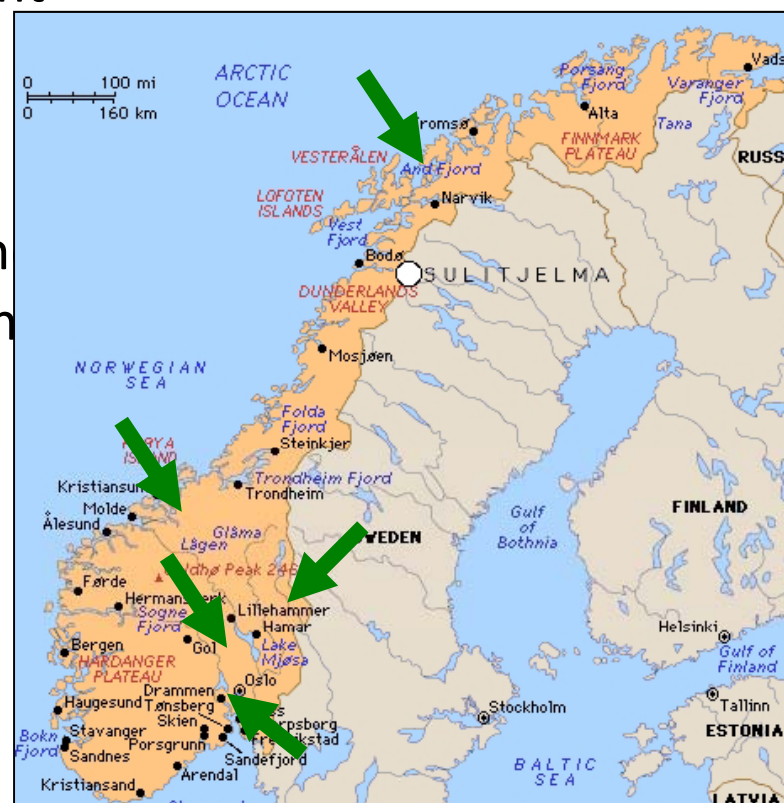
KS 2009

Green Energy Municipalities



## Participants

- 21 municipalities (out of 430) and 1 county (out of 19) participate
- Divided into 5 networks in different parts of the country
- 3 – 5 adviser with different competence of energy, climate and planning issues working close with the municipalities
- Budget € 1 million/ year



**Green Energy Municipalities**

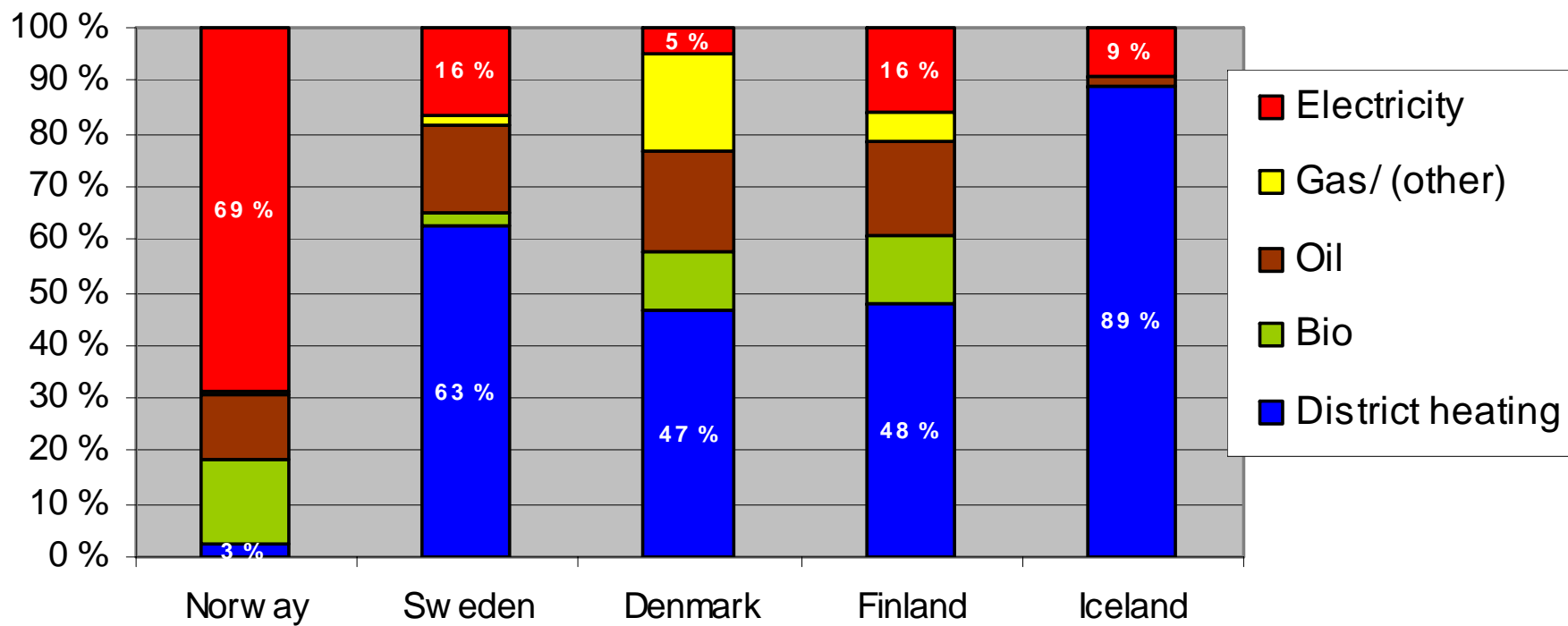


# The market potentials for bioenergy in Norway



# Heating in nordic countries by energy carrier/ source

The bio-heat market



Source: Norsk Bioenergiforening (NoBio)



# More **heat** combined with **power**



The heat marked in Norway must be given political priority to promote a better use of valuable green power.



# Markets for bioheat

- **Fire wood:** **Good profitability**  
**Low potential for further growth**
- **Wood chip, small scale:** **Acceptable profitability**  
**Medium potential for further growth**
- **Wood chip, large scale :** **Low profitability**  
**Large potential**
- **Small scale bioheating:** **Good profitability**  
**Medium potential for further growth**





# Biofuels for transport – Local and national initiatives damaged by national taxes

## Wood/pyrolysis



## Fish oil



## Slaughtery waste



## Vegetable oil



## Used cooking oil





# Bioenergy from agriculture

- **Straw**
- **Biogas**
- **Energy crops**
  - **Salix**
  - **Oil seeds**
- **Organic waste:**
  - **Farming**
  - **Industry**

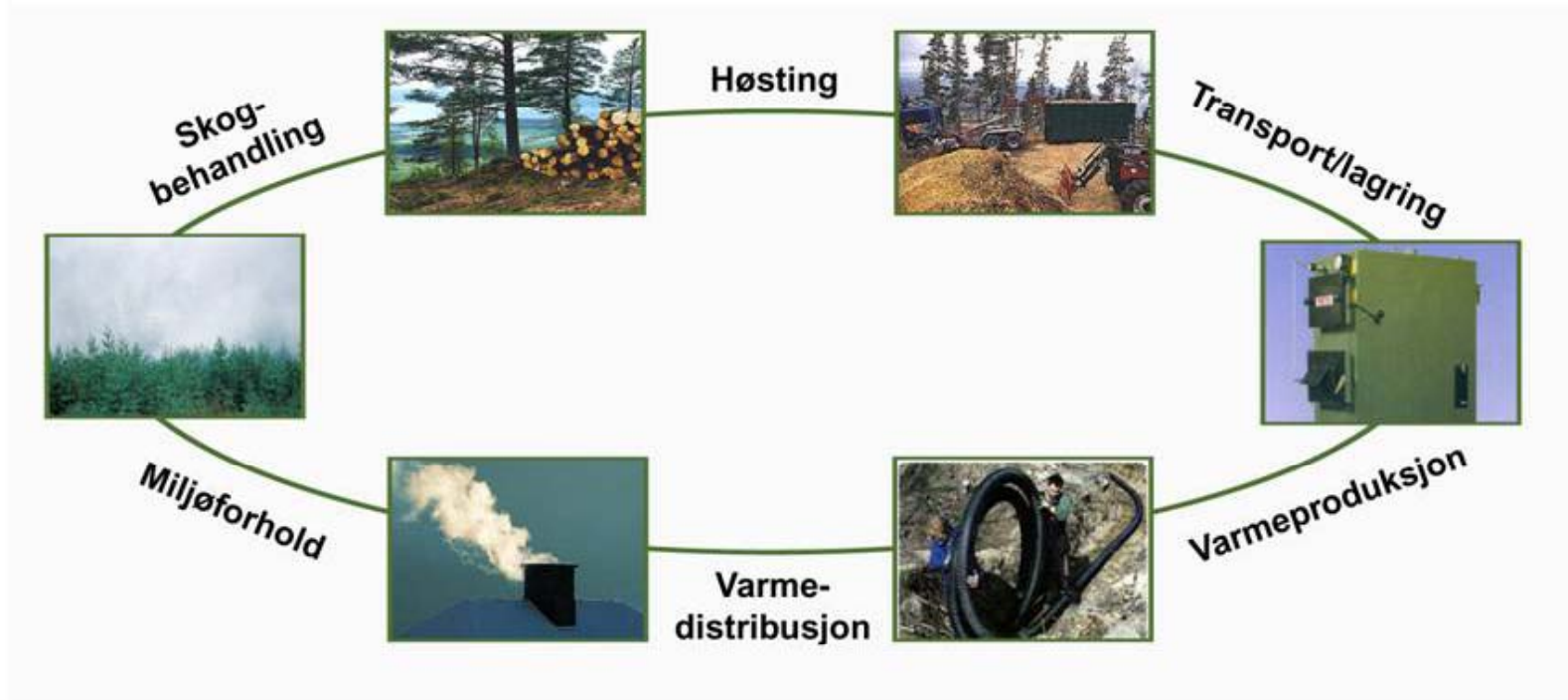




How to increase  
local and regional  
impact on national  
policies and plans

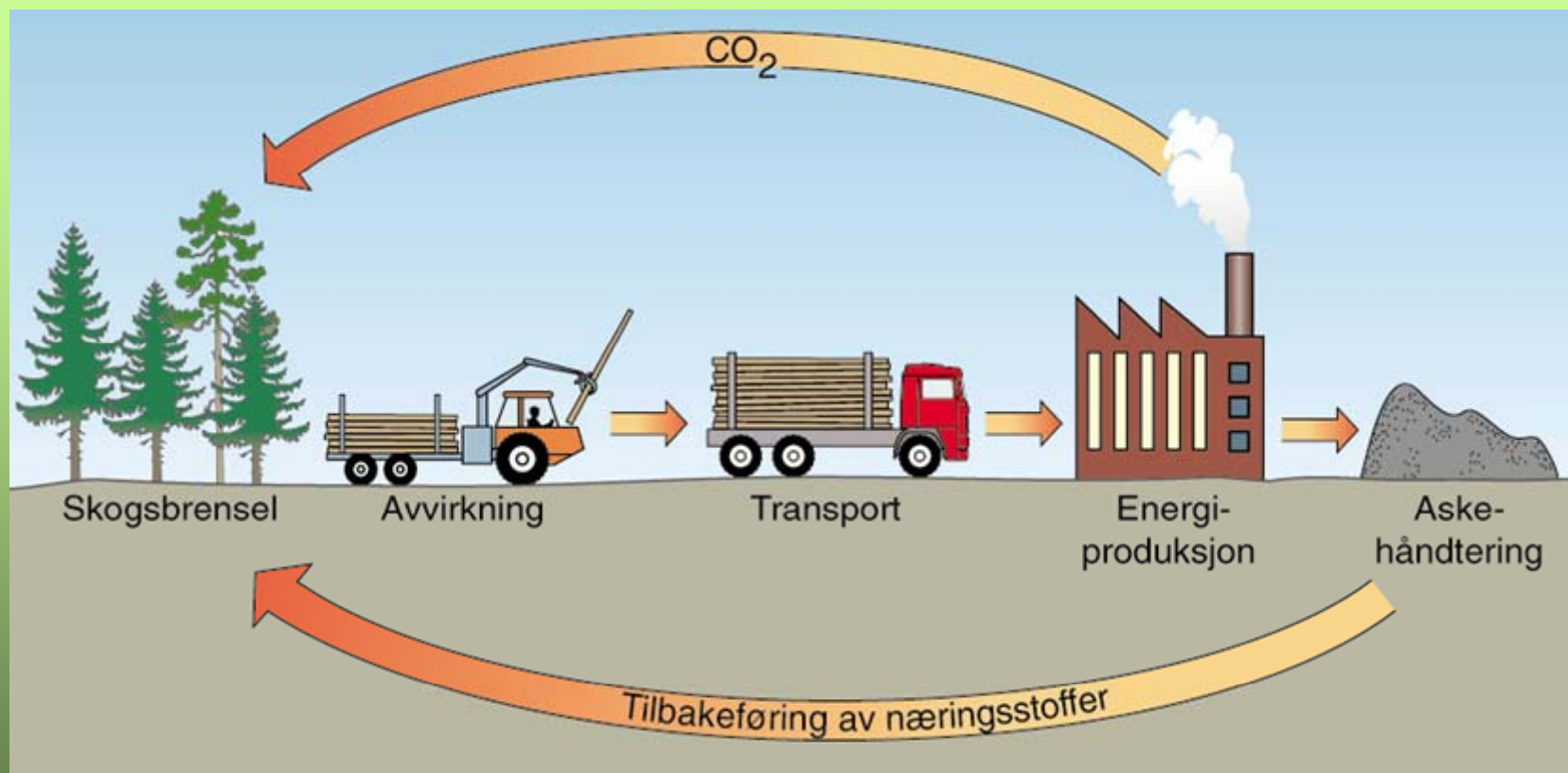
# Inform about the fact that bioenergy creates many new "renewable jobs" in many sectors...

## BIOENERGIKRETSLØPET



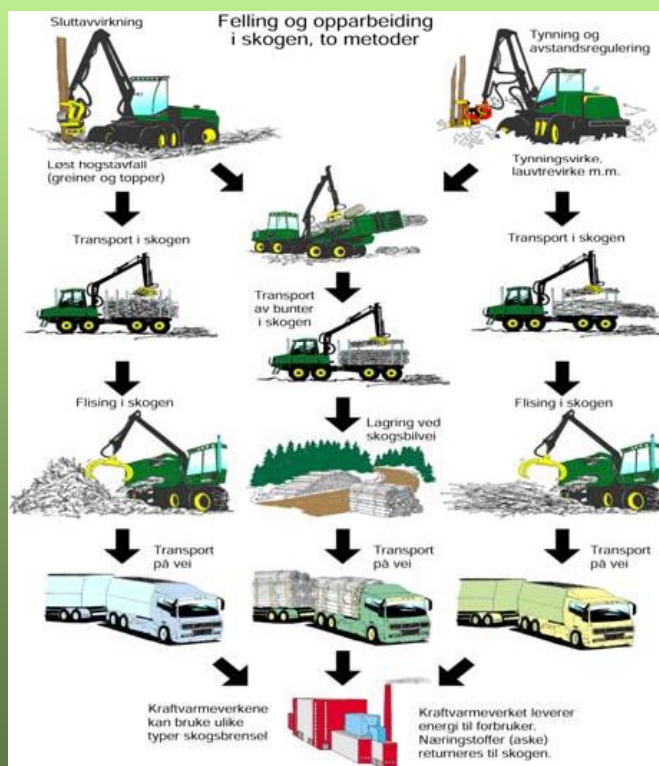


## Inform about bioenergy and the environmental aspect





# The local forestry and agriculture sector incl. the industries must eagerly promote bioenergy in their region





The position of bioenergy in the regional and national energy policies and energy planning

*... is getting stronger because we need more green energy and bioenergy also can create new activities in rural areas*

*--- but the forces who want a slow development are also strong due to Norway's powerful traditional energy sector*



Shaping  
bioenergy  
strategies for  
the future....



Meet and show the politicians and other decision makers what it's all about....





**Thank you  
for your attention**