Industrial livestock production and climate change

Real problems and false solutions

Susanne Gura

Side event to UNFCCC Bonn climate talks

Bonn, 1 June 2009

Livestock's "co-benefits"

- 70 % of the world's poor keep livestock
- livelihoods for one billion of the world's poor
- 200 million pastoralists

FAO

Progress is welcome

Camel milk ice cream sold in Rajasthan, India
LPPS

Economic importance of African indigenous breeds

In Southern Africa, the livestock sector contributes 38% of GDP – not even including subsistence economy, drought power and manure

- Mainly indigenous breeds

Performance of Vietnam smallholder poultry

- 70 eggs per hen
- 35 eggs eaten by the family
- 7 chicks reach selling age
- small cost, small workload, small risk
- no public cost

Annual rate of return: 600 %
USD 50 million per year
for 8 million families
5% of Gross Domestic Product

FAO 2006

Livestock‘s emissions

18 % of total human activity related emissions (transport: 14 %)

- **65 % of nitrous oxide and 64 % of ammonia**
- **37 % of methane**
- **9 % of carbon dioxide equivalent**

Includes emissions of feed production
Excludes land use / land use change
Amazone basin: 70% of rainforest is lost to pastures

80 % of agricultural emissions ***IPCC***

Carbon emissions

One third of the crops are for feed

From *feed grain* production:

- 41 million tonnes from fossil fuel use to produce fertilizer;
- 90 million tonnes from on-farm fossil fuel use;
- 10-50 million tonnes from processing, mainly related to factory farms.

Far greater carbon emissions are caused by the destruction of forests and other ecosystems, mostly converted to *pastures* ***IPCC***

Pastures are not worse than feed grain

We can't switch from roughage to more feed

We need to reduce meat consumption

Nitrous oxide and ammonia (1)

- **Animal nitrogen excretion high**
- **Ruminants:**
  When roughage is fed and excreta returned to soils, there is no negative effect
- **Negative effect occurs when feed is grown with chemical fertilizer**
- **Around 40% of nitrogen supply to crops is from chemical fertilizer**
- **Around 33% of crops are grown for feed**
  e.g. 90 % of soybean is for feed

FAO

False solution: Nitrification inhibitors

far from affordable, efficient, practical

Grasslands:
Carbon sink AND food resource

- 30 % of global land, 70 % of agric. land
- 34 % of carbon stores (roots)
- Seasonal use by wild and domesticated herds contributes to grassland conservation as well as to its carbon sink function
- Ruminants are the only way to turn grassland into food
- Evolution: grasslands & ruminants

Methane (1): Enteric fermentation

Source No. 1: Enteric fermentation
Problem: Too many cattle

False solutions:

- **Genetically change *methanogene bacteria***
  or discourage them by vaccination

but*: *Among the oldest and least understood group of microorganisms (Archae)

- **Intensification**

but: major problems of animal health & welfare, feed unresolved at present level of intensification

=> Reduce cattle numbers,
=> reduce meat and milk consumption

Methane (2): Liquid manure

Source No.2: *Liquid manure*. (Solid manure has no methane emissions)

3 % of anthropogenic methane emissions

3 % could be crucial in mitigating climate change

Problem: *Pig factory farms*

False solution:

- ***Biogas digester*: trying to mitigate emissions from industrial livestock production that do not exist in other livestock production systems.**

But: technical problems, other factory farm problems persist, raises false hope that further intensification would save climate

=> Reduce pork consumption

Reducing methane emissions from factory farms with biogas digesters are a major CDM activity

Smithfield pig farm, North Carolina

Smithfield farm in La Granja, Veracruz, Mexico (2009 swine flu)

56% of CDM projects in Mexico are pig farms
These biodigesters, however, have experienced many technical difficulties that place their future viability and continued development in question.

E. Lokey in: Renewable Energy Volume 34, Issue 3, March 2009, Pages 566-569

The world's main meat and milk producers and exporters

- **Asia has overtaken Europe in terms of milk production.**
- **Brazil has overtaken the USA as the world's main meat exporter.**
- ***Pork* is the most consumed meat in the world, and China produces more than half of it.**

FAO

Industrial production systems

Globally,

- **one third of pigs**
- **half of eggs**
- **two thirds of milk**
- **three quarters of broilers**

are produced with industrial breeding lines

FAO

Livestock Revolution

*2020 Brief No. 61 (***October 1999)**
International Food Policy Research Institute, Washington
Livestock to 2020: The Next Food Revolution

Policy support, subsidies, tax breaks

=> Industrial production grows 7 times faster than traditional production

Level playing field?

Demand driven?

Driven by subsidies: Pig production in Vietnam

Fifteen potential types of subsidy for *imported breeds*, totaling USD 31 per sow per year, provide up to *70% of the gross margin*

ILRI 2006

=> *Abolishing subsidies means public savings!*

Driven by low labour cost: Contract production in Thailand

- Income below minimum wage
- Expected stability failed
- Indebtedness
- Risk of diseases
- Technology pressure, i.e. Biosecurity

source***: I. Delforge (May 2007): Contract Farming in Thailand: A view from the farm. Focus on the Global South, Bangkok***

Driven by cost externalisation

What is the true price of meat?

External cost are 0,34 to 0,47 €/kg higher in conventional than in organic pork

The conventional pork production is subsidized in Germany with billions of €

The price difference comes predominantly from distribution and processing cost

Institut für Ökologische Wirtschaftsforschung, Korbun et al. 2004

Driven by government support

- School milk programme in China
  dairy growth 15 % per year
- Dairy Pakistan: Pasteurisation Law

Driven by industry power

- Meat corporations, dairy corporations
- Only four companies provide global poultry genetics
- Multispecies genetic companies

Genus plc, Erich Wesjohann, Hendrix Genetics, Freres Grimaud

Monsanto

- Export health requirements override production for local needs, e.g. culling to be disease free without vaccination

Avian Flu control by smallholder adversity ?

"Against expectations, backyard flocks in Thailand show the lowest risk of detected infection with the virus, only one quarter that of layer and broiler flocks."

FAO 2006

"Bird 'flu follows trade, not migration routes."

Birdlife International, March 2007

"The problem comes from backyard production, in Thailand and elsewhere".

Aviagen/EW-Group, July 2007

No option: Intensification

Increase amount of product from each kg of feed

These calculations never compare the ecological footprints of industrial feed with roughage or nutrient-rich waste

Intensification is based on genetics

New selection biotechnologies are increasing uniformity within even shorter time periods. They are aiming at:

- higher selection intensity (e.g. DNA marker-assisted selection);
- shorter generation intervals (e.g. selection from embryo, not adult animals);
- more females than males in cattle and pig ('sexed semen'); and
- replication of the same animals (clones).

Intensification: More of the same problems

Livestock biotechnologies are likely to lead to

- **faster increase in genetic uniformity,**
- **more market power and dependency on a few genetics corporations,**
- **more disease problems,**
- **more demands for subsidies,**
- **more pressure on animal welfare,**
- **more environmental pollution, and**
- **more climate change,**

in sum, more of the problems that are already now an implicit part of the production system and not likely to be solved

We are not eating the wrong species, but just too many industry animals

- White meat better than red meat?
- Aquaculture better than livestock?

100 kg of feed will produce

- 75 kg of catfish meat
- 50 kg of chicken meat
- 13 kg of beef *WorldFish Center (2008)*

Increasing industrial aquaculture means change from local to industrial feed

“Blue revolution” – no thanks

Consumption per person/year (2002)

Milk

- **North 202 kg**
- **South 46 kg**

Meat

- **North 78 kg**

  36 kg in the 1950ies
- **South 28 kg**

  24 kg in the 1960ies

FAO

Meat consumption

grams per head per day

North	**224 g**
South	**47 g**
Global	**101 g**

Recommendation to save the climate:
(medical journal The Lancet)

90 g/head/day

Benefit for human health: 1 billion people are obese

China: already reached 90g in the cities

Some steps to get there

- Abolish subsidies/tax breaks
- Change the focus of public research
- Put consumption reduction on the UN agenda

Further reading

Industrial livestock production and its impact on smallholders in developing countries

Susanne Gura

May 2008

Further reading

Agriculture and climate change:
Real problems, false solutions

A briefing by Grupo de Reflexion Rural, Biofuelwatch, EcoNexus

and NOAH - Friends of the Earth Denmark

by Almuth Ernsting, Susanne Gura, Bente Hessellund, Antje Lorch, Helena Paul & Stella Semino

Preliminary report available online at

http://www.econexus.info/pdf/agriculture-climate-change-june-2009.pdf