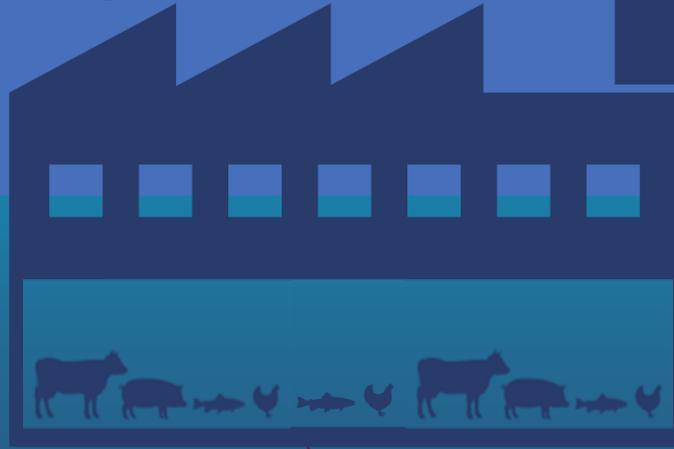


Animal Factory Farming:

Killer stats investors can't ignore



Jeremy Collier
CIO, Collier Capital

70%

\$12.6bn 13%

\$4bn

21%

80%

85%

\$3.3bn

\$3bn

28 ESG issues

The three stages of truth

I. Ridicule

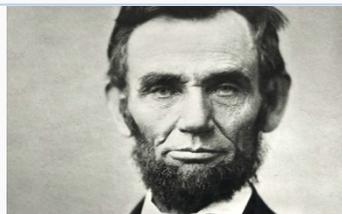
II. Violent Opposition

III. Acceptance

Slavery

"I have endured a great deal of ridicule"

Abraham Lincoln, 1863



1865
13th amendment of the US Constitution

Today – slavery is illegal across the globe

Women's Rights

"A women's place is in her home"

Anti-Suffragette postcard, late 19th century



1919
US Women's Suffrage Amendment

Today – widespread support for equality

Global Warming

"Global warming is a scam, perpetrated by scientists"

Martin Keeley, Geologist, 2004



2005
Kyoto Protocol

Today – global warming is an issue

Animal Factory Farming

"I don't know who asked the sow if she wanted to turn around"

National Pork Producers Council US on use of cruel gestation crates, 2012



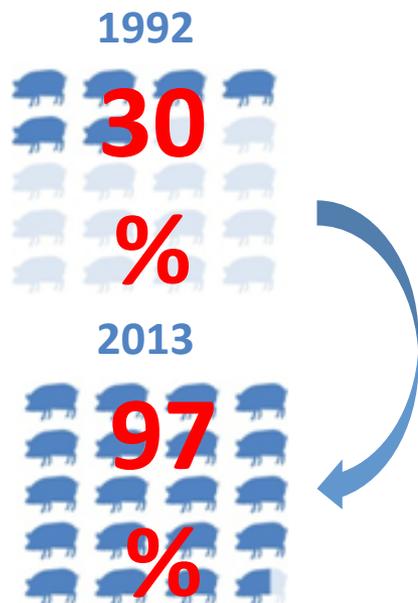
1988 – Sweden bans battery cages
2013 – Gestation crates banned in the EU
2015 – California Enacts Strictest Animal Antibiotic Law in the US

Beginning of the journey to acceptance

Animal factory farming is threatening global sustainability... this is not about vegetarianism

Factory farming is a new phenomenon

Factory farmed pigs (US, %)¹



Global animal population

1993 – 13 billion 
2013 – 23 billion  (+77%)²

On average, there are **3 chickens per person**²

1980 – 9% of  consumed comes from fish farms

2013 – 50%³ of  consumed comes from fish farms

These numbers are projected to increase....

Factory farming has exploded on the world...

99% of all meat consumed in the US is factory farmed; 63% in the rest of the world

The four inconvenient truths



**Factory farming has exploded on the world...
99% of all meat consumed in the US is factory farmed; 63% in the rest of the world**

Threatens Human Health

- **80%** of all antibiotics in the **US** are used on farm animals; **65%** in **Europe**
- **Last Resort Antibiotics: Colistin Resistance Found** Scientists discovered bacteria resistant to the drug of last resort in patients and livestock in China, Europe and US
- Increased **frequency of animal epidemics**



#1 Use of Antibiotics- Worldwide

Contributes to Global Warming and Pollution

- The livestock sector produces **14.5% of global greenhouse gas emissions**, more than the transport sector (13%); this includes
 - **39%** of methane emissions
 - **65%** of nitrous oxide emissions
- **130x more animal waste** than human waste is produced in the US



The irreversible tipping point of global warming is fast approaching

Endangers Food Security

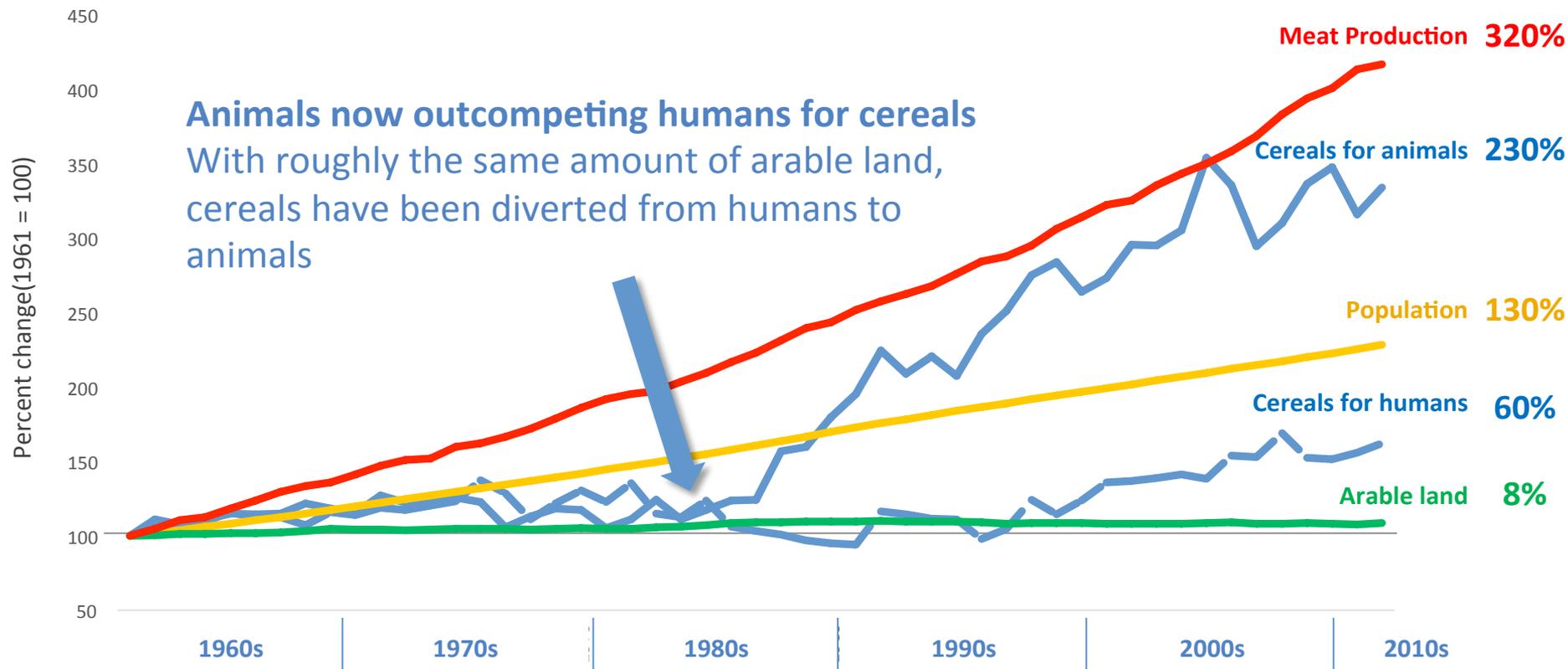
The new phenomenon can't feed the world...

- At least **one third** of the world's grain harvest is **fed to farmed animals**
- On average, it takes around **6kg of plant protein** to produce **1kg of animal protein**
- **4kg of wild fish** are used as feed to produce **1kg of farmed salmon**



Protein consumption is crowding out calories for people living at subsistence level; diverting some resources from animals to humans would feed the world

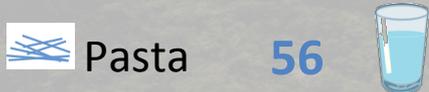
The Green Revolution



Factory farming is a false solution... it cannot feed the world

Consumes Our Plants Scarce Resources

- Estimated liters of **water** required to produce **100 calories** of...



- Animal agriculture is responsible for up to **91% of Amazon deforestation**



#1 user of fresh water; #1 cause of deforestation

The four inconvenient truths...The four horsemen of the apocalypse



**Animal factory farming is threatening global sustainability...
this is about materiality, not morality**

If universities and powerful investors are not on the cutting edge, who will be?

As a university / business leader

- **Influence your *business practices*** – for example, Virgin America only serves cage-free eggs aboard their flights
- **Improve your *catering policy*** – ensure that no factory farmed food is served for internal catering and events; implement a ‘Meat Free Monday’ policy

As an individual

- **Refine your *donations and speaking engagements policy***
- **As a consumer, make the choice to buy high-welfare meat, eggs and dairy and *reduce your meat consumption***
- **Sign up to the FAIRR newsletter**

As an investor

- **Make *impact investments***
- **Review and become a member of the *FAIRR (Farm Animal Investment Risk & Returns) Initiative* (www.fairr.org)**

What does this mean for investors?

For example, **Hallmark/Westland**, a California-based meat packing company.

In 2008, evidence of animal cruelty and health concerns forced the company into

the **biggest meat recall in US history**: 65 million kilograms, equivalent to the weight of 195 jumbo jets.

The recall cost \$116 million. But the resulting health and safety class-action forced them into **bankruptcy in 2012**.

And there are large public examples hidden in plain sight...

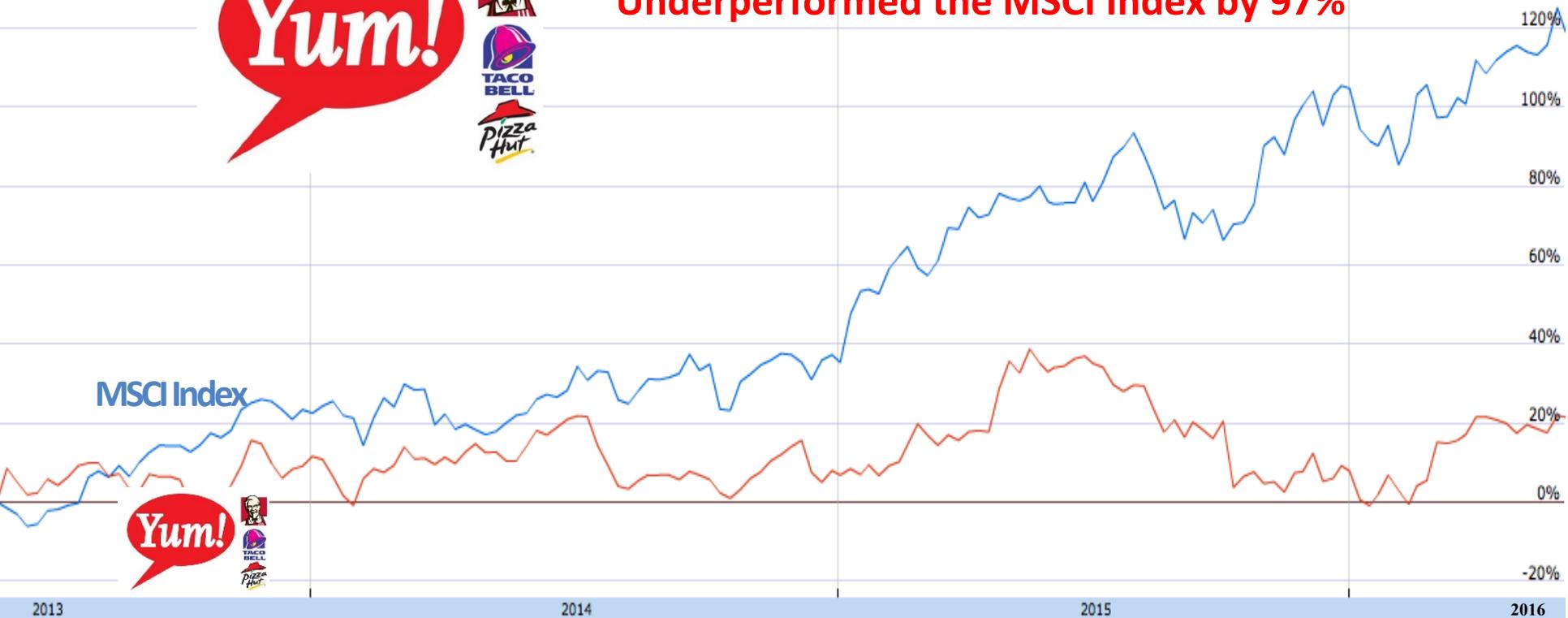
Investment risks in the fast food industry



Risks for investors



Underperformed the MSCI Index by 97%



Pricing investment risk

Investment risks hidden in plain sight

Consumers

WALL STREET
JOURNAL

03.11.2014

“ Meat companies go antibiotics-free as more consumers demand it ”

CNN

22.09.2016

“ Are there too many antibiotics in your fast food meat? ”

Policymakers

CBS
NEWS

12.10.2015

“ California Enacts Strictest Law Limiting Antibiotics in Livestock ”

npr

21.09.2016

“ U.N. Pledges To Fight Antibiotic Resistance In Historic Agreement ”

Businesses

Bloomberg

28.04.2015

5

“ Sales of antibiotic-free & organic chicken have increased 25% & 33% y/y, respectively* ”

The New York Times 28.04.2015

“ Tyson to end use of human antibiotics on chickens by 2017 ”

Investors

Knowledge gap

Consumers, policymakers and businesses are starting to act... Investors should too

Investment risks and opportunities in the **poultry and egg** industry



Risks for investors

\$3.3bn over the first 6 months

economic cost due to US avian flu outbreak,

representing **6%** of the **\$50bn** US poultry industry

Government bill including cleanup =

\$700m

Opportunities for investors



Replacing eggs in mayonnaise **reduces price volatility** in key inputs



The **world's largest food catering company**, serving **8 million meals a day** in the US alone, has walked away from the **most commonly sold mayonnaise** in the world

Impact Investing in food and materials technology



Clara Foods

Clara Foods

Egg whites



Perfect Day

Milk

IMPOSSIBLE™

Impossible Foods

Meat



Memphis Meats

Beef and pork



Clear Labs

Clear Labs

Food analysis



**Bolt
Threads**

Bolt Threads

Silk



Beyond Meat

Beef and
chicken



Hampton Creek

Mayonnaise,
cookies and eggs



Kite Hill

Cheese



Sunfed

Chicken



Gelzen

Gelatine



Modern Meadow

Leather

Impact investments with the objective of reducing dependence on animals

Farm Animal Investment Risk & Return Initiative

As investors we care about the bottom line – have we priced risk?

1. A collaborative network *by* investors, *for* investors.
2. With an objective to close the knowledge gap.
3. It's about materiality, not morality.
4. Since launch in December, more than **\$1.5 trillion** of AUM joined the FAIRR network.



By joining, you can be an early adopter to price this risk

FAIRR is a hub by investors for investors

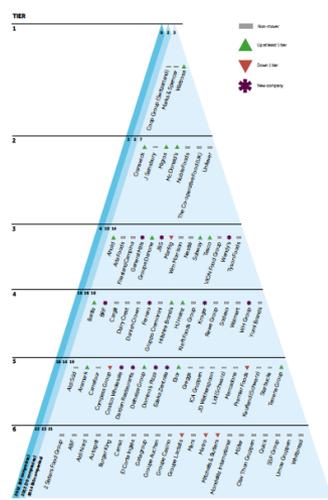
Investor Collateral

Investment risk report



28 ESG risks

Benchmark



Transparency on supply chains

Case studies



Practical help by investors for investors

Direct Engagement

Internal risk management

- ❖ Ask your ESG research providers to identify metrics and provide data on this risk

Active Stewardship

- ❖ Direct dialogue with company management on these issues
- ❖ Collaborative engagement with companies

Bridging the knowledge gap for investors

FAIRR Engagement with Investee Companies (April 2016)



Antibiotics engagement – backed by \$1.5 trillion AUM

- Targeting **10 of the largest global fast food companies**
- Addressing the **excessive use of antibiotics** in livestock production
- 60 investor signatories to date, with **\$1.5 trillion AUM**

Current Status

- **8 of the 10** companies have responded and are in direct dialogue with our team
- Companies have already given concrete **public commitments:**

60 institutional investors with over \$1.5 trillion AUM



Antibiotics engagement launch (April 2016) – press coverage

Forbes

‘Food company investors demand antibiotic reduction, now!’

FORTUNE

‘Big investors push McDonalds, Yum! and Domino’s to drop antibiotics’

theguardian

‘Investors urge fast food and pub chains to act to reduce farm antibiotics’



REUTERS

‘Investor group launches campaign to curb antibiotic use’



FINANCIAL TIMES

‘Systemic’ antibiotics crisis troubles big investors’

Daily Mail

‘Investor group launches campaign to curb antibiotic use in food’

52 articles in major publications across 15 countries

Investor Engagement on Sustainable Protein (Sept 2016)

Sustainable Protein Engagement launched

- 40 signatories to date, with \$1.25 trillion AUM
- Targeting 16 international food companies
- Addressing the **material risks** to the livestock industry posed by the four inconvenient truths
- Highlighting the **opportunities** presented by the growing market for plant-based proteins

Company targets for sustainable protein engagement:

Kraft Heinz



Unilever

Walmart

Mondelēz
International



**Ahold
Delhaize**

The **co-operative**

**GENERAL
MILLS**

COSTCO
WHOLESALE

**WHOLE
FOODS**
MARKET

Nestlé

TESCO

Sainsbury's

Morrisons
Since 1899

ocado

**MARKS &
SPENCER**

Mitigating climate risk and building resilient supply chains

Investor Engagement on Sustainable Protein launch (Sept 2016) – press coverage



REUTERS

‘Investors urge food companies to shift from meat to plants’



‘AP funds, Nordea, Folksam take aim at food companies on meat risk’



‘We’re addicted to meat. And it’s destroying the planet’

**THE
HUFFINGTON
POST**

‘Global Investors Push For a Protein Shake-up’

FORTUNE

‘Walmart and others are being asked to stop selling as much meat’

**BUSINESS
INSIDER**

‘Investors urge food companies to shift from meat to plants’

Sustainable Protein engagement-backed by 40 investors with \$1.25 trillion AUM

**Bridge the knowledge gap
Reduce risk**

Join the FAIRR Initiative

www.fairr.org

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