

# Agriculture - Water Pollution & Nutrition (A Cultural Ecological Approach)

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# Challenges of our times

- Talking about Energy ... nuclear power plants and costs of decommissioning.
- Another typ of Energy
- Our everyday energy supply = our nutrition and meal culture
- looking at the consequences of our agricultural production systems
- consequences on our natural resources - water - soil - air etc.

# Challenges of our times

- Air, soil and water pollution as well as climate change are attacking the human livelihoods within rural and urban areas on local and global levels.

For a long period of time Climate Change was located far away in the Sahel Zone - destroying the basis of livelihood of people in West African countries. Now these environmental conditions are coming closer (like the climate change we all experienced during this summer) and are challenges to look for new modes of accommodation in our human and cultural ecological settings.

# Faravahar



long time ago - before the Arabs conquered Iran with Islam  
natural elements were holy:

**Water**  
**Soil**  
**Air and**  
**Fire**

The later was and still is worshiped by the Zarathustrians -  
the old religion in Iran.

In former times people in Yazd brought their dead relatives to a castle on a hill to be taken by vultures in order to avoid holy soil and water to be polluted.



# Symbolic Values

The Parsi in India - even declare about 7 element to be holy: they encompasses

- plants
- animals as well as
- human beings the sacred integrity of creation.

This environmentally sound philosophy and worldview (Weltanschauung) has nearly disappeared in everyday life of people in the country.

What a loss! It could be important to revitalize such a relationship to nature as pollution problems are getting difficult to overcome by technical solutions only!

**My theses is that our (human kind) relationship to the environment still is - even in highly industrialized societies deeply rooted in normative, ethical as well as emotional settings and contexts.**

**Religion and even confessional differences play a role, but mostly overlooked.**

# Symbolic value

I even would go so far as to say that without the symbolic value of our natural elements environmental regulations will fail.

It is our perception of nature that counts. We need a concept to see the tree or other natural elements - and justify them to be beautiful - useful or in danger.

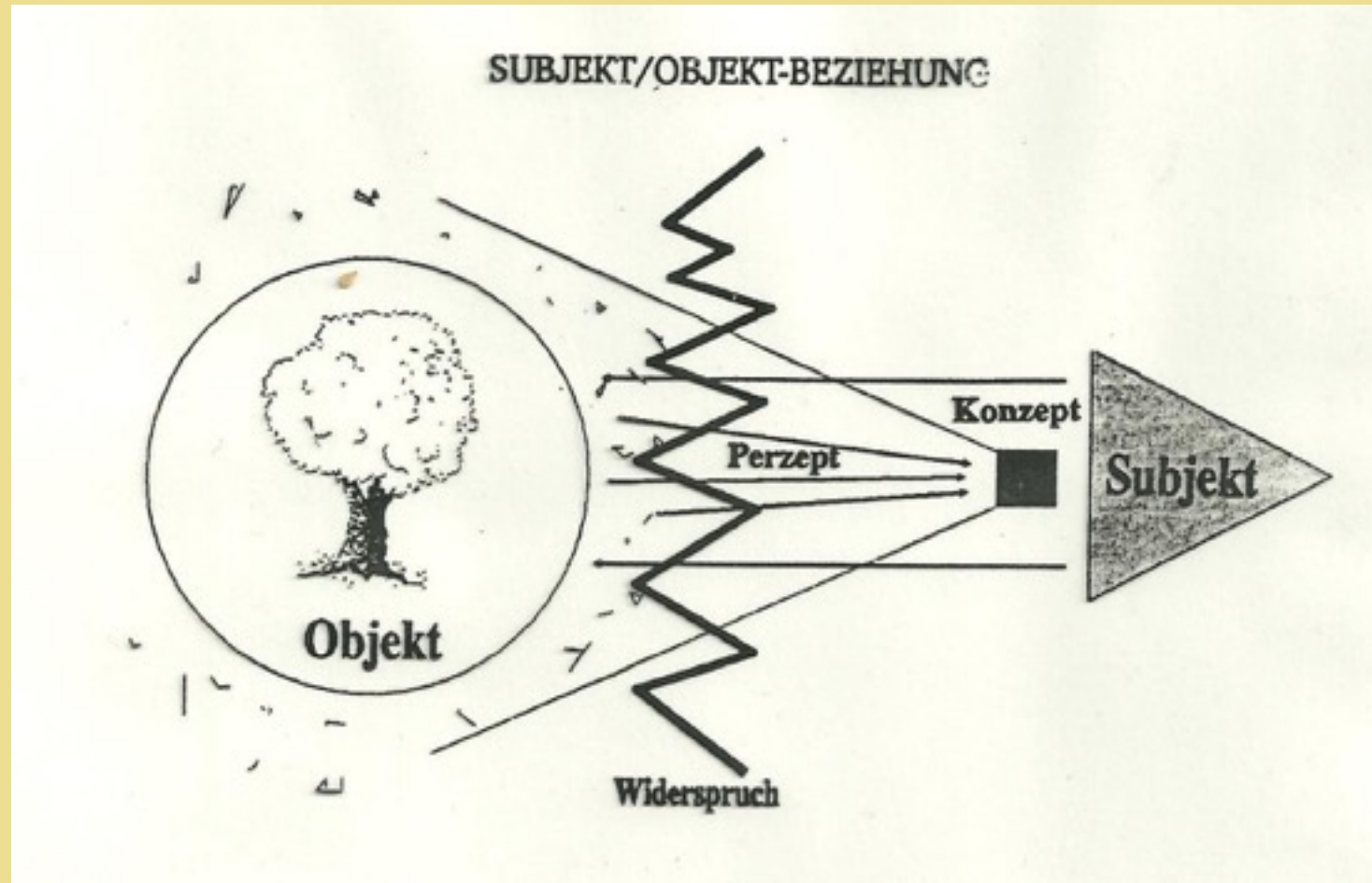
# A phenomenological approach

**A fruit tree is not always and every where  
the same fruit tree**

**Changing perspectives and perceptions depends on the  
subject or the actors involved.**



We need a cultural-concept to see and recognize  
- our perception is the key



taking water as an example:  
Water and water quality can as well be an issue of discussion and bargaining

Since these last years Nitrate pollution in water has become a topic in the media and many articles are discussing this issue in Germany -  
pretending as if it is something new.

## A suppressed problem

No one is interested to mention that it had already been discovered as a problem some decades ago.

EU regulations had started in 1981 -

# Ground water pollution: as serious problem in Germany

**I will refer to my empirical studies that I have done some times ago – in the northern parts of West Germany, in Vechta and Cloppenburg.**

**„Agriculture bears a major responsibility in efforts to protect the quality of ground water. This has been clearly underscored in the ordinance on liquid manure passed in NRW in 1984 - for the Federal Republic of Germany, the first state-wide regulation on the use of manure. „ (Teherani-Krönner 1985)**

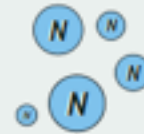
# THE NITRATES DIRECTIVE IN A NUTSHELL



Nitrogen is a vital nutrient that helps plants and crops grow, but high concentrations are harmful to people and nature.

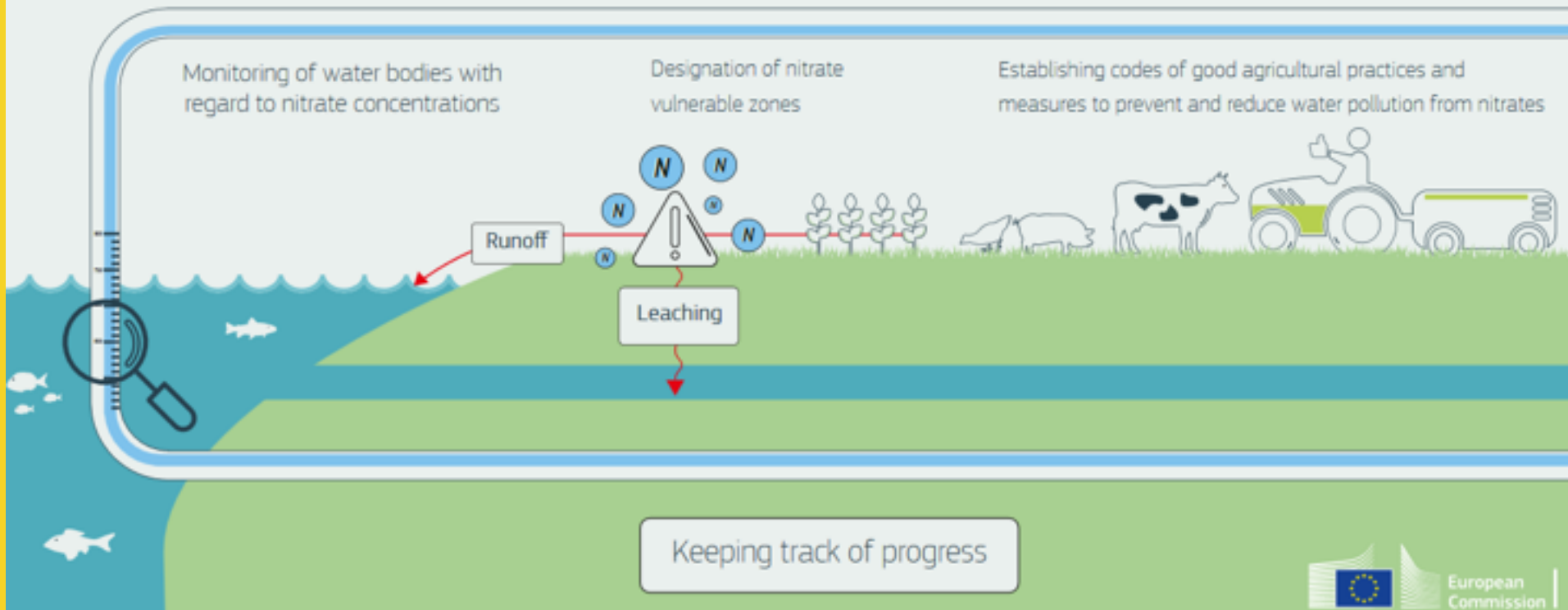


Pure, clean water is vital to human health and to natural ecosystems.



Excess nitrogen from agricultural sources is one of the main causes of water pollution in Europe.

The EU wants to reduce water pollution caused by nitrates used in agriculture and sets out steps for EU countries to take



ec.europa.  
eu  
4/5/2018

# Groundwater in the Water Framework Directive

The components of the [Water Framework Directive](#) dealing with groundwater cover a number of different steps for achieving good quantitative and chemical status of groundwater by 2015.

([ec.europa.eu](http://ec.europa.eu) - 25.8.2018)

Germany is far away from the standards.

A bill of complaint by the EU - with regard to nitrate pollution of water - addresses Germany

**Germany has not been able to sufficiently reduce nitrogen surpluses from agriculture in recent decades. The EU had therefore launched an infringement procedure against Germany.**

**Since 1 June 2017, the new Fertilizer Ordinance applies. With the amendment, the Federal Government responded to the demands of the EU Commission to implement the Nitrates Directive.**

**(praxis [agrar.de](http://praxis.agrar.de) -20.8.2018)**

# Bargaining about the dung units: a horse-trade

The upper limit of 170 kilograms of total nitrogen per hectare per year applies from now on to all organic fertilizers.  
(praxis [agrar.de](http://agrar.de) -20.8.2018)

EU Recommendation 2 livestock units - per hectare  
= 2 cows, 1  
10 pigs  
666 broilers

- (source Fleischatlas 2018)

1 Livestock unit was calculated by 80 kg nitrogen when I did my research.

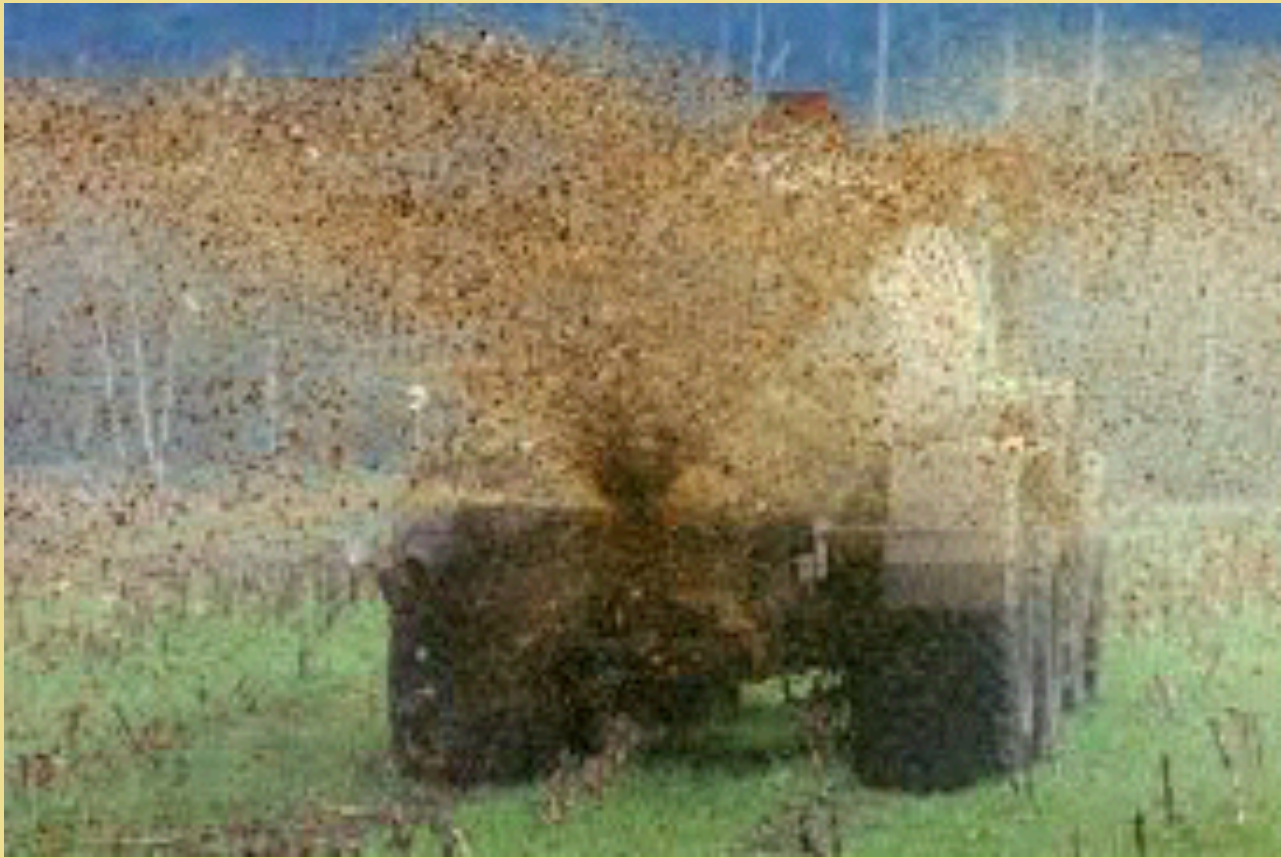


## Changed technology in animal husbandry

Nine out of ten pigs are kept on perforated ground. Most of the stables are construed in a way that urine and feces can be passed through. Bedding like straw is rarely used.

Subsidies went to the construction of such stables as well.

Slurry on the fields - only corn can tolerate that much fertilizing by liquid manure - semi liquid manure but their roots are not able to keep the nitrate dosage



Environmental organizations and the media blames the intensive animal husbandry as polluter.



manure  
and Slurry  
in water is  
shit

# Weltfleischerzeugung 1992 - 2014

AMI

in Mio. t

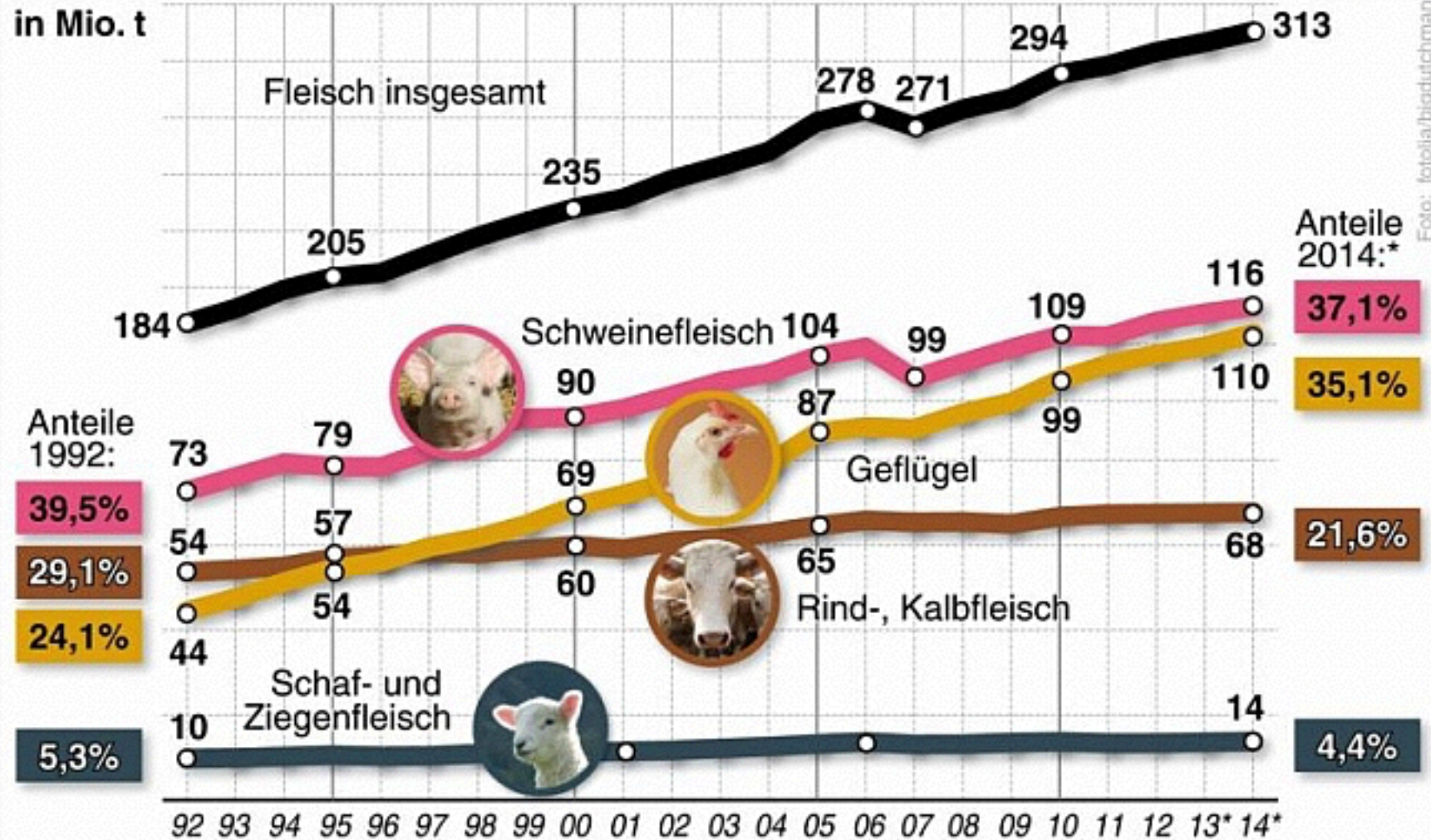


Foto: fotolia/bigdutchman

DBV  
Situationsbericht  
2017/2018 (8/2018)

# A long lasting story - nitrate pollution in groundwater

**Blaming the intensive animal husbandry  
- like that in the regions of Vechta and Cloppenburg  
connotation and imagining that my glass of water (sign for purity) gets  
polluted by slurry (the symbol of disgusting dirt and danger) means  
awareness raising or even more it is sensitization as touching a taboo zone;**

Mary Douglas 2003: Purity and Danger An. Analysis of Concepts of Pollution and Taboo

**But not the nitrate fertilizers in vegetable production like asparagus  
cultivation in other parts of Germany - they are hardly attacked.**

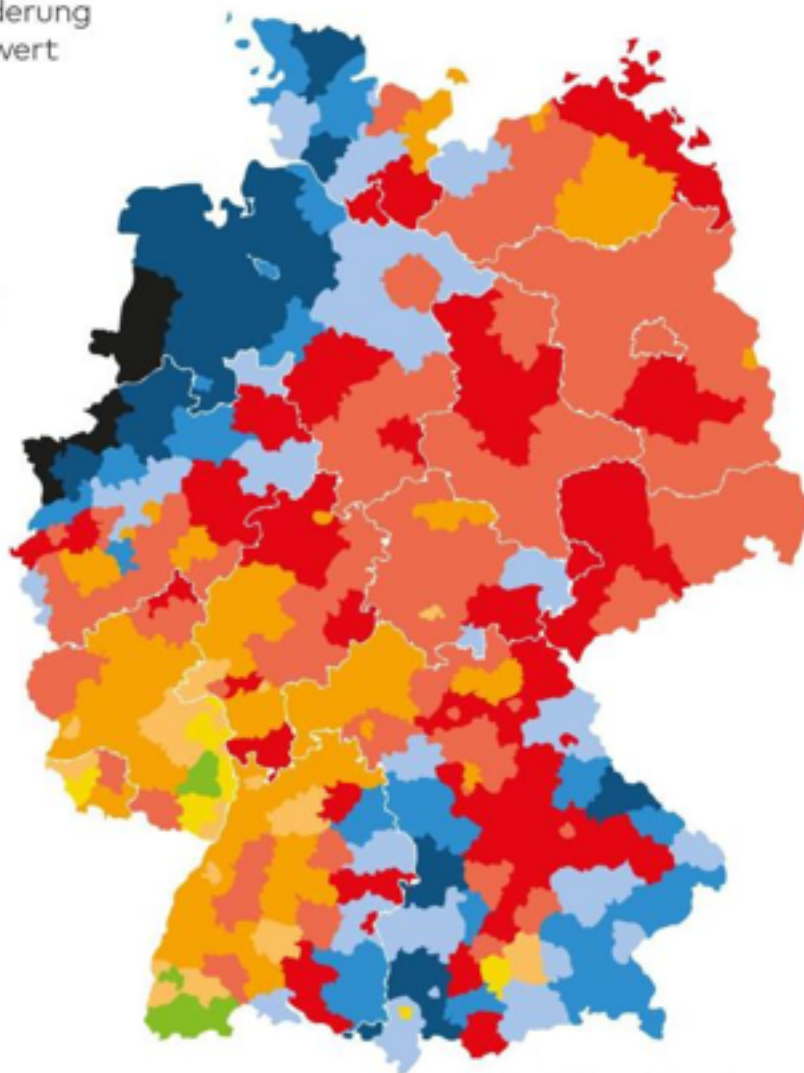
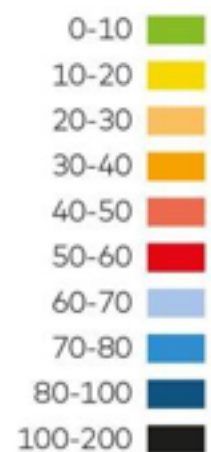


Michael Sowa:  
pig in the soup

## Hohe Nitratwerte besonders im Norden und Süden

Erforderliche N-Minderung  
für einen Nitrat-Zielwert  
von 37,5 mg/l

Minderung in kg N/ha



WELT

Quelle: Umwelt Bundesamt



# Nitrate in ground and drinking water

## EU regulation started in the 1980s

- Nitrate pollution in ground and drinking water was already in the mid 1980s a problem as the EU had reduced the additive pollutants in drinking water by 50 %. Nitrate in drinking water was supposed to be less than 50mg/l.  
Process of decision making - a side effect of standard setting Nitrate from 90 mg to 50 mg /l. A problem for water companies - technological problems not solved.
- It is clear that what had been done so far is not enough - and the Ordinance on Liquid Manure of the mid 1980s in NRW and Lower Saxony does not work.
- Regulations were not effective at all.



**Will new regulations work ?**

Why did it not work so far?

Let me take you to Vechta and Cloppenburg in the mid 1980

When I first started my research in North-Rhein Westphalia and Lower Saxony I made appointments with the Farmers Extension Service Organizations - it happened that they called farmers by saying:

**„...Here comes a women from Khomeini -she wants to know how you treat your hugs.“**

**I did not expect that religious differences in that region could play such an important role - even regarding environmental regulations.**

# A little history of that region: Vechta and Cloppenburg

Vechta and Cloppenburg have an old tradition in animal production.

Farmers had many children; no family planning. They followed an inheritance law that allowed the children to stay on the farm but only the senior son became the owner of the land and had the right to cultivate. ... was entitled to cultivate the land.

The soil in that region was and still is not very fertile and family members on the farm had to either leave the place or invent another sort of income.

Things changed with the construction of the railway to that area. The import of feed stuff became possible. Farmers in Vechta and started to keep pigs and calves, cattle and chickens and sell them to other regions to Münster for example. Thus intensive animal husbandry became a source of income and wellbeing in Vechta and Cloppenburg.

In the early 1900 - more than 100 years ago - livestock population on a farm around the Dümmer See region reached 1000 animals. Farmers became rich and strong and this is ongoing till today.

# Vechta and Cloppenburg - confessional differences

People in Vechta and Cloppenburg are **Catholics**, they were and still are different from the protestant neighboring people and regions as they lived in a enclave. It was and still is a catholic diaspora in a protestant surrounding.

I did not know about it before I started my research and did not expect that this:

- cultural
- religious and even
- confessional

aspect at the end of the 20st century in Germany could play a role in environmental regulation.

## **Vechta: controlling farmers freedom of action: amount and time ban**

With the „Gülleverordnung“ Ordinance on Liquid Manure it was the first time for farmers to become confronted with an environmental regulation.

The amount of 2,5 Dung units were allowed to be put on a hectare of land.

The ideology of being a farmer is: Free man on free land - accepting interventions look difficult.

The timing for manuring is an issue of regulation as well - the farmers had to organize tanks to keep the animal manure during the winter months. Even with some financial support they had to spend some money on the construction of slurry manure tanks.

Farmers partly accepted this time ban - as they were used to avoid taking out the liquid manure on holy Sundays and holidays.

Mary Douglas said: dirt is perceived when it appears at the **wrong place**  
- but in this case it appears at a **wrong time**.

## confessional differences matters

Farmers of Vechta and Cloppenburg had a problem to build their tanks in the neighboring regions. No one was willing to give land or offer contract of leasing - not even for free manuring.

**The protestant farmers just did not want  
the catholic shit.**

# The German Meat Atlas 2018 is looking for a change in agricultural policies

Meat and milk offer 17 % of calories to human beings in the world.  
77 % of global agricultural land is spend on it.

The five biggest meat and milk producer are responsible for greenhouse gases more than the oil company of Exxon.

The aim is more environmental protection and welfare animal husbandry in agriculture.

Fleischatlas- 2018 in Claudia Ehrenstein in Welt Digital

# blaming the consumers

- recommendations are given to reduce meat consumption in Germany
- this in fact shows a slight reaction
- the consumers have reduced meat - somewhat
- from 62 kg to 58 kg per person per year -
- groups of vegetarian and vegans are increasing and more products are offered even in ordinary super markets
- but even reducing meat consumption in Germany does not mean that less animals are produced and kept. The amount is even growing.



# From meat to vegetable meals



- [https://www.tripadvisor.com.au/LocationPhotoDirectLink-g187323-d695537-i77717937-Die\\_Berliner\\_Republik\\_Brokers\\_Bierbourse-Berlin.html#77717937](https://www.tripadvisor.com.au/LocationPhotoDirectLink-g187323-d695537-i77717937-Die_Berliner_Republik_Brokers_Bierbourse-Berlin.html#77717937) </a><br/>This photo of Die Berliner Republik - Brokers Bierbourse is courtesy of TripAdvisor

# Changing Meal Habits

Reducing the meat consumption is supposed to help decreasing the amount of animal production. The consumers are addressed to solve the problem.

The Green party in Germany wanted to introduce one veggie day - and failed to run the election.

But this was again an attack towards the „freedom“ of consumers.

Although there was a tradition in many Christian regions to reject meat consumption on Friday. Even until today all canteen and public places offering meals on Friday have fish instead or in addition to meat on their program.

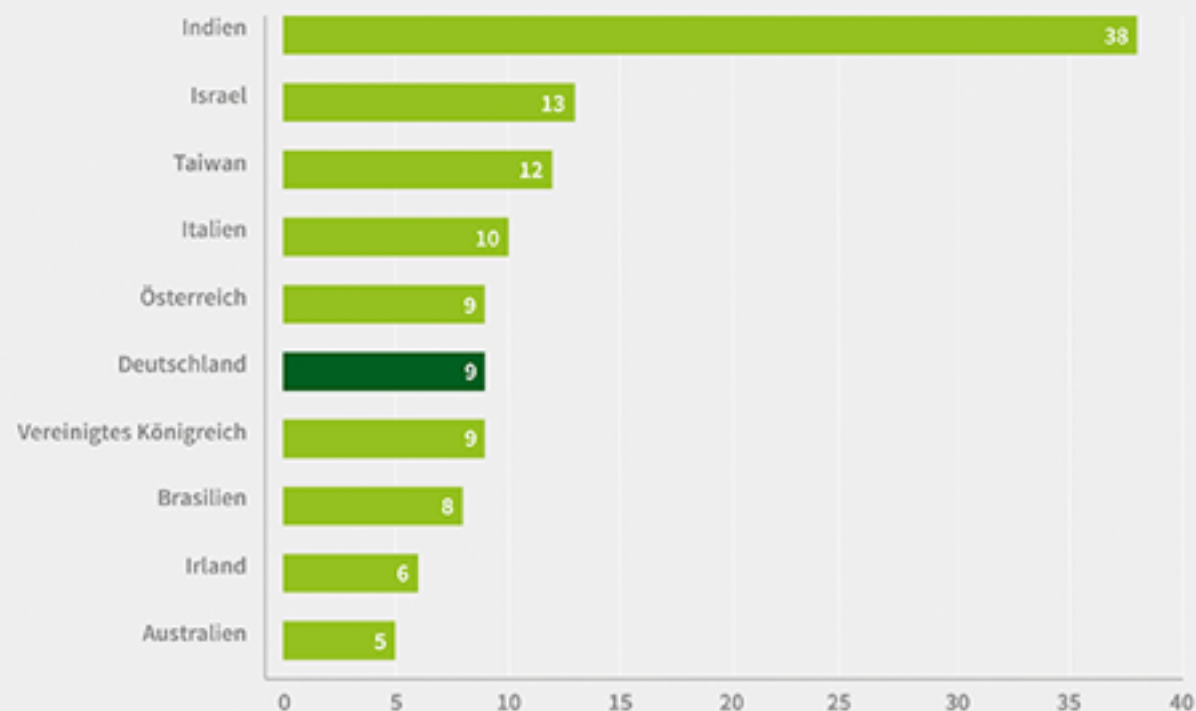
We have an increasing amount of vegetarians in bigger cities and vegans. The amount is not high but they are influencing the supply in supermarkets and shops and restaurants.

# Changing Meal Habits

- More vegetarian
- more vegan
- flexitarian
- slow food activists



## Länder mit dem höchsten Anteil von Vegetariern an der Bevölkerung weltweit (Stand: 2016)

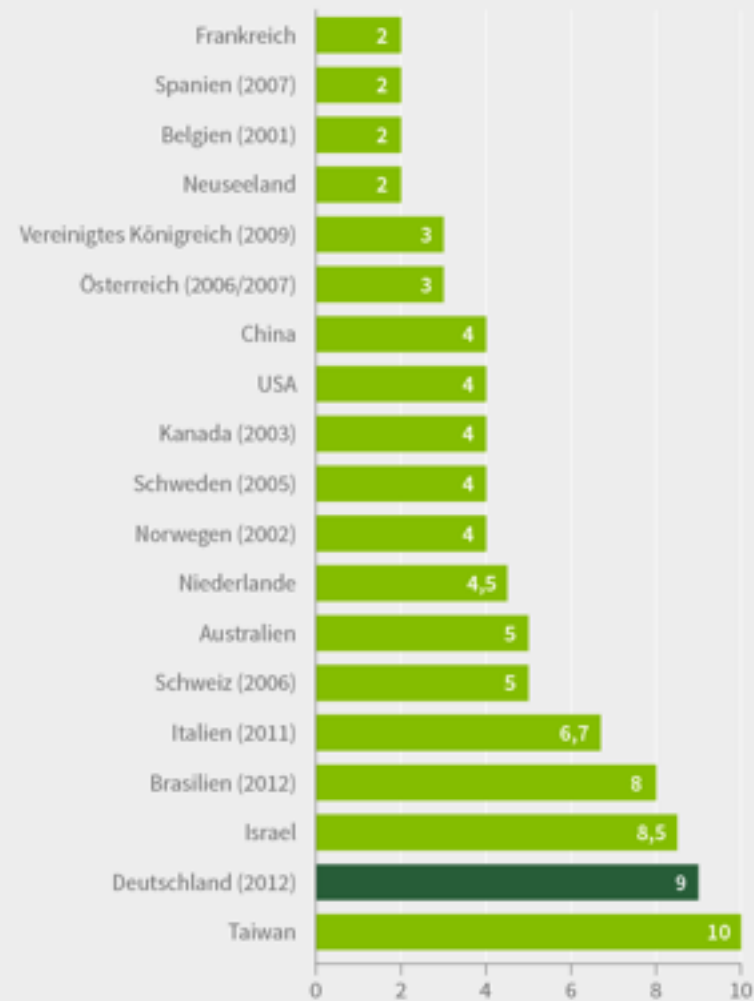


Quelle: WorldAtlas © Statista 2016



## Vegetarier/Veganer in ausgewählten Ländern

Prozentualer Anteil an der Bevölkerung



Quellen: Weltweit, ausgewählte Länder, diverse Quellen; 2013  
© Statista 2013

# Changing Meal Habits

- 

Questions are:

- Will the reduction in meat consumption in Germany reduce the environmental problems of Nitrate pollution in ground- and drinking water?
  - Will it help to reduce meat production in Germany?
- Can it help to improve water resources in the country?

The answer is:

- **NO!**

... South East Asian countries - especially China - consume meanwhile more meat - and pork is the favorite



# German pigs for China

A huge and increasing market in China is longing for  
„Pigs Made in Germany“





Bringing feed stuff from Brasil - soy beans - to Germany and exporting meat to China - leaves the slurry on the field which will leach in the groundwater.

The shit - remains in this country - that beside being famous for its industrial production and export champion - is as well one of the export champions of agricultural products as well.

Even if the population in Germany is not growing - the amount of animals that are produced in this place - is a high source of pollution and green gas emission.

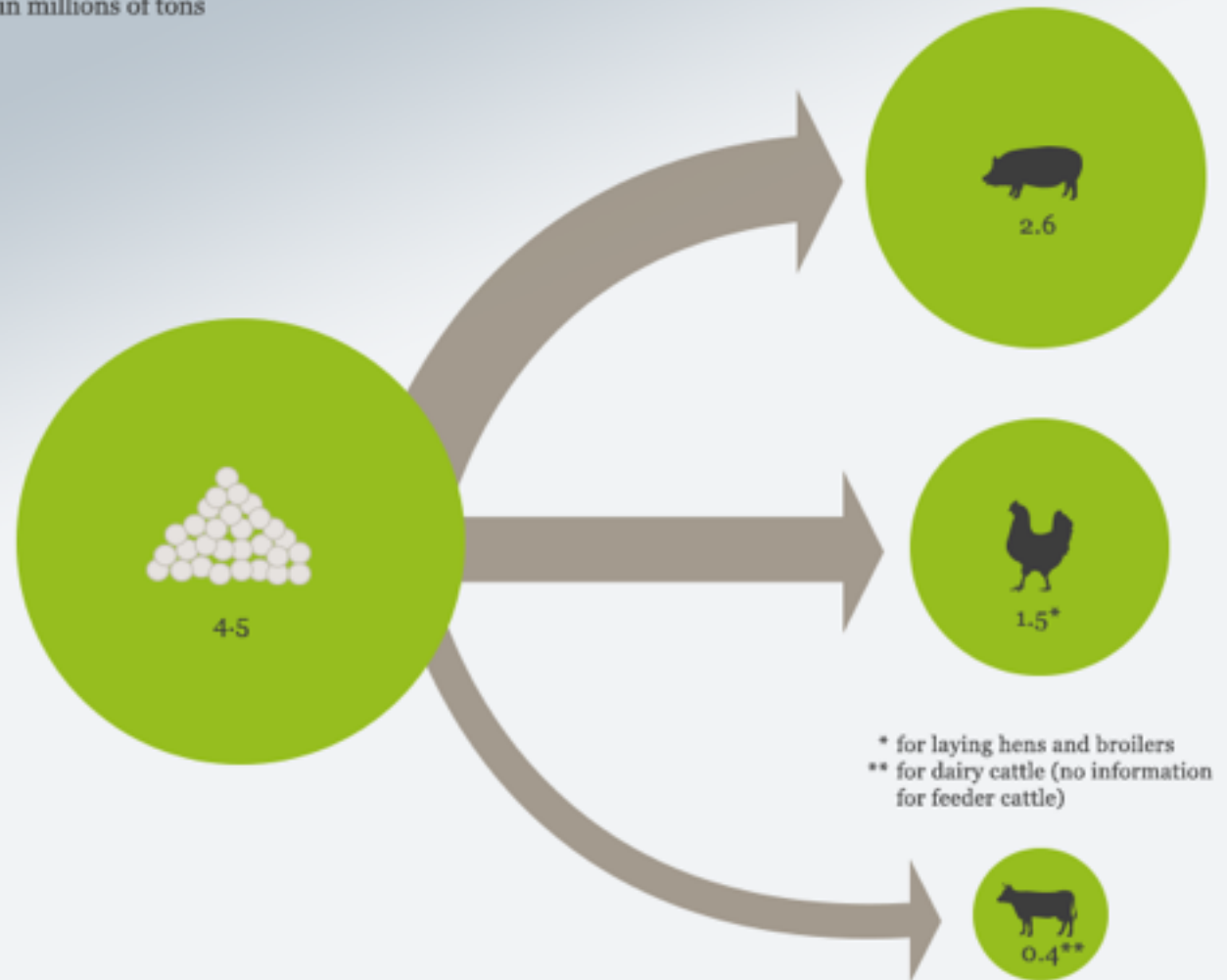
The **population of animals in the Global North** has to be taken into consideration whenever **population growth** as a source of environmental problems is discussed . These animals do pollute much more than the people in many parts of the Global South.

- GHG 10.000 t CO<sub>2</sub> in Germany - but much lower in e.g. India

Importing  
Soy beans from Brasil etc.

## Soy meal consumed in Germany in 2014/15

in millions of tons



# Liquid manure trade is flourishing

2016, more than 2.2 million tons of animal dung from Holland was exported - already three percent more than in 2015. The equivalent of around 66,000 trucks or 900 shipments a year come from Holland to Germany. For example, Germany is the largest consumer of Dutch dung, although it is abundantly available domestically. In 2015 alone, 208 million tonnes of slurry flowed from German stables - 92 times as much as imported from the Netherlands.

. Greenpeace - Gülle ohne Grenzen - September 2017 - 22.8.2018

- 200 million square meters slurry manure in Germany ...

(source Fleischatlas 2018)

# Can we guarantee the purity of water?

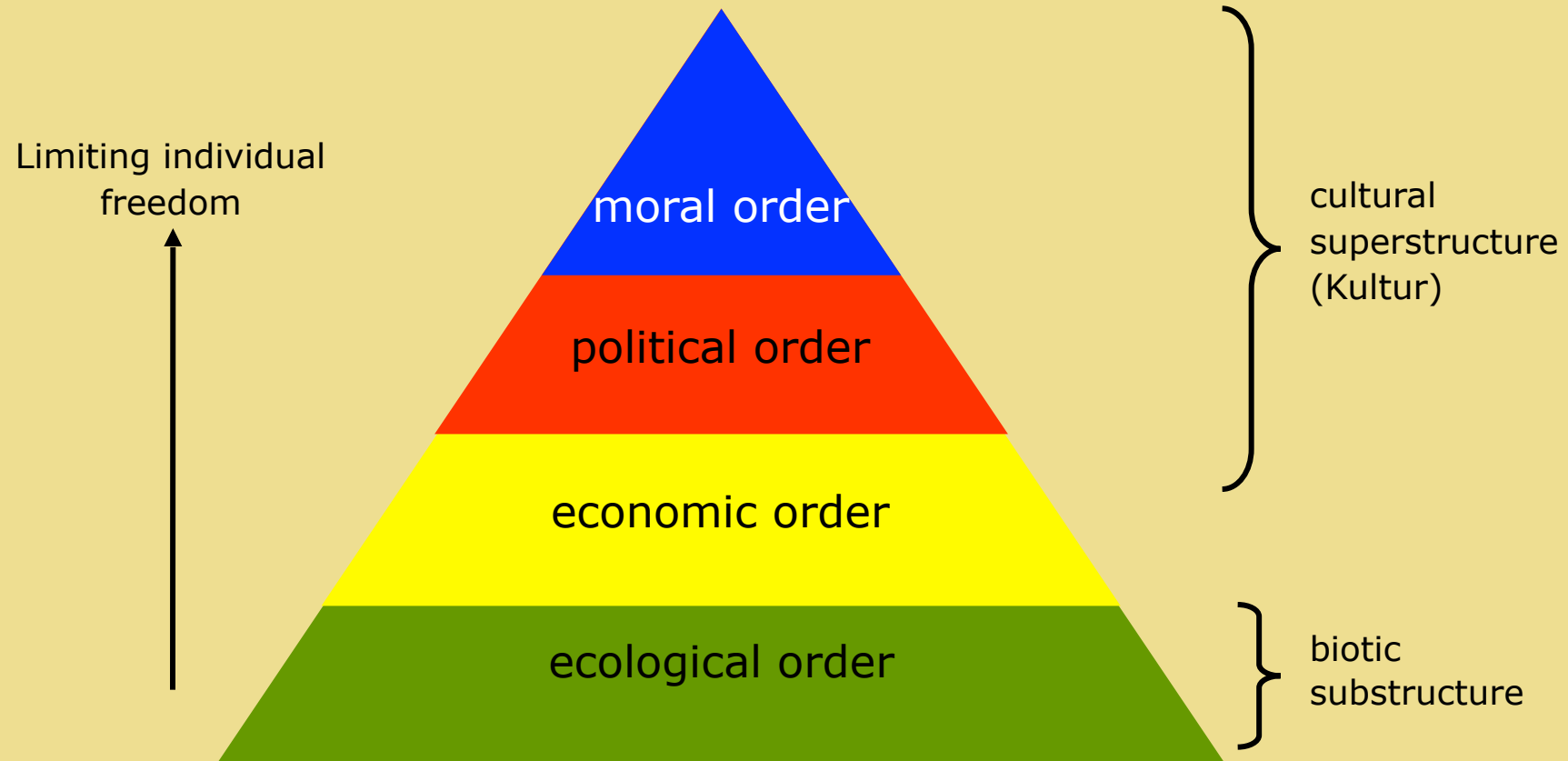
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beside keeping the population of animals in the country ?



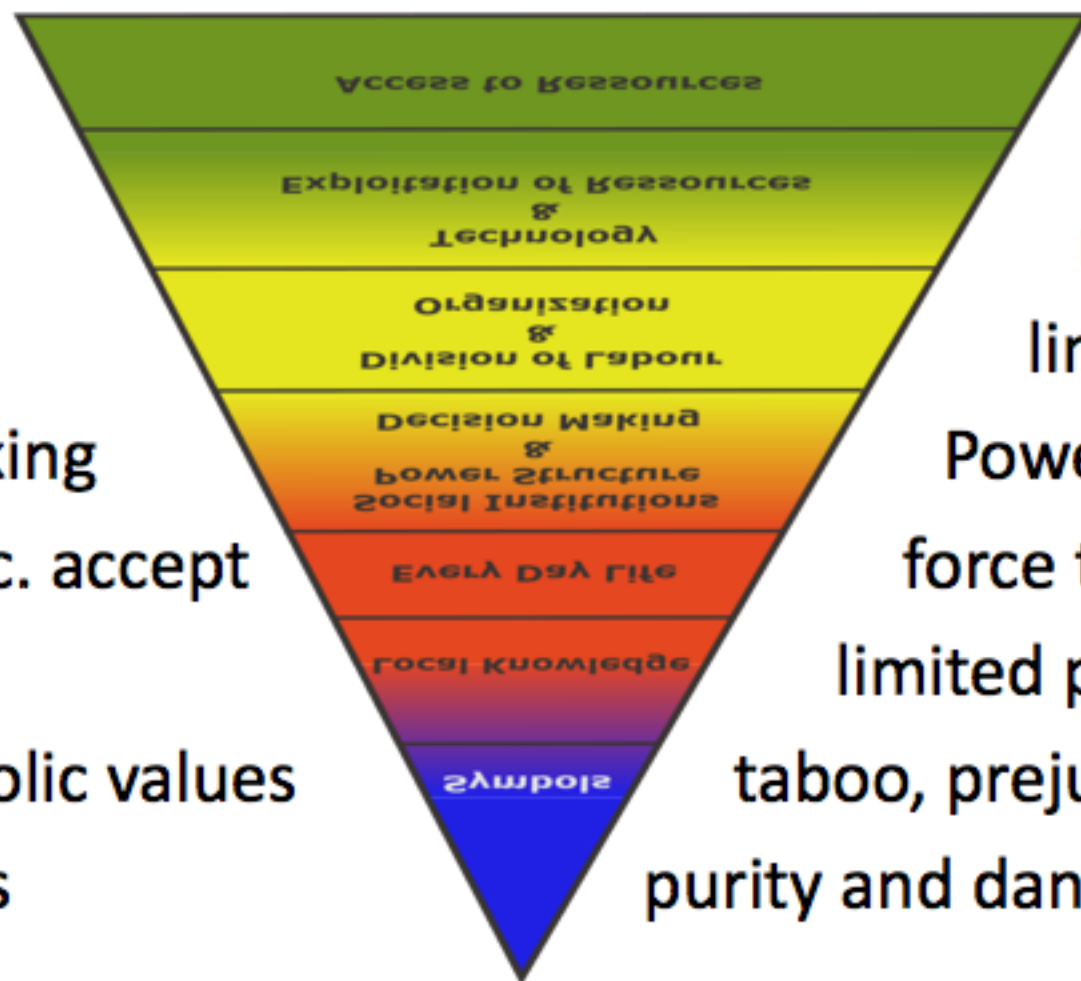
Streetart in Berlin- Homeland

# Human & Cultural Ecological Pyramid



# Analyzing the scope of action within the cultural ecological funnel

- Eco Potential
- Technological options
- Social capacities
- joint decision making
- Routine action, soc. accept
- Knowledge system
- Cultural and symbolic values
- Moral and believes



- limitations
- technological barriers
- risk avoidance
- limitations to particip.
- Power structure
- force to change
- limited perception
- taboo, prejudices & discrimination
- purity and danger

# Understanding people's rationality

- Their perception
- Their priority setting
- Finding their scope of action
- Through the cultural ecological funnel

Vechta & Cloppenburg

resources - soil fertility- water- animals

Technologies in intensive animal husbandry  
- liquid manure stable

Economy - local and global-

Social organization religiøs  
institutions

Action level - routine

Local  
autonomy  
knowledge  
Symbols  
& taboos



# Limitations and options

**Environmental Resources - groundwater pollution**

**Technologie in use - intensive animal husbandry -liquid manure slurry collecting**

**Political regulations - inheritance law - land use policy**

**economical success during decades - import of feedstuff to Vechta**

**differences and conflicts with neighboring regions**

**rejecting the catholic shit by the protestant neighbors**

**Slurry regulation a matter of normative and cultural value system**

## **EU-KOMMISSION VERKLAGT DEUTSCHLAND**

Die großindustrielle Agrarwirtschaft ist der wichtigste Verursacher hoher Nitratkonzentrationen im Grundwasser. Schon seit 2008 drängt die Europäische Kommission als „Hüterin der Verträge“ auf die angemessene Umsetzung der [EU-Nitratrichtlinie](#). Aufgrund der anhaltend hohen Belastung reichte die EU-Kommission im November 2016 schließlich [Klage gegen Deutschland](#) ein. Es drohen hohe Strafzahlungen. Mit einer Reform der Düngegesetze sollte schärfer gegen die massive Überdüngung der Felder vorgegangen werden. Im Frühjahr 2017 verfasste Deutschland daraufhin die Düngeverordnung neu. Doch viele Experten fürchten, dass die neuen Maßnahmen nicht für eine Kehrtwende ausreichen.

Gülle ohne Grenzen - September 2017 - (22.8.2018 )

Nitratbericht 2012  
Gemeinsamer Bericht  
der Bundesministerien  
für Umwelt, Naturschutz und Reaktorsicherheit sowie  
für Ernährung, Landwirtschaft und Verbraucherschutz

Nitratbericht 2016

Gemeinsamer Bericht der Bundesministerien für  
Umwelt, Naturschutz, Bau und Reaktorsicherheit  
sowie für Ernährung und Landwirtschaft