# The Carbon (& other key) Impacts of Meat

# Challenges & Solutions

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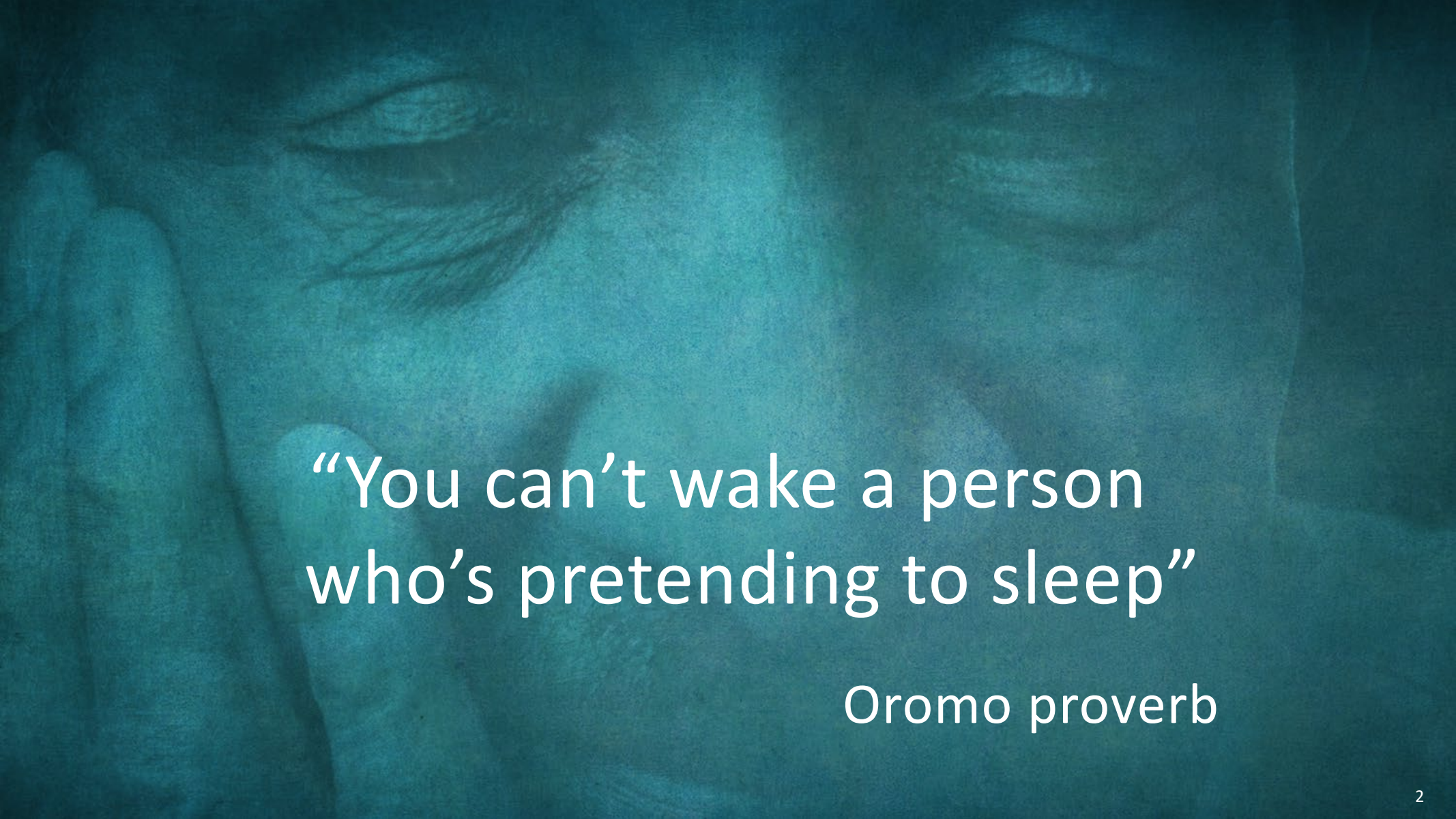
“You can’t wake a person who’s pretending to sleep”
Oromo proverb

**70%** of biodiversity loss

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**21-37%** of GHG emissions

© Greenpeace

**80-85%** of target catch managed at limits

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**MOST** chemical use

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**70%** of freshwater use

**70%** of effluents

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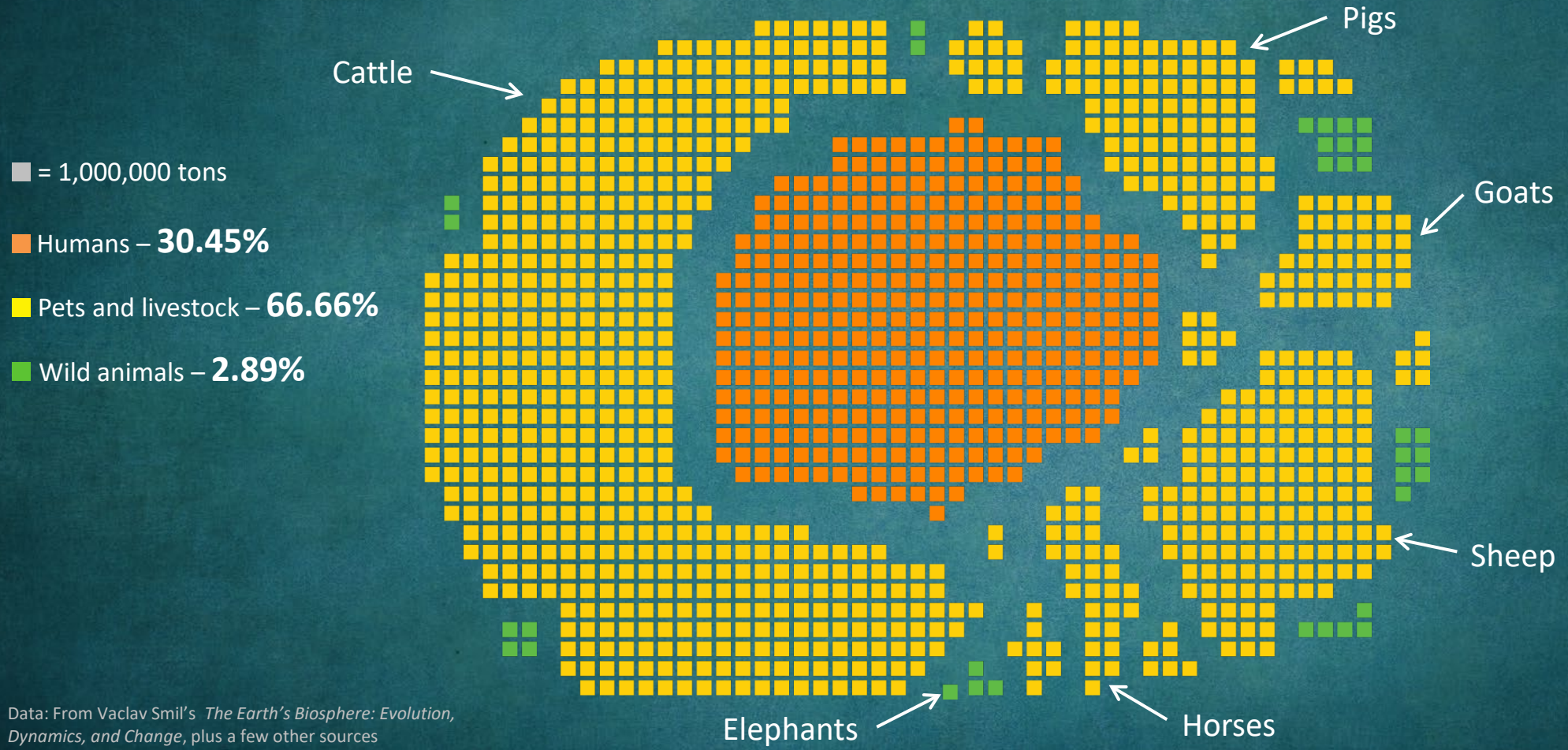
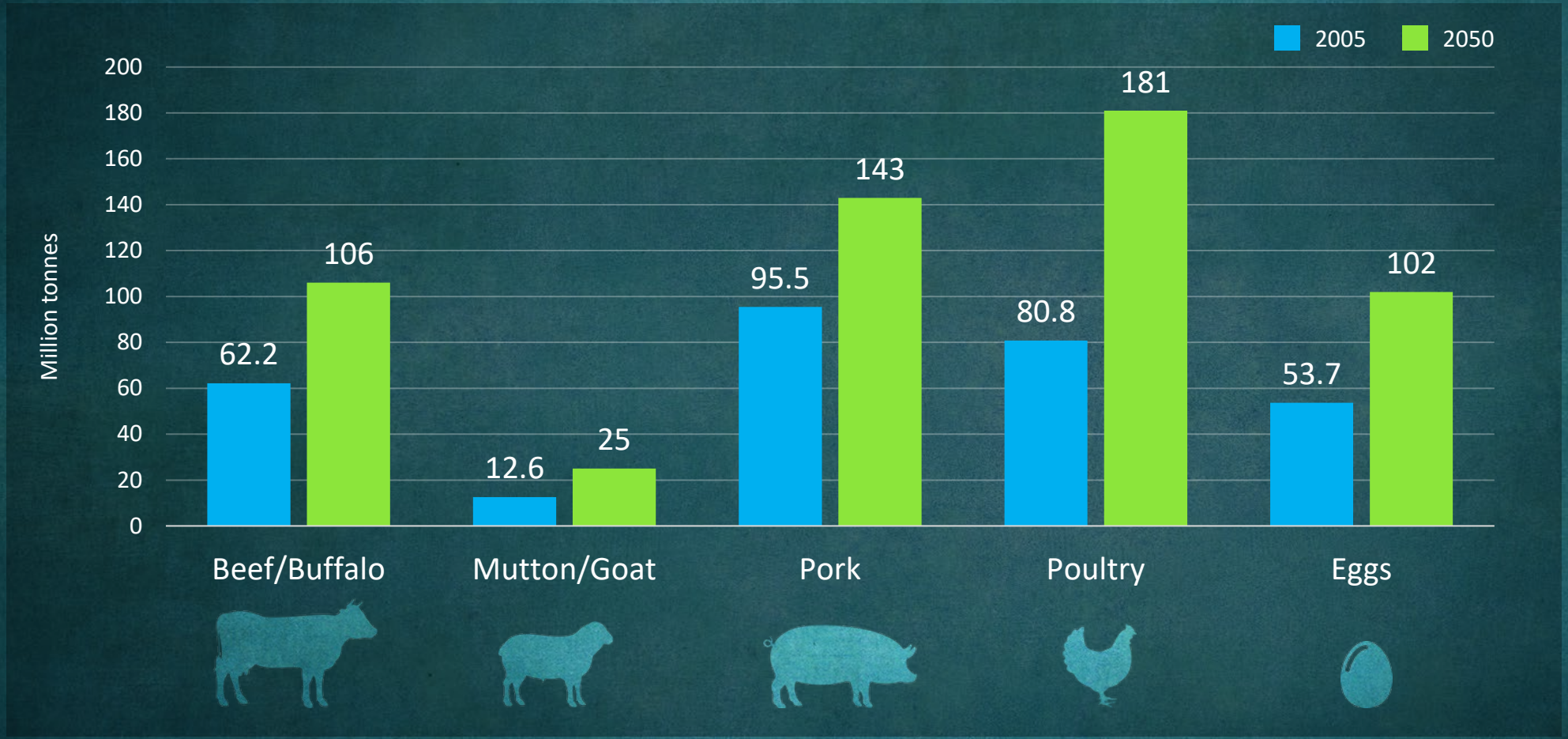
**50%** of topsoil loss

# Earth’s land mammals by weight



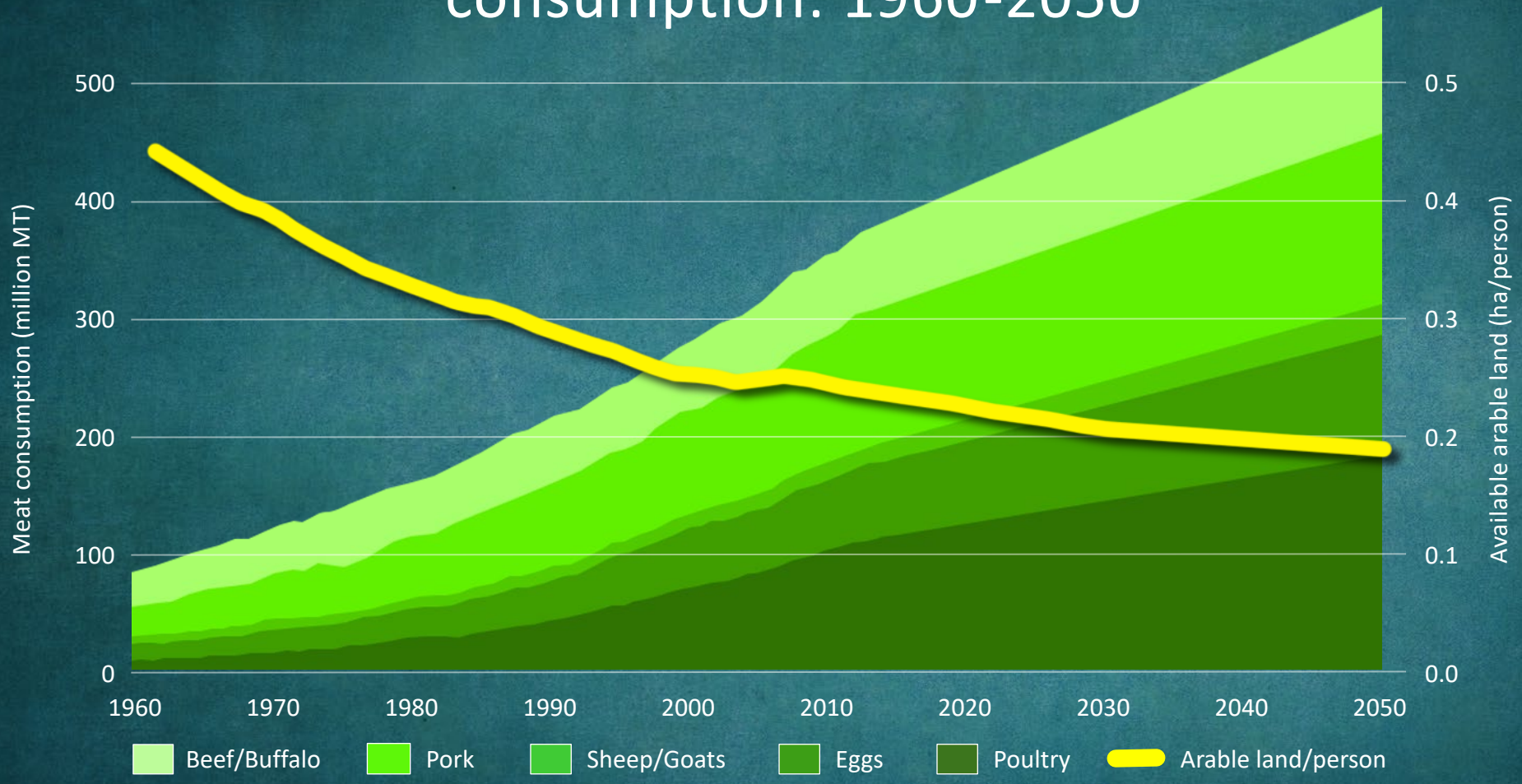

Data: From Vaclav Smil’s *The Earth’s Biosphere: Evolution, Dynamics, and Change*, plus a few other sources

# Global demand for meat, 2005 vs 2050




Source: Our World in Data ,2024, based on FAO estimates and projections

# Actual (and projected) world animal protein consumption: 1960-2050




Source: FAO 2013

The issue isn't

**what** to think,

it's **how** to think

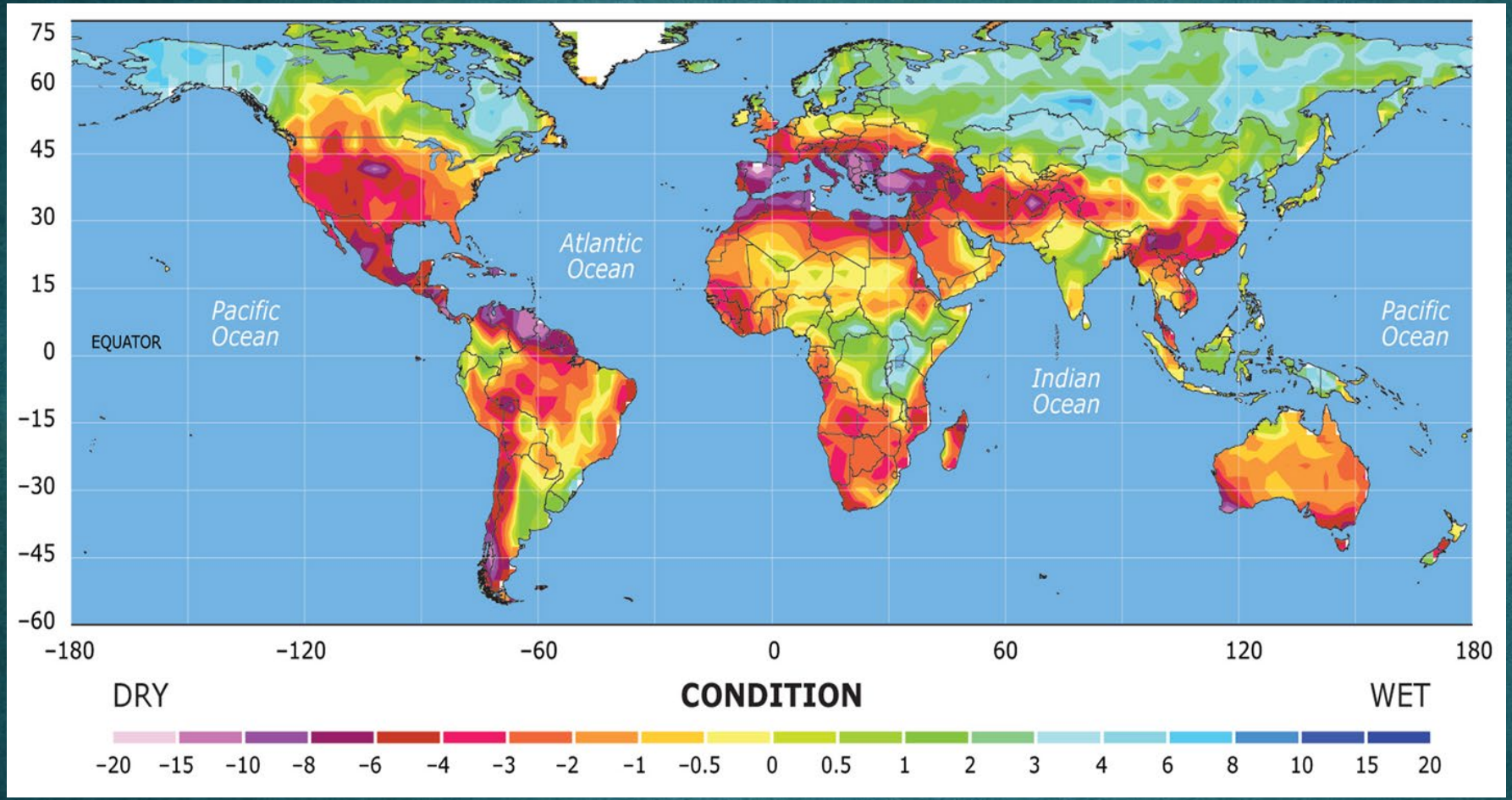
What is more sustainable
**today**,
won't be **tomorrow**

Climate change will shift

**where** and **how**

we produce meat and feed

# Global drought forecast – 2030-2039




Source: UCAR




# Climate impacts on livestock

- Water availability
- Higher temperatures
- Pasture and feed quality, availability and cost
- Increased stress, disease, and mortality rates
- Supply chains will shift, ingredients too

# Poultry – efficiency matters

## Global improvement evolution

| | 1925 | 1945 | 1965 | 1985 | 2005 | 2045* |
|---|---|---|---|---|---|---|
| Conversion – kg feed/kg live | 4.7 | 4.0 | 2.4 | 2.0 | 1.7 | 1.6 |
| Mortality % | 18% | 10% | 6% | 5% | 4% | 3% |
| Age (days) | 112 | 84 | 63 | 49 | 42 | 40 |
| Live commercial weight - kg | 1.0 | 1.4 | 1.6 | 1.9 | 2.4 | 3.2 |

*projected

Source: Dr. Paul Aho, Novus Poultry Roundtable: Feeding the World and the Role of Poultry, January 2010

Efficiency is necessary
but it's
**insufficient** and **too slow**


The problem with
averages
27
28
29
30
31
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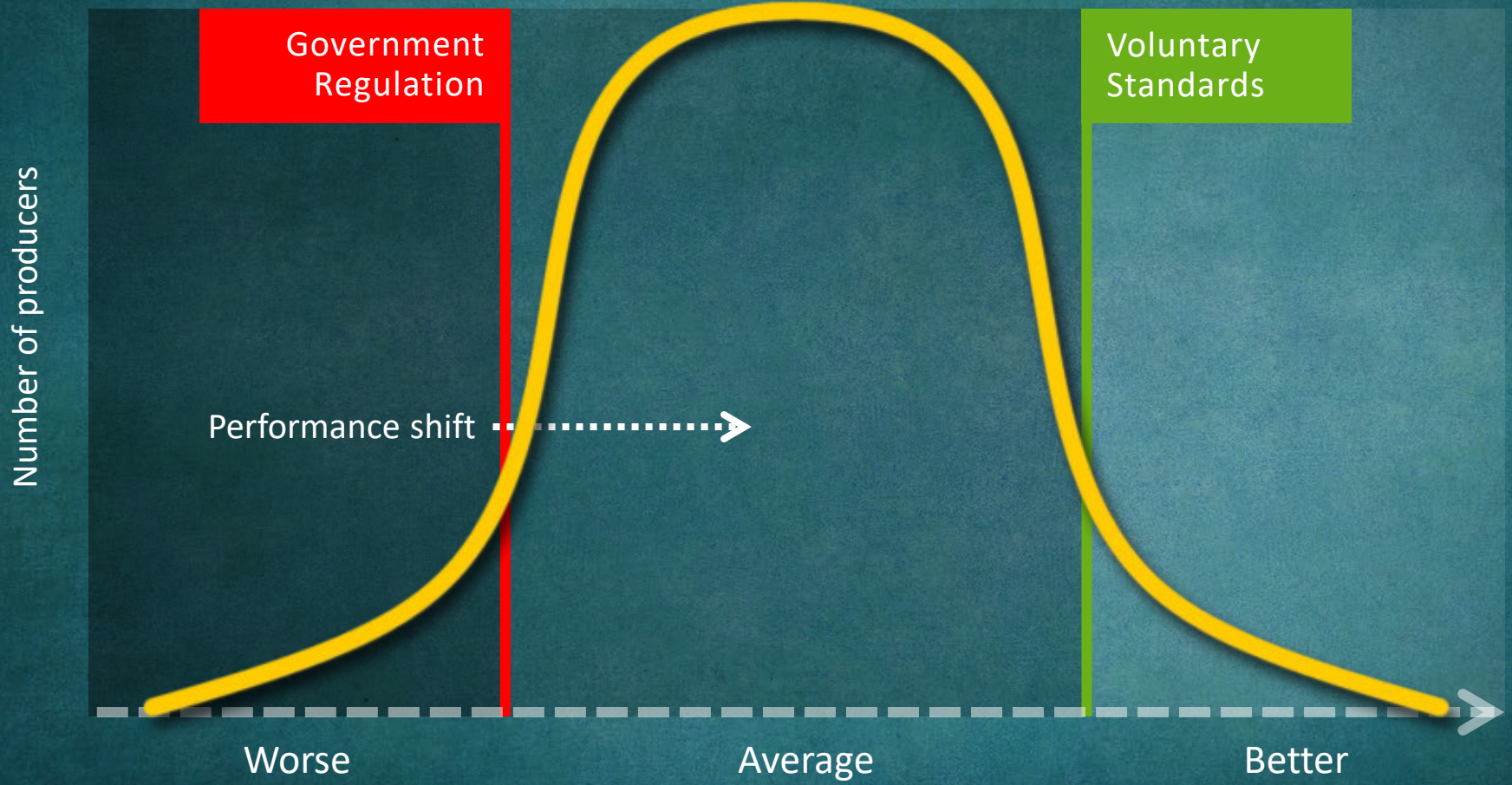
Averages tell you how many, not the

**who, where, why**

of GHG emissions

Which reduces meat's GHG emissions **most**?

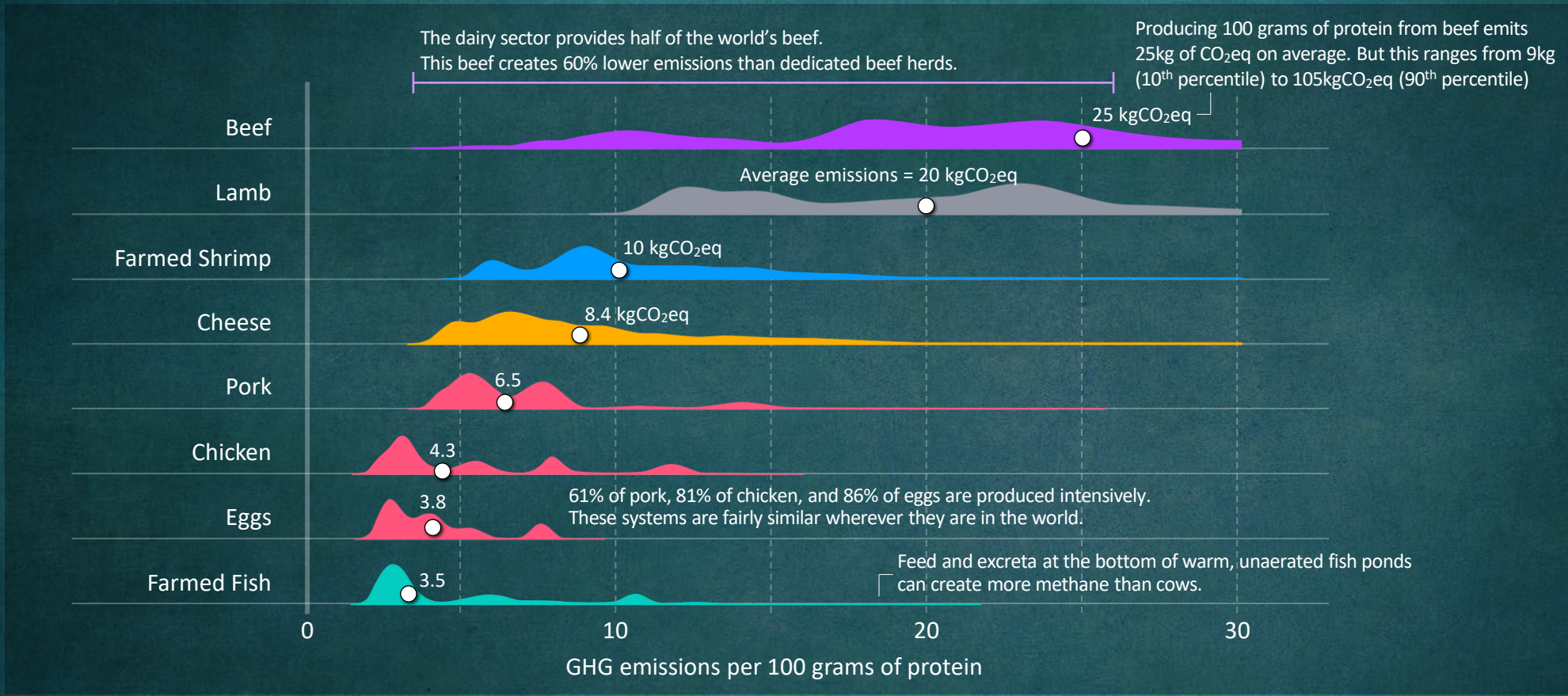
# Reward the best, or move the rest?



# “Average emissions intensity” ignores 10x & 100x differences


# Comparing carbon footprint of protein-rich foods

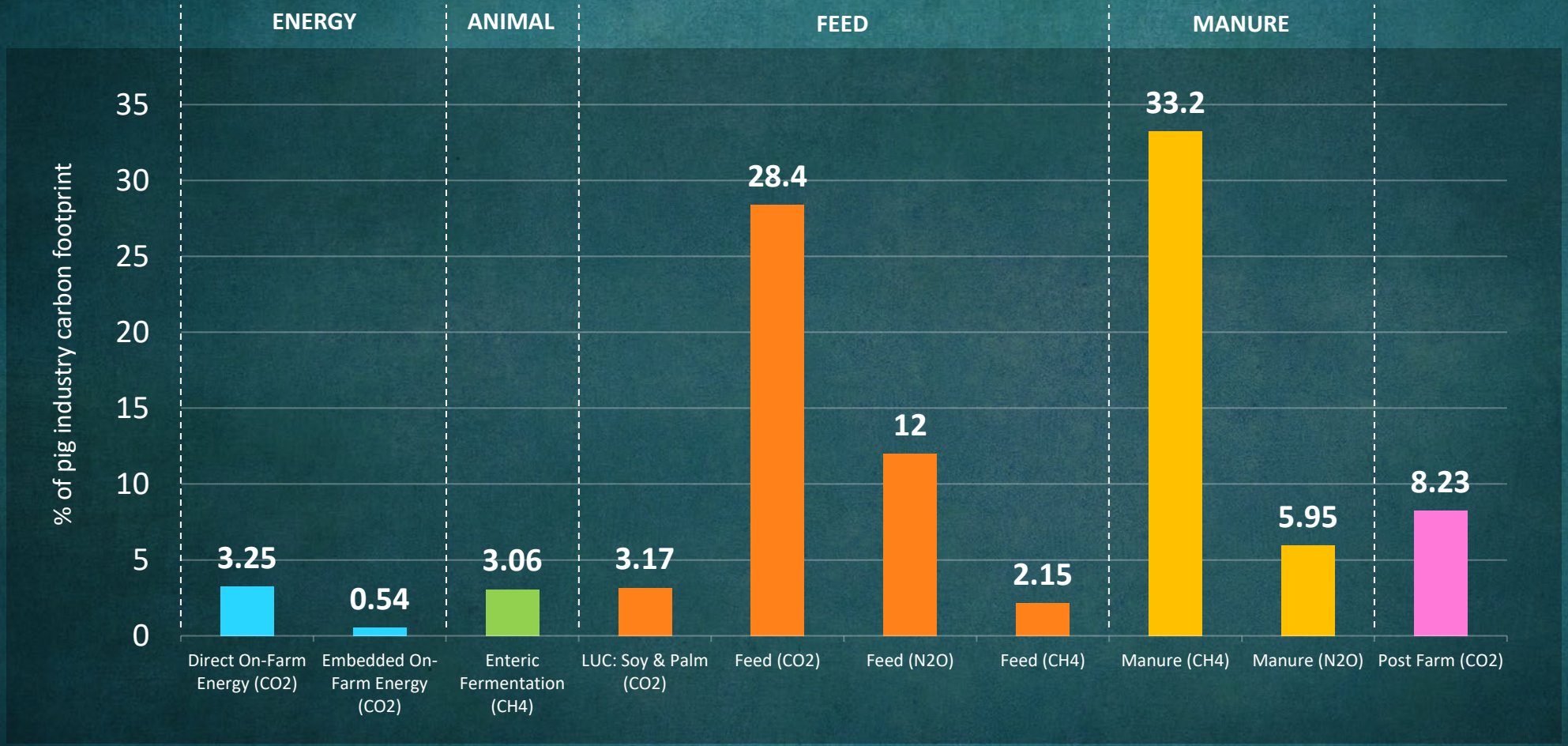
## Greenhouse gas emissions from protein-rich foods per 100 grams of protein




Note: Data refers to the greenhouse gas emissions of food products across a global sample of 38,700 commercially viable farms in 119 countries. Emissions are measured across the full supply-chain, from land use change through to the retailer and includes on-farm, processing, transport, packaging, and retail emissions.

Source: Joseph Poore and Thomas Nemecek (2018). Reducing food's environmental impacts through producers and consumers. *Science.*

# GHG emission sources in the global pig industry




Source: FAO Global Livestock Environmental Assessment Model (GLEAM) Version 3, 2022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# Feed in livestock's footprint

- **98%** of water for livestock
- **45%** of all livestock GHG emissions
- One feed ingredient can double GHG emissions of animals

Source: FAO, 2013. Mekonnen-Hoekstra, 2012

The embedded GHG emissions in feed are **multiplied** in meat

Reputational **risks** are **global**

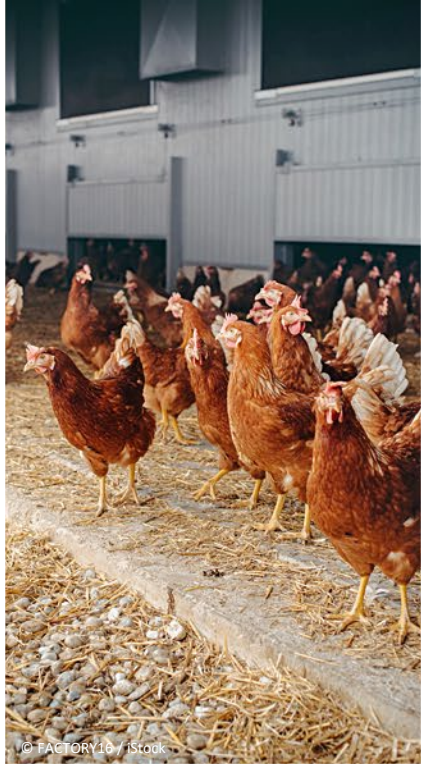
Solutions are

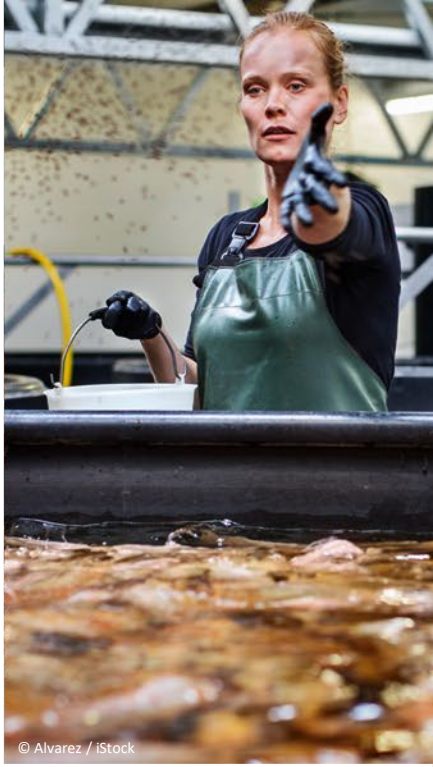
**pre-competitive**

# Global Salmon Initiative

50% of global production certified by 2020, 50% of GHG emissions reduced by 2030

Knowledge sharing **platforms** are **critical**






# Goal: Reduce meat's GHG emissions —

# **50% by 2030**




# Scope 3 GHG emission strategies

- Know your emissions and your suppliers’
- Start with the biggest
- Focus on continuous improvement
- Work with others to move the bottom
- Report results as sectors

We need common metrics, measurements, and **absolute reductions**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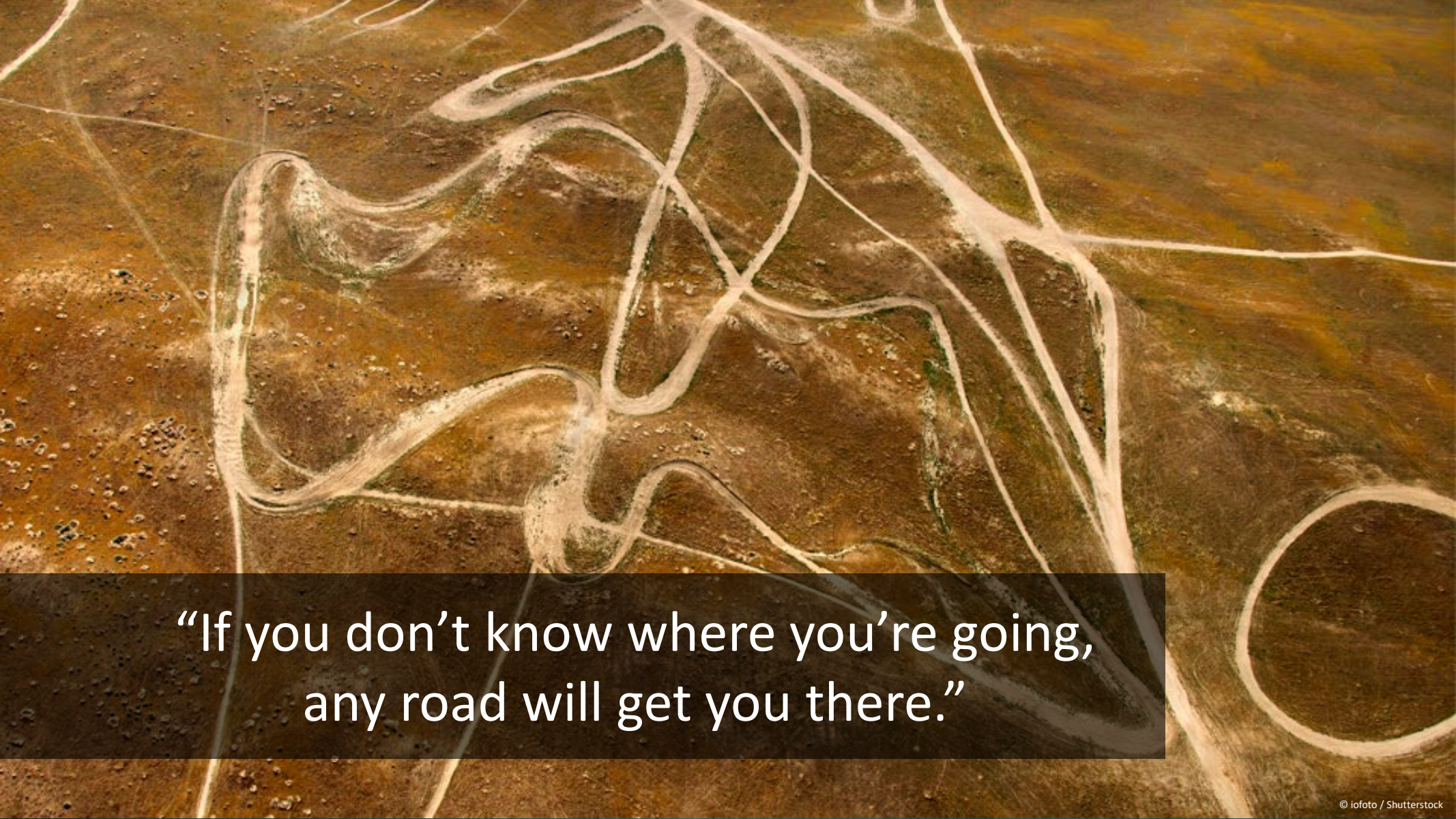
# What is needed will change—*review, revise & reflect*

- Science will improve
- Tools (LCAs, methodologies) will be standardized
- Technology will improve
- Production & Markets will shift
- Regulations will tighten



# Think about it.

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