GOAL Sciences

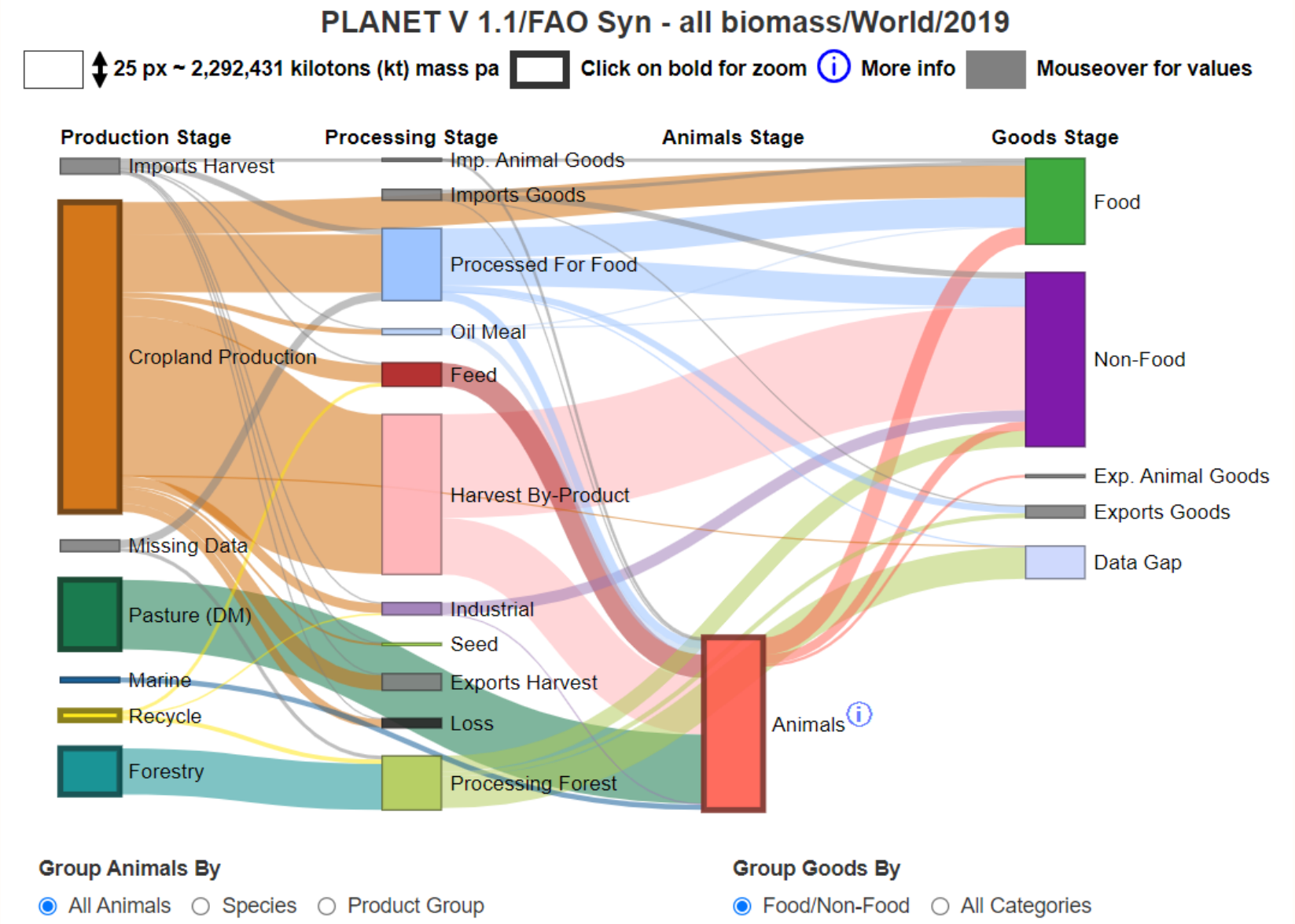
Global Observatory for

Accurate Livestock Sciences

The Economics of Meat

20 October 2022

GOALSciences.org



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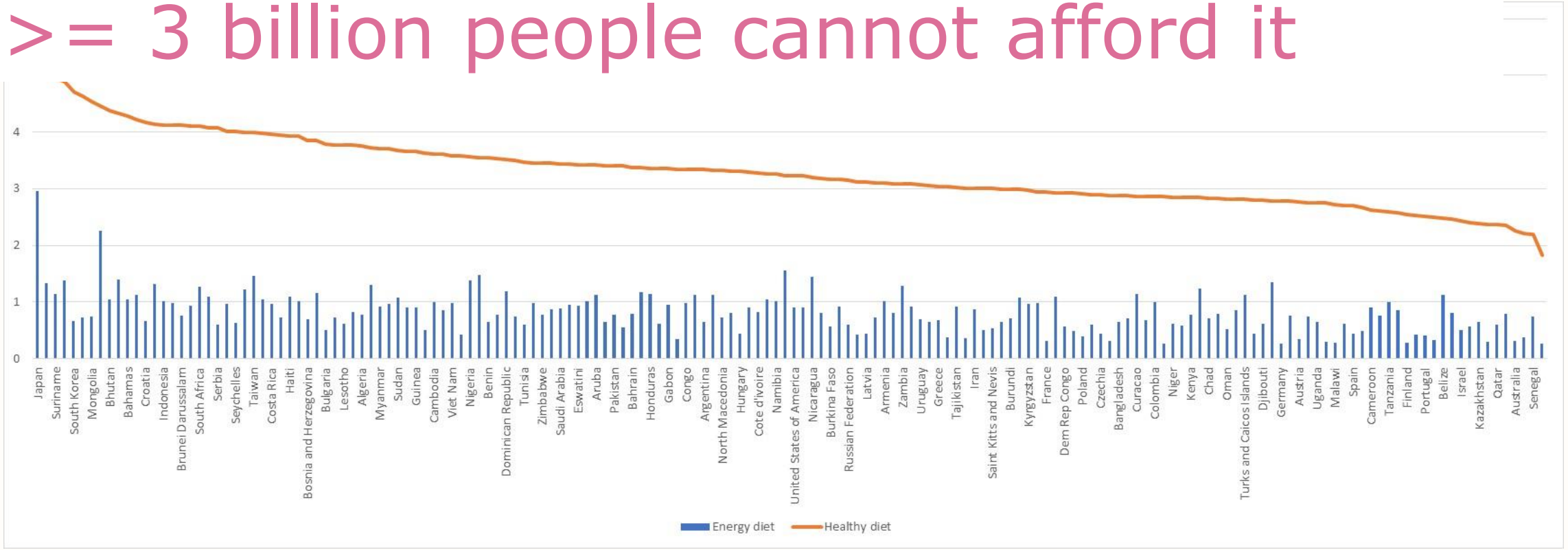
The cost of a healthy meal is 3 USD/day >= 3 billion people cannot afford it



Source: Foodsystemsdashboard

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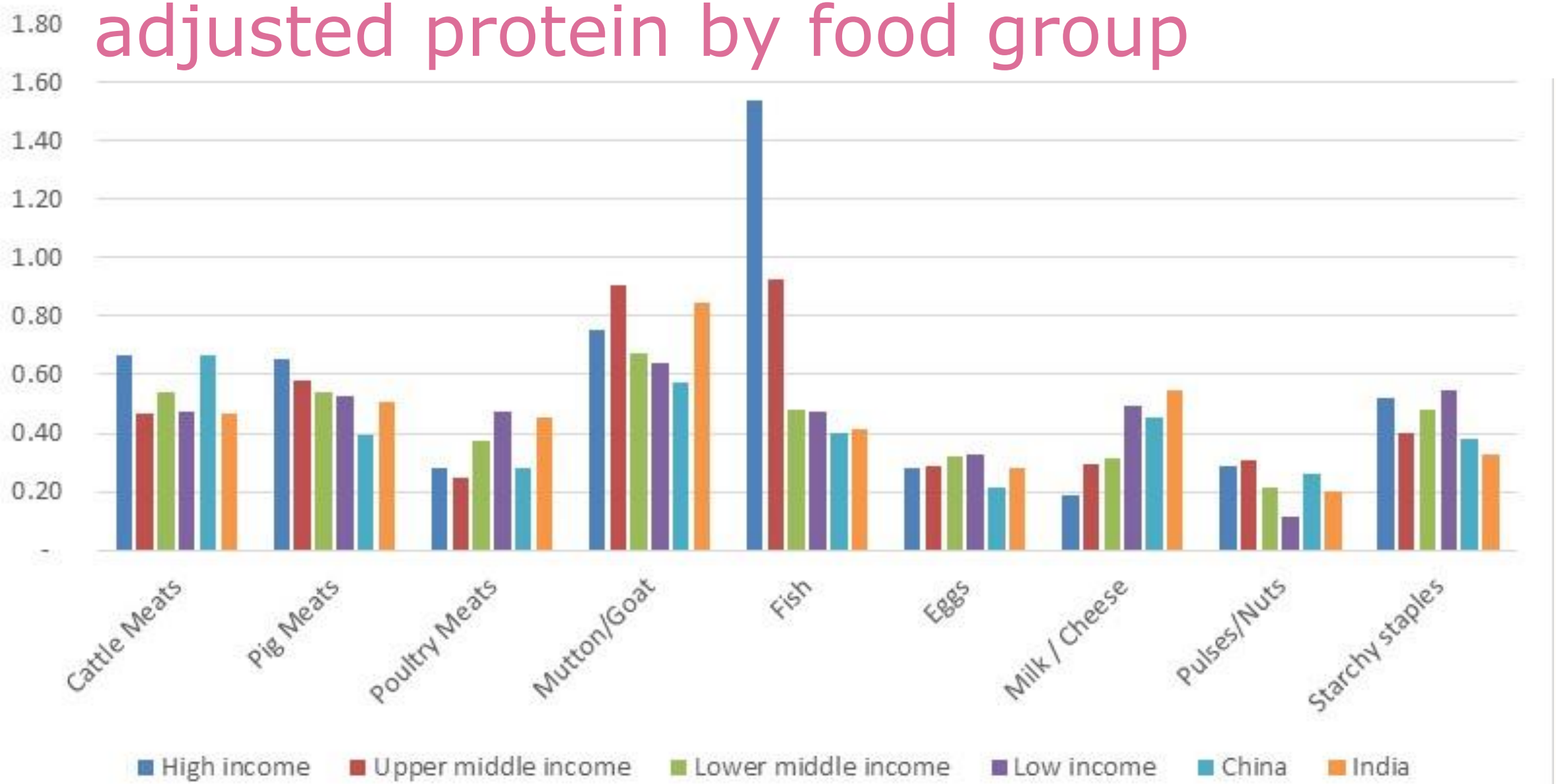
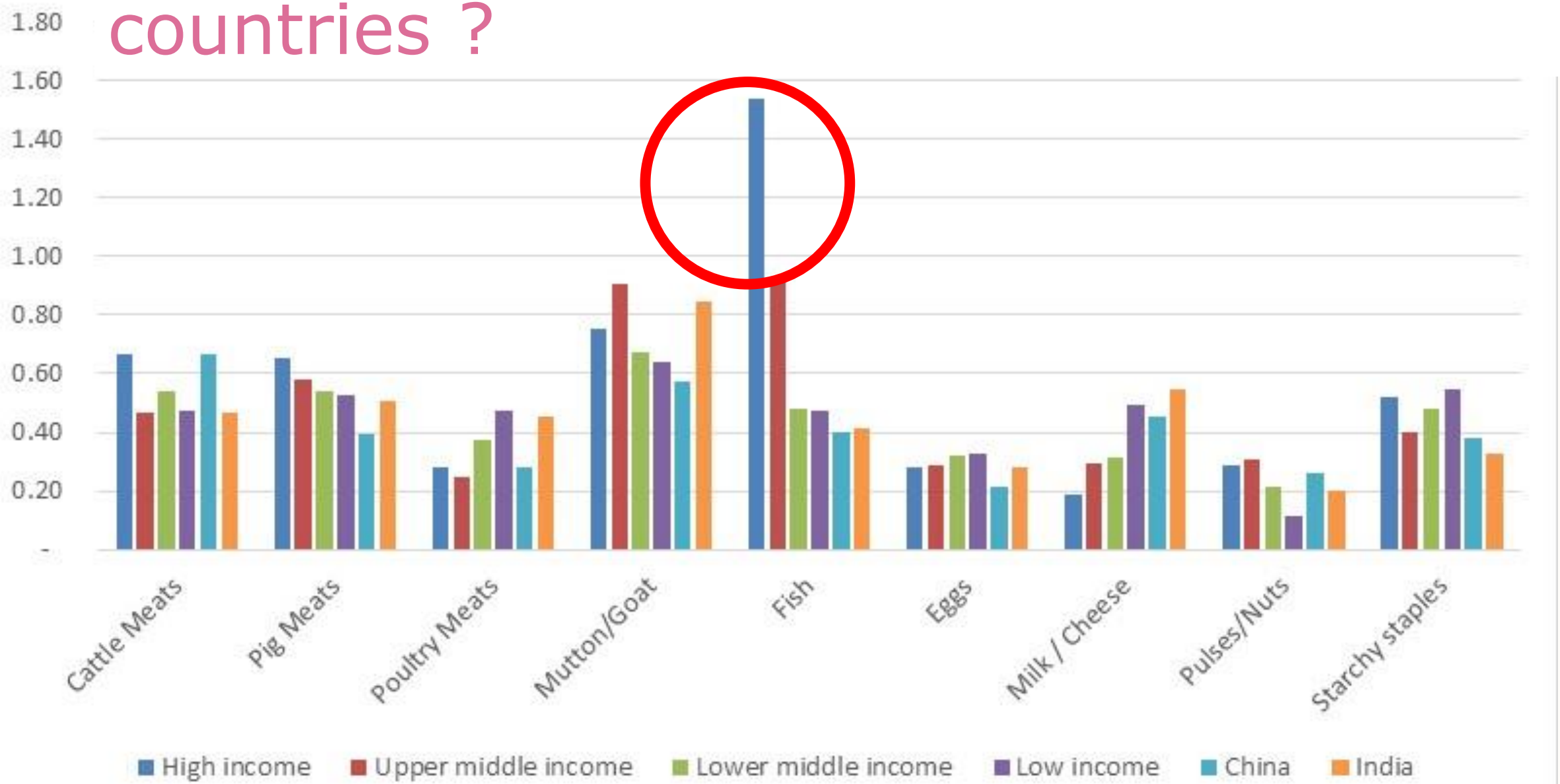
PPP USD price per 10 gram DIAAS adjusted protein by food group



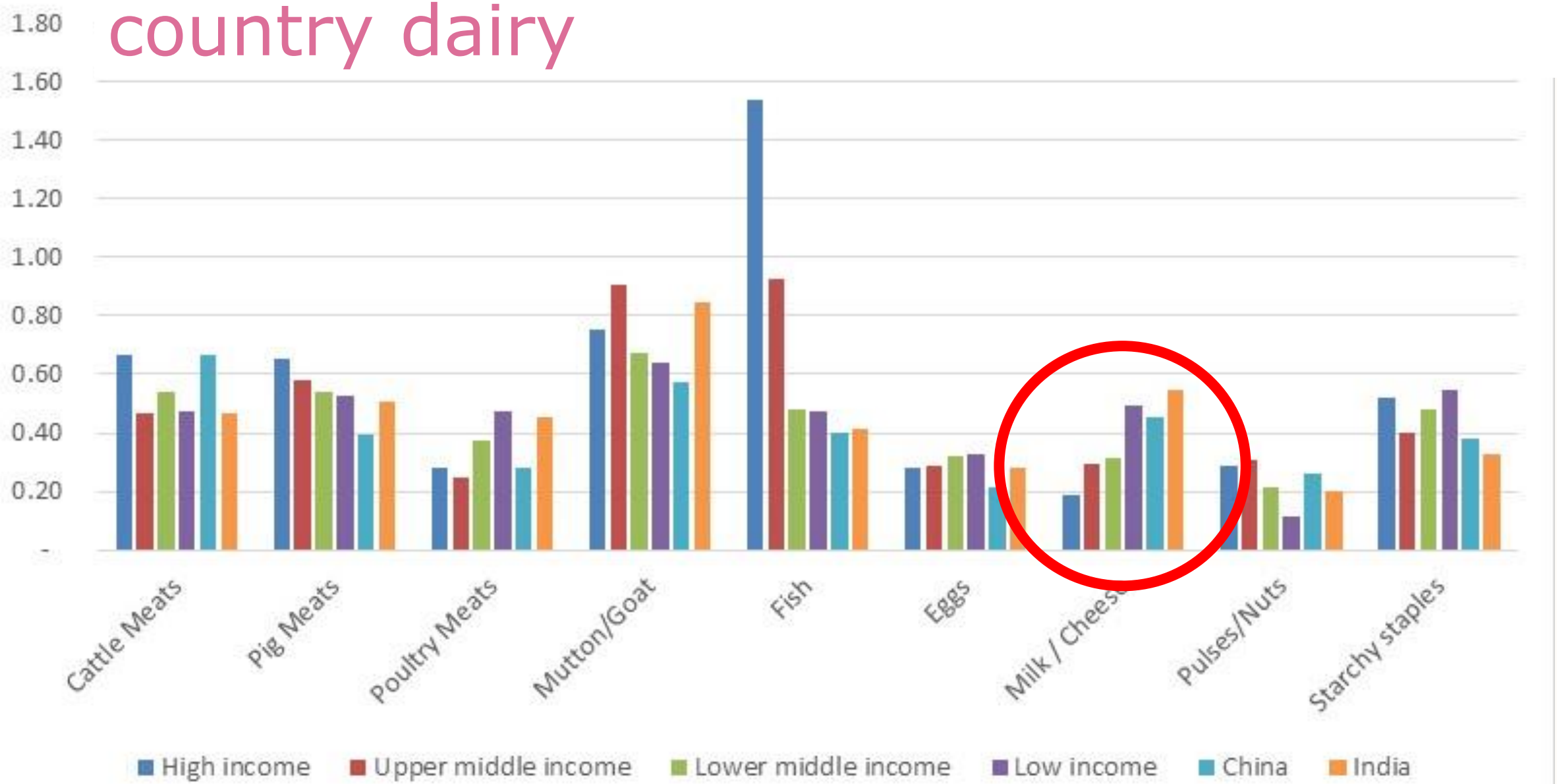
Source: GOALSciences calculations based on Worldbank ICP data

Why is fish so expensive in high income countries ?



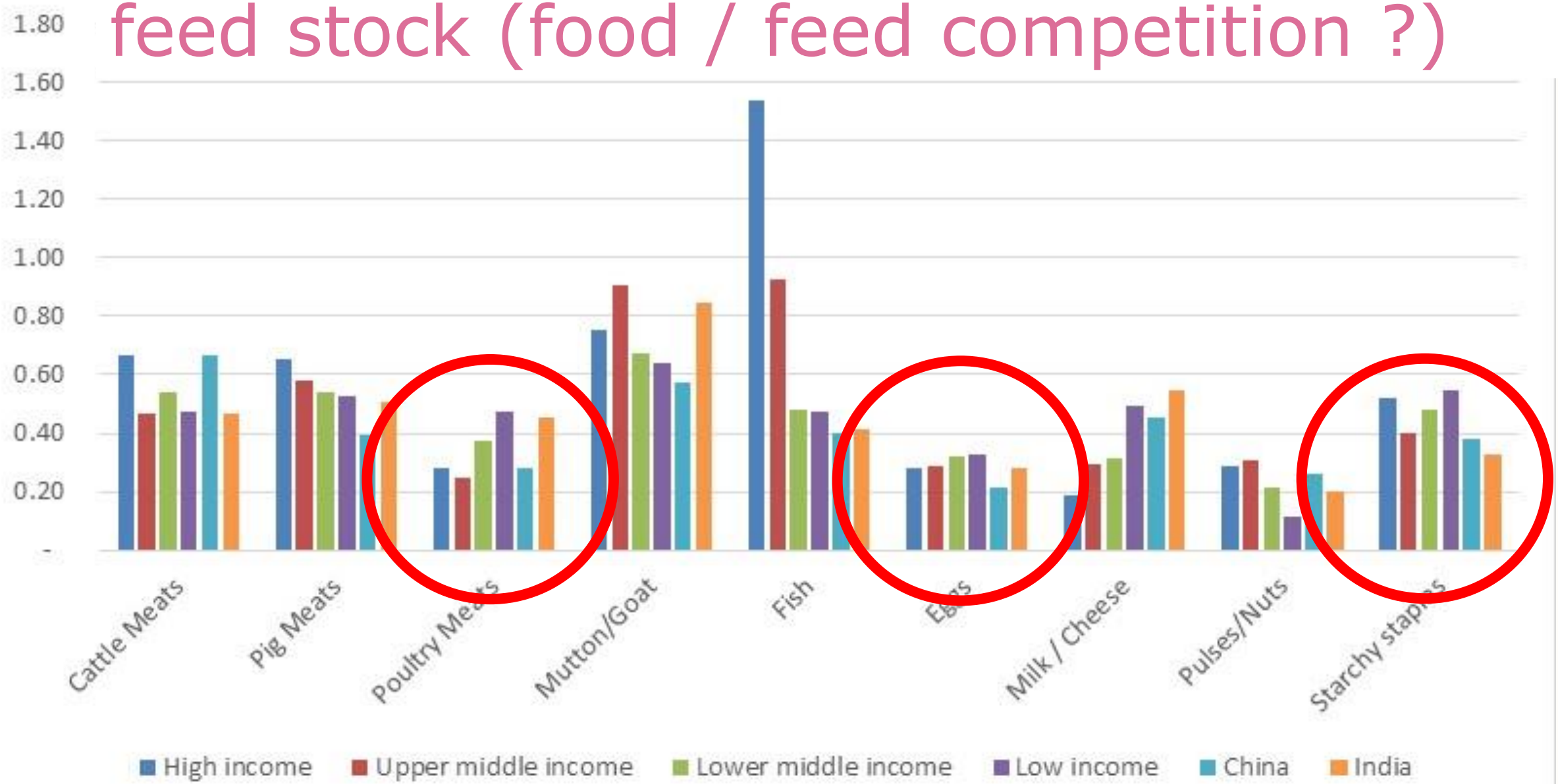
Source: GOALSciences calculations based on Worldbank ICP data

The great success story of high income country dairy



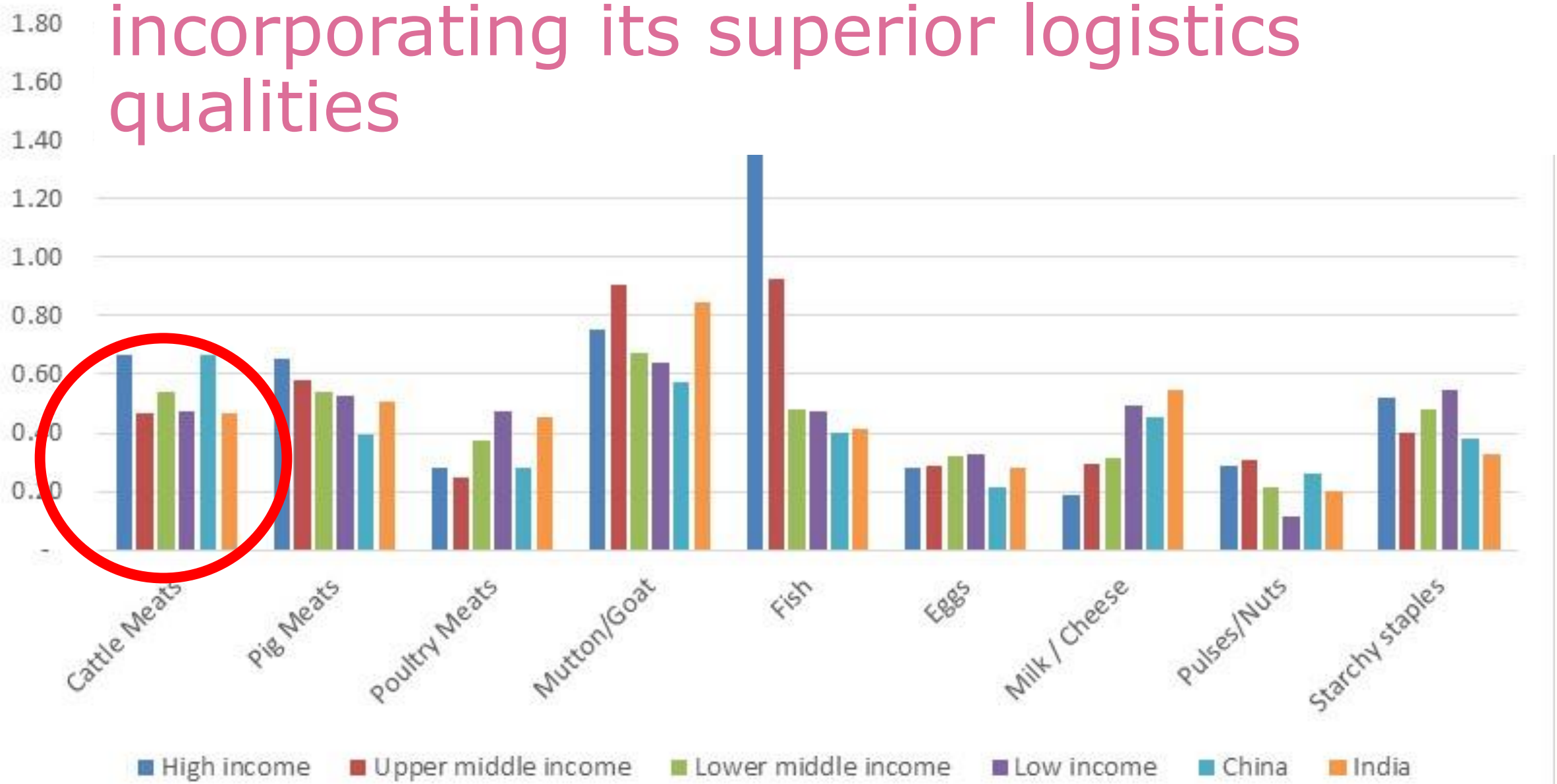
Source: GOALSciences calculations based on Worldbank ICP data

Poultry and eggs are cheaper than their feed stock (food / feed competition ?)



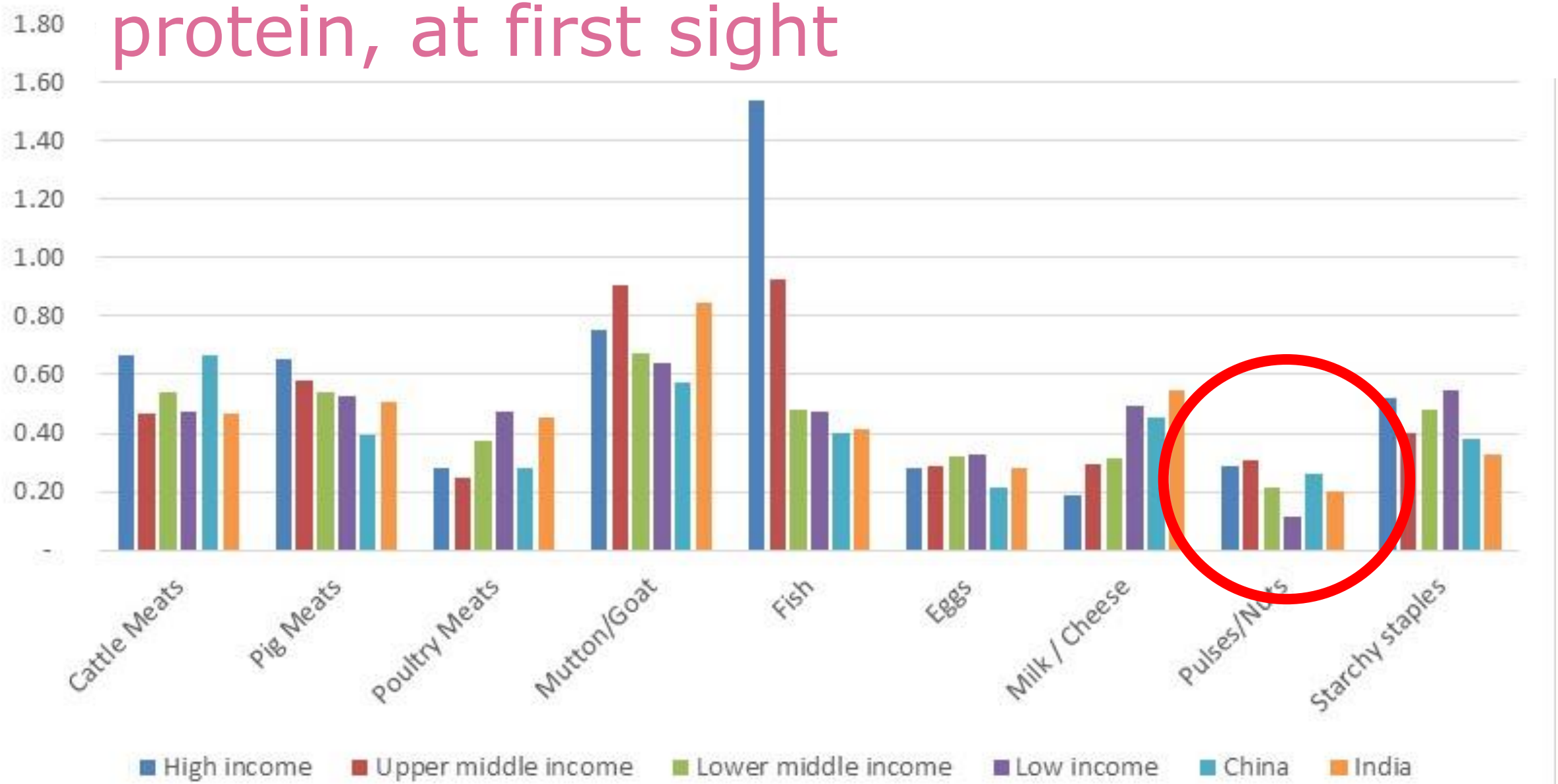
Source: GOALSciences calculations based on Worldbank ICP data

Beef is price competitive when incorporating its superior logistics qualities



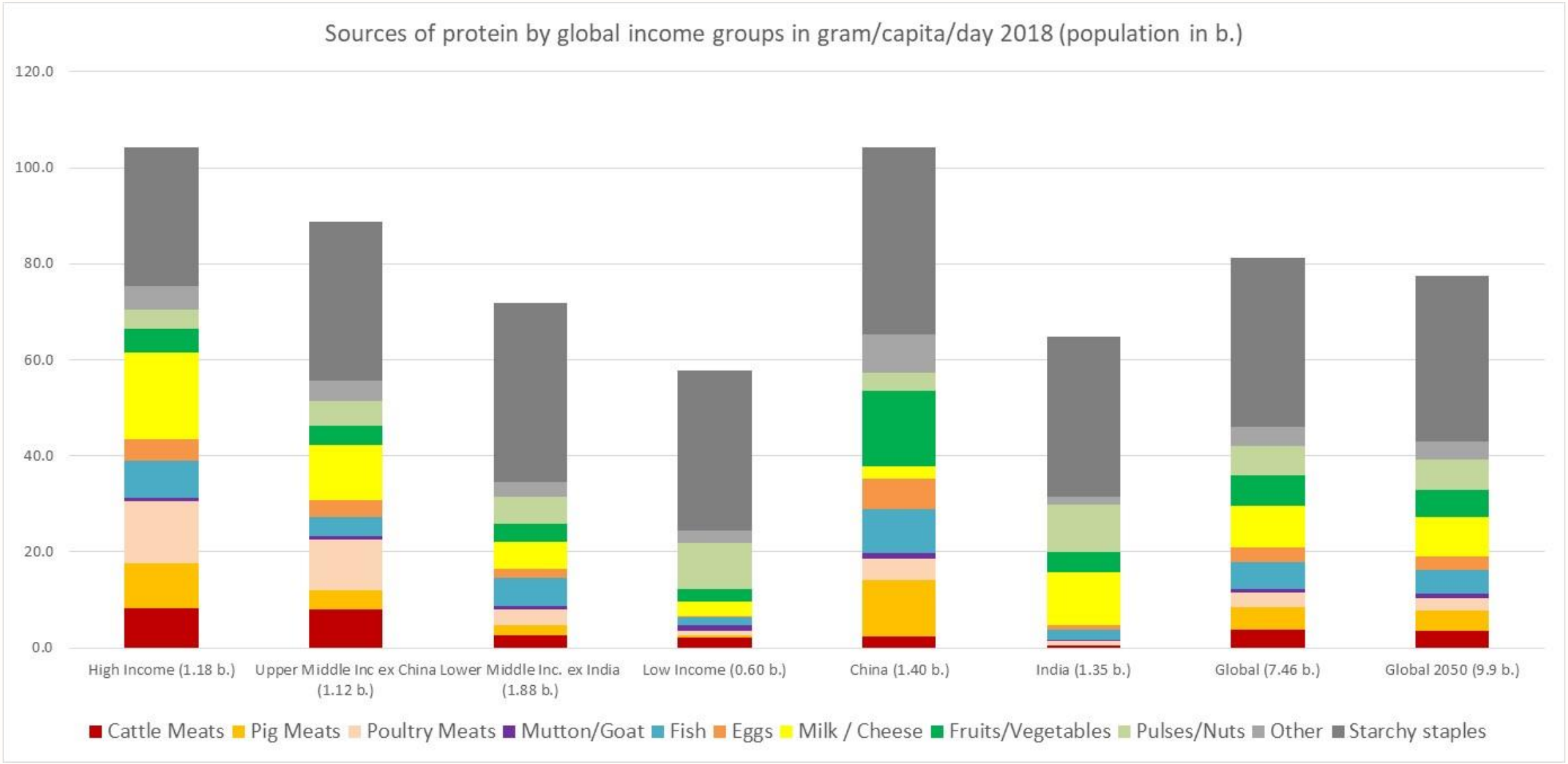
Source: GOALSciences calculations based on Worldbank ICP data

Pulses are the cheapest sources of protein, at first sight

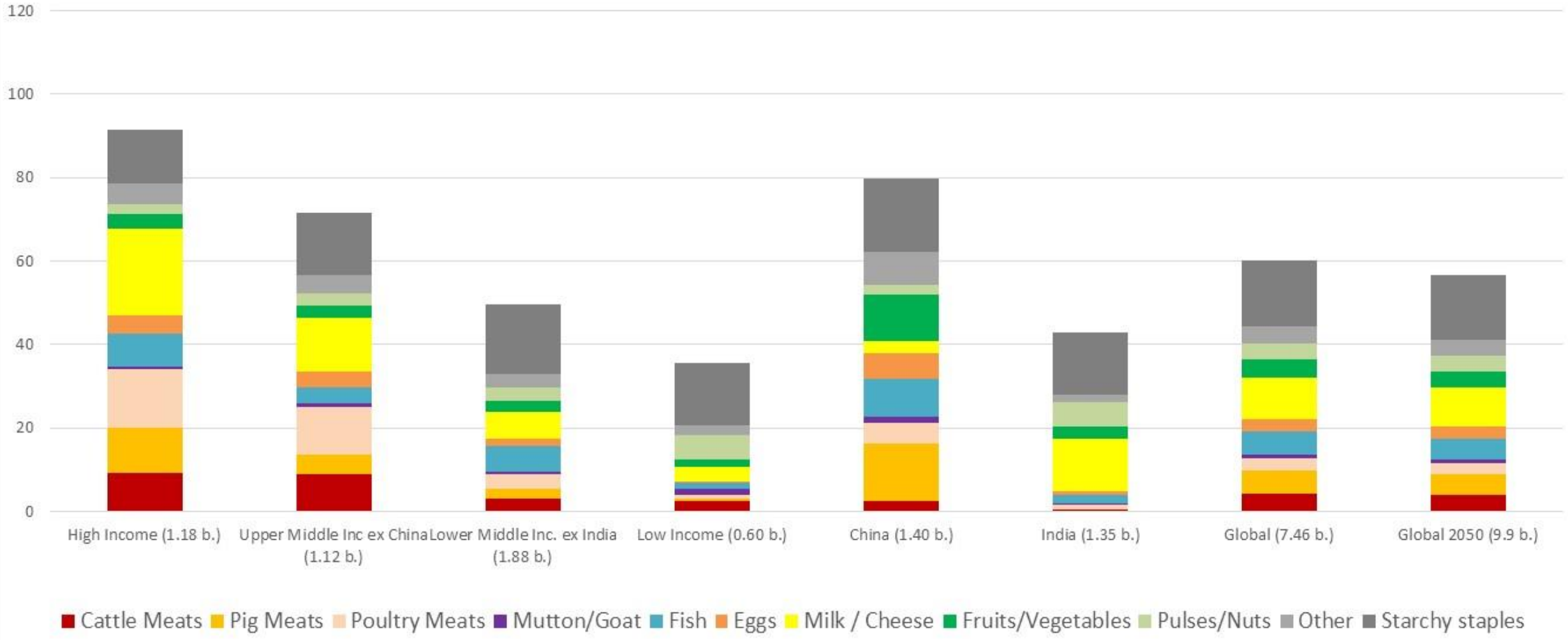


Source: GOALSciences calculations based on Worldbank ICP data

Protein supply per country income group



Bioavailable (DIAAS-adjusted) Protein supply per income group



Scenarios of protein gap

Different scenarios for protein gap, 2 RDA protein values, 3 waste rates and 3 oversupply rates, world total; supply 2018: 221,000 kt		2018 need in kilotons	Factor over 2018 supply	2050 need in kilotons	Factor over 2018 supply
RDA protein per capita per day (gram)	75	204,307	0.92	271,013	1.23
+ Logistics / consumer wastes (%)	10	224,737	1.02	298,114	1.35
+ Oversupply for uneven distribution (%)	10	245,168	1.11	325,215	1.47
+ Oversupply for uneven distribution (%)	20	265,599	1.20	352,316	1.59
+ Oversupply for uneven distribution (%)	30	286,029	1.29	379,418	1.72
+ Logistics / consumer wastes (%)	15	234,953	1.06	311,664	1.41
+ Oversupply for uneven distribution (%)	10	255,383	1.15	338,766	1.53
+ Oversupply for uneven distribution (%)	20	275,814	1.25	365,867	1.65
+ Oversupply for uneven distribution (%)	30	296,245	1.34	392,968	1.78
+ Logistics / consumer wastes (%)	20	245,168	1.11	325,215	1.47
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+ Oversupply for uneven distribution (%)	30	306,460	1.39	406,519	1.84
RDA protein per capita per day (gram)	100	272,409	1.23	361,350	1.63
+ Logistics / consumer wastes (%)	10	299,650	1.35	397,485	1.80
+ Oversupply for uneven distribution (%)	10	326,891	1.48	433,620	1.96
+ Oversupply for uneven distribution (%)	20	354,132	1.60	469,755	2.12
+ Oversupply for uneven distribution (%)	30	381,373	1.72	505,890	2.29
+ Logistics / consumer wastes (%)	15	313,270	1.42	415,553	1.88
+ Oversupply for uneven distribution (%)	10	340,511	1.54	451,688	2.04
+ Oversupply for uneven distribution (%)	20	367,752	1.66	487,823	2.21
+ Oversupply for uneven distribution (%)	30	394,993	1.79	523,958	2.37
+ Logistics / consumer wastes (%)	20	326,891	1.48	433,620	1.96
+ Oversupply for uneven distribution (%)	10	354,132	[illegible]	469,755	[illegible]
+ Oversupply for uneven distribution (%)	20	381,373	1.72	505,890	2.29
+ Oversupply for uneven distribution (%)	30	408,614	1.85	542,025	2.45

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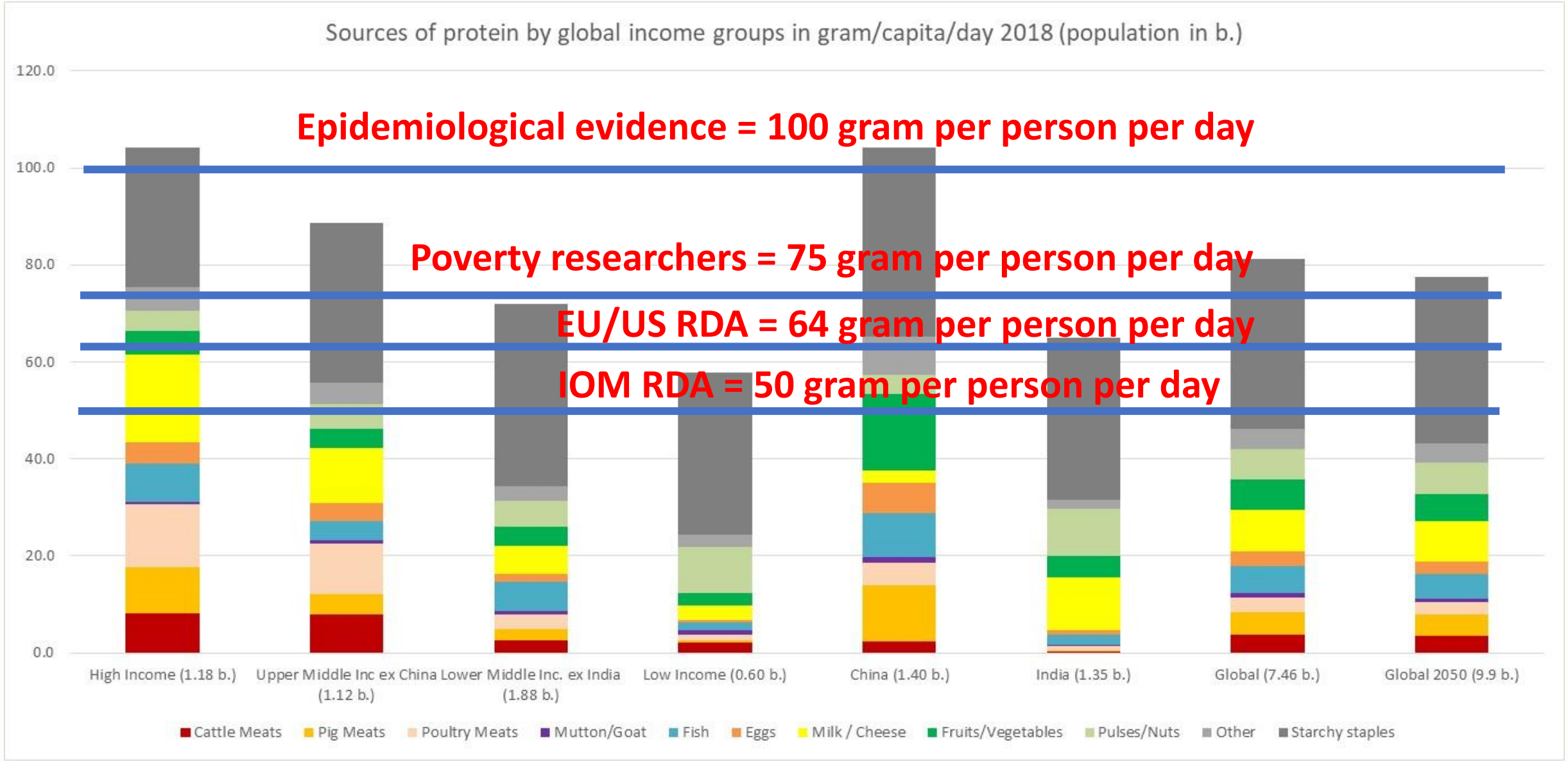
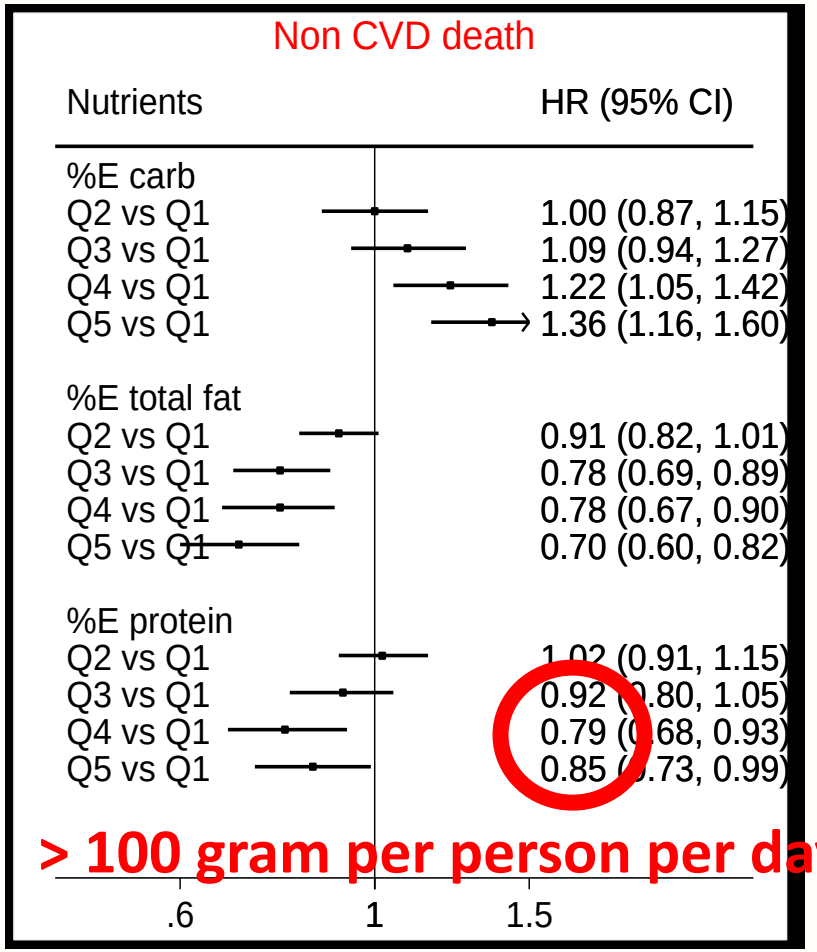
Protein supply per country income group



Benefits of protein according to PURE

(135,000 members in 667 communities in 18 countries)



Q1=11%
Q2=13%
Q3=15%
Q4=17%
Q5=20%

Adjusted for age, sex, activity, location, smoking, educ, WHR, energy, and centre (random effect)

Source: PURE Study 2017

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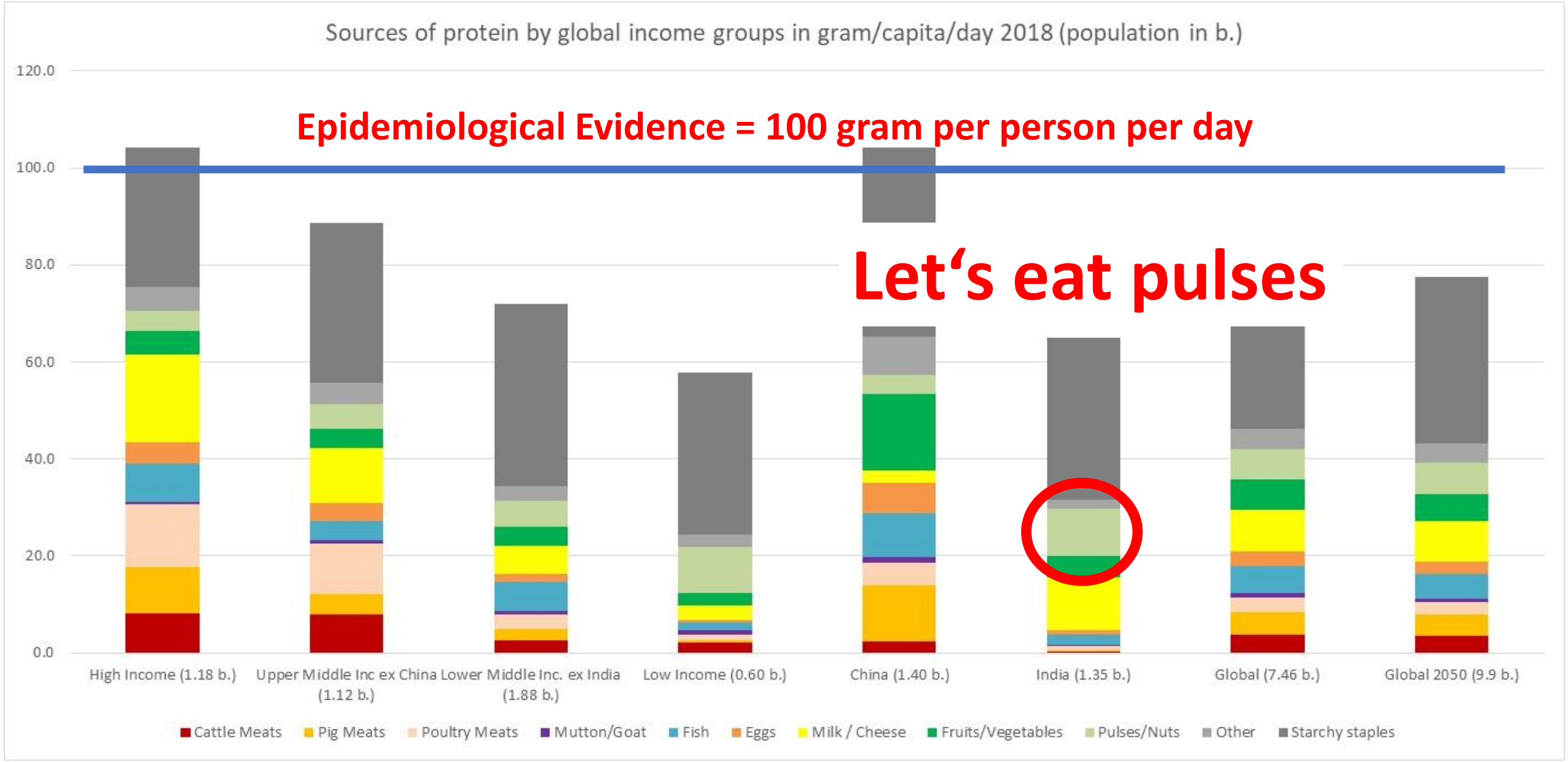
Protein supply per country income group



Let's eat pulses ?

- Since years, India cannot increase its pulses production enough due to agronomic difficulties
- Pulses are toxic, they need up to 2 hours of cooking time to become edible, which is a problem where fuels for cooking are short
- Pulses are available only once per year, and after that have demanding storage requirements

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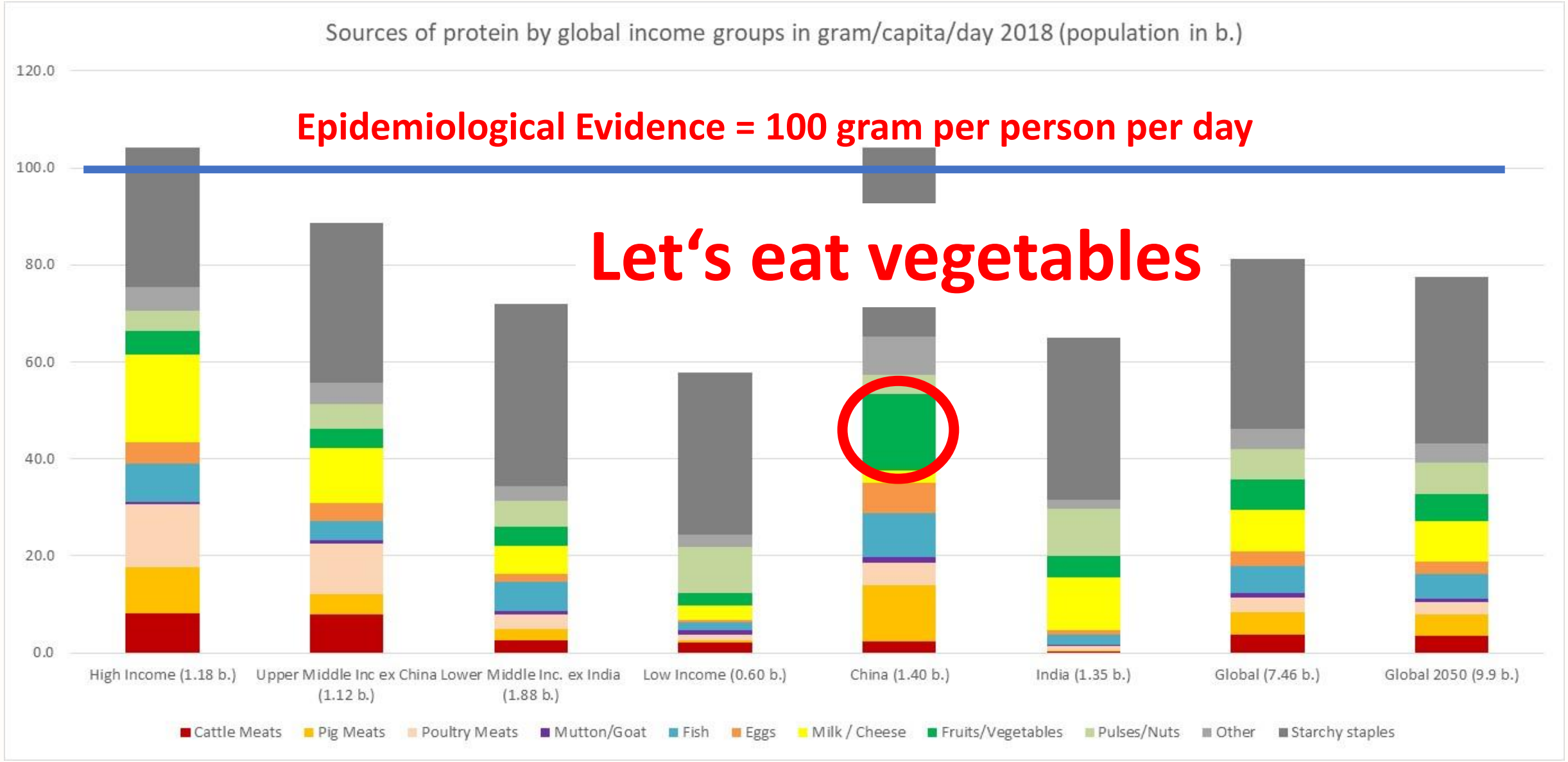
Protein supply per country income group



Let's eat vegetables and fruits ?

Comparing FAO Food balance sheets with Global Dietary Database:

- Wastage rates on overall protein: 20 %
- Wastage rates on overall vegetables: 50%
- Wastage rates on overall fruits: 70%

Scenarios of protein gap

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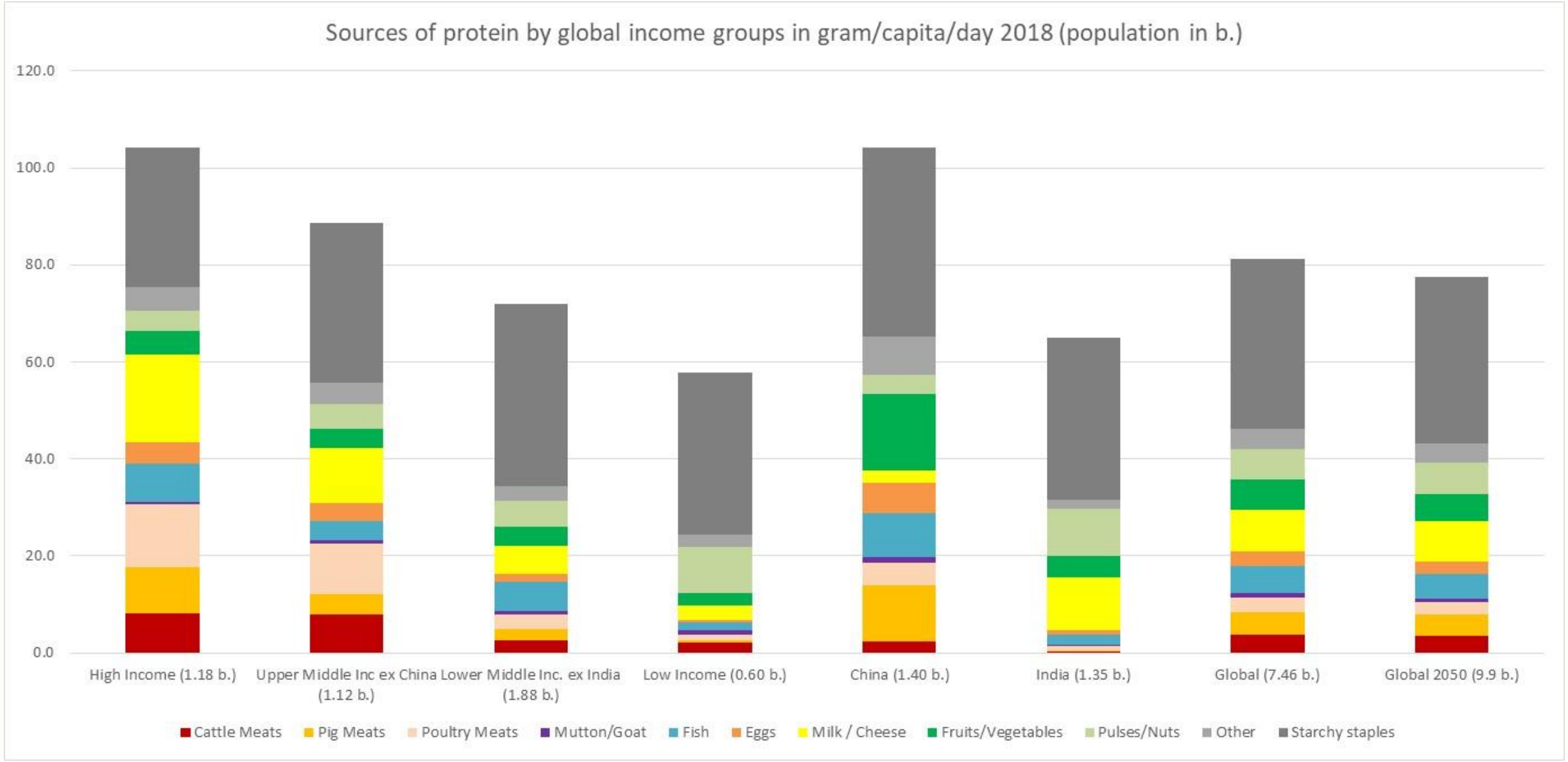
My choice of scenario is where we need to double protein supply today, and triple until 2050, and for that

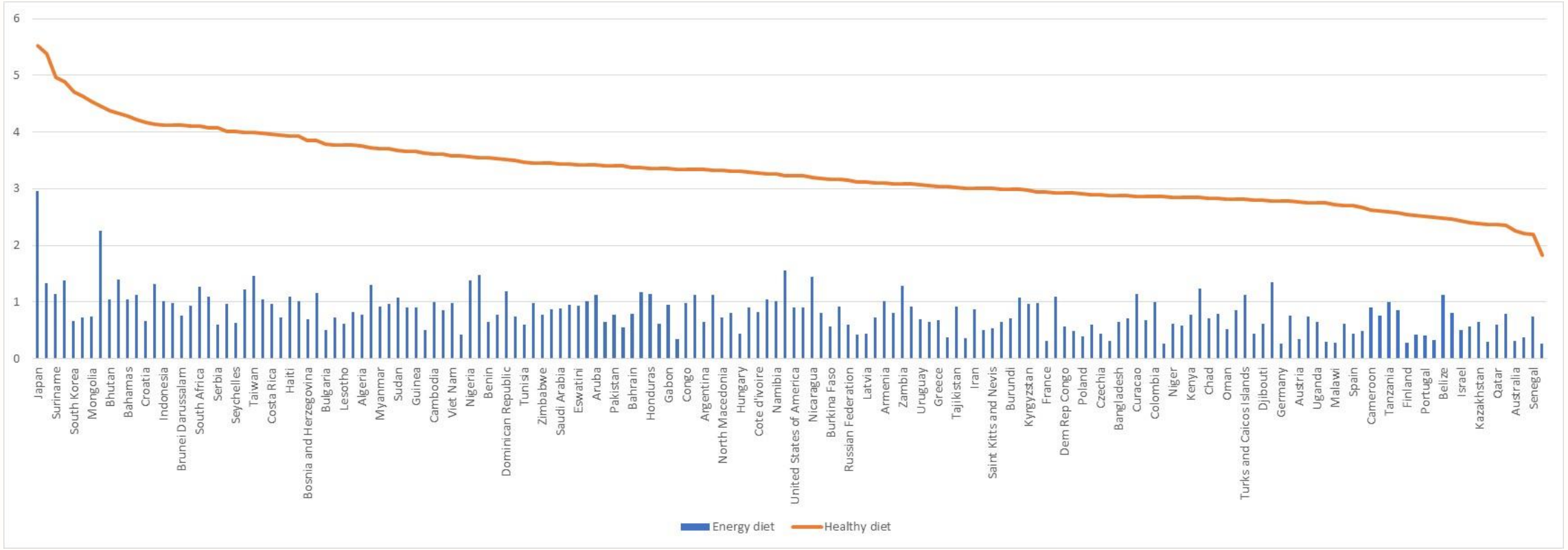
We need more:

- Pulses and vegetables and fruits
- We need more dairy and eggs and fish
- We need more meat from cattle, pigs and poultry
- We need to reduce waste
- WE DO NOT NEED MORE….

We have enough staples – no more needed



Feed / food competition does not exist 1/2



Source: Foodsystemsdashboard

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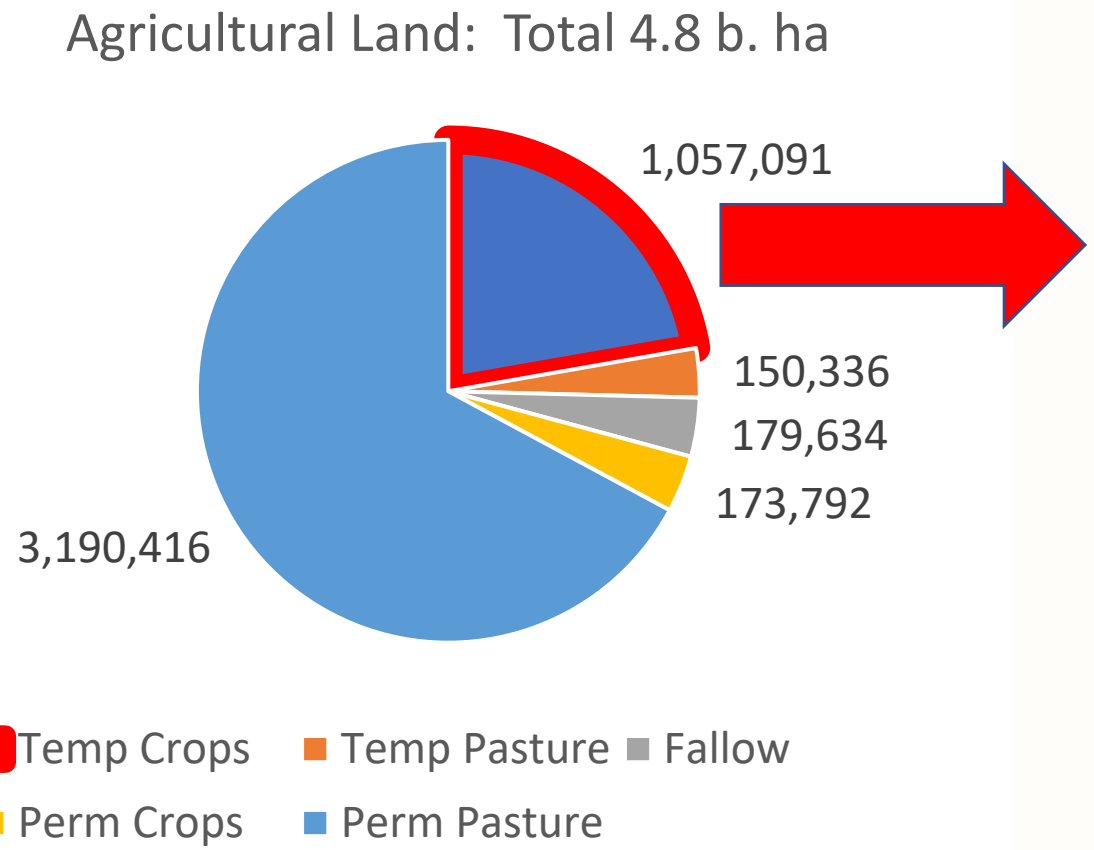
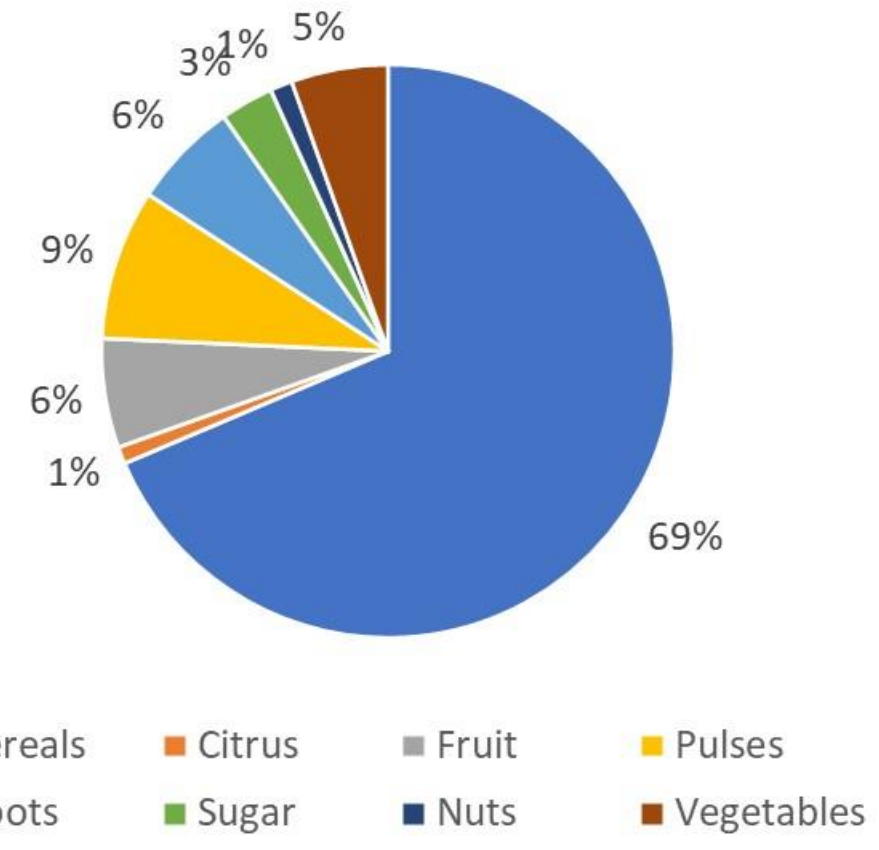
Feed / food competition does not exist 2/2





Source: FAOStat: https://www.fao.org/faostat/en/#data/RL

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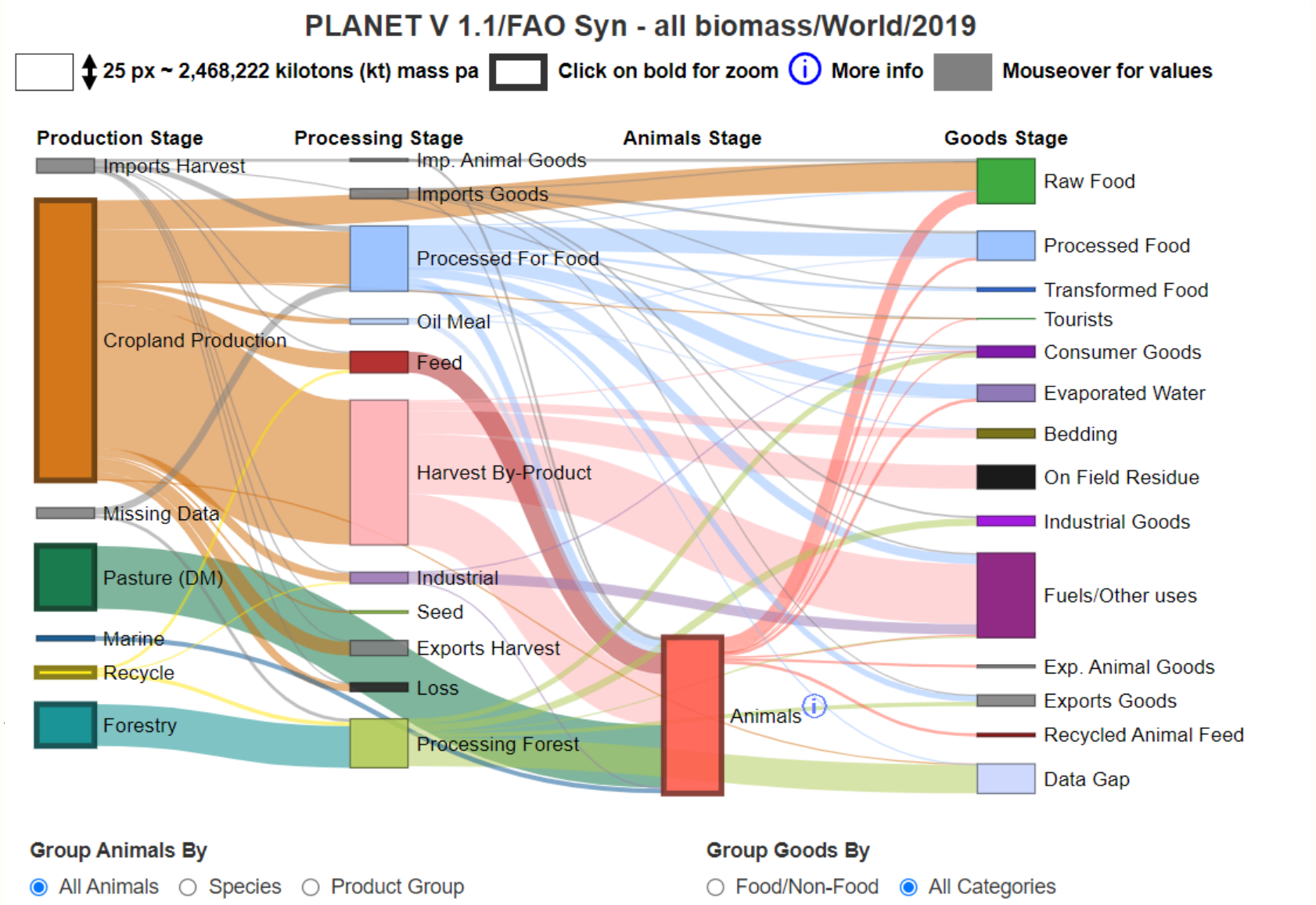
Animal feed / fuel competition !

Notice the

oil meals,
feed amounts,
fuel amounts,
harvest by products



Source: www.goalsciences.org

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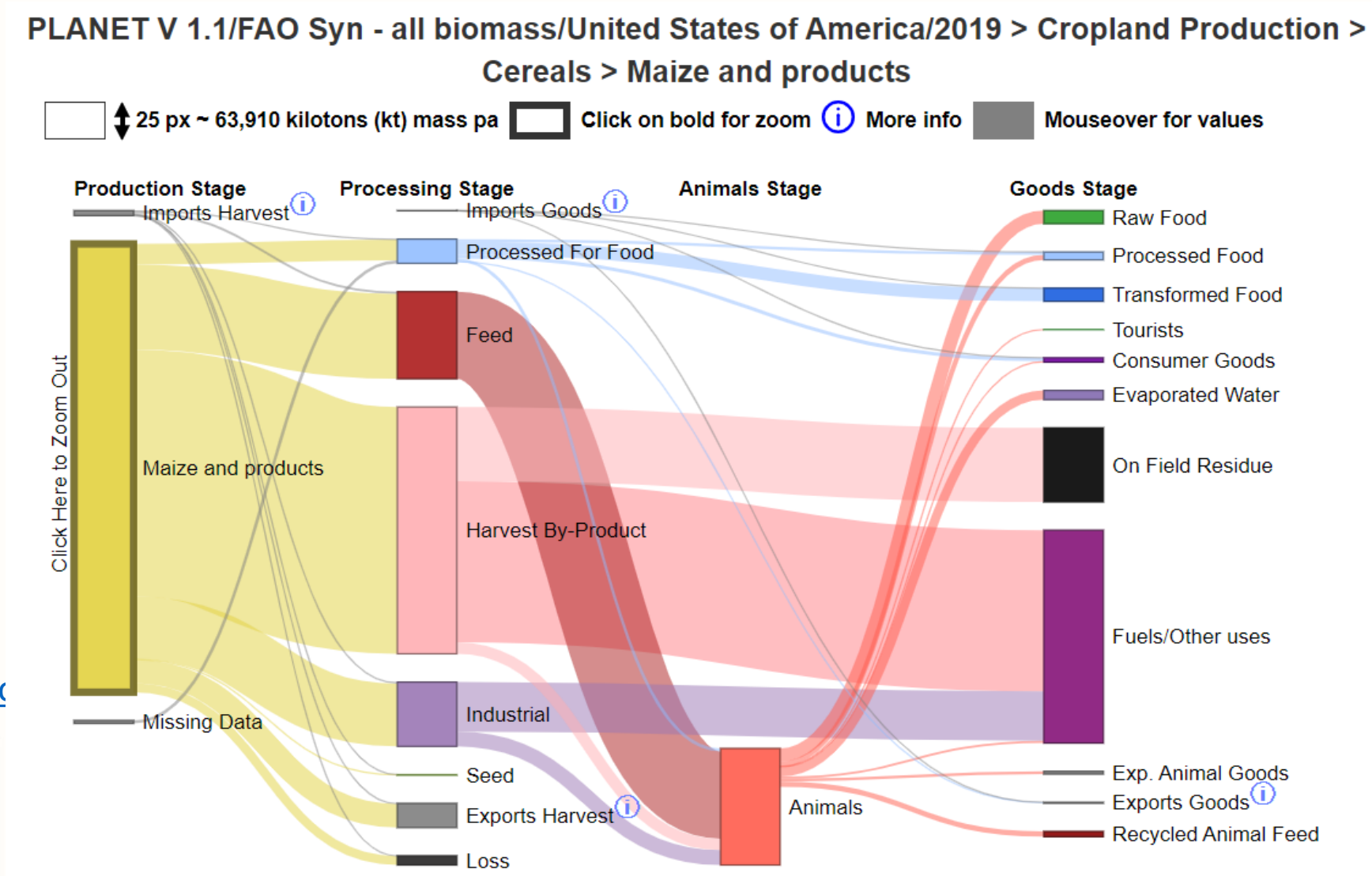
Feed / fuel competition ! Maize in USA



Source: www.goalsciences.

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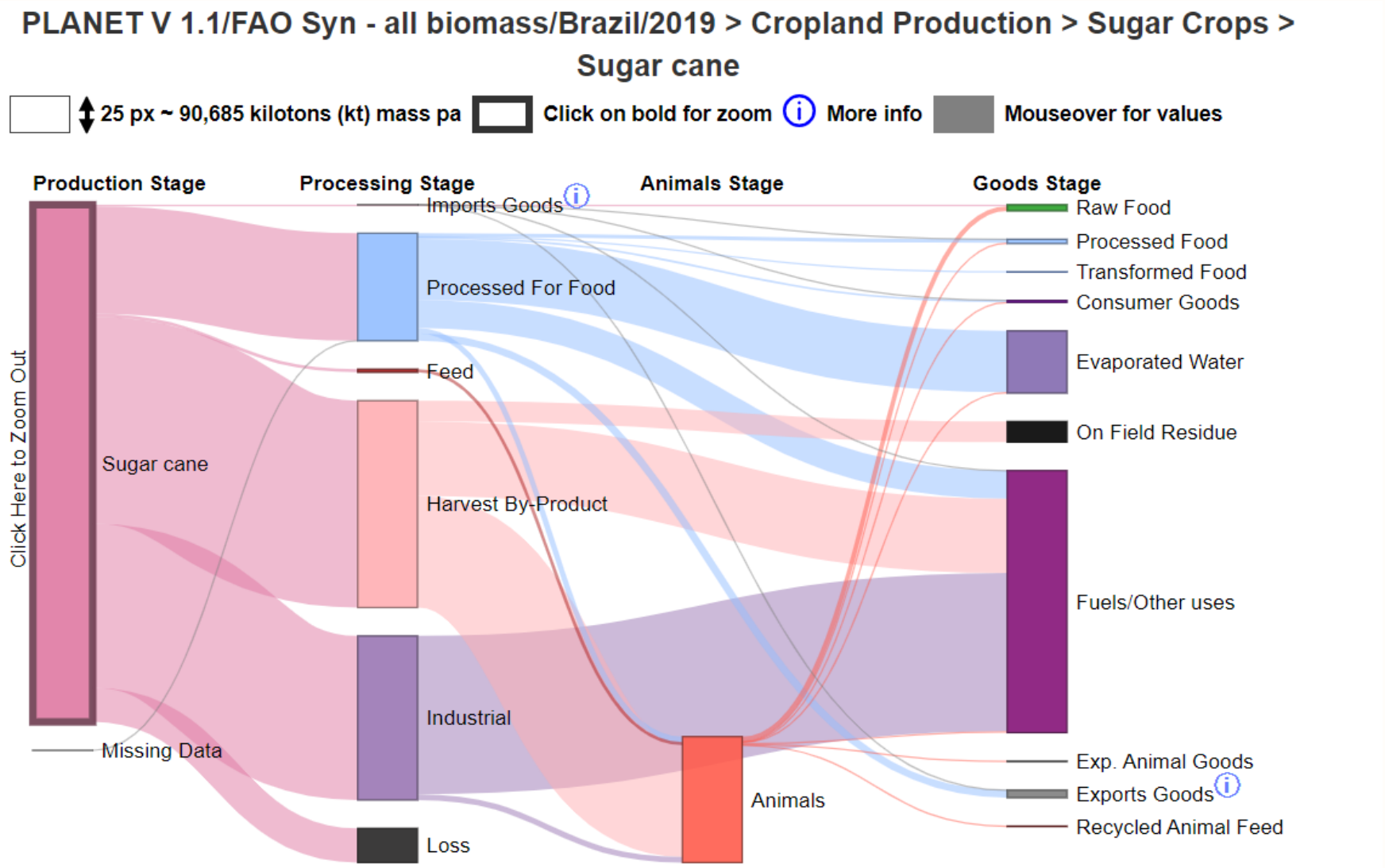
Feed / fuel competition ! Cane in Brazil



Source: www.goalsciences.o

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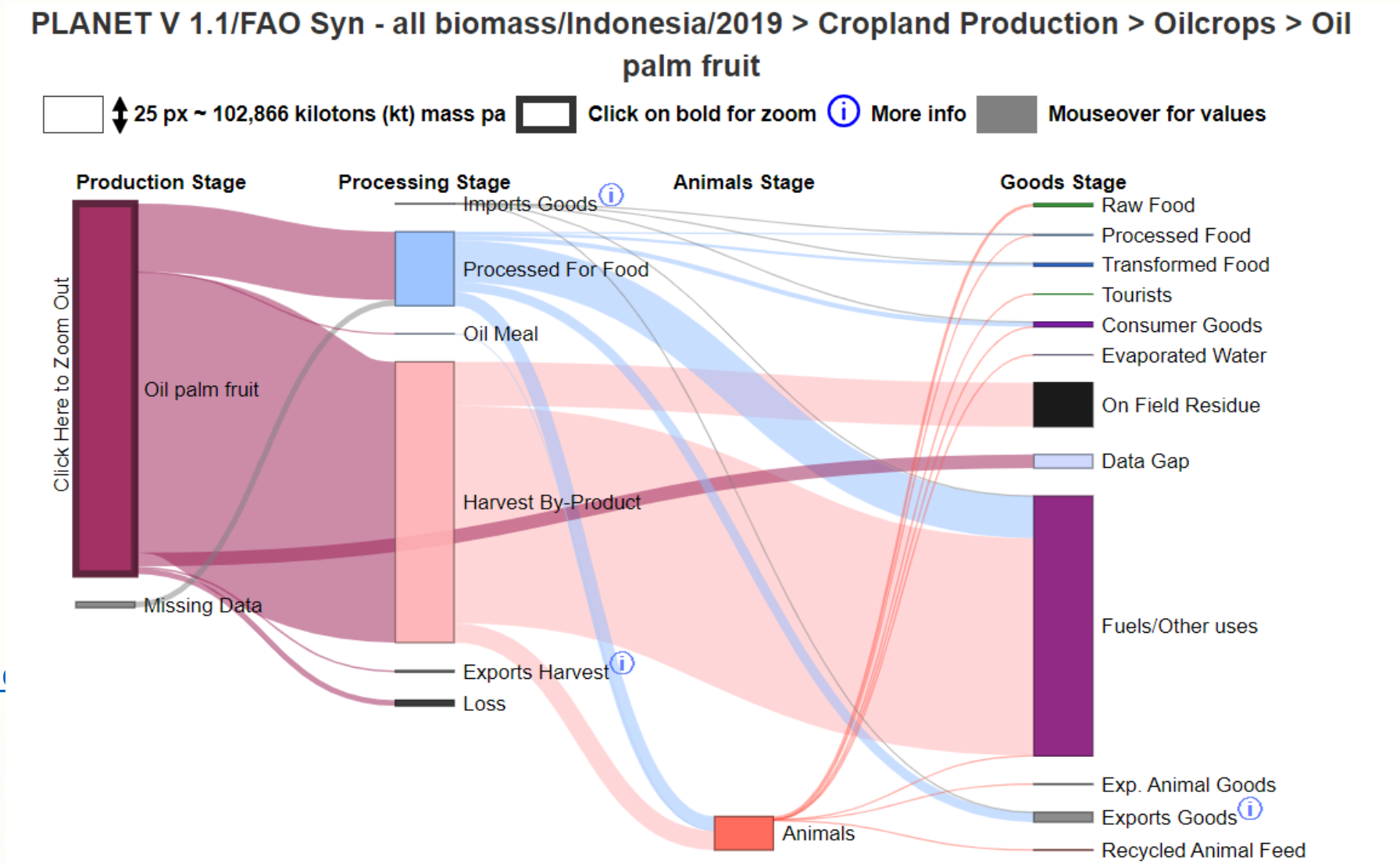
Feed / fuel competition ! Palm in SEA



Source: www.goalsciences.

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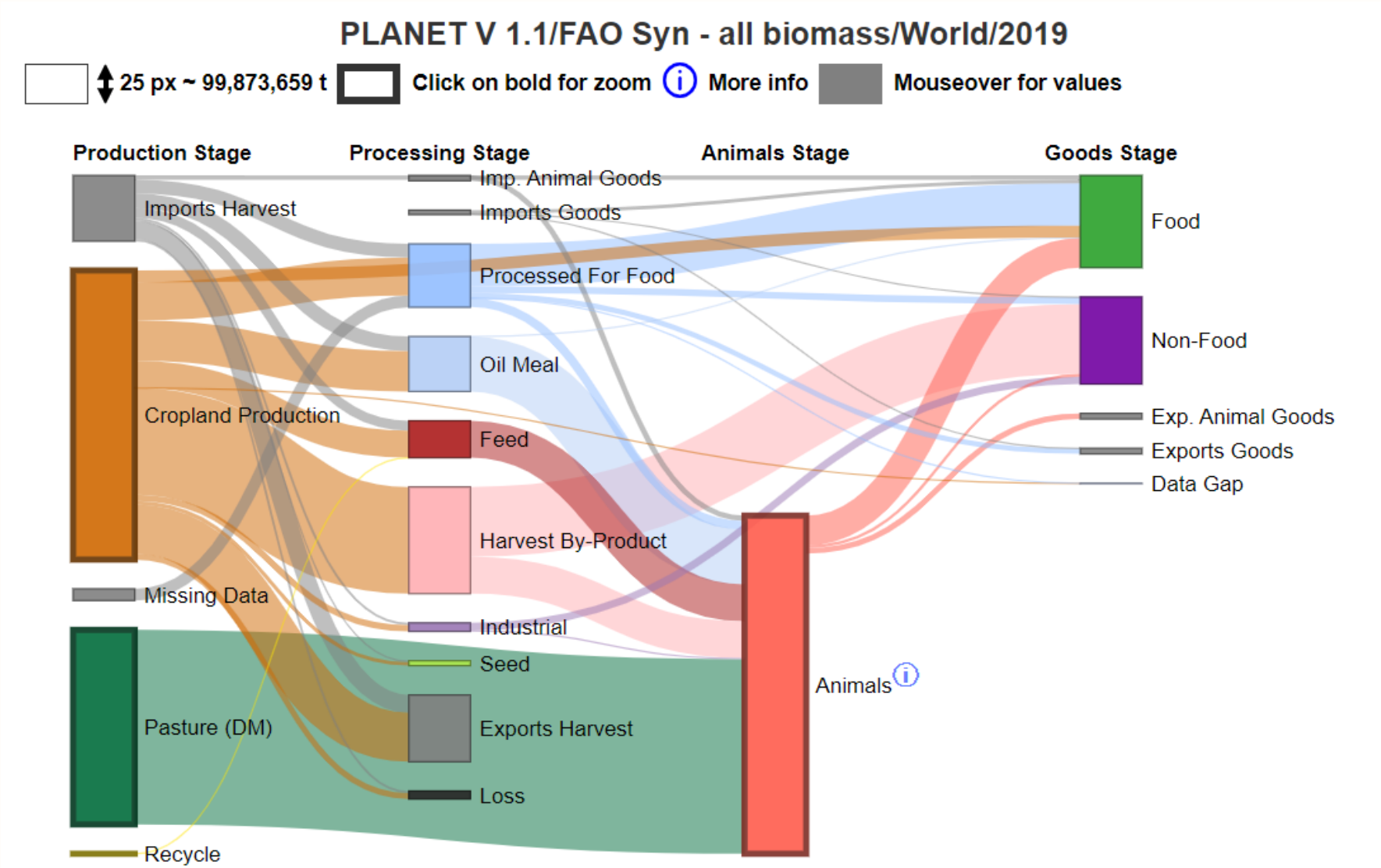
Global Flow of Protein



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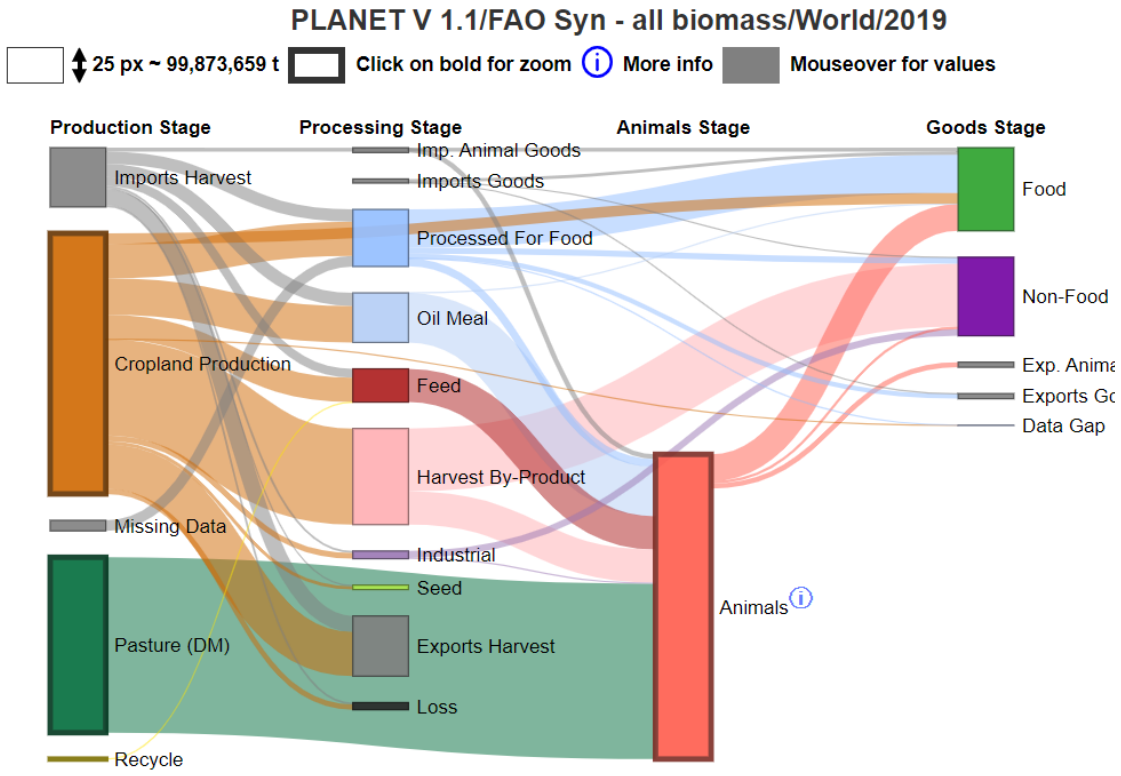
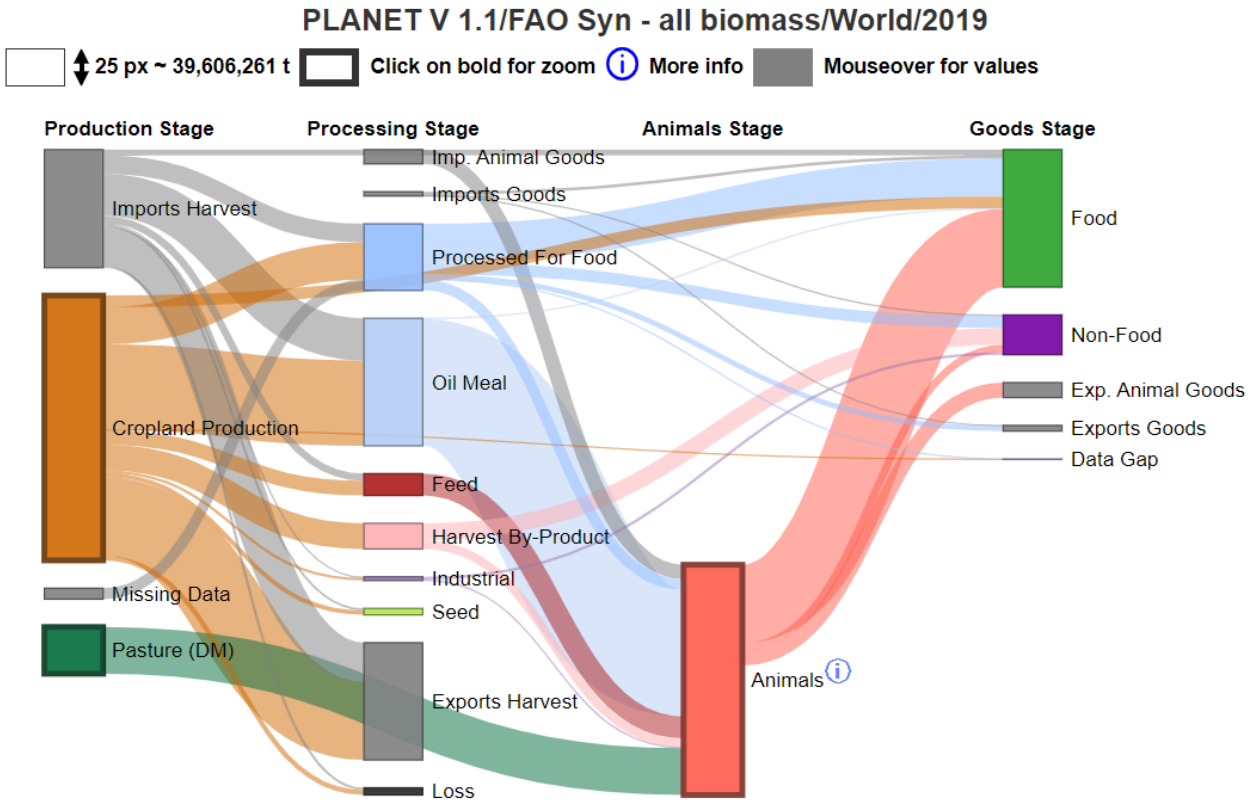
Global Flow of DIAAS-adjusted Protein





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