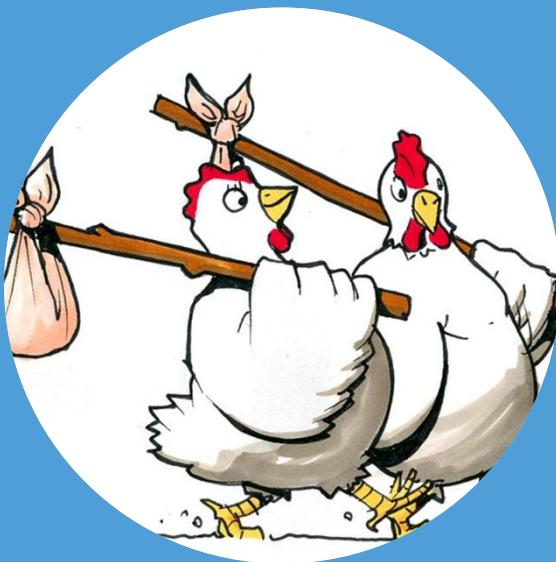


Global competitiveness, lessons learned from the last 10 years

Drivers and issues for the future

Ferry Leenstra, Peter Groot Koerkamp, Peter van Horne and Geert van der Peet



The Netherlands: small country

World's 2nd exporter of agricultural products

Major exporter of agricultural knowledge

Densely populated with people and poultry (livestock)

40.000km², 16.7 million people

N/km²

	People	Poultry	Pigs	Cattle
USA	31.9	212.4	6.3	10
NL	212.4	2000	275	95

NL: as a whole 'urban agriculture'

Kind of societal experimental situation

Egg production, welfare & environment

- 80-ies: introduction of aviary systems
- 1984 onwards: increasing regulations on manure production and disposal; 1994 regulations to reduce NH3 emission
- 1999: EU, traditional cages banned by 2012
- 2003: Avian Influenza, many farms shifted to aviaries and free range
- 2004: cage eggs 'voluntarily' banned from supermarkets
- 2007: specific regulations on dust emission
- 2007: tax benefits for higher levels of welfare & environmental protection
- 2009: ban on enriched cages by 2021

Continuous media attention for alleged 'abuses'

Egg production in The Netherlands (2010)

33.7 million laying hens
1126 farms
40% cage (2002: 74%)
44% barn
13% free range
3% organic

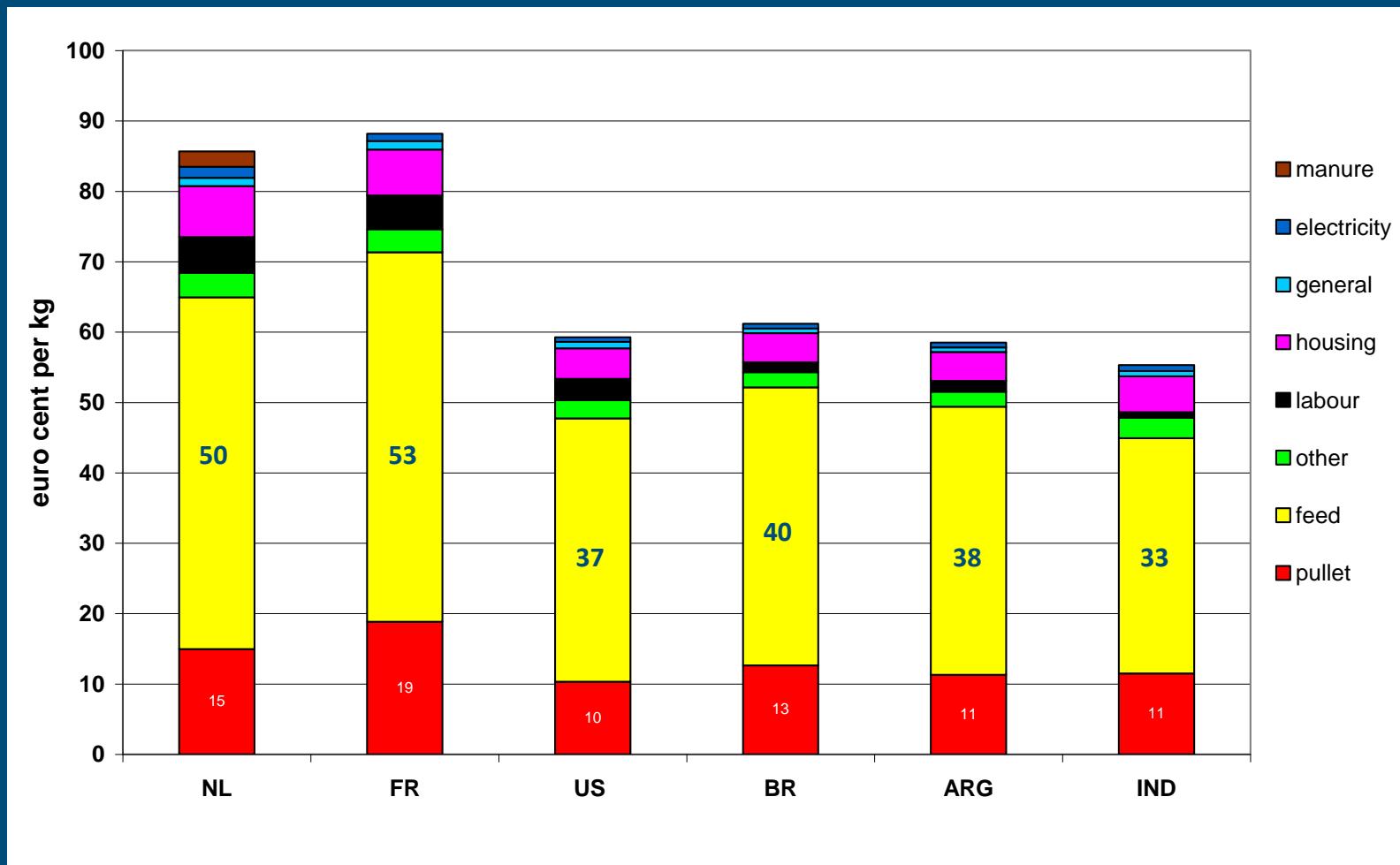
	Billion
Total production	10.1
Import	2.8
Export	9.8

Table eggs:
EU (79% Germany)

Egg products:
liquid EU
powdered world market

Independent family farms
2012: 10-20% of the hens (10% farms) colony cages

Production cost eggs in 2008 (cages), farm level (€ct/kg)



Housing systems ecology and economy

	Battery	Barn	Aviary	Free range
GWP	2235	2685	2666	2740
Acidifying potential	16.3	52.1	28.5	30.1
Gross margin/hen	2.16	3.23	3.23	5.14
Price/egg (euroct)	4.5	5.4	5.4	6.3



Increased perception of welfare

Egg prices and consumers

■ Table eggs

'One buys eggs because there are only a few left in the fridge'

Egg consumption ~ independent of price

If choice available: majority of consumers take the cheaper ones

Retail (which eggs are on the shelf) is determining factor

■ Egg products

Table egg production ~ 25-30% egg products

B2B-market, constant and reliable quality + price

Sustainability of animal production and the public

North western part of EU

- **Importance of animal welfare beyond discussion and incorporated in consumers behaviour**
- **Animal welfare organisations and retail cooperate to market products with higher welfare levels**
- **Market for higher welfare products is developing, more difficult for environment friendly**
- **Effects of animal production on global warming: mainly action groups**
- **Effects of animal production on human health and neighbourhood: issue of civil groups and (local) authorities**
- **Citizen/Consumer attitude: 'should be arranged beyond doubt'**

Market driven rather than minimal production costs

- Dutch poultry farmers invested in aviaries, not in (colony) cages in spite of legal possibilities and differences in production costs
- Performance aviary systems is still improving, gap with cages (production and environmental issues) becomes smaller
- Many inventions in nutrition, equipment, lighting, manure and climate management and genotypes, often in cooperation between farmers, industry and research institutes
- Knowledge as export product

Trends

- **Increasing consumption of animal products (with and without decreasing consumption in rich countries)**
- **Increasing volatility in feed (food) prices**
- **Increasing wealth worldwide (increasing attention for animal welfare among consumers)**
- **Increasing awareness and activity among action groups on environmental issues**
- **Increasing (political) pressure on animal and environment friendly production**
- **More margin with increasing product diversity**
- **Focus on margin and diversification; not only on cost price**

Research on housing and production systems

**Research on specific aspects of production systems,
f.i. welfare, manure handling, dust**

- EU: Laywell (welfare comparison different systems)
- EU: Welfare Quality
- NL: Feather pecking, mutilations (beak treatment)
- NL: Manure handling, ammonia and dust emission

**Need for diversification in production systems
Housing, but also f.i. electricity from poultry manure**

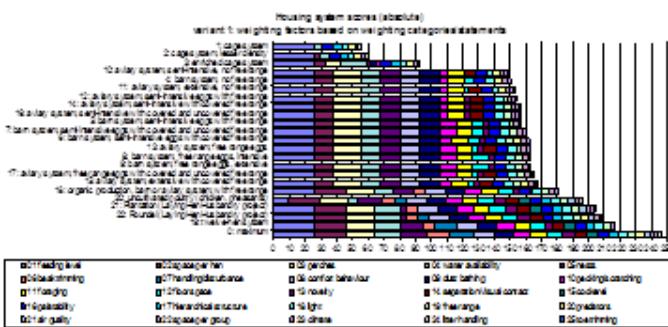


Reflexive Interactive Design (RIO), aimed at new production systems

- **Holistic approach: PPP**
- **System analysis: societal issues and wicked links (structural causes of sustainability issues) included**
- **Reflexivity on current standards and practices**
- **Interaction with all stakeholders**
- **Structured design as method:**
 - **To synthesize needs of all involved and overcome wicked links**
 - **Design as a vehicle for process of communication & change**

Key innovative elements of design concepts

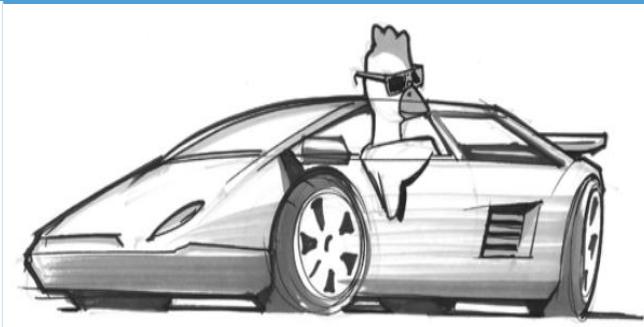
- **Space requirements based on ethological needs (2200 cm²/hen)**
- **Functional differentiation in layout of system**
- **Centred on foraging**
- **Outdoor integrated element of system (solution for disease risks)**
- **Designs fit specific submarkets of consumers**
- **Designs show how laying hen systems may be 'sexy'**



Welfare model



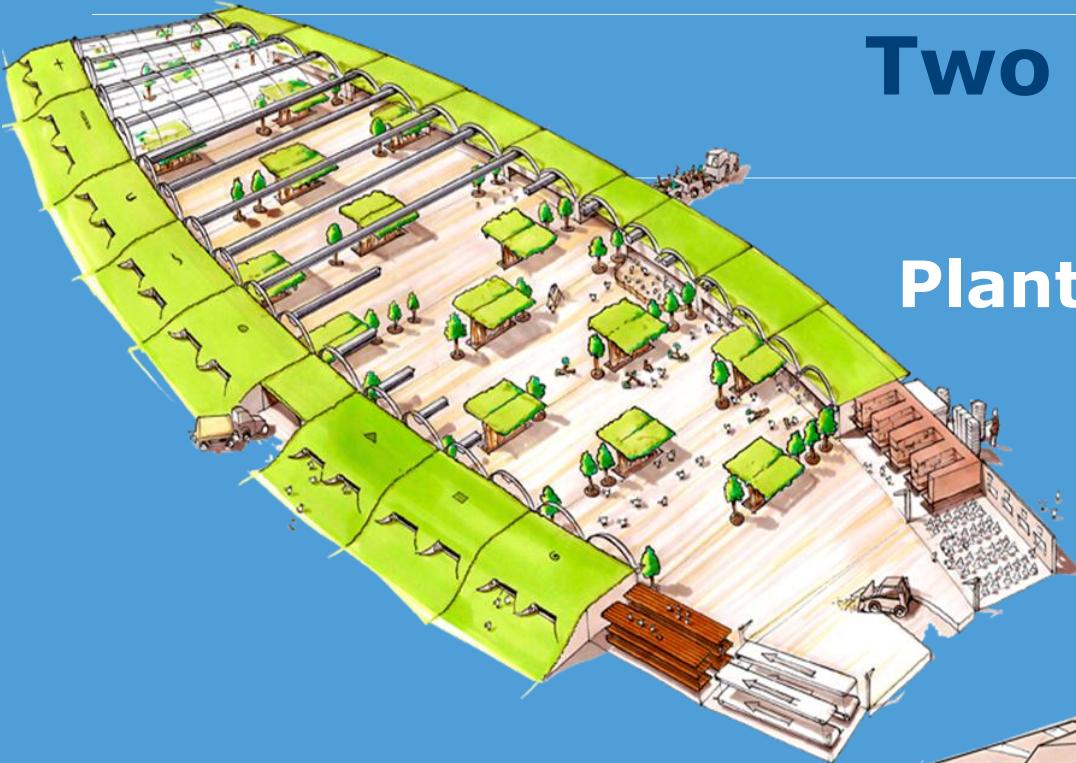
Traditional bourgeois



Cosmopolitan

Two concepts

Plantation



Roundel



Lankerenhof (organic, 6000 hens/house)

inspired by Plantation, www.lankerenhof.nl

Lots of daylight, adapted aviary design, separation of functional areas, open sided walls for outside access, automatic grain supply





The Roundel (daughter company of Vencomatic)



30.000 birds
6.5 hens/m²
No beak trimming
Night area: aviary
Daylight, access to covered area with artificial grass
Outer ring wooded fringe
Meeting & visitor facilities
Eggs sold by AH (AHOLD)



Performance Roundel

**First flock: performance according to standard
(Lohmann Brown Lite)**

Second flock: no beak trimming

**Second farm: no beak treatment, mortality at 40 wk
1.2%**

Roundel as 'brand' and complete system exported

**Welfare judgement: highest standard (at least
organic)**



Realization of RIO-ideas

- **System analysis identifies stakeholders (animals included), their needs (briefs of requirements) and their relations + important issues, wicked links,**
- **In 'out of the box' group sessions with mixed composition inspiring ideas (attractors) and concepts are formulated**
- **Interested stakeholders form new combinations**
- **Inspiring ideas and concepts are adapted and realized**
- **Research has a role as 'matchmaker' and 'lubricator' (new parties, licences, subsidies, ..)**
- **New (financial) constructions and specific licencing (brave local authorities) are necessary**

Some lessons learned

- **Global competitiveness is the result of inherent culture and of pressure to find new solutions**
- **All current systems for egg production neglect one or more sustainability issues**
- **Existing structures are a barrier for new developments**
- **The Netherlands is a societal experiment: many people and animals on a small surface; laboratory for future situations worldwide**
- **Dutch industry and farmers integrate licence to produce and transition from NIMBY to PIMBY**
- **New combinations of stakeholders and out of the box thinking can be constructed and yield new solutions**
- **Variation in systems more likely than a dominant one**
- **Don't be obsessed by costs, its about margin**

Thank you for your attention



Remarks, questions?