

Moral complexity in agriculture

insights from social systems theory and business ethics

(or how a theory crush, an excursion to the British countryside
and a book from my great aunt led to a paper)

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The origin of the paper



The origin of the paper

Systems Research and Behavioral Science

Syst. Res. **31**, 14–22 (2014)

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(wileyonlinelibrary.com) DOI: 10.1002/sres.2146

■ *Research Paper*

The Complexity–Sustainability Trade-Off in Niklas Luhmann’s Social Systems Theory

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Leibniz Institute of Agricultural Development in Central and Eastern Europe, Halle, Saale Germany

Niklas Luhmann



- German sociologist (1927-1998)
- Social systems theory
- Society consists of (sub)systems
- System and their sensitivity to the complex (social and natural) environment
- Reduce complexity to allow for human action

Complexity – Sustainability Trade-off

1. Complexity reduction

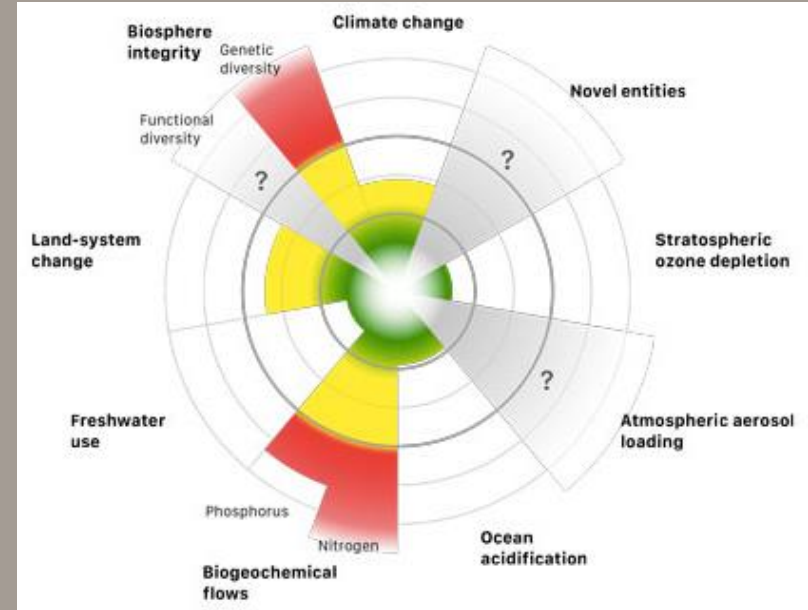
- Systems increase internal complexity → **insensitive** to complexity of the environment (reduce complexity)

2. Critical dependence

- Increasing complexity → growing **dependence** on environment (which makes the continuation of their autopoiesis increasingly unlikely)

Applicable to ... (everything)

Economy and society's maladaptation to the environment



Planetary boundaries (Steffen et al. 2015)

#THEORIST CRUSH TUESDAY

EXPLORING THE SCHOLARS
WHO MAKE OUR HEARTS SKIP A
BEAT



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100years
1918 — 2018

Journal of Agricultural and Environmental Ethics
<https://doi.org/10.1007/s10806-019-09782-3>

ARTICLES



The Moral Complexity of Agriculture: A Challenge for Corporate Social Responsibility

Evelien M. de Olde¹  · Vladislav Valentinov²

Complexity – sustainability trade-off (CST) in agriculture



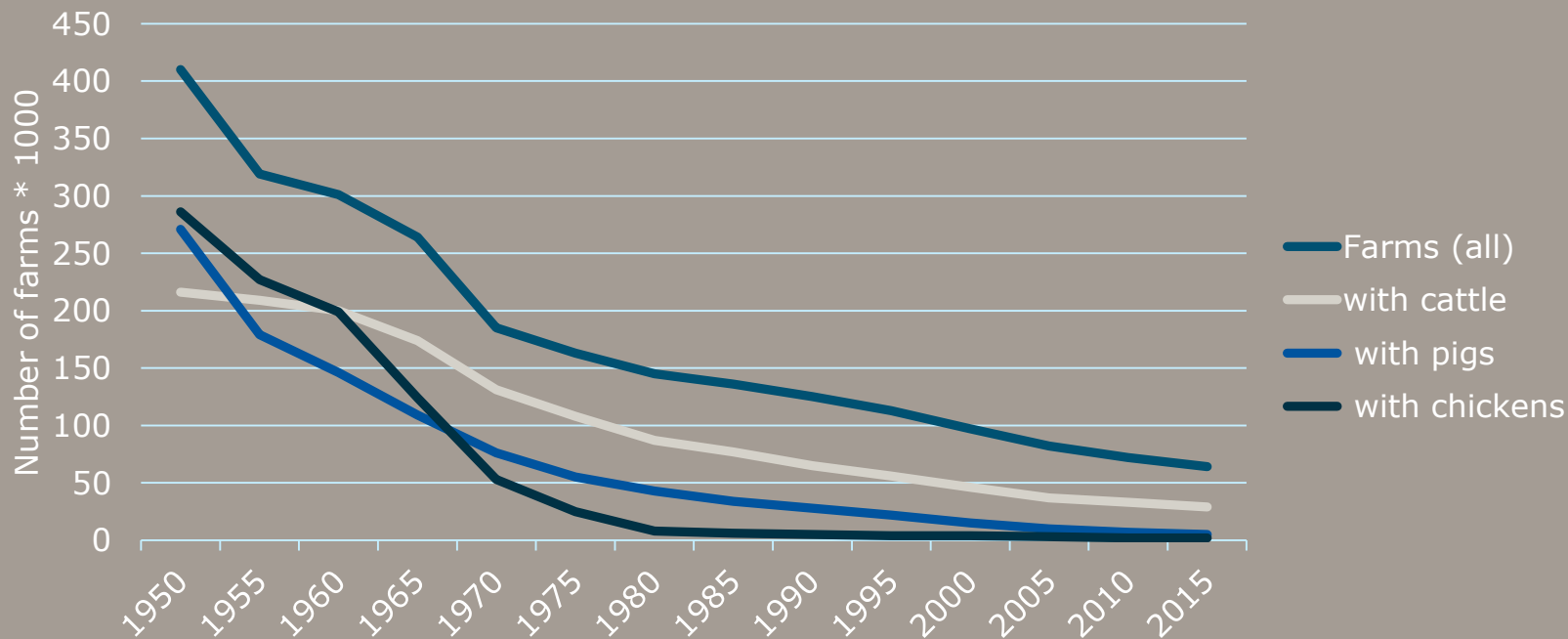
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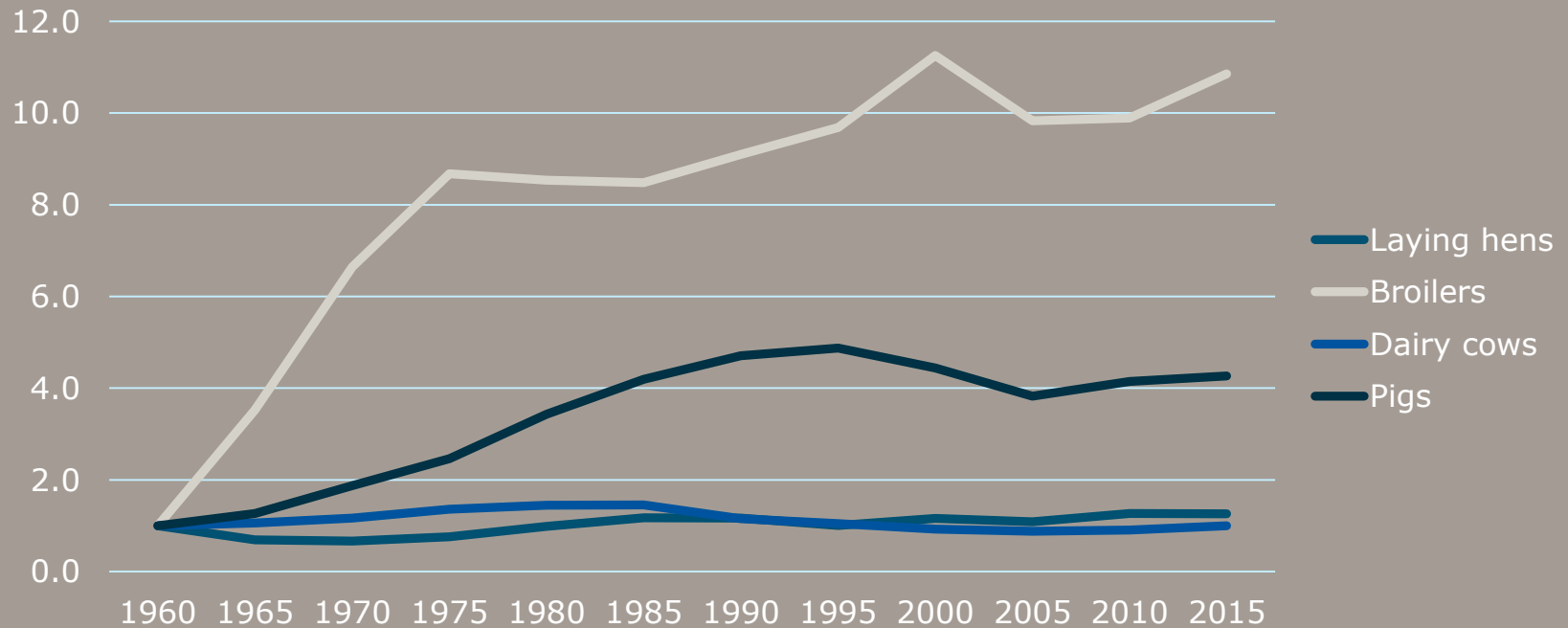
CST in agriculture

- Modernisation of agriculture
 - Specialisation (sector and market)
 - Upscaling
 - Optimisation (labour, land, animals)
 - Intensification
 - Mechanisation

Reduction of farms & specialisation (NL)



Livestock numbers increased (1960 = 1)



Intensification in Dutch dairy farming

Year	1950	2000	2015
Dairy cows	1.5 million	1.5 million	1.6 million
Milk delivered to factory	83%	96%	97%
Dairy cows per farm	13 (cattle)	51	89
Milk production	± 4000 l	± 7500 l	8200 l
Land	± 6 ha	38 ha	55 ha
Labour (ft)		2	2.1
Labour / cow		29	43
Grazing		90%	65%

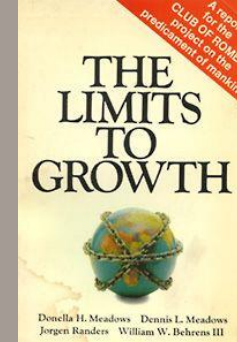


Modernisation of agriculture

- Increased internal complexity

1. Reduced sensitivity to the environment

- Environmental externalities
 - GHG, land, water, biodiversity, nutrients



NL:
- Nature protection law
- Flora and fauna law

EU:
- Council Directive:
natural habitats and
wild flora and fauna

NL:
- Law on water

NL:
- Directive on soil protection

NL:
National Spatial Strategy,
Reconstruction law

NL:
- Decree & regulation
ammonia emission housing
systems animal husbandry

NL:
- Law on air quality
- Law ammonia and animal husbandry
- Law odour and animal husbandry

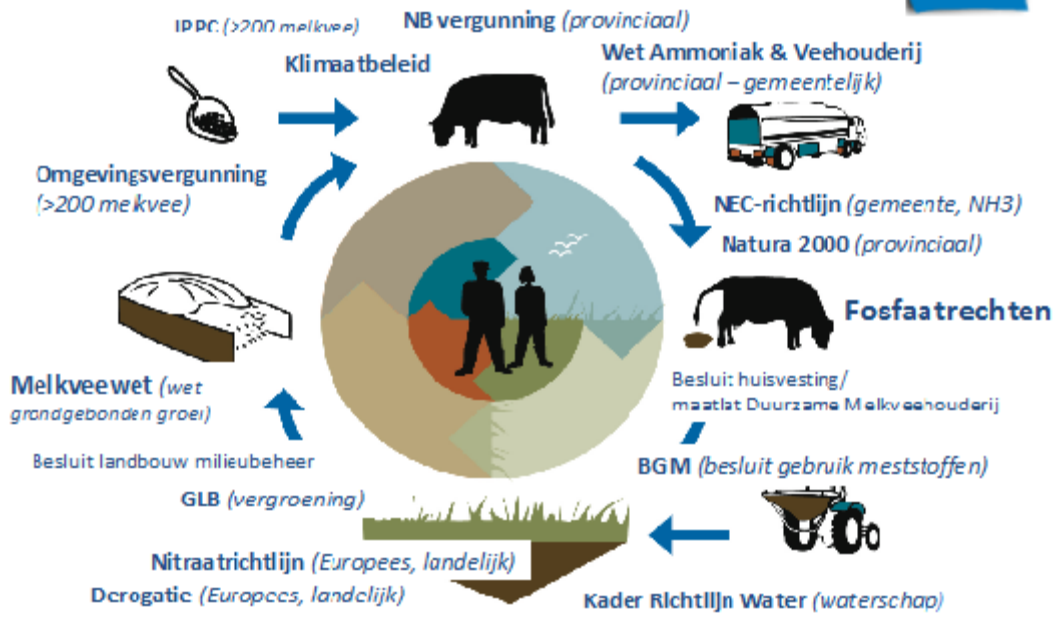
EU:

NL:



tion
usbandry
on animal

De overheid en kringlooplandbouw



Province
- Provincial Spatial Plan
- Provincial spatial order
- National Ecological Network

Municipality
- Municipal Spatial Plan or Zoning Plan
- Municipal Spatial Development Plan
- Archaeological order

erhoeven, 2019

(de Olde, 2012)

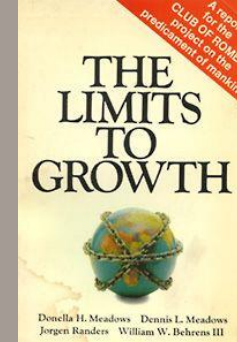


Modernisation of agriculture

- Increased internal complexity

1. Reduced sensitivity to the environment

- Environmental externalities
 - GHG, land, water, biodiversity, nutrients
- Societal concerns and risks





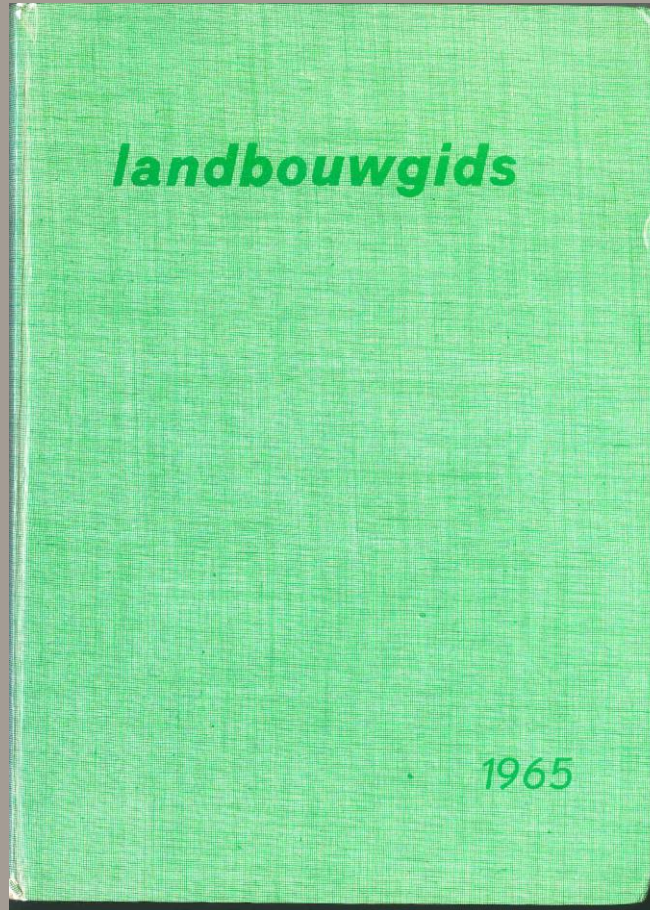




CST in agriculture

1. Reduced sensitivity to the environment
2. Increased dependence on the environment
 - Resources: feed, fertilizer, seeds, loans

Dutch Agricultural guide 1965

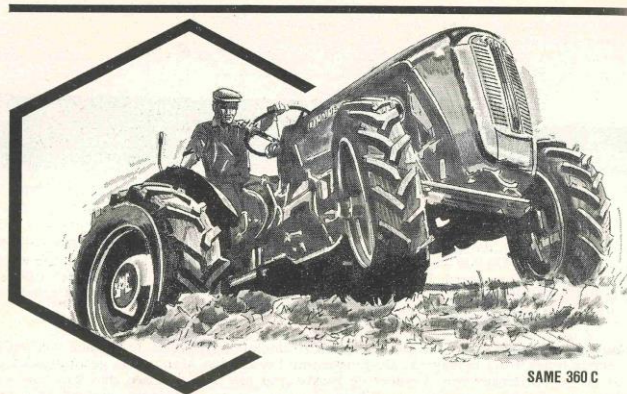


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SAME 360 C

DUBBELE GARANTIE

De voortreffelijke kwaliteitseigenschappen van de Same trekker met luchtgekoelde motor maakten het mogelijk de garantie-termijn te verdubbelen.

Op Same trekkers, geleverd na 1 mei 1964, hebt u

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- automatische diepteregeling
- automatische gewichtsregeling
- dieper ploegen bij sneller rijden
- enorme trekkracht
- gering brandstofverbruik
- betere resultaten door aangepaste wioldruk
- minder slijp, bandenslijtage en structuurbederf

Amplitorque

- verhoging van de trekkracht
- 11 versnellingen
- kruipversnellingen voor alle werkzaamheden



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mengmeststof NPK in korrelvorm

**deltakorrel
granumix**

biedt U o.a.:

keuze uit diverse samenstellingen zowel chloorhoudend als chloorarm

mooie en gelijkmatige verdeling der voedingsstoffen

tijdsbesparing, vooral in drukke perioden

 **deltakorrel** is daarom bij uitstek
de mengmeststof voor het moderne bedrijf

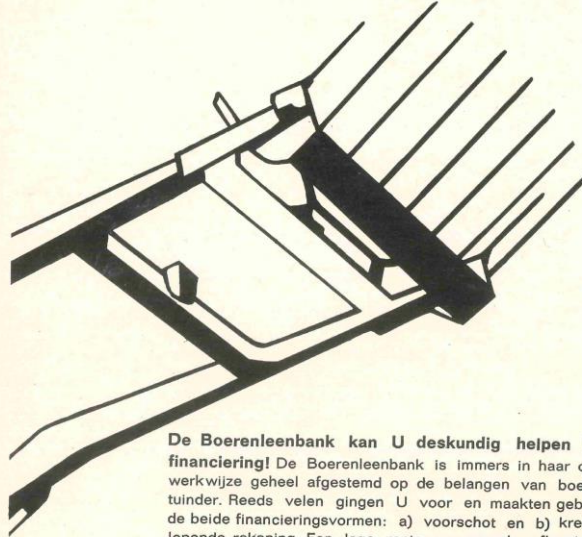
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DELTA CHEMIE
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De Boerenleenbank kan U deskundig helpen bij de financiering! De Boerenleenbank is immers in haar opzet en werkwijze geheel afgestemd op de belangen van boer en tuinder. Reeds velen gingen U voor en maakten gebruik van de beide financieringsvormen: a) voorschot en b) krediet in lopende rekening. Een lage rente en soepele aflossingsvoorwaarden maken het U mogelijk op verantwoorde wijze Uw mechanisatieplannen uit te voeren.

Boerenleenbank
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599 Boerenleenbanken aangesloten bij de Coöperatieve
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100years
1918 — 2018

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Er zijn waarschijnlijk voor Uw bedrijf nog veel meer voordelen op te sommen. Daarom moet U zeker Uw licht eens opsteken over de mogelijkheden van SOL mengvoeders LOS. Vraagt inlichtingen bij Uw leverancier, deze kan over de S.O.L.-deskundigen beschikken.



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CST in agriculture

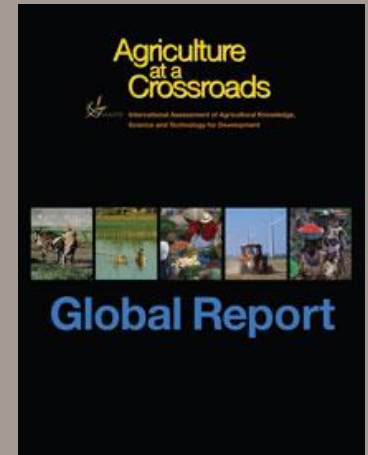
Increased internal complexity

1. Reduced sensitivity to the environment
2. Increased dependence on the environment
 - Resources: feed, fertilizer, seeds, loans
 - Political and societal support, consumer awareness



Agriculture at a crossroads

- Addressing insensitivity & dependence
- Account for the natural and social environment

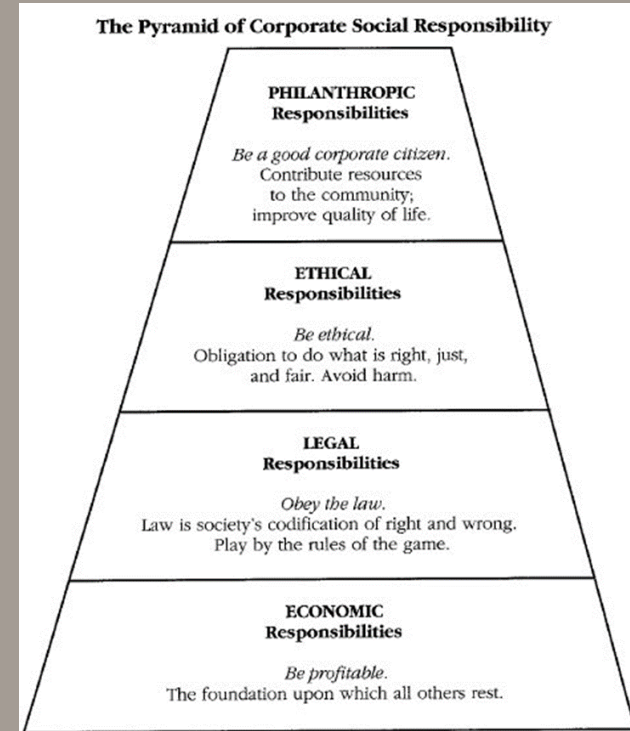


"The goal for agriculture is no longer simply to maximize productivity and profitability, but to optimize across a far more complex range of production, rural development, environmental, social and food consumption outcomes"

(Jules Bos et al. 2013)

Corporate Social Responsibility (CSR)

- Archie Carroll's CSR pyramid (business ethics) (1991)
- Economic & legal responsibilities are not enough
- From governmental regulation to governance and market responsibilities
- Also at farm level - to reconnect









Boerburgertweet

@Boerburgertweet

Boeren laten burgers zien wat zij doen en waar hun voedsel vandaan komt | Elke week andere boer(in) | 24 sept - 30 sept | akkerbouwer | Willem Voncken

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28.6K

Following
4,244

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Boerburgertweet Retweeted



@TeamAgroNL @teamagronl · 6h

Gisteren bedankte [@carolaschouten](#) de boeren met [#bedankdeboer](#). Vandaag is ze jarig en feliciteren boeren, zoals onze ambassadeur [@SuzanneRuesink](#), haar met filmpjes en foto's. Volg [#feliciteerdeminister](#) om deze te zien en plaats je eigen felicitatie met [#feliciteerdeminister](#)

KIPSTER

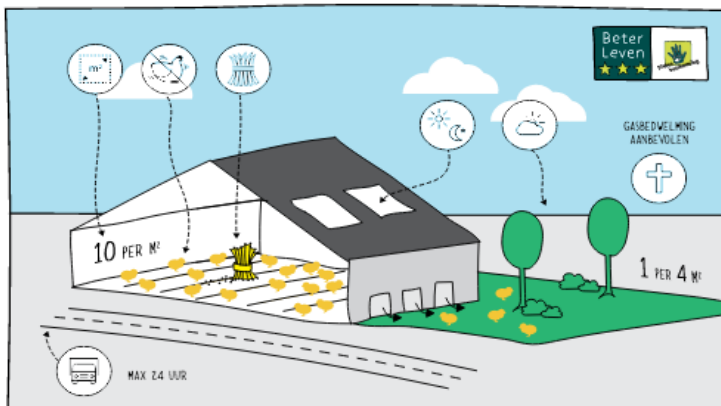
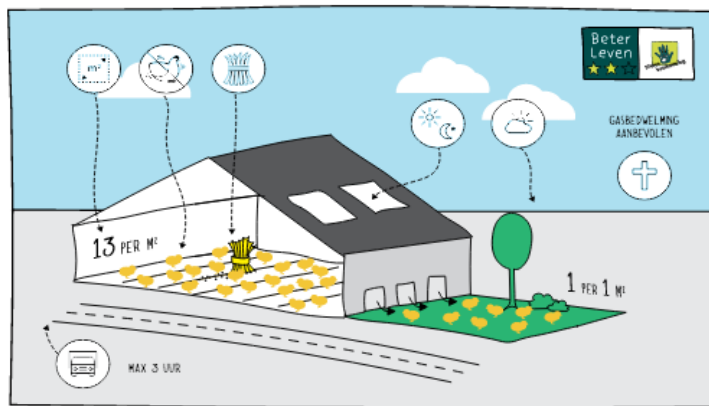
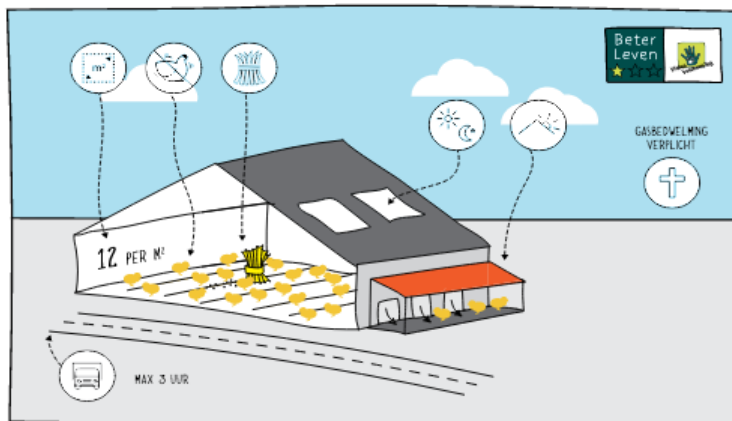


GANGBAAR

ELECTRISCH WATERBAD
OF GASBEDWELMING



18 PER M²

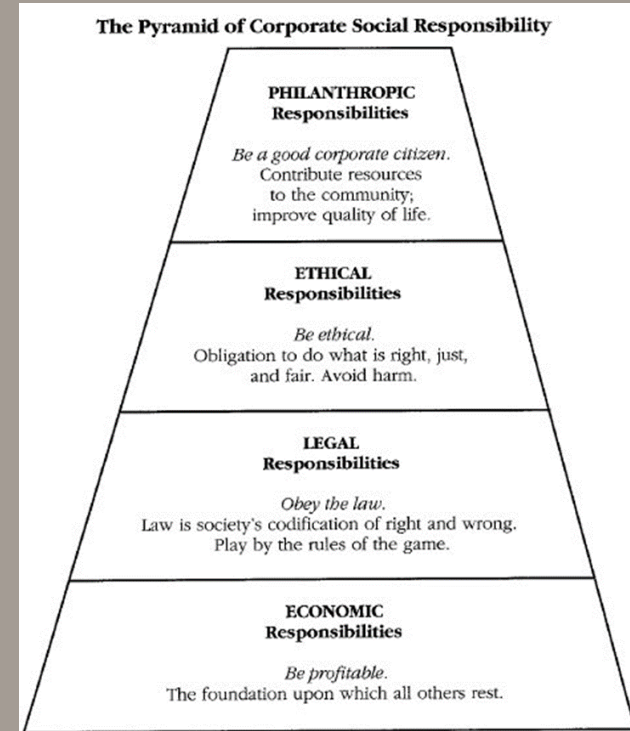


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Corporate Social Responsibility (CSR)

- What is ethical? Sustainable?
- What is right, just and fair?



Ethical used to be producing more for less



FIST
Wij EISEN
meer
VLEES!

FIST
WAAR BLIJVEN DE
NEDERLANDSE KOEIEN
EN VARKENS?
EIST
VLEES

VAREKAMP
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MÆLK ER INFICERET
MED LIDELSE

GO VEGAN

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Boerburgertweet

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Boeren laten burgers zien wat zij doen en waar hun voedsel vandaan komt | Elke week andere boer(in) | 24 sept - 30 sept | akkerbouwer | Willem Voncken

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“Vegan animal rights activists are 'sending farmers death threats' branding them 'murderers'”

The Independent – January 2018



KIPSTER



de vee-industrie

campagnes

doe ook mee

diervriendelijk eten

over ons

DONEREN



wakker
dier



Wakker Dier prijst eitjes aan

In een nieuwe [radiospot](#) toont Wakker Dier zich van de zonnige kant en prijst supermarktketen Lidl met de start van de verkoop van Kipster-eieren. "Vaak zijn we boos over supermarkten, maar nu zijn we juist blij. Blij met het Kipster-ei.", aldus Anne Hilhorst van Wakker



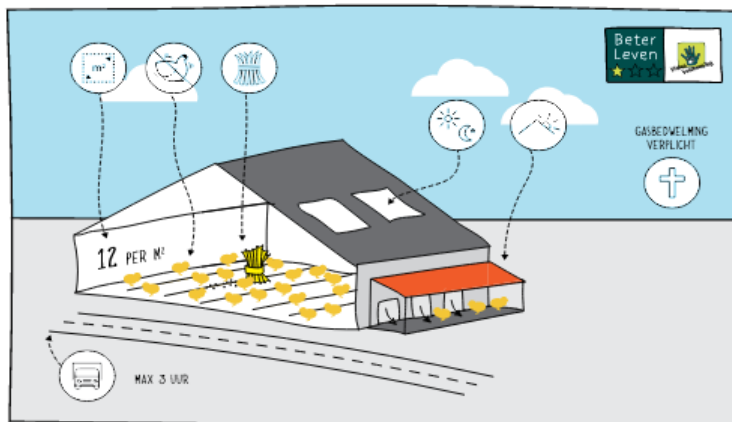
Ethical is improving animal welfare or going vegan?

GANGBAAR

ELECTRICH WATERBAD
OF GASBEDWELING

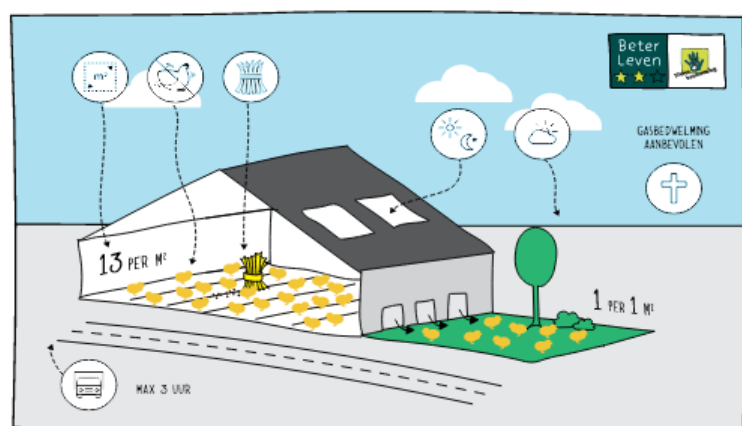


18 PER M²



12 PER M²

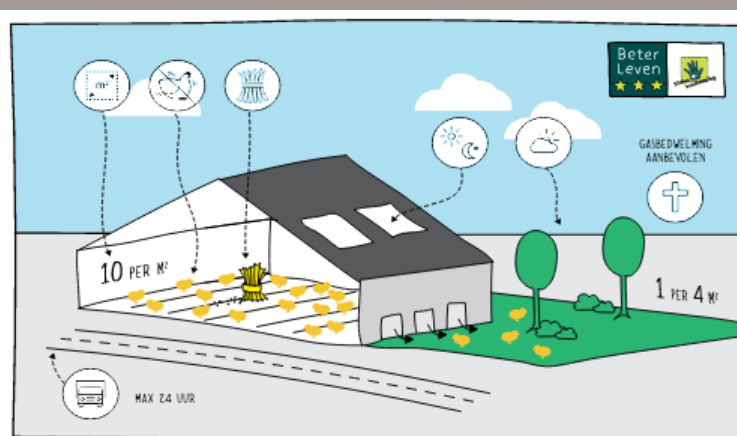
MAX 3 UUR



13 PER M²

1 PER 1 M²

MAX 3 UUR



10 PER M²

1 PER 4 M²

MAX 24 UUR



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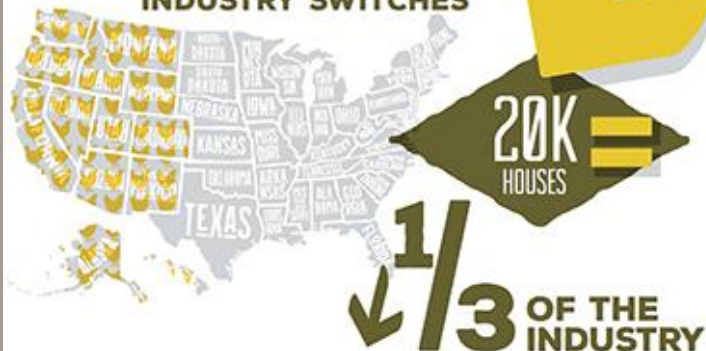
100 years
1918 - 2018

SLOW GROWTH CHICKEN ENVIRONMENTAL IMPACT

Raising chickens for an **ADDITIONAL 2 WEEKS** can negatively impact our environment, the birds and consumer prices. As an industry, we strive to balance the good for all, and it's important you know the potential impact of this change.

LET'S SEE THE IMPACT

IF ONLY
ONE-THIRD OF THE
INDUSTRY SWITCHES



ADDITIONAL BIRDS NEEDED

OVER **1.5+ BILLION** MORE BIRDS / YR

TO PRODUCE THE SAME AMOUNT OF MEAT

ADDITIONAL ON-FARM DEATHS

72.4+ MILLION BIRDS/YR

ANNUAL SHORTAGE IN PRIME MEAT

27.5 BILLION LESS CHICKEN MEALS

THAT'S OVER 5.6 BILLION LBS / YR

ADDITIONAL LAND NEEDED TO GROW FEED

THE SIZE OF MARYLAND

OVER 7.6 MILLION ACRES / YR

ADDITIONAL MANURE

27X'S HIGHER THAN BALTIMORE MET BANE STADIUM

SLIGHTLY OVER 28.6 BILLION LBS / YR

WATER CONSUMED

APPROXIMATELY **8 THOUSAND** OLYMPIC SIZED POOLS

JUST OVER 5.1 BILLION GAL / YR

ADDITIONAL FEED REQUIRED

670K TRACTOR TRAILERS FILLED WITH FEED

MORE THAN 33.5 BILLION LBS / YR

ADDITIONAL PRODUCTION COST

\$9,000,000,000 NINE BILLION DOLLARS

64 MILLION LESS PEOPLE FED / YEAR

THAT'S EQUAL TO THE COMBINED POPULATION OF CALIFORNIA & TEXAS

NATIONAL CHICKEN COUNCIL

SOURCES: THE NATION'S CHICKEN, PRINCIPLES OF SLOW GROWTH, BROILER PRODUCTION IN THE US, BLENDED ANIMAL WELFARE, APRIL 2018

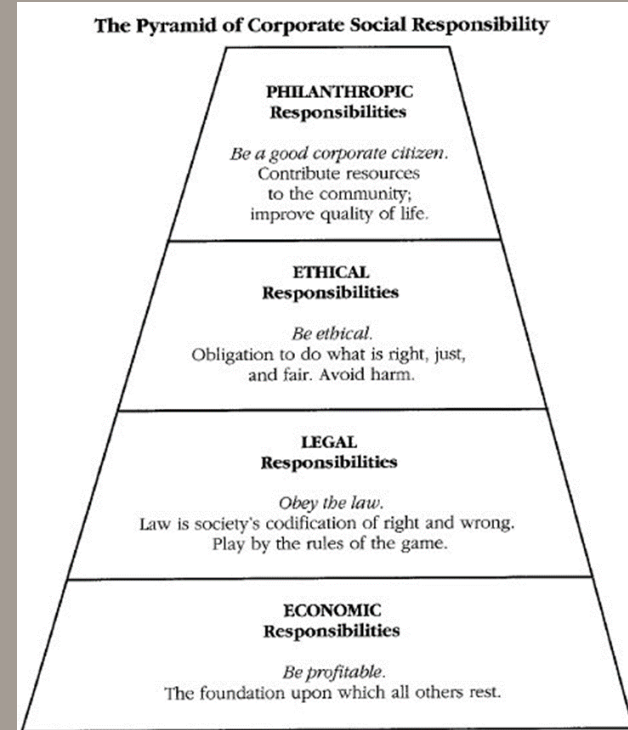
NATIONAL CHICKEN COUNCIL

Ethical is minimum land and resource use?

Corporate Social Responsibility

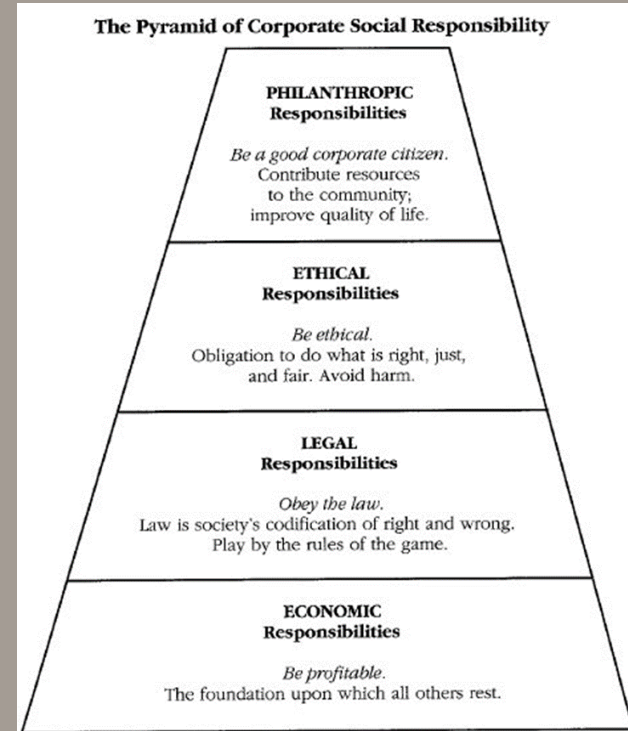
- What is ethical?
- What is right, just and fair?

Productivity
Greenhouse gasses
Public health
No livestock production
No feed-food competition
Resource use
Animal welfare



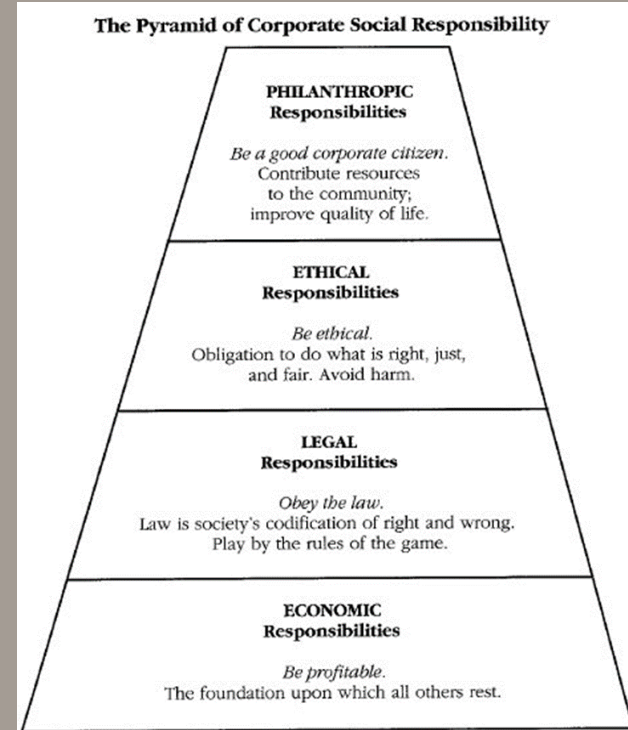
Corporate Social Responsibility

- Who is involved?
 - Their values, norms, convictions, knowledge and interest?
- At what scale?
- In which context?
- Trade-offs?



Corporate Social Responsibility

- What is ethical?
- What is right, just and fair?
- What is “hotly debated”
 - Awareness





Environment

MPs call for tax on all single-use plastic packaging

Government wants to improve recycling rates with greater responsibility on producers to pay for costs of dealing with packaging





What receives attention?

- Stakeholders active on animal welfare, environment (nature)

"While supermarkets support the development of new markets for animal welfare friendly products in partnership with NGOs in some instances, their power is such that they continue to exploit nature and the workers producing such products" (Lever and Evans 2017, p. 218).

- National stakeholders vs local stakeholders
- What can be measured – communicated – priced

Discussion

Bringing together social systems theory and business ethics...

- Legal and economic requirements do not capture the societal and environmental concerns about agriculture
- Nor do they value the efforts of farmers to move beyond what is required
- Moving up the CSR ladder, however, introduces moral complexity - the tendency of multiple legitimate moral standpoints without the realistic prospect of a consensus

Discussion

- Moral complexity prevents the transformation of ethical responsibilities into legal and economic ones
 - Moral judgement are inherently personal and contestable
- Compromise to deal with stakeholder perspectives and navigate trade-offs
- Dependent on what we value and measure

Discussion

- *"we measure what we value, we also come to value what we measure"* (Meadows)
- Role of science in the continuous development of models, tools, labels
- Political and societal expectation for objective reporting



Early cybernetics

Gregory Bateson (1904-1980)
 Norbert Wiener (1894-1964)
 Warren McCulloch (1898-1969)
 Margaret Mead (1901-1978)
 W. Ross Ashby (1903-1972)

Soft & critical systems

C. West Churchman (1913-2004)
 Russell Ackoff (1919-)
 Peter Checkland (1930-)
 Werner Ulrich (1948-)
 Michael C. Jackson (1951-)

Complexity theory

Ilya Prigogine (1917-2003)
 Stuart Kauffman (1939-)
 James Lovelock (1919-)

Systems Thinkers

 Springer

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ARTICLES

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General systems theory

Ludwig von Bertalanffy (1901-72)
 Kenneth Boulding (1910-1993)
 Geoffrey Vickers (1894-1983)
 Howard Odum (1924-2002)

Learning systems

Kurt Lewin (1890-1947)
 Eric Trist (1911-1993)
 Chris Argyris (1923-)
 Donald Schön (1930-1997)
 Mary Catherine Bateson (1939-)

Later cybernetics

Heinz von Foerster (1911-2002)
 Stafford Beer (1926-2002)
 Humberto Maturana (1928-)
 Niklas Luhmann (1927-1998)
 Paul Watzlawick (1921-2007)

System dynamics

Jay Forrester (1918-)
 Donella Meadows (1941-2001)
 Peter Senge (1947-)

The Open
 University

