CO2-system in the Dutch greenhouse horticulture

PRIMAFF international symposium

Mrs. Jolanda Mourits
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Context
- introduction Dutch Greenhouse Horticulture
- Program ‘Greenhouse as a Source of Energy’

CO2-settlement system Dutch greenhouse horticulture
- Basic principle
- Why?
- Project
- Advantages
- Legislation
- Implementation
- Planning
Context: Holland

General
- Small country (41.528 km²)
- with a moderate climate
- 16.4 million people

Economy
- An open market economy with an international orientation
- High level financial and professional services
- Transit sector that plays a key role on an international level
Context: Dutch greenhouse horticulture

- 6000 production facilities
- 10,000 ha:
  - 4600 ha of vegetables
  - 2700 ha of cutflowers
  - 1500 ha of pot- and bedding plants

- Turnover € 5.2 billion
- Most of the products are exported
- Contribution to the surplus of Dutch trade balance = € 6 billion = 7%

*Greenhouse horticulture is important for the Dutch economy!*
Context: Dutch greenhouse horticulture

<table>
<thead>
<tr>
<th>Natural gas consumption</th>
<th>4 billion m³ = 9 % total Dutch gas consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costs of Energy</td>
<td>20 – 25 % of total production costs</td>
</tr>
<tr>
<td>Energy-efficiency</td>
<td>1990: 100 %</td>
</tr>
<tr>
<td>improvement</td>
<td>2009: 47 %</td>
</tr>
<tr>
<td>Electricity production</td>
<td>10 % of the national production</td>
</tr>
<tr>
<td>CO₂-emission overall</td>
<td>7 Mton (102% 1990)</td>
</tr>
<tr>
<td>of which</td>
<td></td>
</tr>
<tr>
<td>CO₂-emission for</td>
<td>5.3 Mton (77% 1990)</td>
</tr>
<tr>
<td>cultivation</td>
<td></td>
</tr>
</tbody>
</table>

Source: LEI-WUR, 2010
Context: Why Energy Transition?

- Cost price reduction of energy
- Security of supply
- License to produce / global warming
- Market demand
- Independence of fossil fuels
Program: Greenhouse as a Source of Energy

Innovation- and action program

**Ambition:**
by 2020 new greenhouses with zero CO2 emission & energy neutral on an economic base

**Goals for 2020:**
- a 48 % reduction CO2 emission compared to 1990
- Improvement of E-efficiency with a 2 % per year
- Share of 20 % renewable energy
Program Greenhouse as a Source of Energy

Initiative of:
- The Horticultural Product Board
- The growers organisation
- Department of Economic Affairs, Agriculture & Innovation

= private/public partnership!

In cooperation with:
- Research institutes, energy consultants, suppliers, growers etc
One integral approach leading to:

7 strategies and goals for 2015 and 2020

=> There is not one solution!
Integral approach

Exploration

Research & Innovation projects (R&D)

Monitoring & Evaluation

Demonstration projects

Legislation & Licenses

Communication
Policy instruments

- Research and communication program
- Subsidy:
  - Innovation investments
  - Demonstration projects
- Tax reduction on sustainable investments
- Laws and regulations *e.g.* CO₂ system
- Adjust licenses
- Guarantees *e.g.* for geothermal projects (risk reduction)
- CO₂-footprint method
### CO₂-settlement system: the basics

<table>
<thead>
<tr>
<th>Sector</th>
<th>CO₂-cap for the entire greenhouse horticulture sector guaranteed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pays</td>
<td>CO₂-emission &gt; CO₂-cap =&gt; malus</td>
</tr>
<tr>
<td>Receives</td>
<td>CO₂-emission &lt; CO₂-cap =&gt; bonus</td>
</tr>
</tbody>
</table>

Division over the **individual enterprises** incentive
CO$_2$-settlement system: why?

Conclusion 2005-2006:
long-term agreement on energy efficiency
Energy limit values in GJ/m$^2$ per cultivation

Alternatives – environmental law?
• Individual licenses
• General administrative order:
  compulsory investments with paybacktime $\leq$ 5 year
• CO$_2$-emission trading
CO-system: project

2006 start of the exploration of a specific CO$_2$-system suitable for 6000 relatively small energy-intensive greenhouse horticulture enterprises

**Project partners:**
- Horticultural Product Board (public sector organisation)
- Growers organisation
- Department of Infrastructure & Environment
- Department of Economic Affairs, Agriculture & Innovation

In 2007 the growers agreed to switch in 2011 to the sector CO$_2$-system
## CO₂-system: advantages

<table>
<thead>
<tr>
<th>Government</th>
<th>Sector and enterprises</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cap =&gt; Certainty about the sectoral CO₂-emissions</td>
<td>Reduced energy tax (€ 100 mnl/year)</td>
</tr>
<tr>
<td>Ambitious CO₂-target</td>
<td>flexibility</td>
</tr>
<tr>
<td>Innovation incentive</td>
<td>Cost effective</td>
</tr>
<tr>
<td>Limited implementation costs</td>
<td>Limited implementation costs and administrative burdens</td>
</tr>
<tr>
<td>Effective enforcement</td>
<td>Malus and bonus</td>
</tr>
<tr>
<td>Sector support</td>
<td>Opt out EU-ETS system</td>
</tr>
</tbody>
</table>
Environmental law:
• Obliges greenhouse horticulture enterprises to participate in the sector CO₂-system
• The possibility to order a public organisation to implement the system

General administrative order:
• CO₂-cap for the entire sector
• Business categories
• Method of calculation for the division of the sector costs or benefits to the individual enterprises
• the Horticultural Product Board is ordered to implement the CO₂-system

Regulation of the horticultural Product Board:
• Details about the registration, monitoring, annual CO₂-declaration
**CO₂ system implementation**

**Business categories involved:**
all enterprises except EU-ETS:
  - **A-regime:** annual CO₂-emission > 305 ton CO₂
  - **B-regime:** annual CO₂-emission < 305 ton CO₂

- **B-regime enterprises**
  (50% emitting 5% of the CO₂-emission):
    - Only registration

- **A-regime enterprises +**:
  - Individual annual CO₂-declaration based on the energy bills
  - Cheque by the Product Board, no external verification
CO₂ system implementation

- Individual CO₂-emission report debit or credit
- Total CO₂-emission report debit or credit

Horticultural Product Board

Government
CO$_2$ system implementation

**Enforcement** in case growers don’t respond:

- Reminder
- Visit of the enterprise
- Penalty
- Product Board determines the CO$_2$-emission of the enterprise
Implementation in 2 phases:

**2011-2012: start with a simple system:**
- Only sector costs (malus), no benefits (bonus)
- Division of the sector costs to the individual enterprises according to the share of the enterprises energy use in the entire sector energy use (small incentive)

**2013-2020: more sophisticated system:**
- Sector costs (malus) and sector benefits (bonus)
- Sophisticated division => greater incentive: enterprises with relatively low CO₂-emissions are rewarded, enterprises with relatively high emissions will pay

=> CO₂-emission reduction is worth money!
## CO₂-system: planning

### simple CO₂-system 2011-2012

<table>
<thead>
<tr>
<th>Year</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>Pilot (November 2010 – February 2011)</td>
</tr>
<tr>
<td>2011</td>
<td>April: start, registration and determination regime A or B</td>
</tr>
<tr>
<td>2012</td>
<td>CO₂-declaration individual enterprise over 2011</td>
</tr>
</tbody>
</table>
| 2013 | CO₂-declaration individual enterprise over 2012  
Reckoning for 2011+2012 at once |

### sophisticated CO₂-system 2013-2020

<table>
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<th>Year</th>
<th>Description</th>
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</table>
| 2011 | Work out sophisticated division (state-aid)  
Work out bonus system (state-aid, government funding)  
Adjust legislation and regulation |
| 2013 | Negotiation CO₂-cap 2013-2020  
Start |
A simple, cost effective CO$_2$-system for *small energy-intensive enterprises* including an *incentive for innovation* is possible!
Thanks for your attention

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