

CO₂-system in the Dutch greenhouse horticulture

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Ministry of Economic Affairs,
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- Program ‘Greenhouse as a Source of Energy’

CO₂-settlement system Dutch greenhouse horticulture

- Basic principle
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- 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%

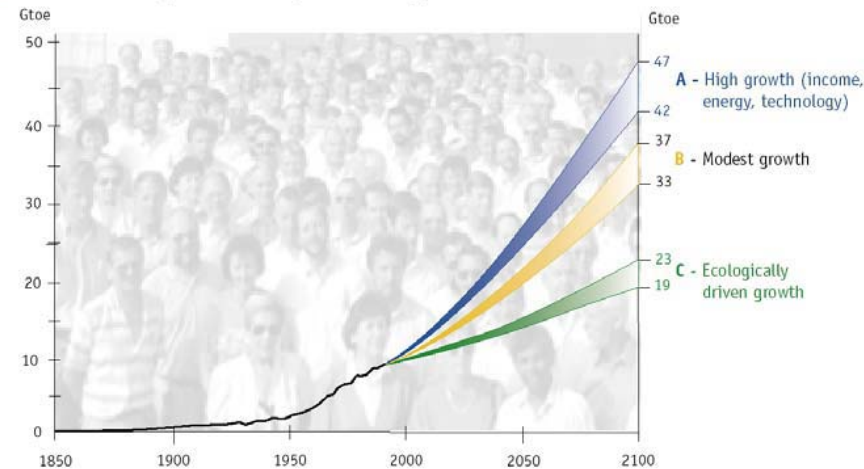
Greenhouse horticulture is important for the Dutch economy!



Context: Dutch greenhouse horticulture

| | |
|--|---|
| Natural gas consumption | 4 billion m ³ = 9 % total Dutch gas consumption |
| Costs of Energy | 20 – 25 % of total production costs |
| Energy-efficiency improvement | 1990: 100 % 2009: 47 % |
| Electricity production | 10 % of the national production |
| CO ₂ -emission overall of which CO ₂ -emission for cultivation | 7 Mton (102% 1990) 5,3 Mton (77% 1990) |

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 Partners

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

Energy saving



Low energy cultivation

Light

renewable energy



Solar-energy

Geothermal

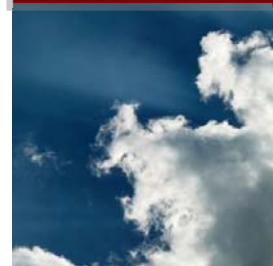
Biofuels
(bio-CHP)

Efficiency



Sustainable
Electricity

CO₂



Sustainable
CO₂

=> There is not one solution!

Integral approach



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

CO₂-cap for
the entire greenhouse horticulture **sector**

| | |
|----------|---|
| Sector | <i>guaranteed</i> |
| Pays | CO ₂ -emission > CO ₂ -cap => malus |
| Receives | CO ₂ -emission < CO ₂ -cap => bonus |

Division over the **individual enterprises** *incentive*

CO₂-settlement system: why?

Conclusion 2005-2006:

long-term agreement on energy efficiency

Energy limit values in GJ/m² per cultivation



Alternatives – environmental law?

- Individual licenses
- General administrative order:
compulsary investments with paybacktime ≤ 5 year
- CO₂-emission trading



CO-system: project

2006 start of the exploration of a specific CO₂-system
suitable for
6000 relatively small energy-intensive greenhouse horticulture enterprises

Projectpartners:

- 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 CO₂-system

CO₂-system: advantages

| Government | Sector and enterprises |
|--|---|
| Cap => Certainty about the sectoral CO ₂ -emissions | Reduced energy tax (€ 100 mnl/year) |
| Ambitious CO ₂ -target | flexibility |
| Innovation incentive | Cost effective |
| Limited implementation costs | Limited implementation costs and administrative burdens |
| Effective enforcement | Malus and bonus |
| Sector support | Opt out EU-ETS system |

CO₂-system: legislation

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**

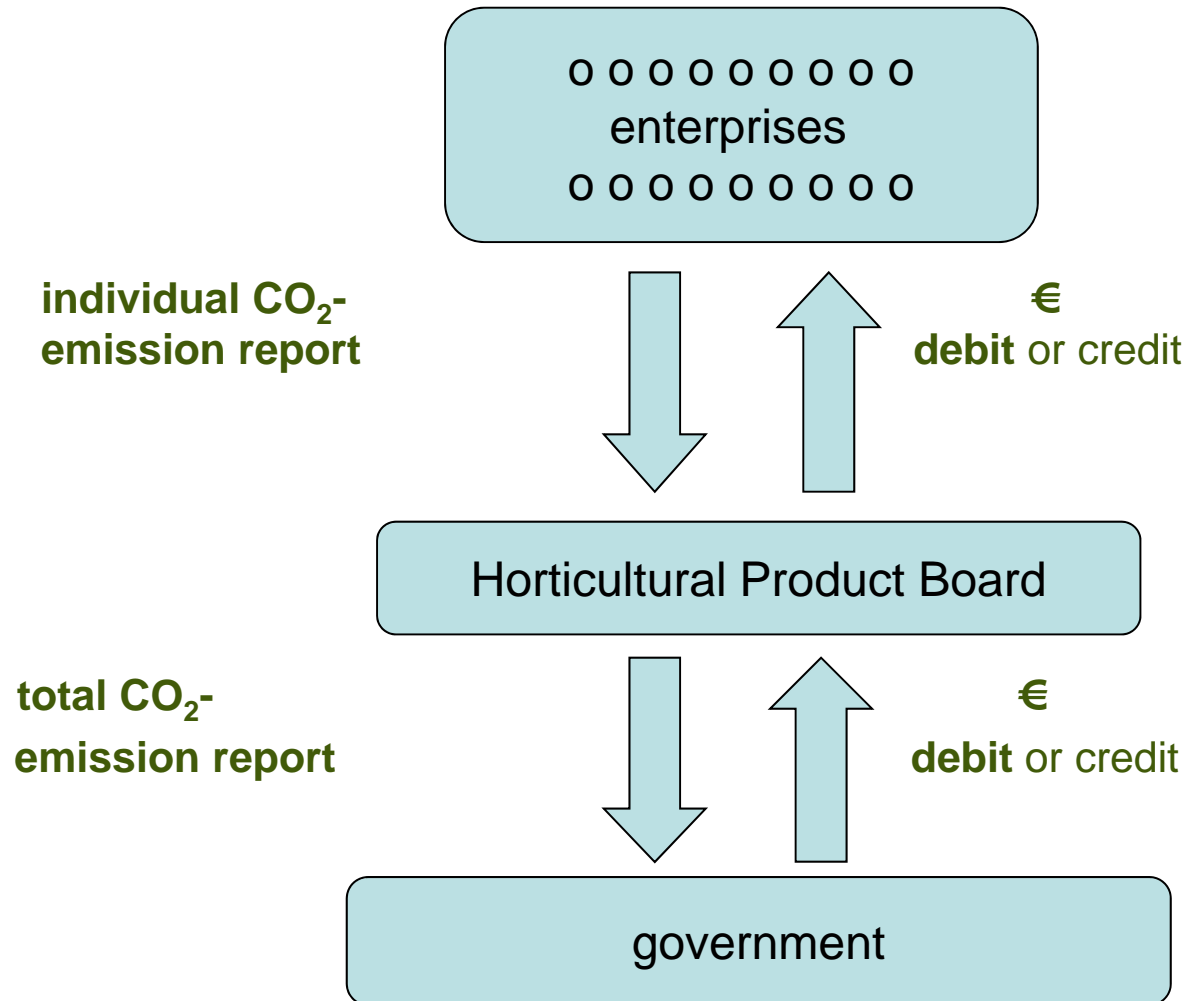
(50% emitting 5% of the CO₂-emission):

- 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



CO₂ system implementation

Enforcement in case growers don't respond:

- Reminder
- Visit of the enterprise
- Penalty
- Product Board determines the CO₂-emission of the enterprise

CO₂ system implementation

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 | |
|--|---|
| 2010 | Pilot (november 2010 – february 2011) |
| 2011 | April: start, registration and determination regime A or B |
| 2012 | CO ₂ -declaration individual enterprise over 2011 |
| 2013 | CO ₂ -declaration individual enterprise over 2012 Reckoning for 2011+2012 at once |
| sophisticated CO₂-system 2013-2020 | |
| 2011 | Work out sophisticated division (state-aid) |
| | Work out bonus system (state-aid, government funding) |
| | Adjust legislation and regulation |
| | Negotiation CO ₂ -cap 2013-2020 |
| 2013 | Start |

Conclusion

A simple, cost effective CO₂-system

for small energy-intensive enterprises

including an incentive for innovation

is possible!



Thanks for your attention

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