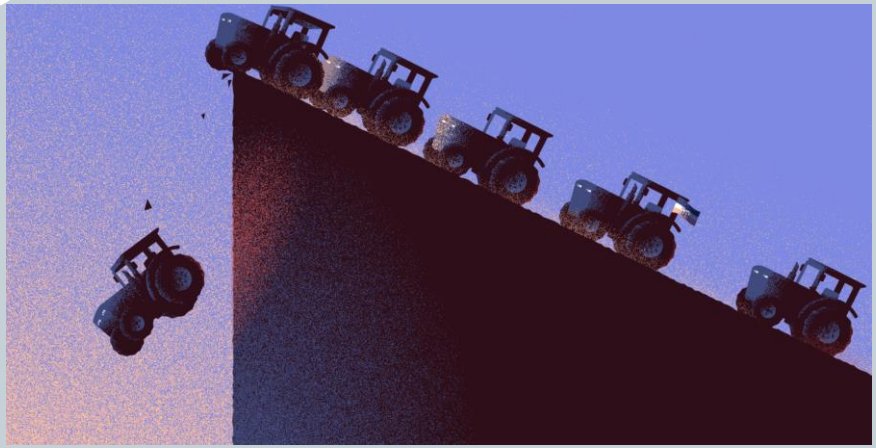
Collapse of the Dutch Agricultural Miracle?

Impact of the Green Deal Reform on aspects of One Health

Gert van der Laan



ldoh
LEARNING AND DEVELOPING OCCUPATIONAL HEALTH

Netherlands Center for Occupational Diseases

Università degli Studi di Milano

National Institute for Public Health and the Environment
Ministry of Health, Welfare and Sport

Non Disclosure Declaration

- Potential conflict of Interests: financial payments or sponsoring of organizations:
  - LDOH Foundation for Learning and Developing Occupation Health: non for profit organization
  - Netherlands Center for Occupational Diseases
  - National Institute for Public Health The Netherlands
  - University of Milano, International Centre for Rural Health
  - International Vegetable Seed Firm:. *'We want to be the best seed firm internationally and such can only be achieved with perfect working conditions; we hire you to help us in this regard with occupational health care, research, training, advice; we include two hours for study weekly in your contract because you don't know anything about our business..';* > 30 years ago]

I declare no competing interests

Outline

- The Dutch Agricultural Miracle
- The hidden costs of feeding the world
- Impact agricultural activities on One Health Triangle
  - Environment
  - Animal health
  - Human health
- The Dutch Farm Crisis
- The Way forward; what can we do?

Agriculture in The Netherlands: some facts and figures

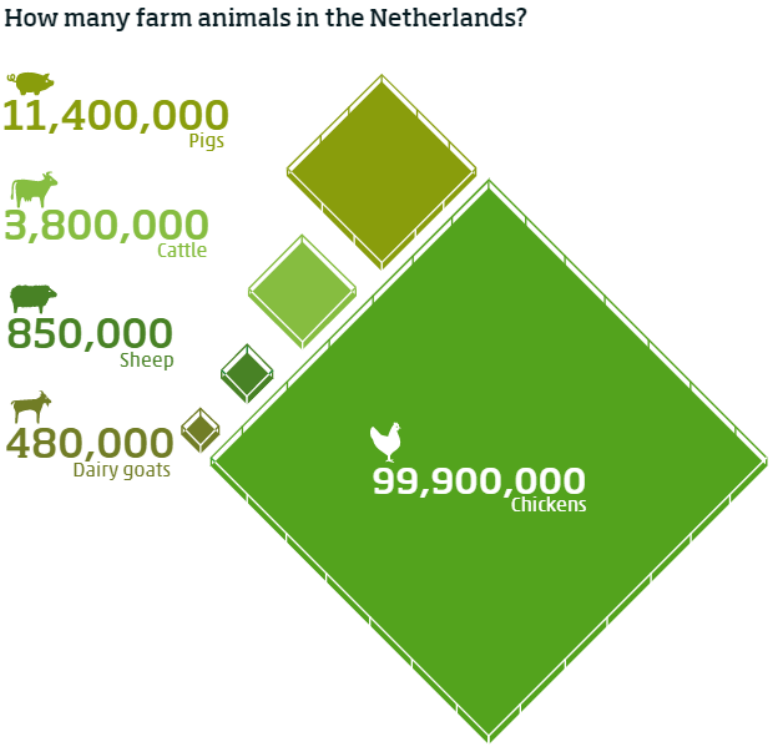
MADE IN HOLLAND
AGRI-FOOD

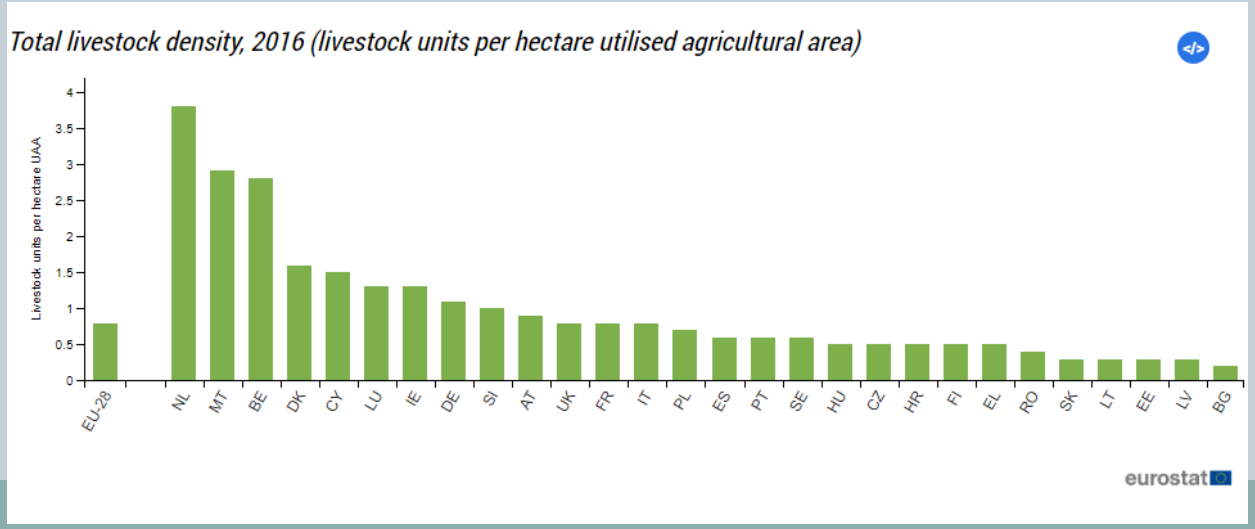
Leading in Innovation • Health and Sustainability • Integral Chain Approach
Solutions for Global Issues • Strategic Alliances • Knowledge Hub

Humans and Livestock in NL:

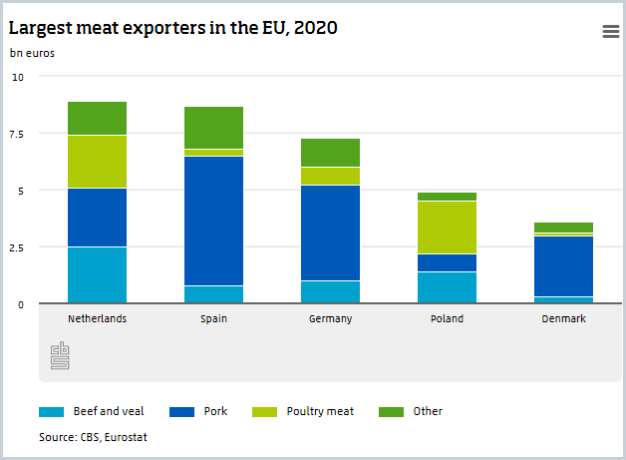
Human Population Netherlands 2021: 17,295,000

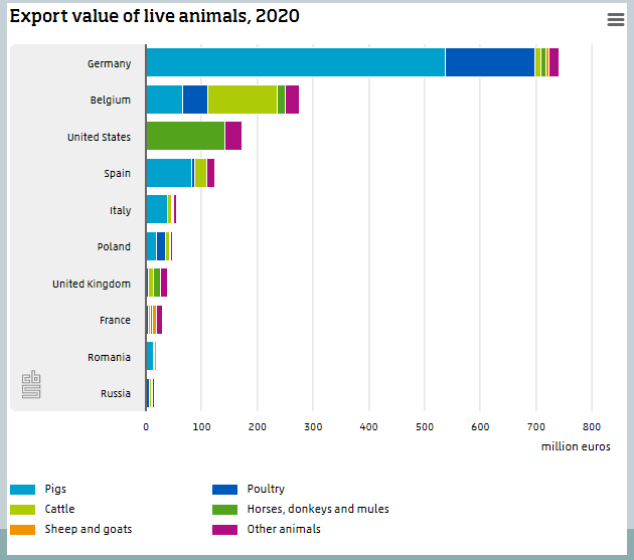
Population Density: 509,3 inhabitants/square km (highest of EU countries after Malta)

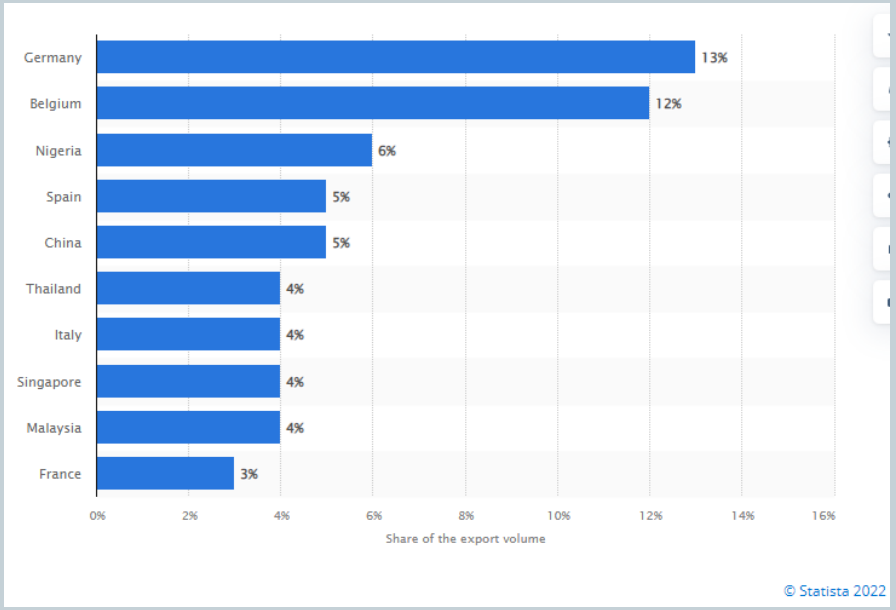




Feeding the World







Distribution of skim milk powder exports from the Netherlands in 2021, by destination

High Agricultural Productivity in The Netherlands: the keys?

- Efficient production systems and processes: high input/high output
- Fertile soil, high use of fertilizers and pesticides
- Import of animal feed/soya beans
- Use of (cheap) natural gas for heating the greenhouses
- Cheap manual labor from migrant workers
- 'Research and Development: Wageningen University; seed companies
- 'Silicon Valley of Agriculture'
- Important driver of growth and development
- Stimulated and facilitated by Dutch Authorities and EU: production maximalization, never ending consumption driven grow *that cannot be sustained due to biophysical limitations*
- *Neglect of considerable environmental and social trade offs*

High Agricultural Productivity in The Netherlands: at what price?

- Aspects of One Health Triangle; impact on:
  - Environment
  - Animal Health
  - Human Health

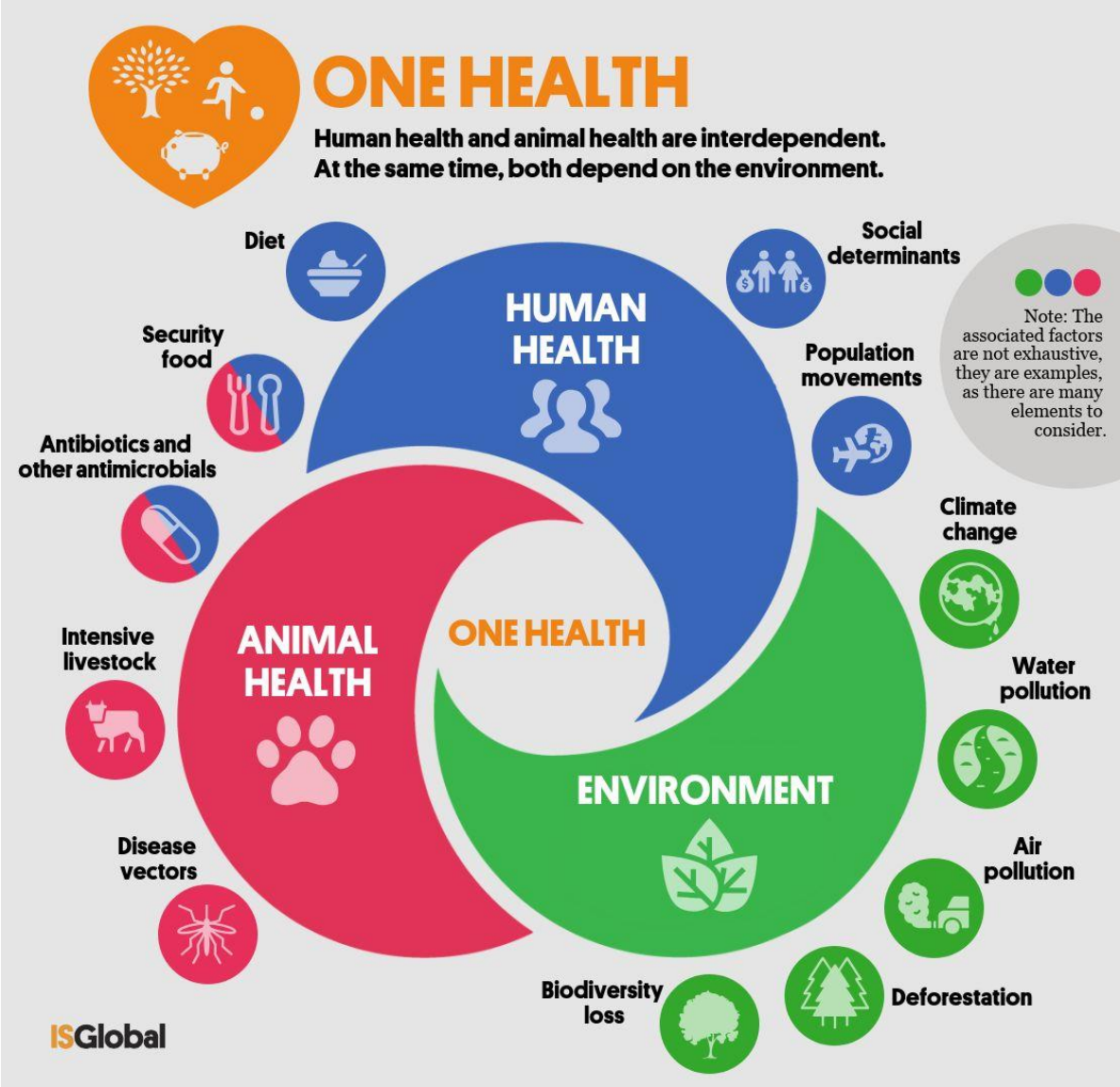
- Hidden costs:
  - Animal disease cost and controls
  - Restoring and control of environmental pollution
  - Drinking water purification
  - Maintenance of basic facilities in abandond rural areas

One Health at risk:

Environment

Animal Health

Human Health



Impact of Agriculture on the Environment

Fig. 1

From: A new green revolution or agribusiness as usual? Uncovering alignment issues and potential transition complications in agri-food system transitions

Contrasting visions for sustainable dairy farming, showing an efficiency-focused approach with manure fermenter and low-diversity field (left) versus a diversity-focused approach with free range grazing integrated with fruit trees (right). Both photographs by Jerry van Dijk.

Empty landscape

Monoculture grassland

Dairy herd indoors year round

Grassland with fruit trees

Free range grazing

Diversity focussed

Re-allotment of arable land

Bron: Fryslansite, auteur onbekend

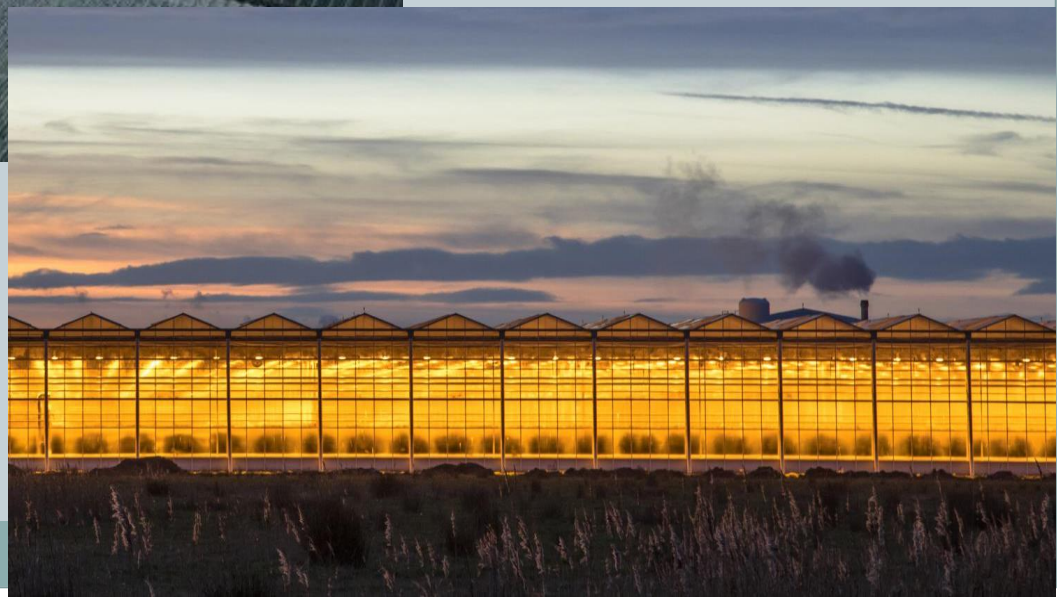
Afbeelding 6

Bron: Boender, 2009

Greenhouses: 10.000 ha

Greenhouses: impact on landscape and light pollution

Use of energy for heating and lighting and pollution by pesticides and nutrients are major known problems

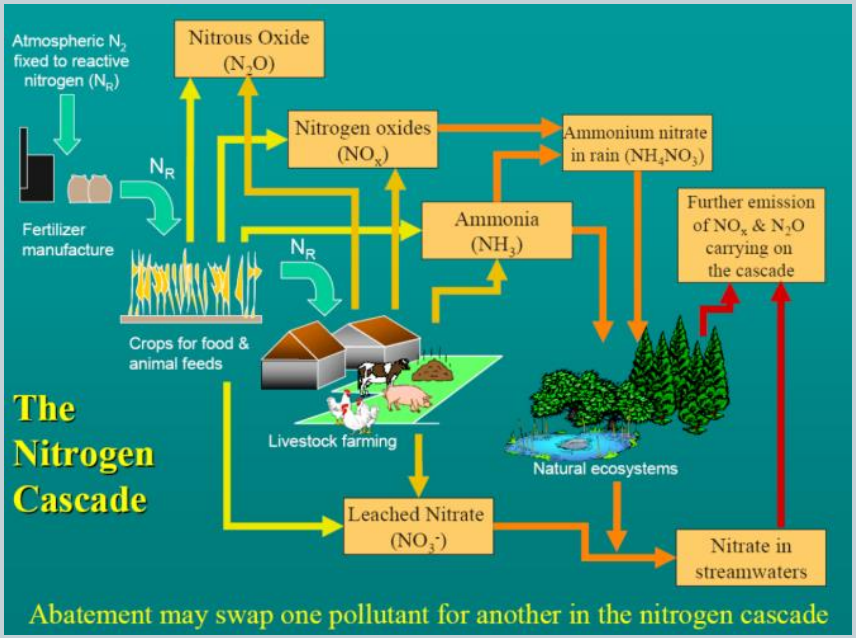


Impact of Agriculture on the Environment

- **Nitrogen deposition:**
  - Manure surplus
  - Exceeding the limits (Nitrate Directive)
  - Import of animal feed and fertilizers

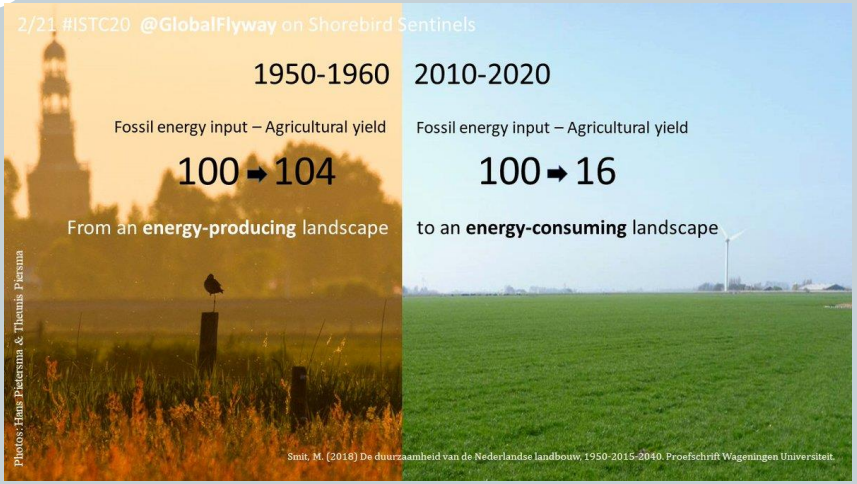
Greenhouse gas emissions from animal farming account for 17% of the EU's total, the equivalent of 704 million tonnes of CO2 and 'more than all cars and vans put together' (FAO)

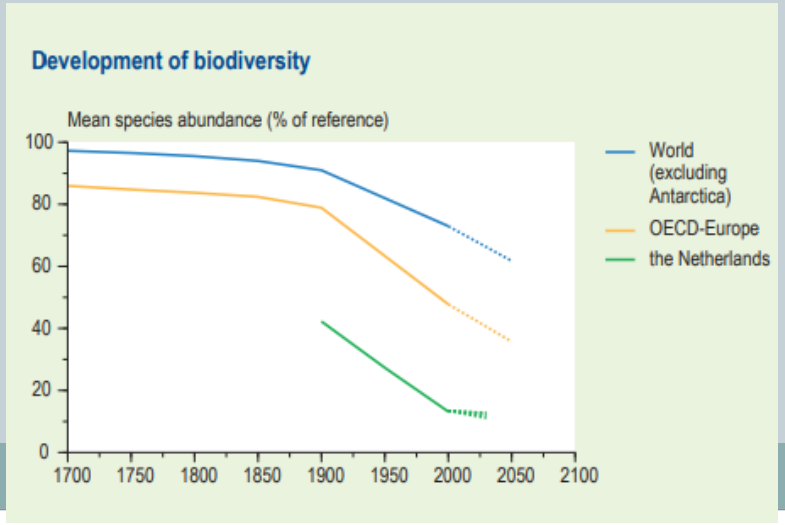
Environmental standards have not been met (Water Framework Directive)

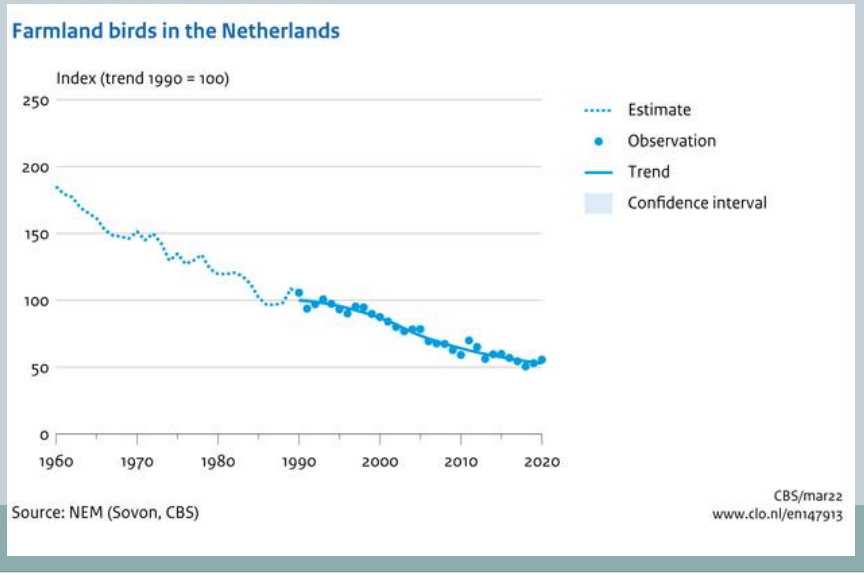


Loss of biodiversity / ecological heterogenicity

Country Report for The State of the World's Biodiversity for Food and Agriculture – The Netherlands







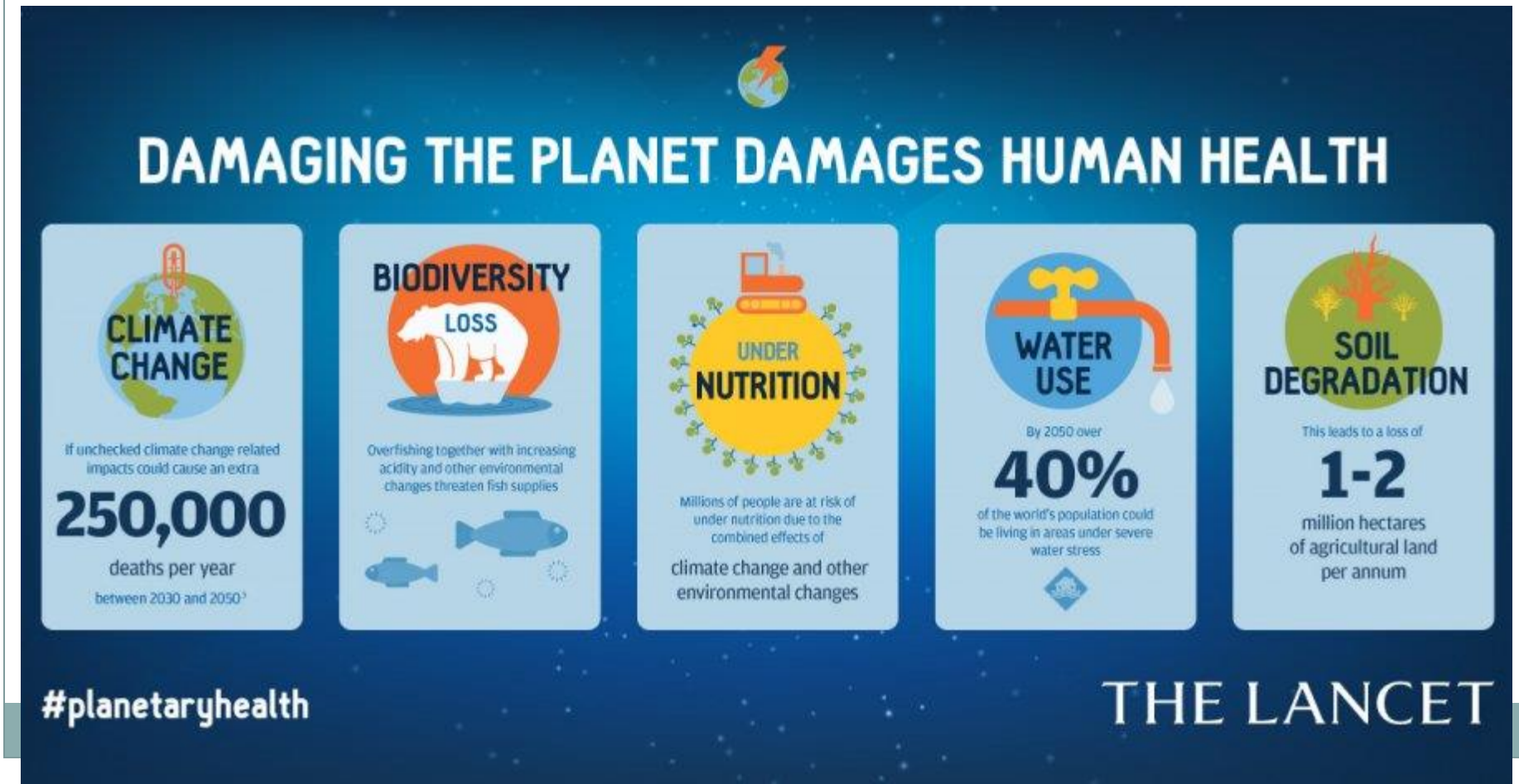
Dehydration and Salinization

- Drainage for lowering of groundwater level for agriculture is organized to allow heavy equipment to drive out and does not sink away
  - Leads in low-lying grassland areas on peaty soils in North and West Netherlands to lowering of land and decrease of plant, bee and bird species
- The Rhine is now so low that it will hinder trade.
- Low fresh water supply enables salinization of arable land in coastal areas

The ROCKEFELLER FOUNDATION THE LANCET

The Rockefeller Foundation–*Lancet* Commission on planetary health

Safeguarding human health in the Anthropocene epoch: report of The Rockefeller Foundation–*Lancet* Commission on planetary health



Impact of Agriculture on Animal Health

- Animal wellfare
- Animal transport
- Zoonoses

Transport to Italy and Spain for production of Salami or Chorizo

Zoonoses from Intensive livestock farming

News

Bird flu at poultry farms in 2021/2022

In 2003, a thousand people became infected with bird flu and a vet died

2021 570.000 mink culled;

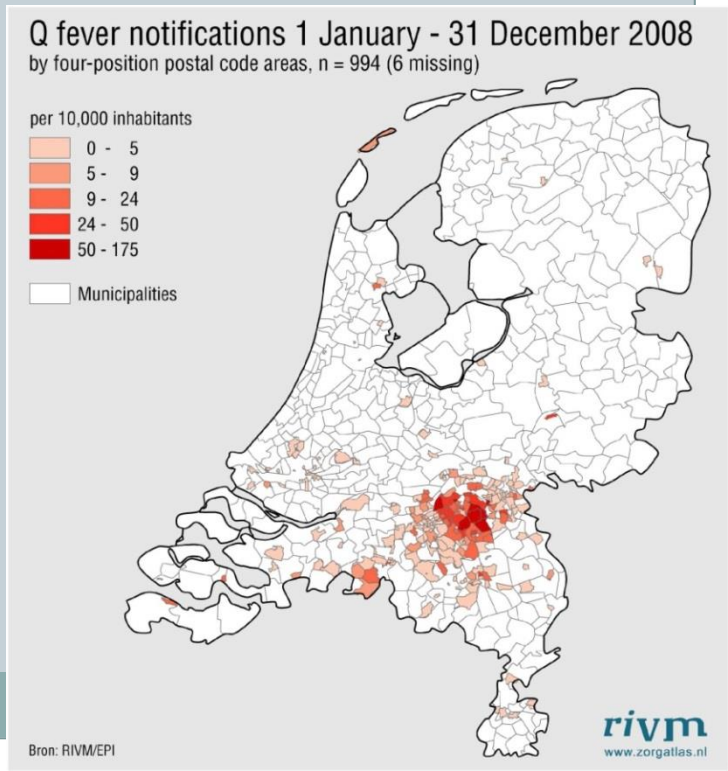
Bird flu found on more Dutch farms, 220,000 chickens are culled

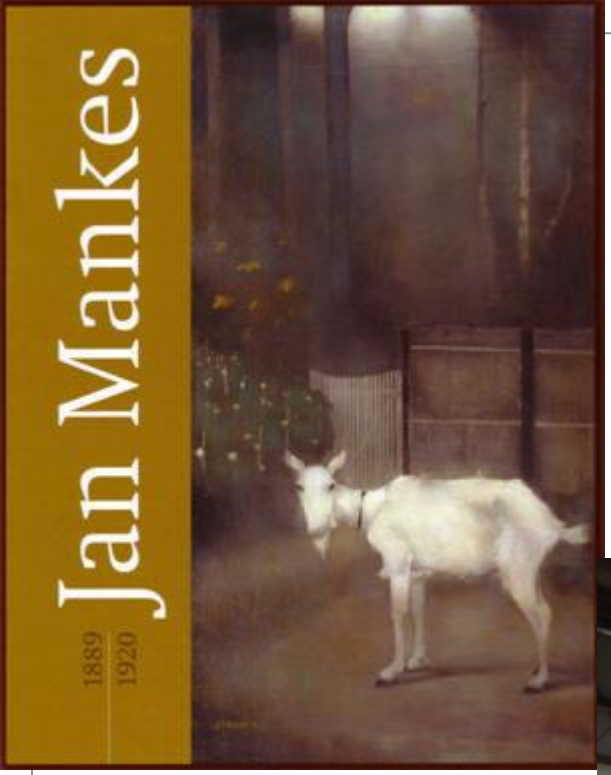
Business January 24, 2022

Q-fever in The Netherlands 2007-2010

- > 4000 patients with Q-fever (laboratory confirmed)
- 600 hospitalized
- 11 patients died

- Connection dairy goats-humans:
  - Epidemiological findings
  - Genotyping data:
    - One predominant type same
    - in humans and goats





Goats in The Netherlands

Increase after swine fever epidemic in 1997
Transition of Pigfarmes into goat farmes…….

‘Poor men’s cow’

1995: 76.000

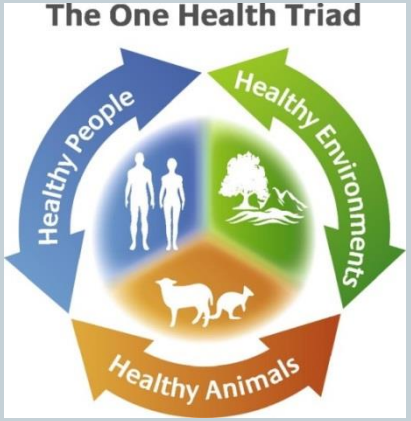
2009: 375.000
(3.000 goat farms
Herds 600-7000)

Probable causes of the outbreak

- Strong increase in the number of dairy goat herds and goat numbers
- Influenced in-herd dynamics of Coxiella Burnetii?
- Introduction of a more virulent strain or genetic shift to a more virulent strain?
- Lack of basic hygienic measures: birth remnants were not destroyed but processed as manure
- Too many animals in a densely populated country

Q-fever epidemic in The Netherlands Lessons learnt, wake-up call

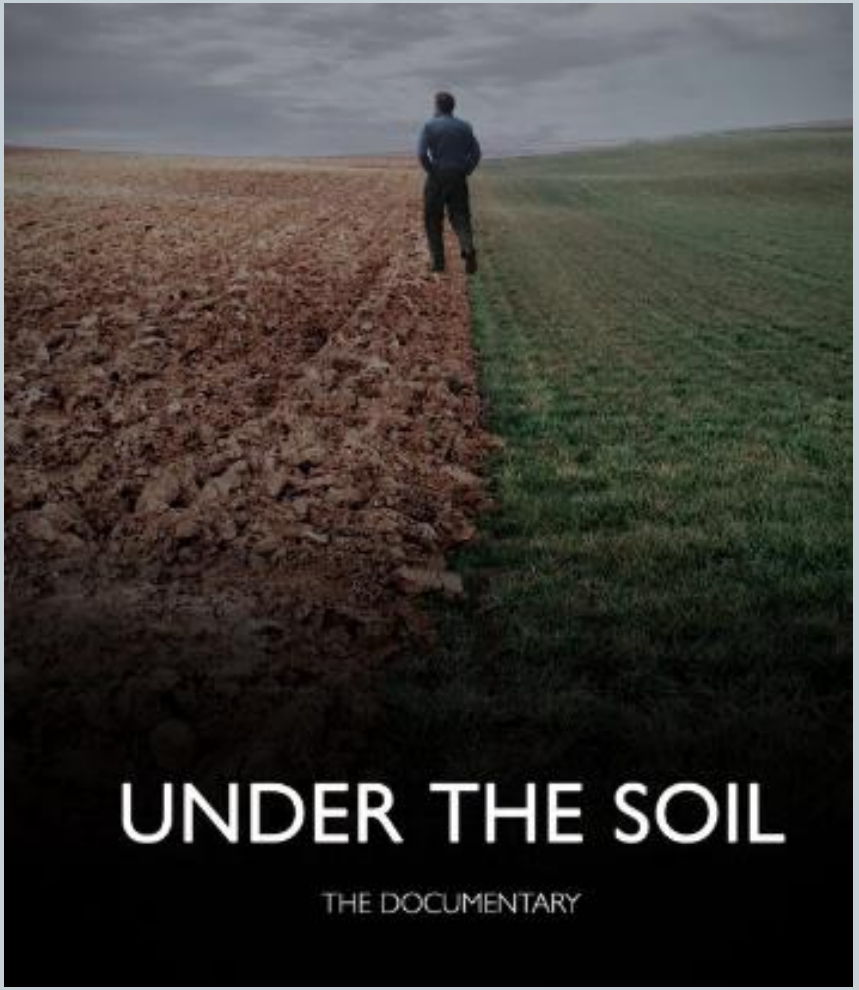
- The risk of outbreaks of zoonoses is increasing: intensive lifestock farming , increased mobility, animal transport.
- Better prepareness: awareness, education, hygienic measures
- Share information
  - In the human medical chain
  - In the veterinary chain
  - Human ⟷ Veterinary
- One Health approach:
  - people, animals and the environment are recognized as being interconnected and integrated approaches are practiced for understanding, maintaning and improving the health of all



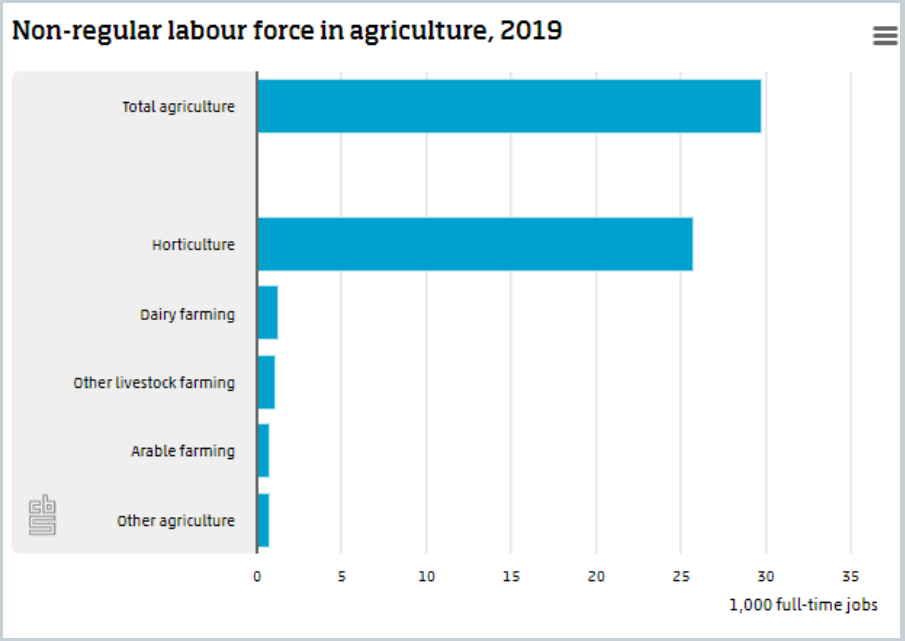
Agriculture Workers Health

- Issues of concern:

- Long-term effects of pesticides / M. Parkinson
- Antibiotic resistance
- Farm dust lung diseases
- Migrant workers health
- Mental Health: depression, suicides, agitation



Migrant Workers in Dutch Agriculture



BRILL NIJHOFF

EUROPEAN JOURNAL OF MIGRATION AND LAW 24 (2022) 217–240

European Journal of Migration and Law

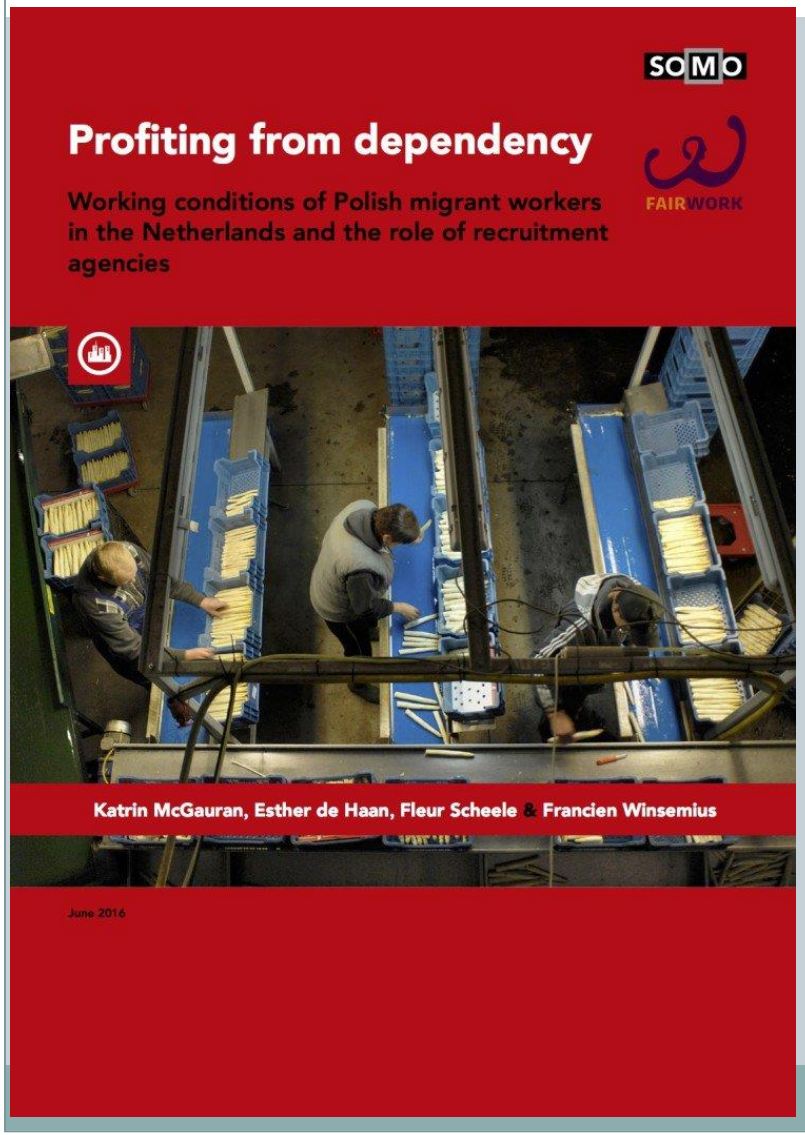
brill.com/emil

Migrant Labour in Dutch Agriculture: Regulated Precarity

Karin Astrid Siegmann | ORCID: 0000-0001-6664-9249
Associate Professor in Labour and Gender Economics,
International Institute of Social Studies, Erasmus University Rotterdam (ISS),

Erasmus University Rotterdam study:
"Migrant laborers are paying the price for Dutch food security"

Migrant work: a global issue in agriculture and construction



Flexibilisation of labour relations and the (lack of) stricter legal regulation

Labour exploitation and unacceptable working conditions for migrant workers in the Netherland

Sneller, sneller, sneller,' and 'faster, faster, faster,' that is my entire Dutch and English vocabulary", said one of the interviewed workers.

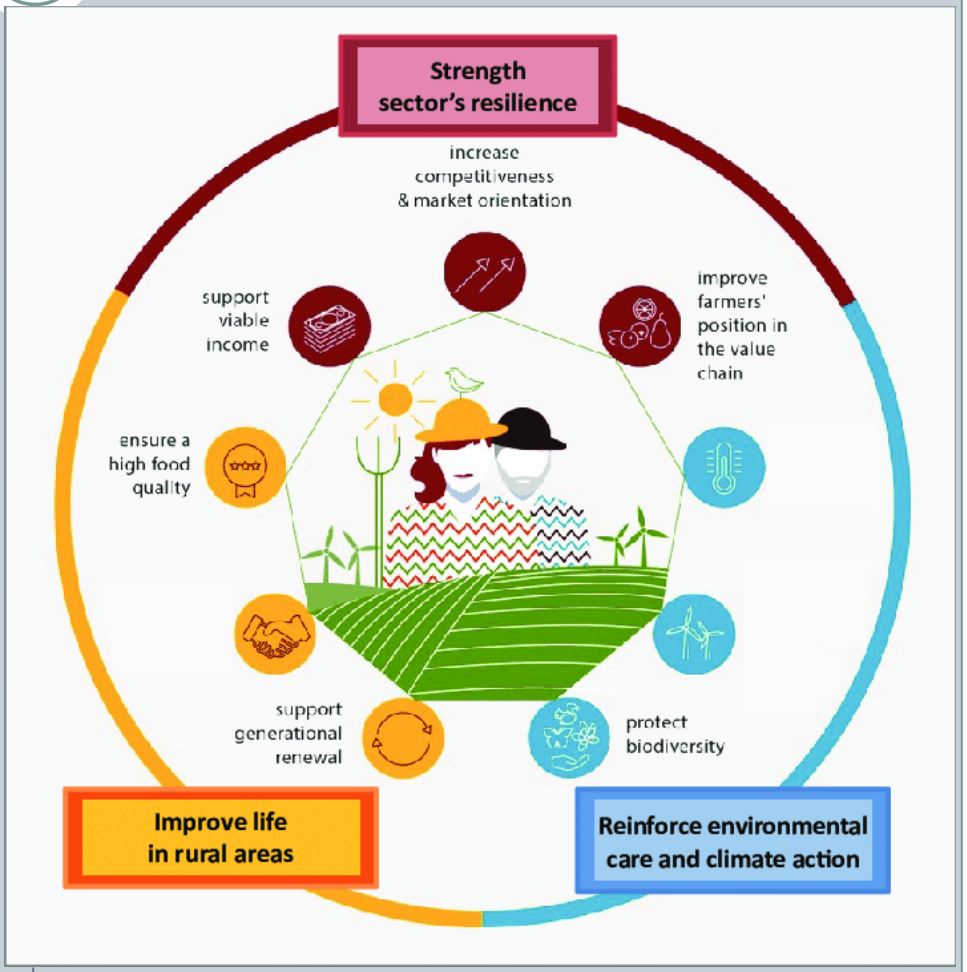
"The owner of the greenhouse where I was employed introduced a competition "He put a list with the names of all workers on the wall. They were ranked in phases according to their productivity. When someone was in the orange phase for a couple of days he would be fired.

The Netherlands Farm Crisis

- Weak governance to address Nitrogen Issue
  - Farms cause 85 percent of ammonia emissions and 40 to 45 percent of overall nitrogen emissions.
  - Until 2019, the government was essentially hoping that the problem would go away on its own. Some farmers would retire. Others would be forced out of business by competition or reduced demand for animal products. Others yet would invest in technologies that capture or reduce ammonia emissions.
  - That year, the Council of State, the Netherlands' highest administrative court, ruled that more needed to be done. Government's plan to cut nitrogen emissions in half by 2030. As a consequence reduction of the livestock is needed and one in three Dutch farms may need to close.
  - The idea Green deal that agriculture is more than efficient food production comes slowly; top down decisions are taken too late

Green Deal impact on Agriculture

- **Farm to fork strategy**
  - Making the EU food supply chain from farm to fork more sustainable: for a fair, healthy and environmentally friendly food system
- **Resistance to Change**
- **Farmers protests**



Radical Farmers protest

WORLD IN DEPTH

Trump and co rally to Dutch farmers' side in fight against climate change laws

The Netherlands is polarised by environmental legislation that aims to cut damaging emissions but also threatens to put 11,000 farms out of business. Bruno Waterfield reports

Keys to Agricultural Workers Health

Keys: **Global level:** achieving a net-zero carbon economy: technology, finance, knowledge

UN Sustainable Developent Goals : 'Free the human race from the tyrrany of poverty and want and to heal and secure our planet'

BUT: 'The American way of life is not up for negotiation'(George Bush)

AND: 'Evironment cannot be improved in conditions of poverty' (Indira Gandhi)

What we can do as OHS professionals to improve agriculture workers health?

education, education, education?

Keys to Agricultural Workers Health

- **Education and training**
  - Chain Approach (Erik Jors):
  - Community Approach (Susan Brumby)
  - WIND (Work Improvement in Neighbourhood Development) programme agriculture (ILO)
- **Collaboration**
  - One Health Approach, Connectivity
  - BOHS approach
  - Overcome professional territorialisme
- **Regulation**
- Develop robust measures and precautionary actions: *regulation of OHS is a public task and requires active and alert authorities*
  - 'Harmfull Inertia'.
  - Competent authorities /Labour Inspectors

Keys to Agricultural Workers Health

- Chain Approach (Erik Jors):
- Community Approach (Susan Brumby)
- One Health Approach
- BOHS approach (occupational health through primary and community health care)
  - Importance of Secundary Support System: Knowledge and Referal Centres
  - Research and Development
  - Education and Training
  - Connectivity

Chain approach: Pesticides Program Uganda

- Training integrated pest management in local communities
- Training sellers of agrochemicals on safety issues
- Training applicators of pesticides for vector control
- Awareness raising of pesticide poisoning in local hospitals
- Influencing national regulations
- Stimulating National Poisoning Information Centre
- Exchange of PhD students from Kampala and Aarhus
- Evaluation
- Sustainable funding by DK
- Run by Eric Jors: sowing seeds of hope..

Safe work with pesticides: preventing AOPI

- Authorisation of Plant Protecting Products
  - National and EU-level (specific circumstances in different areas)
  - Prescription of formulation (fluid, granule, powder)
- Education and training
  - Certificate of competence; licence to use
- Technology
  - Automatization of spraying in greenhouses
- Protection
  - Personal protection, re-entry times
- Control
  - Strict inspections, enforcement,
  - Residue control (market correction)
  - [AOPI: Acute Occupational Pesticide-related Illness]

efsa
European Food Safety Authority

Community approach (Susan Brumby)

IAOH
BASIC
O H S
INITIATIVE

Awareness Series

AGRICULTURE

Occupational Safety and Health in Agriculture- The BOHS Approach

Prepared in Public Interest

By

Indian Association of Occupational Health

April, 2013

SAfety CUlture and RIsk Management in Agriculture

Call for measures to be implemented in the New EU Common Agricultural Policy:

Measures:

•Integrate occupational safety and health (OSH) into EU agricultural policies.

•Establish a European network for agriculture safety and health.

•Allocate specific funding for agriculture OSH research in Horizon 2020

•Develop and implement OSH education and skills programmes for farmers and workers in the agriculture sector.

•Improve statistics to reflect the true level of agricultural accdents and OD's

cost
EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY

COST is supported by the EU Framework Programme Horizon 2020

Short Course for Primary Health Care

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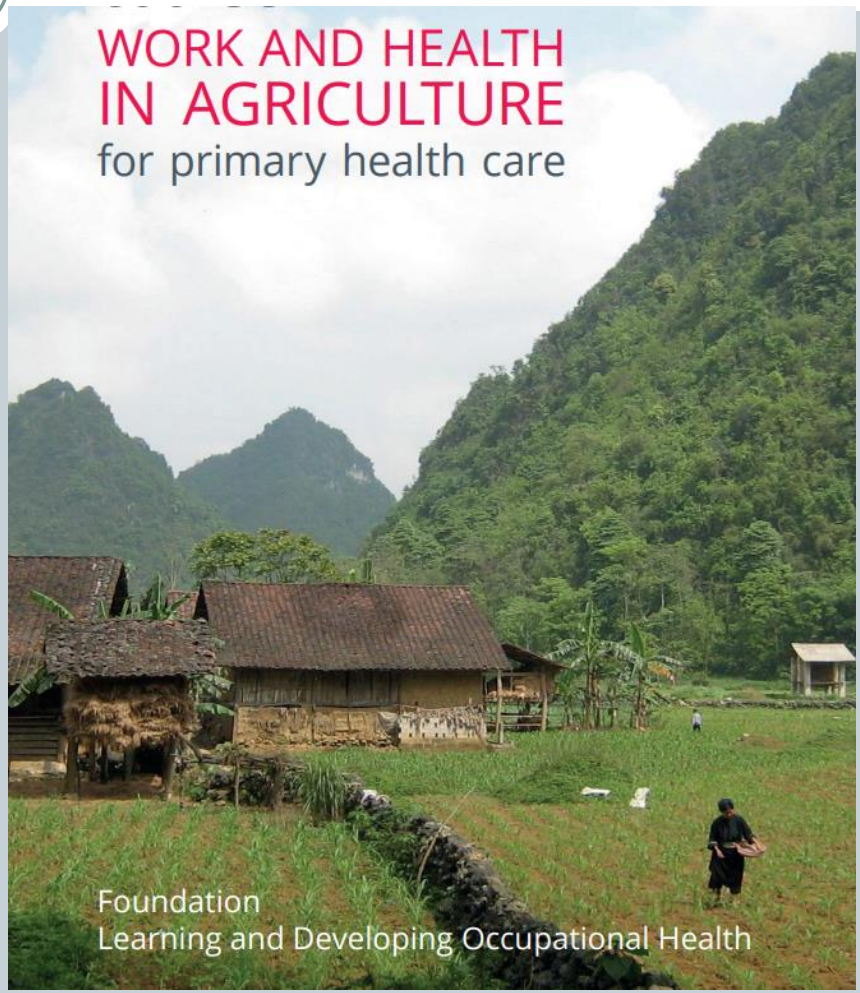
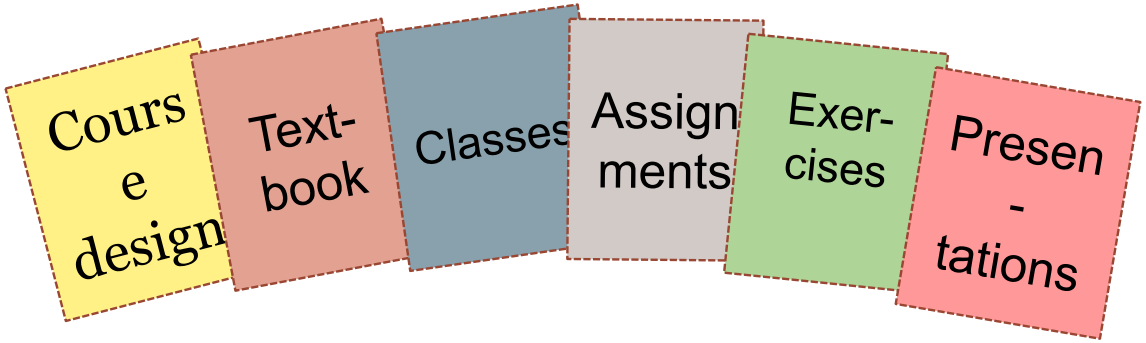
https://ldoh.net/



Short course for Primary Health Care

Work & Health in Agriculture

Maarten Verberk, Frank van Dijk, Gert van der Laan, Mieke Lumens, Ad de Rooij



- **All materials for a 3-4 day course, freely available**
- Fits into the approach of Basic Occupational Health Service (BOHS)
- Course participants: physicians, nurses, community health workers who want to learn BOHS for workers in agriculture
- Author: Netherlands foundation Learning and Developing Occupational Health (LDOH)

https://ldoh.net/

LDOH invites a team that is interested to:

- Use the course for training the professionals in their region; adaptation possible to local insights and agricultural practices

Elements of the course

1. Activities of BOHS
2. Workplace evaluation
3. Respiratory diseases
4. Skin diseases
5. Musculoskeletal diseases
6. Zoonotic diseases
7. Mental disorders
8. Chemicals & pesticides
9. Physical factors
10. Accidents
11. Personal protection
12. Networking in BOHC
13. Information resources

- Training in teaching skills

ldoh
LEARNING AND DEVELOPING OCCUPATIONAL HEALTH

Thanks for your Attention

g.vanderlaan@occmed.eu

Valuable sources

Jules F.F.P. Bos, A. (Bert) L. Smit, Jaap J. Schröder,Is agricultural intensification in The Netherlands running up to its limits?

NJAS - Wageningen Journal of Life Sciences,Volume 66, 2013, Pages 65-73, ISSN 1573-5214, https://doi.org/10.1016/j.njas.2013.06.001.

https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/agriculture-and-green-deal_en

Addendum

Working on a **WARMER** planet

The impact of heat stress on labour productivity and decent work

International Labour Organization

1919·2019

Impact Climate Change on Workers Health

ANSES Opinion
Request No 2013-SA-0216

anses
French agency for food, environmental and occupational health & safety
Investigate, evaluate, protect

The Director General

Maisons-Alfort, 24 January 2018

OPINION
of the French Agency for Food, Environmental and Occupational Health & Safety

on the "Assessment of the risks to worker health posed by climate change"

Occupational Risks due to Climate Change

- Increase in Temperature
  - Discomfort, dehydration, heat strokes, psychosocial risks (impaired alertness, violence)
- Alteration of Biological and Chemical Environment
  - Inhalatin of volatile substances, alteration of spatial range of vectors of infectieus diseases
- Extreme Weather Events
  - Flooding, submersion, summer droughts, forest fires

Impact of Climate change is unevenly distributed geographically and agricultural and construction workers are expected to be the wordt affected.

International Journal of
Environmental Research and Public Health

MDPI

Review

Impacts of Climate Change on Outdoor Workers and Their Safety: Some Research Priorities

Haruna M. Moda [1], Walter Leal Filho [2,*] and Aprajita Minhas [2]

Int. J. Environ. Res. Public Health 2019, 16, 3458

Table 3. Health Impacts of Urban Heat Island (UHI) on Outdoor Workers.

Health Impacts	Author & Year
Heat exposure	
Heat Stress/Stroke Fatigue • Dehydration and Kidney Disease • Cardiovascular Disease • Respiratory Distress • Death • Increase morbidity and fatality	Leal Filho et al. [48] Ward et al. [43] Kjellstrom et al. [40] Heaviside et al. [31] Hanna et al. [42] Tan et al. [57] Kovats and Hajat, [56]
Air Pollution	
• Respiratory Distress • Respiratory Track Irritation • Asthma Attack • Increased Respiration due to Heat exposure • Exposure to carcinogens	Kjellstrom et al. [40] Ward et al. [43] Kjellstrom et al. [52]
Unbalanced Physiological Function leading to decrease in work capacity	Lucas et al. [29] Lundgren et al. [24] Kjellstrom et al. [40] Kovats and Hajat, [56]
Extreme weather and sea level rise	
• High risk of flooding causing displacement • Injury • Resource disruption e.g., water supply	Kjellstrom et al. [52] McGranahan et al. [58]
Psychological effects on Workers Mental health	Kjellstrom et al. [7] Lundgren et al. [24] Hanna et al. [42] Kjellstrom et al. [52]

Heat Stress Nephropathy

'Mesoamerican nephropathy' in sugar cane workers El savador and Costa Rica, 2009

KI REPORTS
KIReports.org
REVIEW

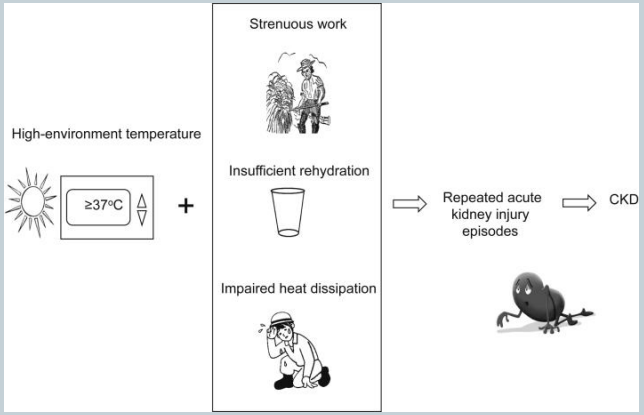
Occupational Heat Stress and Kidney Health: From Farms to Factories

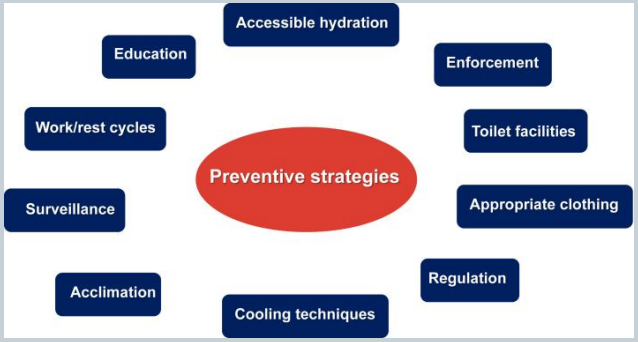
Fabiana B. Nerbass[1,2], Roberto Pecoits-Filho[2,3], William F. Clark[4,5], Jessica M. Sontrop[5], Christopher W. McIntyre[4,5] and Louise Moist[4,6]

[1]Nephrology Division, Pro-rim Foundation, Joinville, Santa Catarina, Brazil; [2]School of Medicine, Pontificia Universidade Catolica do Parana, Curitiba, Parana, Brazil; [3]Renal and Metabolic Division, George Institute for Global Health, Sydney, New South Wales, Australia; [4]Division of Nephrology, Schulich School of Medicine and Dentistry, Western University, London, Ontario, Canada; [5]Kidney Clinical Research Unit, London Health Sciences Centre, London, Ontario, Canada; and [6]Department of and Epidemiology and Biostatistics, Western University, London, Ontario, Canada

Millions of workers around the world are exposed to high temperatures, intense physical activity, and lax labor practices that do not allow for sufficient rehydration breaks. The extent and consequences of heat exposure in different occupational settings, countries, and cultural contexts is not well studied. We conducted an in-depth review to examine the known effects of occupational heat stress on the kidney. We also examined methods of heat-stress assessment, strategies for prevention and mitigation, and the economic consequences of occupational heat stress. Our descriptive review summarizes emerging evidence that extreme occupational heat stress combined with chronic dehydration may contribute to the development of CKD and ultimately kidney failure. Rising global temperatures, coupled with decreasing access to clean drinking water, may exacerbate the effects of heat exposure in both outdoor and indoor workers who are exposed to chronic heat stress and recurrent dehydration. These changes create an urgent need for health researchers and industry to identify work practices that contribute to heat-stress nephropathy, and to test targeted, robust prevention and mitigation strategies. Preventing occupational heat stress presents a great challenge for a concerted multidisciplinary effort from employers, health authorities, engineers, researchers, and governments.

Kidney Int Rep (2017) **2**, 998–1008; http://dx.doi.org/10.1016/j.ekir.2017.08.012
KEYWORDS: acute kidney injury; chronic kidney disease; chronic kidney disease of unknown etiology; climate change; heat exposure; Mesoamerican nephropathy; occupational heat stress





THE GLOBAL RISK OUTLOOK FOR 2019

Types of Risks: ENVIRONMENTAL GEOPOLITICAL SOCIETAL TECHNOLOGICAL ECONOMIC

Top 5 Global Risks in Terms of **Impact**

1. Weapons of mass destruction
2. Failure of climate-change mitigation and adaptation
3. Extreme weather events
4. Water crises
5. Natural disasters

Top 5 Global Risks in Terms of **Likelihood**

1. Extreme weather events
2. Failure of climate-change mitigation and adaptation
3. Natural disasters
4. Data fraud or theft
5. Cyber-attacks

SOURCE: World Economic Forum – Global Risks Report 2019

Flooding after 1953: Delta Plan

Typical NL: water management

Deltaplan: investment next 30 years 20 billion Euro's

Floods in Assam, Bihar, Nepal, Bangladesh, 2019

The poorest countries face the worst of the effects of climate change.

In 2019 nearly four million indivduals were displaced by the Monsoon Floods.