The roles of Policy
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Bioenergy markets and policies
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Discussion

Reasons to support bioenergy production
Discussion

Reasons not to support bioenergy production
Policy

A policy is a deliberate system of principles to guide decisions and achieve rational outcomes. A policy is a statement of intent, and is implemented as a procedure or protocol. Policies are generally adopted by the Board of or senior governance body within an organization where as procedures or protocols would be developed and adopted by senior executive officers.

Why policy?
Discussion

*Reasons to support bioenergy production*

*Reasons not to support bioenergy production*
The role of Policy
Bioenergy
Bioenergy

bioenergy is this

Energy Mix
Transitions

Natural Science
Technology
Biology
Engineering

Social Science
Economics
Social studies
Policy making
Transitions & Economy

*normal good* or commodity: direct benefit

*public good*: indirect benefit

Properties:

a) *non-rival*. consumption of the good by one individual does not reduce the amount of the good available for consumption by others.

b) *non-excludable*. it is not possible to exclude individuals from the good's consumption

externalities

a) *no directly reflected in the market prices*

b) *non-evitable by whom gets benefit or suffers from its effects*
The role of externalities in forestry

- Changes on climatic conditions in the nearby areas
- Changes on general climatic conditions (CO2 pool)
  CO2 markets? market price CO2 tn?
- Soil conservation
  Soil losses: ~27 EUR/ha yr (in Spain, 1998 prices)
  Potential Risks: ~24 EUR/ha yr (insurance companies est.)
- Water quality: 0.03-0.36 EUR/m³ + 0.06 EUR/m³
- Dams: 2.5-4% profitability investment
- Landscape
- Biodiversity
- ...

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The role of externalities in forestry

Externalities play an important role in forestry

Example: a reforestation *Pinus radiata* plantation

Profitability: 4.5% (normal good)

Profitability including public goods and externalities: 6.18%

plus job generation: 7.13%
How?
Policy related to Bioenergy

- Environmental Policy
- Agricultural Policy
- Energy Policy
Energy Policy

The earlier energy policy goals are oriented towards the creation of alternative technologies and fuels to reduce direct dependency on oil imports from OPEC countries

1980-1990s: Later, polluting effects of fossil fuels (coal) gets relevant
1990s: Acid rain (soil, water and forest health)

Energy Policy EU level

Securing energy supply

Is it relevant?

2005: 50% of the energy of the EU comes from outside the EU

2030: The estimation is 70% from outside the EU
Energy Policy EU level


2001: EU adopts the Directive on the Promotion of Electricity produced from Renewable Energy Sources ('Renewables or 'RES-E” Directive’). The directive sets an EU-wide target of 21% of renewables share in electricity production by 2010.

2003: EU adopts the Biofuels Directive setting "reference values” of 2% market share for biofuels in 2005 and 5.75% share in 2010.


2007: Commission presents "Renewable Energy Roadmap " as part of its "energy-climate change” package.

2008: Directive (…) on the promotion of the use of energy from renewable sources. COM(2008) 19 final


20XX: Later developments. Sustainability of bioenergy?
Climate Policy

The UNFCCC (United Nations Framework Convention on Climate Change)

Internation environmental treaty at Rio 1992

Aims at stabilizing greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system (ie 2C above pre-industrial global average temperature)

Follows by several other conventions (Ex. 2015 Paris agreement)
UNFCCC

• framed set no mandatory limits on greenhouse gas emissions for individual nations
• contained no enforcement provisions
• considered legally non-binding
• Key elements:
  o common but differentiated responsibilities
  o polluter pays principle
The European emissions trading system

- Flexible, market-based mechanism to be a component of environmental policy
- The Directive can be applied to the six greenhouse gases (Kyoto Protocol)
- To all combustion installations with a thermal input greater than 20 MW
- Member State must develop a national allocation plan (NAP)
European Climate Change Programme (ECCP)

Involves initiatives across the energy, transport, and industrial sectors.
Has resulted many directives and mechanisms
- Monitoring and reporting greenhouse gas (GHG) emissions
- Promoting cogeneration of heat and electricity
- Promoting use of renewable energy (GHG gases)
- Promoting use of biofuels for transportation
- Energy efficiency (e.g. new buildings)
Climate and energy package

• In 2008 the EU set the so-called 20-20-20 targets
  o to reduce greenhouse gases by 20% below the 1990 levels,
  o to increase the share of renewable energy to 20%
  o to improve energy efficiency by 20%

• All these targets should be met by the year 2020

- the promotion of energy from renewable sources (wind, solar, aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases)
- mandatory national targets for the overall share of energy from renewable sources in gross final consumption of energy and for the share of energy from renewable sources in transport
- statistical transfers
- joint projects between European Community Member States
- joint projects with third countries

- guarantees of origin
- administrative procedures
- information and training
- access to the electricity grid for energy from renewable sources
- sustainability criteria for biofuels and bioliquids
National renewable energy action plans

- Detailed commitments and roadmaps with interim targets
- Cumulative renewable energy share in gross final consumption will be between 20.2% and 22.4% by 2020
- For several Member States it will only be possible meet the 20% target if they are able to attain a predicted improvement in energy efficiency and associated drop in gross final energy consumption
- Bioenergy would account for almost 54.5% of the overall 2020 renewable energy target
- Solid biomass and forestry biomass in particular will continue to be the major sources for bioenergy
Energy Policy EU level

Summary objectives

1. Secure energy supply
2. Environmental protection
3. Promote competition
Policy objectives: renewable energy

The different policy objectives are implemented and become a “demand” factor stimulating the development of the bioenergy sector.
Policy objectives: sets demand

The different policy objectives are implemented and become a “demand” factor stimulating the development of the bioenergy sector.

Example from the national overall targets for the share of energy from renewable sources in gross final consumption of energy in 2020

(Communication from the Commission - Biomass action plan {SEC(2005) 1573})

Policy related to Bioenergy

Policy

- Environmental Policy
- Agricultural Policy
- Energy Policy
Agricultural Policy EU level

- **Objectives of the CAP (Art. 39)**
  - Increase productivity
  - fair standard of living for the agriculture population
  - guarantee of secure supply of food
  - reasonable retail price to consumers

Art 110: contribute to the harmonious development of world trade by reduction of trading restrictions
Art 130r: environmental protection

### Agricultural Policy EU level

#### Table 2. Examples of rural development measures for biomass and wood mobilisation during the CAP 2007–2013 programming period. B = biomass specific, WM = wood mobilisation in general.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Description</th>
<th>Examples and notes</th>
<th>B</th>
<th>WM</th>
</tr>
</thead>
<tbody>
<tr>
<td>121</td>
<td>Modernisation of agricultural holding</td>
<td>Short rotation coppice for biomass production, mostly with reference to bioenergy production (minor part of total allocate amounts).</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>122</td>
<td>Improving the economic value of forests</td>
<td>Pre-commercial thinning and replacement of low value forest stands.</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>123</td>
<td>Adding value to agricultural and forestry products</td>
<td>For micro-enterprises only: support for harvesting machinery, (portable) sawing mills, and other processing facilities (e.g. woodchip and pellet production).</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>124</td>
<td>Cooperation for development of new products, processes and technologies in the agriculture and food sector and the forestry sector</td>
<td>Initiatives for the substitution of fossil fuels.</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>125</td>
<td>Infrastructure related to the development and adaptation of agriculture and forestry</td>
<td>Building and/or improving forest roads.</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>221</td>
<td>First afforestation of agricultural land</td>
<td>Afforestation for productive or protective purposes.</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>223</td>
<td>First afforestation of non-agricultural land</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>225</td>
<td>Forest-environment payments</td>
<td>Ex-ante or ex-post forestry practices such as vegetation control, thinning, diversification of vegetation structure.</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>226</td>
<td>Restoring forestry production potential and introducing prevention actions</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>227</td>
<td>Non-productive investments</td>
<td>Thinning and pruning to improve the ecological value of forest.</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>311</td>
<td>Diversification into non-agricultural activities</td>
<td>Bioenergy production as one of the possible actions.</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>312</td>
<td>Support for business creation and development</td>
<td>It may cover the processing of forest products, bioenergy production and related actions.</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>321</td>
<td>Basic services for the economy and rural population</td>
<td>Increase of the share of decentralised produced and used heat energy out of biomass.</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

EU Policies and Bioenergy

Box 2. Main EU policies affecting the production and use of energy wood

<table>
<thead>
<tr>
<th>Policy</th>
<th>Description</th>
<th>Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Agricultural Policy and Rural Development Policy</td>
<td>They aim at the competitiveness of the primary sector and at promoting rural development, amongst other things by offering financing opportunities to farmers and forest owners.</td>
<td>Forestry measures and related activities aimed at producing forest energy wood can be directly financed. These policies determine the availability, types and costs of forest woody biomass to the energy sector.</td>
</tr>
<tr>
<td>Directive 2002/91/EC on energy performance of buildings</td>
<td>It promotes energy performance of new and existing buildings, for example by fostering the efficient use of installations like boilers and air-conditioners, and of renewable energies.</td>
<td>It stimulates demand for energy wood, since this is among the energy sources most broadly used for efficient heating technologies like the cogeneration of heat and electricity and district heating.</td>
</tr>
<tr>
<td>EU Emission Trading Scheme (Directive 2003/87/EC)</td>
<td>The core of EU climate change policy – it applies a market system to cost-effectively reduce greenhouse gas emissions. It applies a ‘cap and trade’ system: it imposes a limit to industries’ total emissions, and it allows trading the assigned ‘emission allowances’ which can be used to emit or can be sold on the market.</td>
<td>By putting a price on greenhouse gas emissions, it fosters the substitution of fossil fuels with less carbon-intensive energy sources, therefore strengthening the economic competitiveness of woody biomass and other renewable energy sources.</td>
</tr>
<tr>
<td>Renewable Energies Directive (Directive 2009/28/EC) and Biofuels Directive (Directive 2003/30/EC)</td>
<td>By establishing individual legally binding targets for the share of renewable energies consumed in the various EU Member States, they promote an increased use of renewable energy sources for all energy sectors and in particular for the transport sector.</td>
<td>They force EU Member States to increase the use of wood and other renewable energy sources to reach the mandatory targets.</td>
</tr>
</tbody>
</table>

The data were collected and analysed within the project COOL (COmpeting uses Of forest Land; www.cool-project.org), Author: Francesca Ferranti.
National Policies and Bioenergy

Policies on harvesting practices
   Branches, leaves, machinery…

Forest and environmental policy
   Sustainability

General Recommendations
   Needles left
   Trees environmental or landscape value
   Dead wood or tree tops from broadleaves
   Forest residues proportions
   Damage on soil controlled
   Insect damages
National Policies and Bioenergy

Regulating forest fuel harvesting


Figure 7.1-1. Stages of forest fuel production and related policy areas.