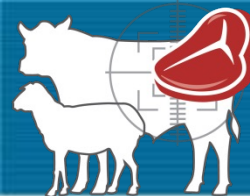


# **Situação atual e perspectivas da produção de alimentos no Brasil e no mundo**

**Saulo da Luz e Silva**

Departamento de Zootecnia

[sauloluz@usp.br](mailto:sauloluz@usp.br)

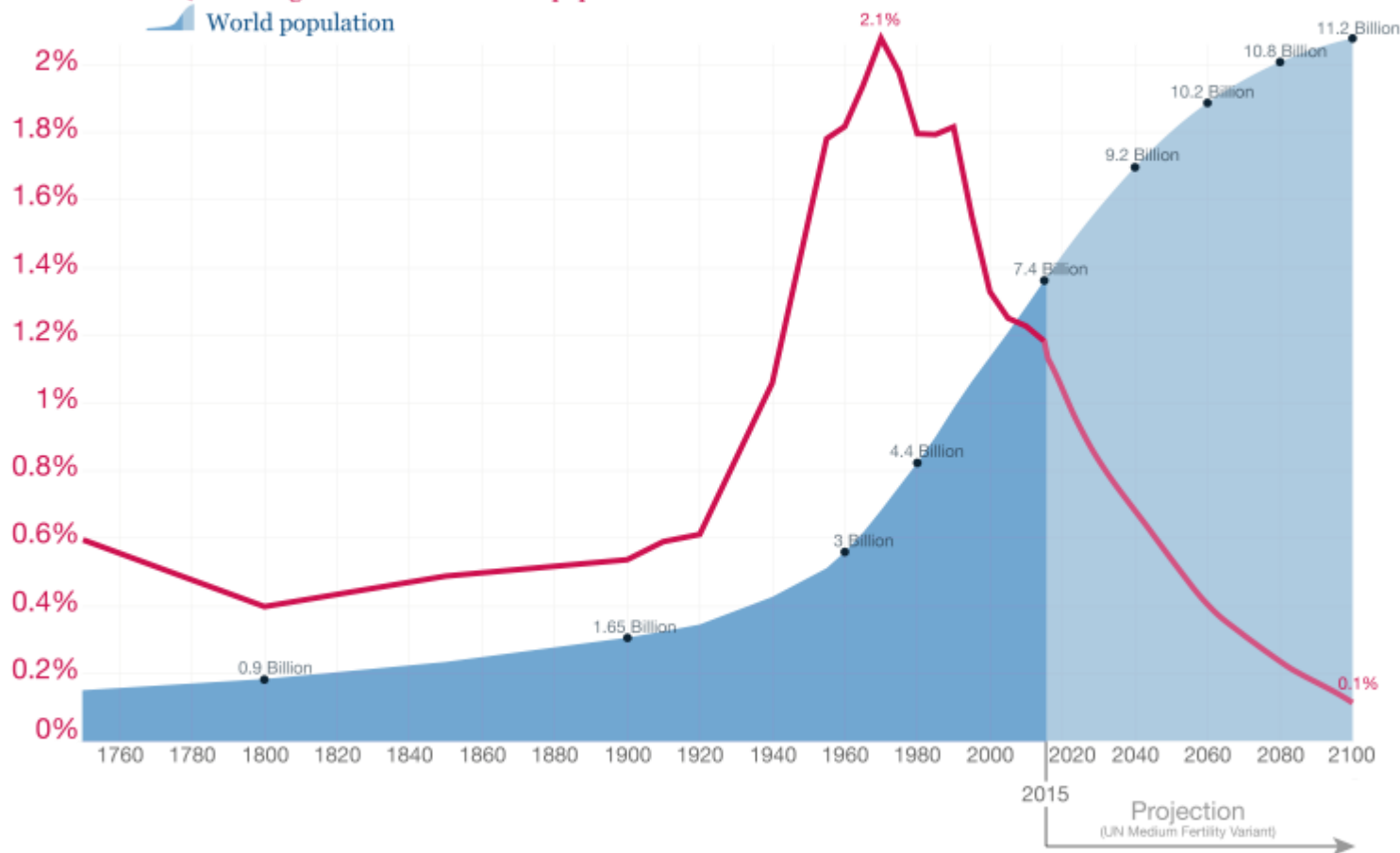


# Crescimento da população - Projeção

Our World  
in Data

## World population growth, 1750-2100

Annual growth rate of the world population  
World population

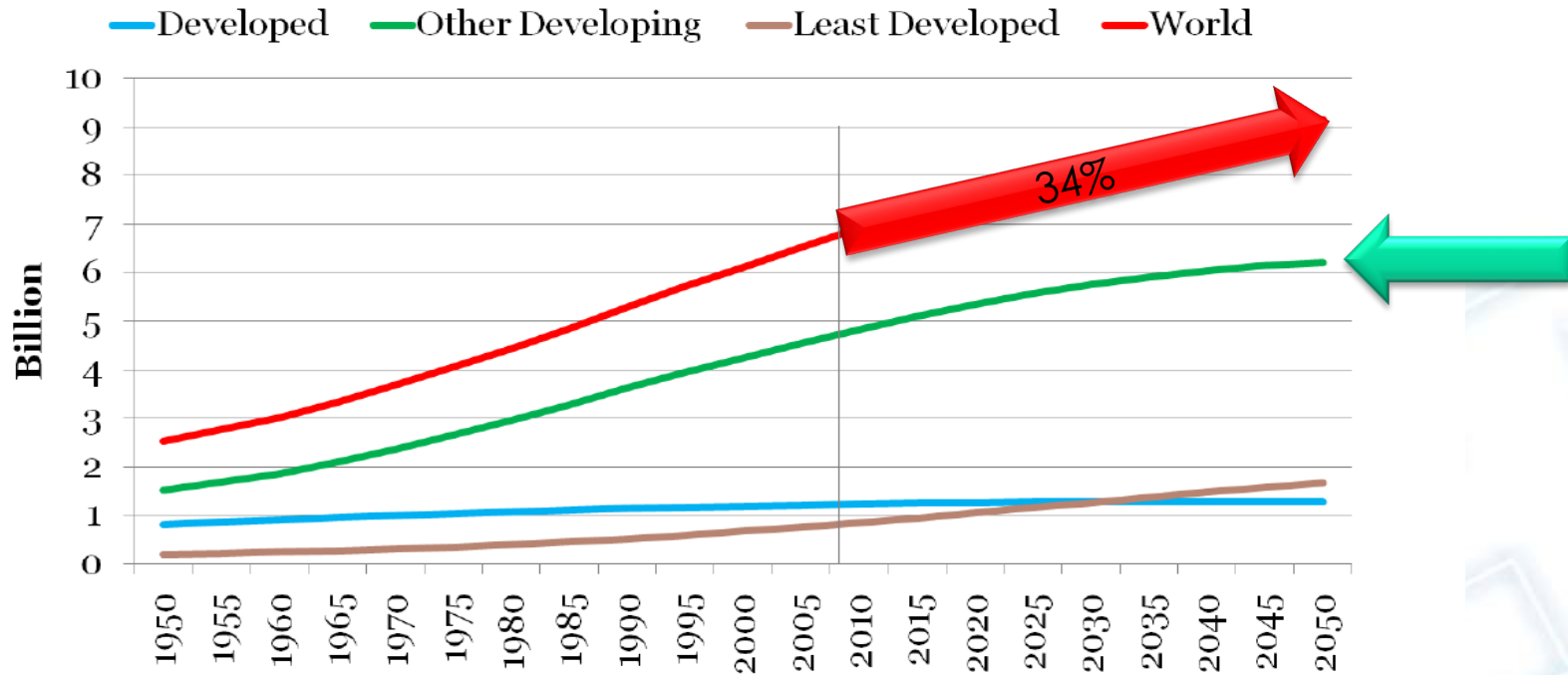


Data sources: Up to 2015 OurWorldInData series based on UN and HYDE. Projections for 2015 to 2100: UN Population Division (2015) – Medium Variant. The data visualization is taken from [OurWorldInData.org](https://ourworldindata.org). There you find the raw data and more visualizations on this topic.


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## Population growth

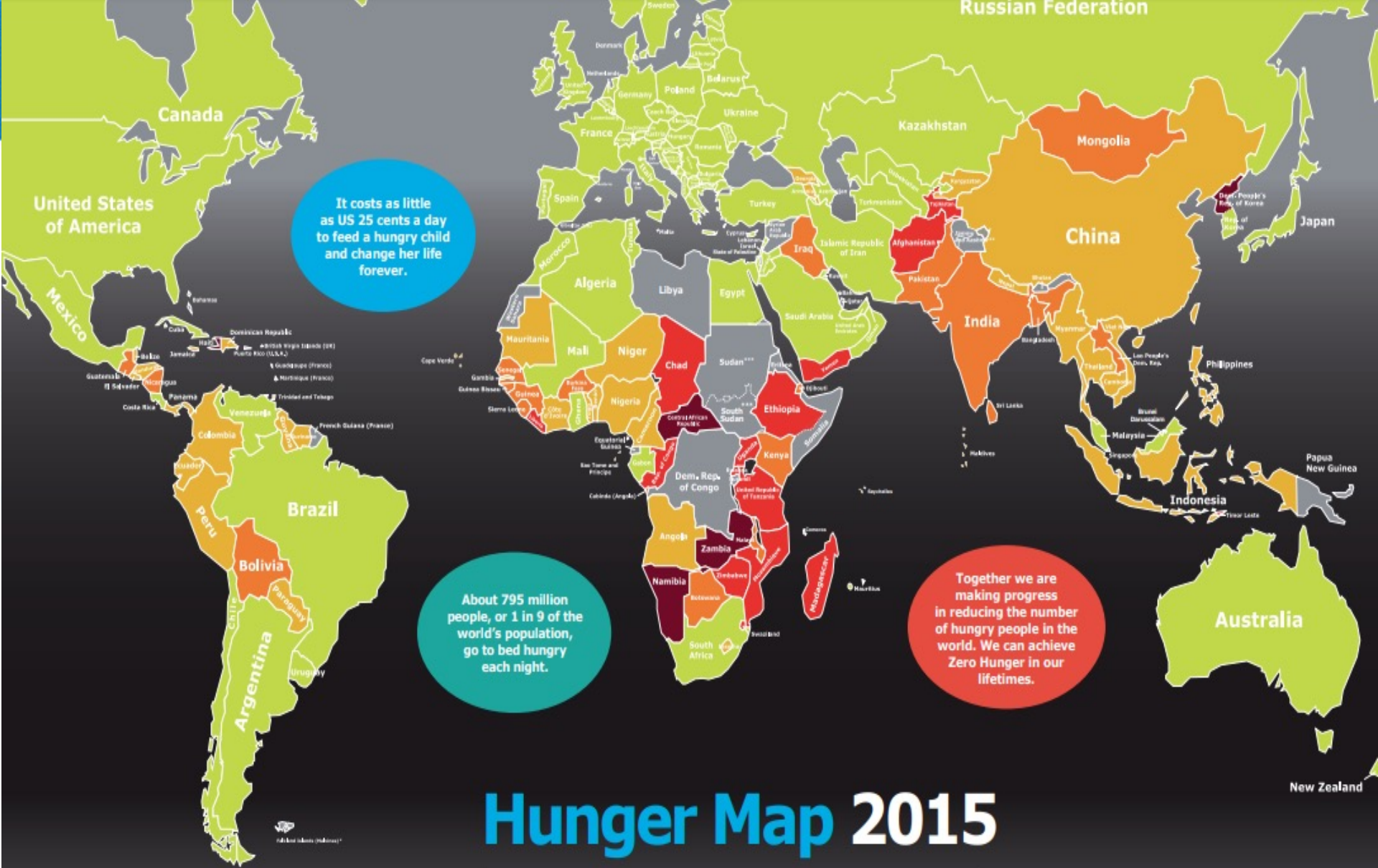


Source: UN Population Division, from van der Mensbrugge et al. 2009

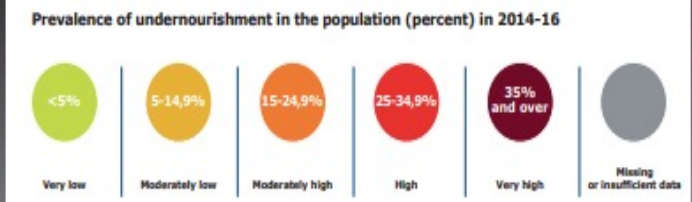
**H**  **W**

**TO FEED THE WORLD**

**2050**



# Hunger Map 2015



The map shows the prevalence of undernourishment in the population of developing countries as of 2014-16. The indicator measures the probability that a randomly selected individual in the population is consuming an amount of dietary energy, which is sufficient to cover his/her requirements for an active and healthy life.

Source: FAO, IFAD and WFP, 2015. The State of Food Insecurity in the World 2015. Meeting the 2015 international hunger targets: taking stock of unmet progress. Rome, FAO. Further information is available at [www.fao.org/publications/sofi/en/](http://www.fao.org/publications/sofi/en/) (undernourishment 4.0). FAO Statistics Division (2015) - [www.fao.org/sofi/en/](http://www.fao.org/sofi/en/)

© 2015 World Food Programme

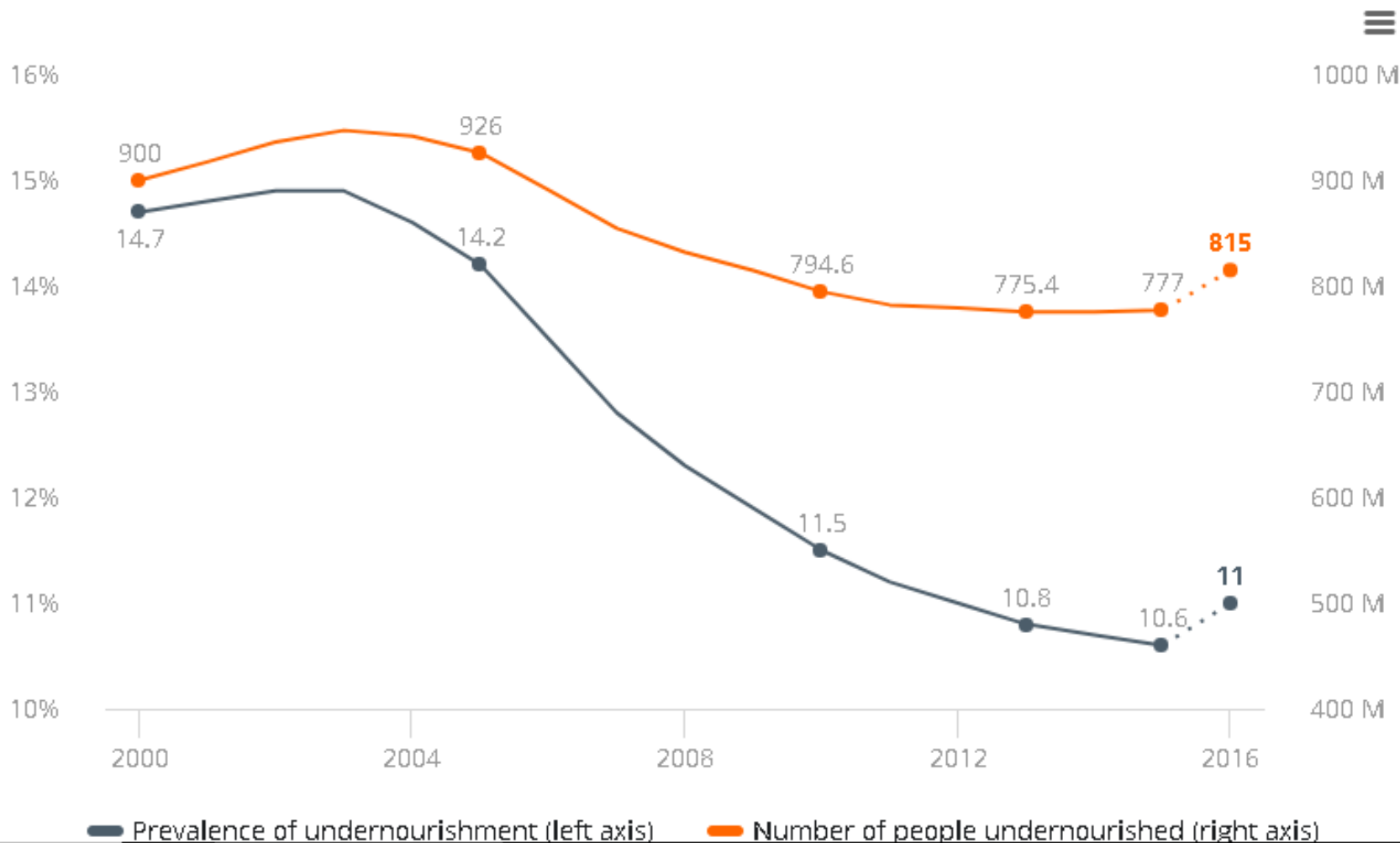
The designations employed and the presentation of material in this map does not imply the expression of any opinion whatsoever on the part of WFP concerning the legal or constitutional status of any country, territory or sea area, or concerning the delimitation of frontiers.

\* A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

\*\* Corrective remarks expressed the State of Central to Southern and Eastern Africa agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.

\*\*\* Food boundary between the Republic of South Sudan and the Republic of Sudan has not yet been determined.

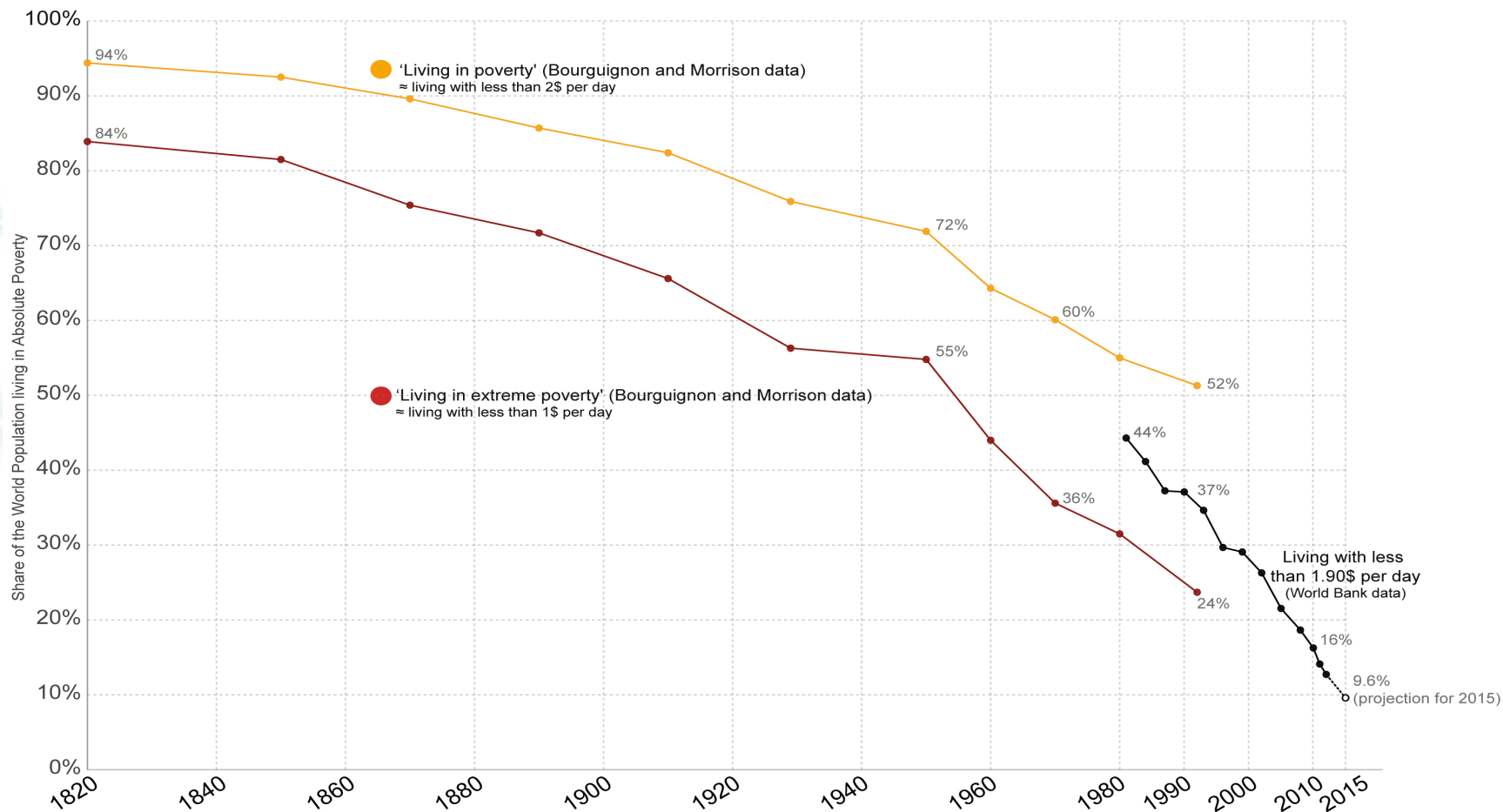
# Número e % de pessoas mal-nutridas no mundo



Our World  
in Data

## Share of the World Population living in Absolute Poverty, 1820-2015

All data are adjusted for inflation over time and for price differences between countries (PPP adjustment).



Data sources: 1820-1992 Bourguignon and Morrison (2002) - Inequality among World Citizens, In The American Economic Review; 1981-2015 World Bank (PovcalNet)

The interactive data visualisation is available at [OurWorldinData.org](http://OurWorldinData.org). There you find the raw data and more visualisations on this topic.

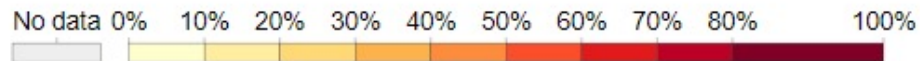
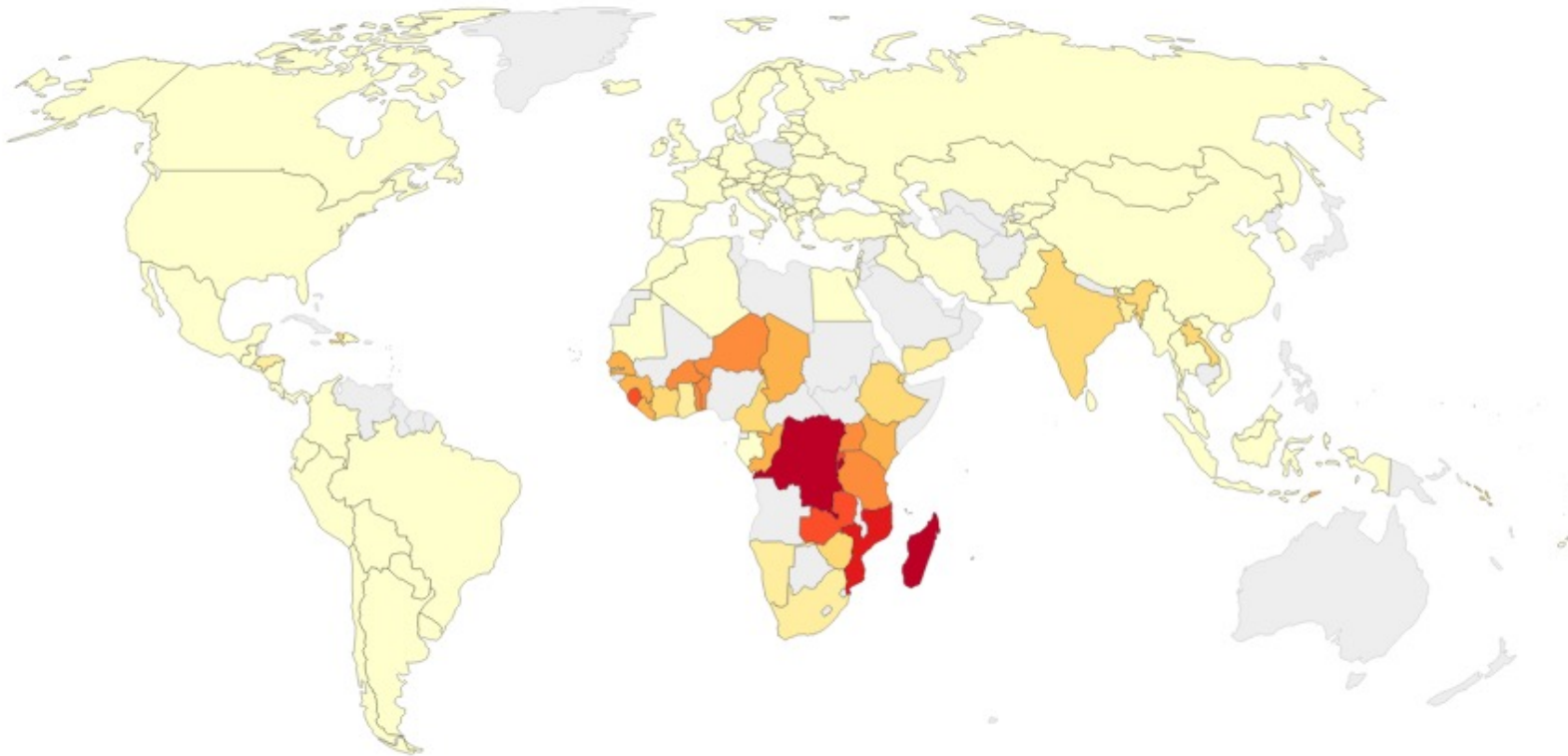
Licensed under CC-BY-SA by the author Max Roser.

# % de pessoas mal-nutridas no mundo

## Share of the population living in extreme poverty, 2017

Extreme poverty is defined as living with per capita household consumption below 1.90 international dollars per day (in 2011 PPP prices). International dollars are adjusted for inflation and for price differences across countries.

Our World  
in Data

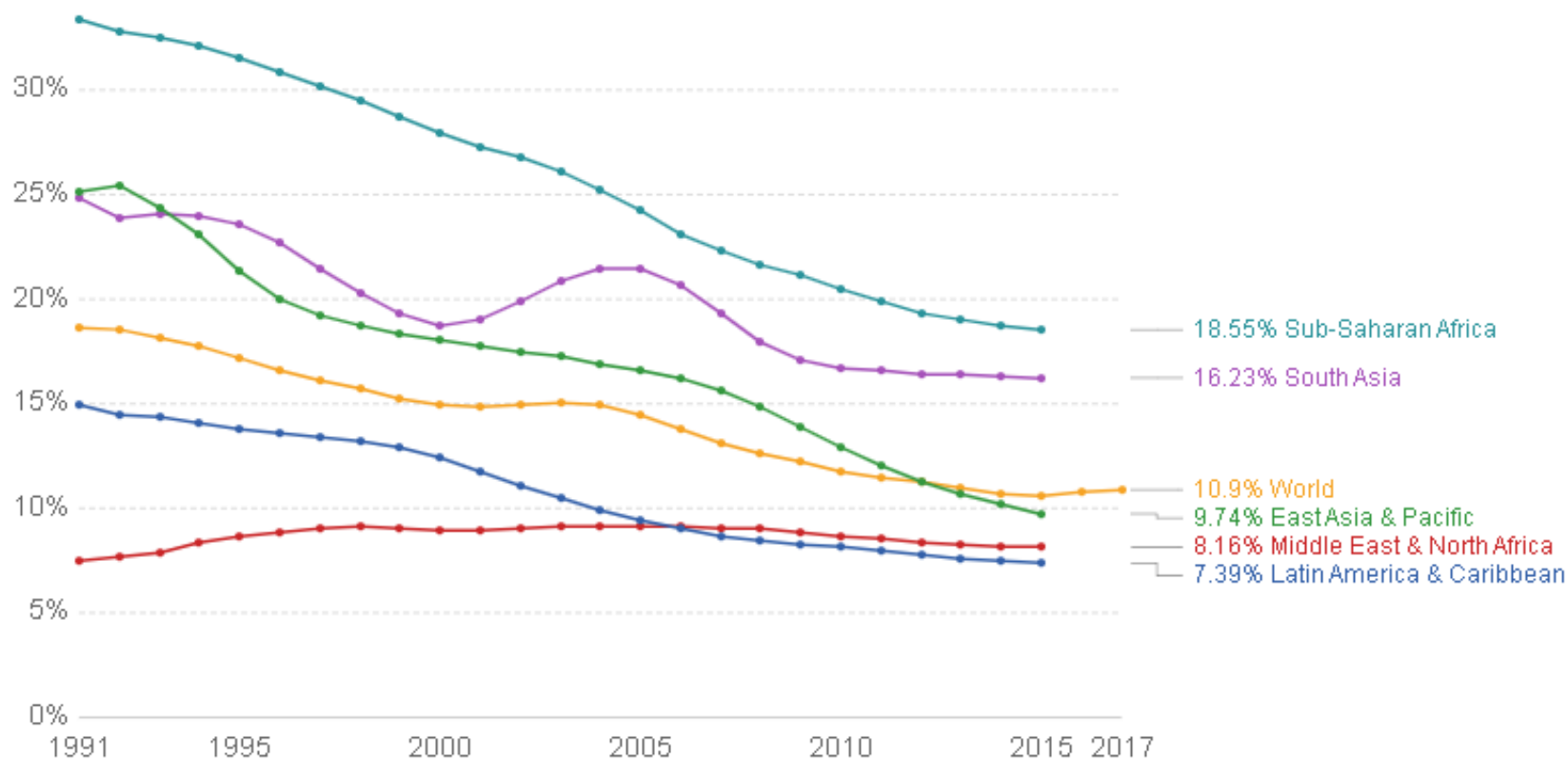


Source: World Bank

[OurWorldInData.org/extreme-poverty/](https://OurWorldInData.org/extreme-poverty/) • CC BY



# % de pessoas mal-nutridas no mundo



Source: UN Food and Agriculture Organization (FAO)

Note: Developed countries are not included in the regional estimates since the prevalence is below 5%.

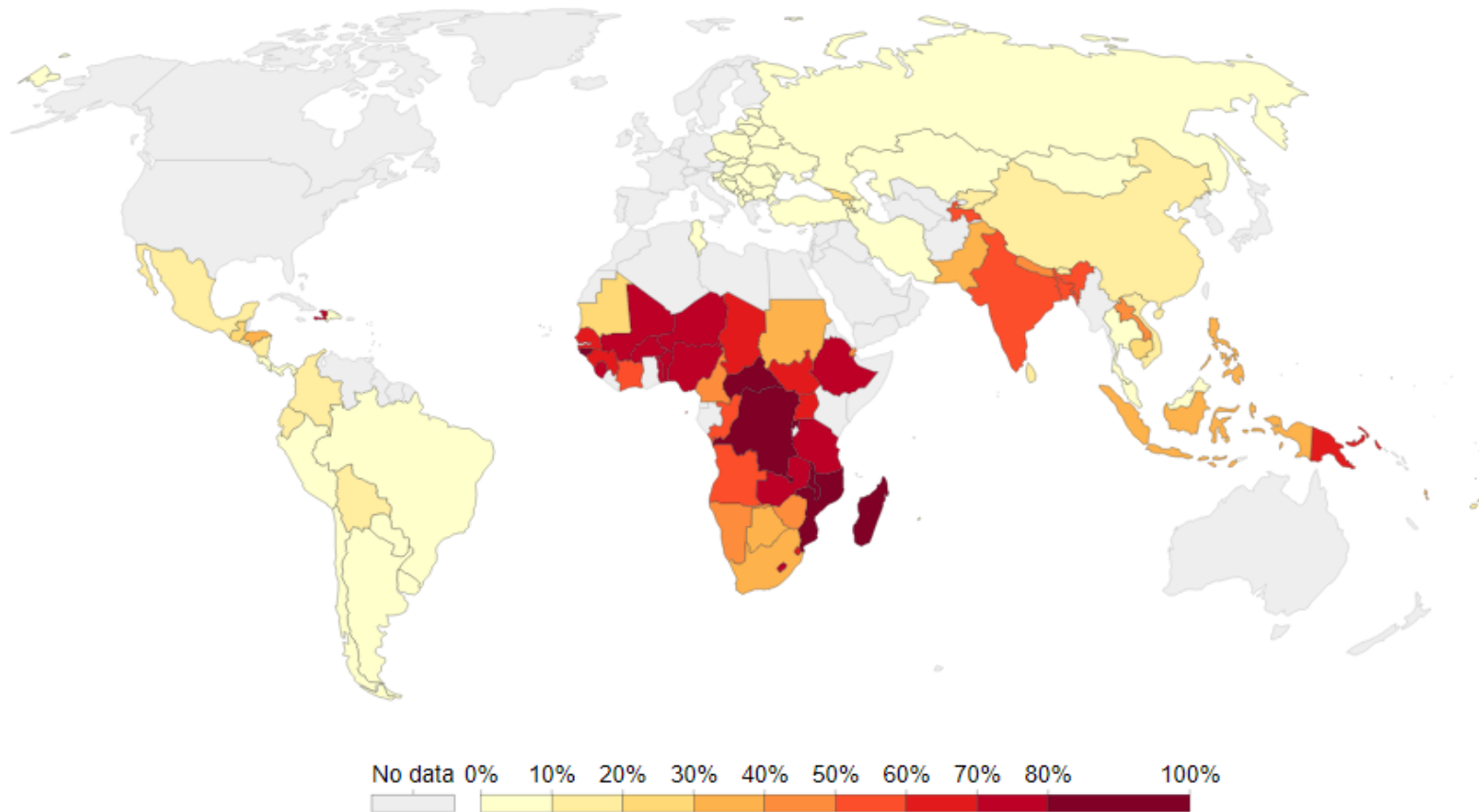
CC BY

# População pobre

Our World  
in Data

## Share of population living with less than 3.10 int.-\$ per day, 2014

Share of population living with per capita household consumption below 3.10 international dollars per day (in 2011 PPP prices). International dollars are adjusted for inflation and for price differences across countries.



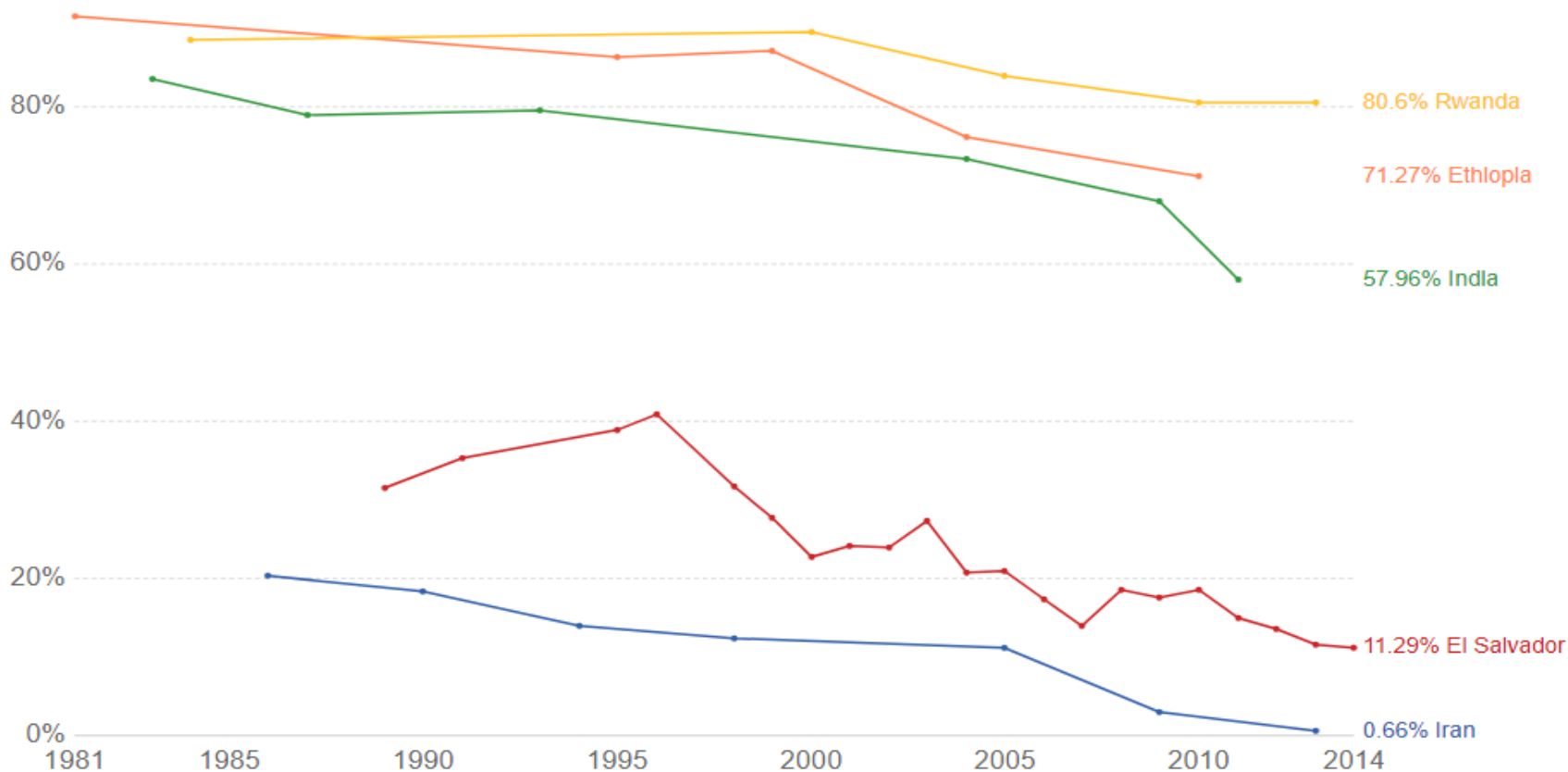
Source: World Bank – WDI

Note: Consumption per capita is the preferred welfare indicator for the World Bank's analysis of global poverty. However, for about 25% of the countries, estimates correspond to income, rather than consumption.

[OurWorldInData.org/extreme-poverty/](http://OurWorldInData.org/extreme-poverty/) • CC BY

## Share of population living with less than 3.10 int.-\$ per day

Share of population living with per capita household consumption below 3.10 international dollars per day (in 2011 PPP prices). International dollars are adjusted for inflation and for price differences across countries.

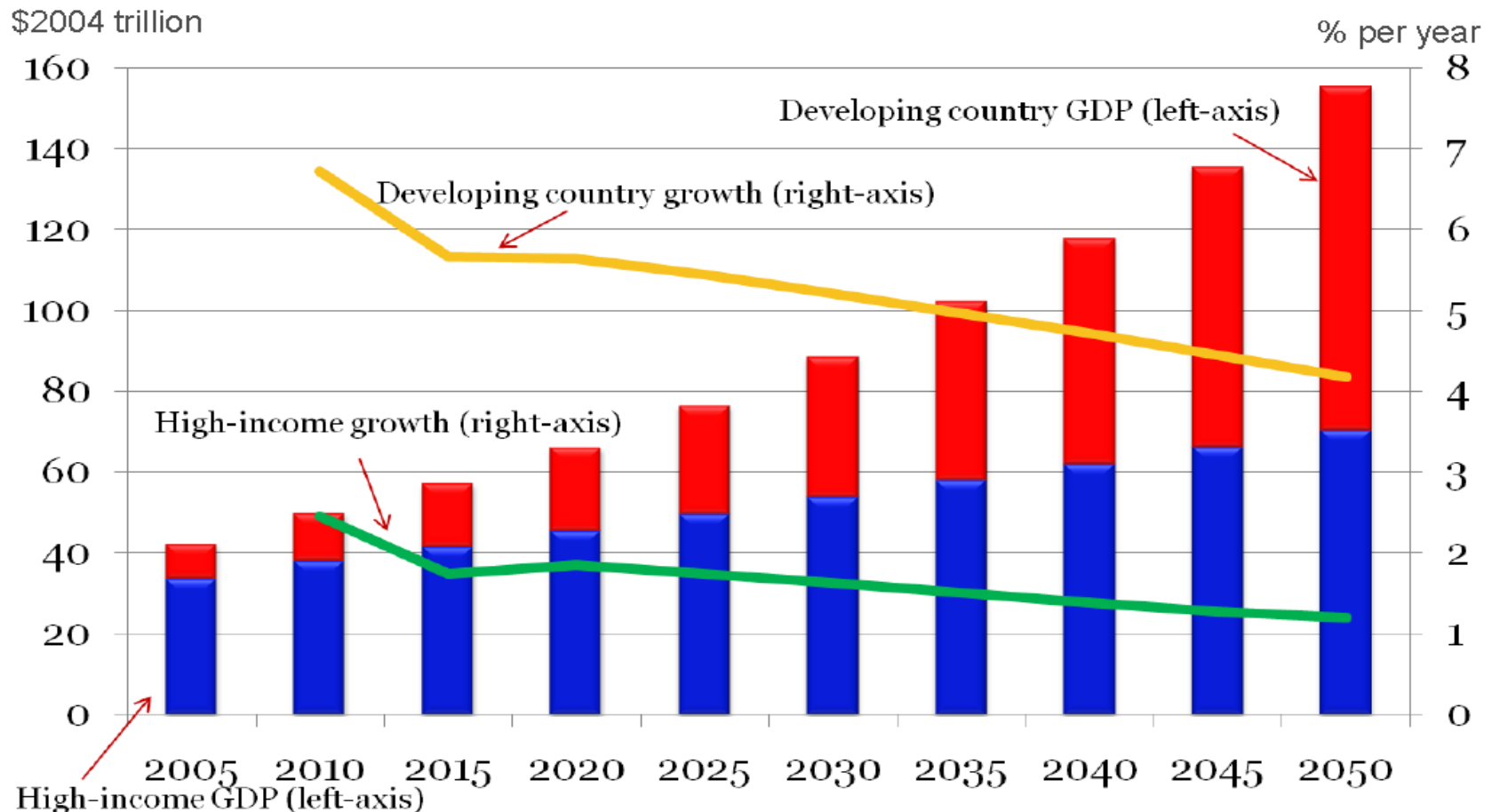


Source: World Bank – WDI

Note: Consumption per capita is the preferred welfare indicator for the World Bank's analysis of global poverty. However, for about 25% of the countries, estimates correspond to income, rather than consumption.

OurWorldInData.org/extreme-poverty/ • CC BY

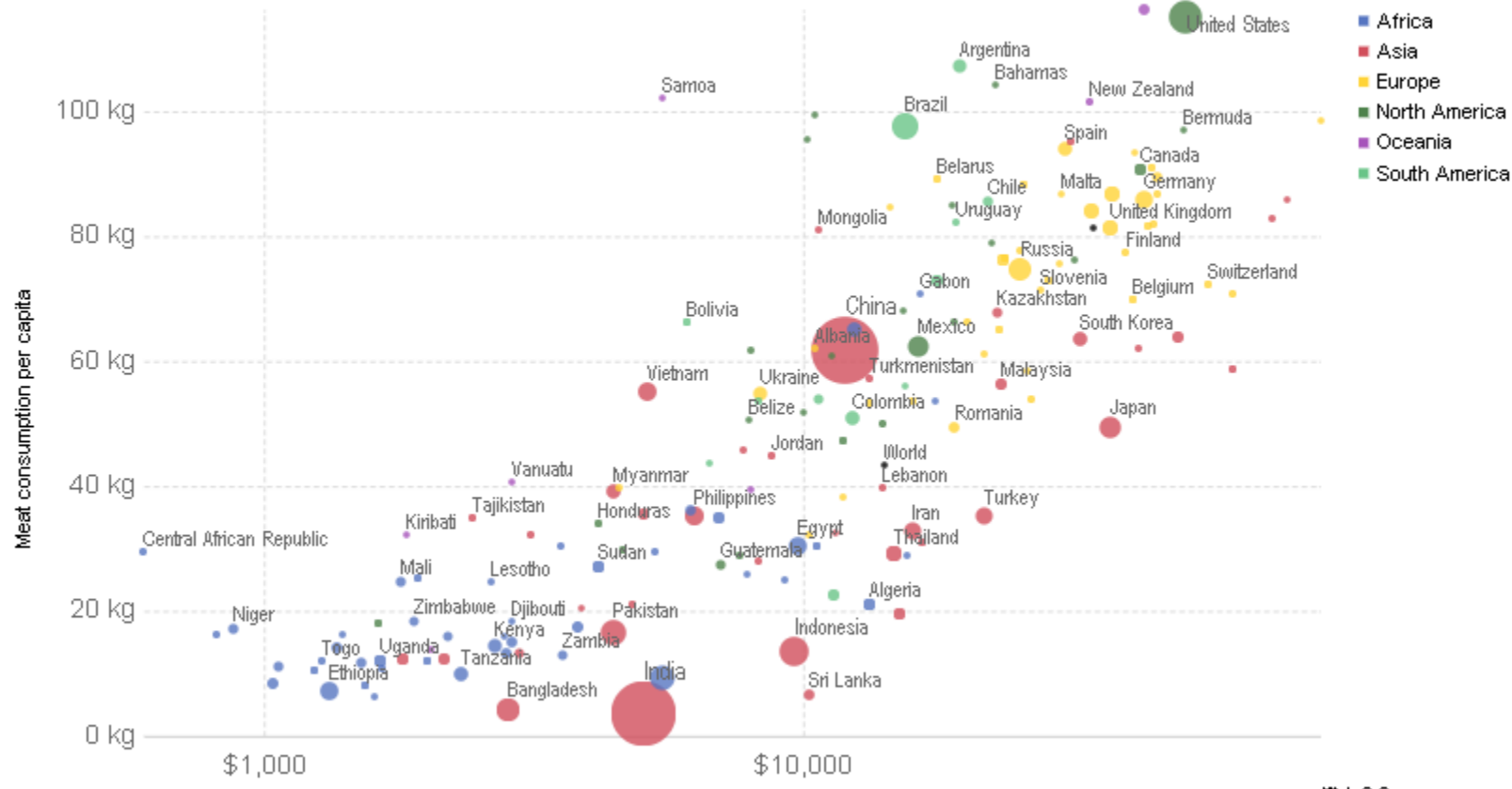
## Income growth



## Meat consumption vs. GDP per capita, 2013

Average meat consumption per capita, measured in kilograms per year versus gross domestic product (GDP) per capita measured in 2011 international-\$. International-\$ corrects for price differences across countries. Figures do not include fish or seafood.

LINEAR

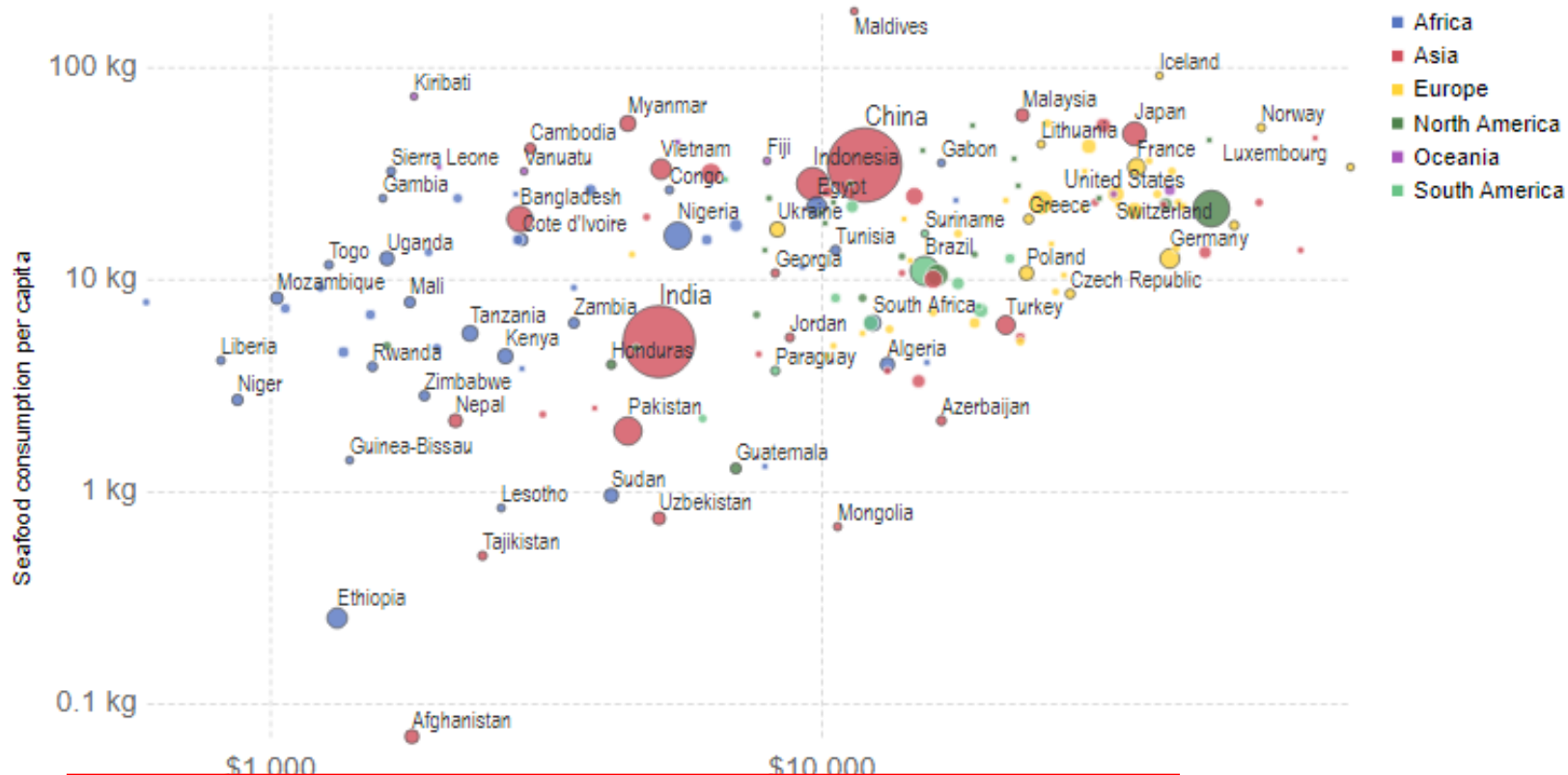


Meat consumption tends to rise as we get richer

## Fish and seafood consumption vs. GDP per capita, 2013

Annual average per capita consumption of fish and seafood products, measured in kilograms per person, versus gross domestic product (GDP) per capita, measured in 2011 international-\$. International dollars correct for price differences across countries.

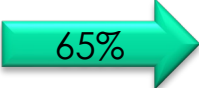
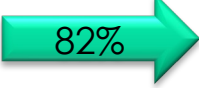
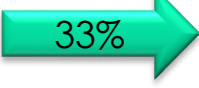
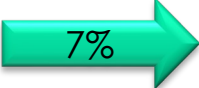

LOG



Seafood consumption more weakly linked to income

LOG

## Meat consumption by region, 2000 and 2050 (projected)

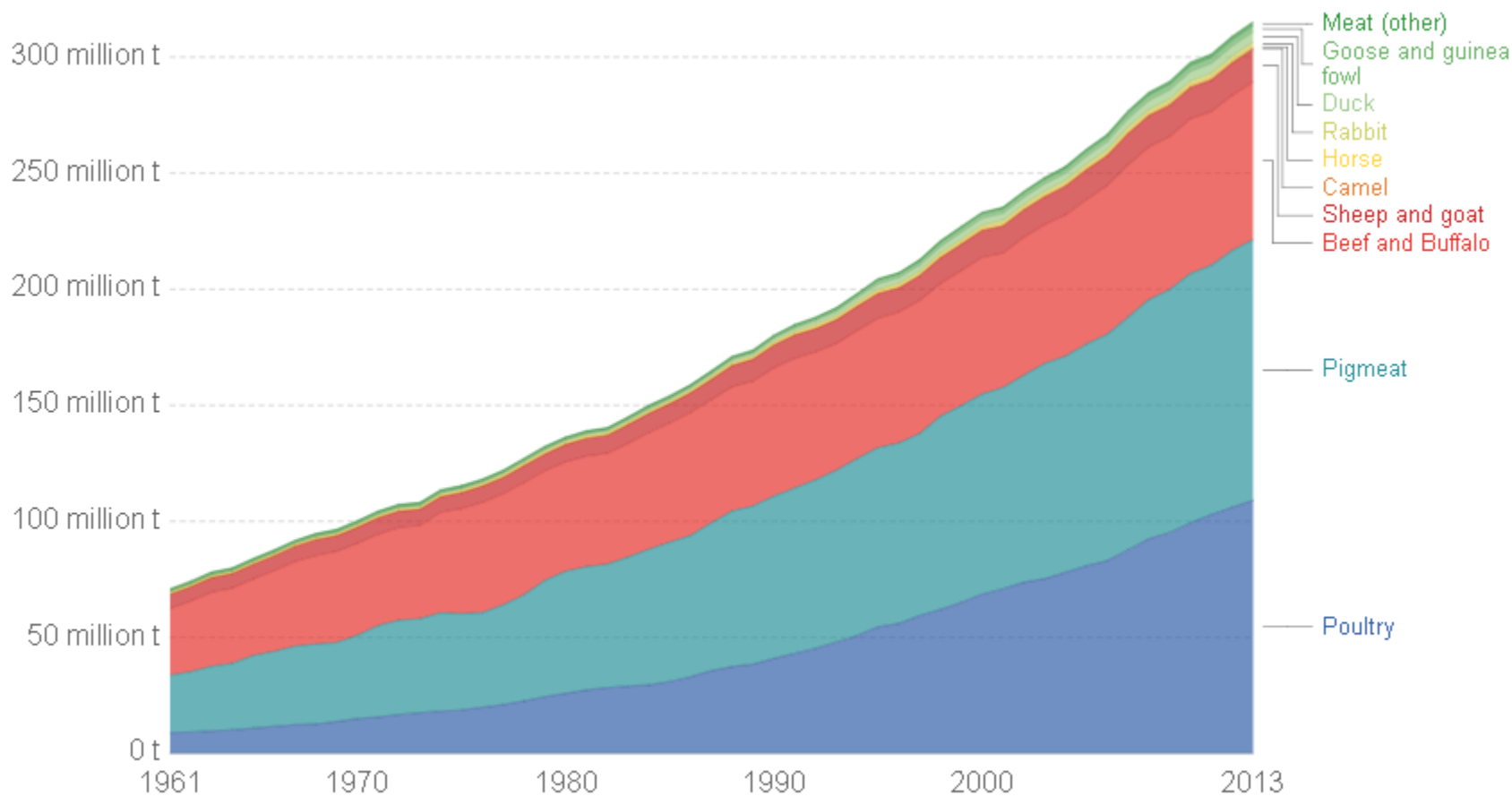
	PER CAPITA CONSUMPTION OF MEAT	
	2000	2050
	<i>(kg/person/year)</i>	
Central and West Asia and North Africa	20	33 
East and South Asia and the Pacific	28	51 
Latin America and the Caribbean	58	77 
North America and Europe	83	89 
Sub-Saharan Africa	11	22 

- Produção carne atual (2014)
  - 317 milhões de ton.
- Produção em 2050
  - 470 milhões ton.
  - 72% consumido em países em desenvolvimento;
- Aumento de 150 milhões de ton.  
(aumento de 32%)

Fonte: FAO, 2016



# Produção mundial de carne



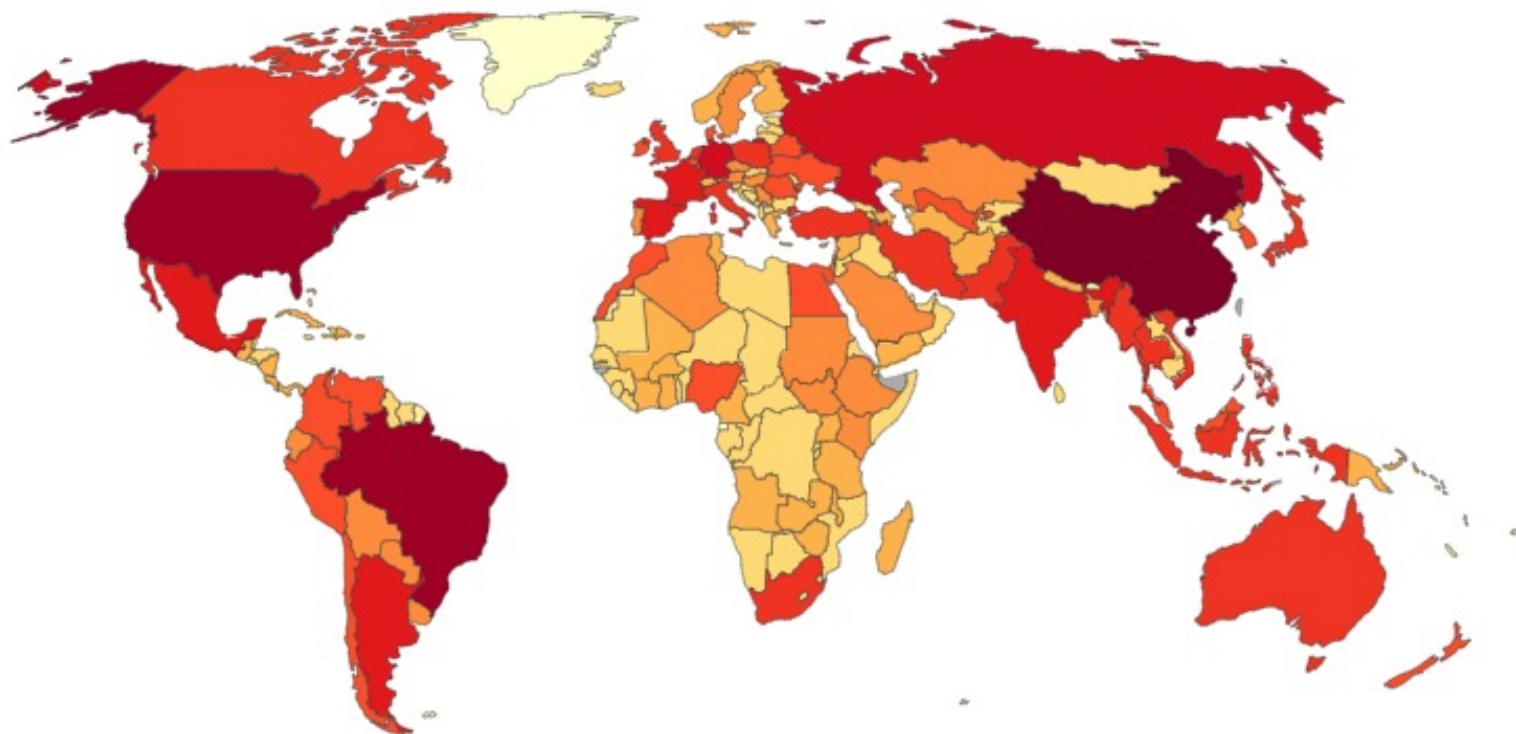
Source: UN Food and Agricultural Organization (FAO)

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# Produção mundial de carne por região

In Data

Total meat production, measured in tonnes. Meat includes cattle, poultry, sheep/mutton, goat, pigmeat, and wild game. Figures are given in terms of dressed carcass weight, excluding offal and slaughter fats.



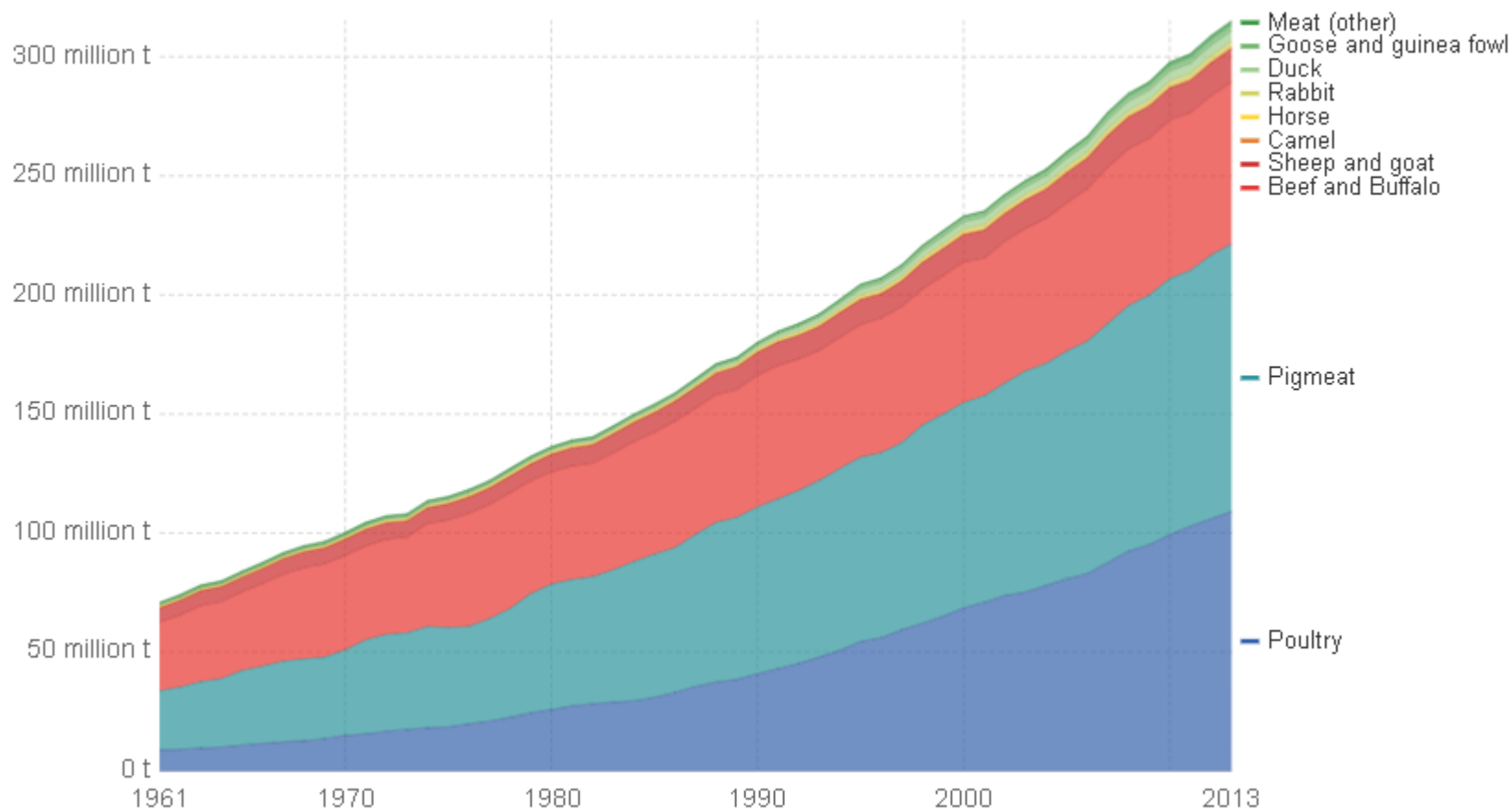
Source: UN Food and Agricultural Organization (FAO)

OurWorldInData.org/meat-and-seafood-production-consumption/ • CC BY-SA

Fonte: Our World in data

## Meat production by livestock type

Meat production by commodity or product type, measured in tonnes per year. All data shown relate to total meat production, from both commercial and farm slaughter. Data are given in terms of dressed carcass weight, excluding offal and slaughter fats.



Source: UN Food and Agricultural Organization (FAO)

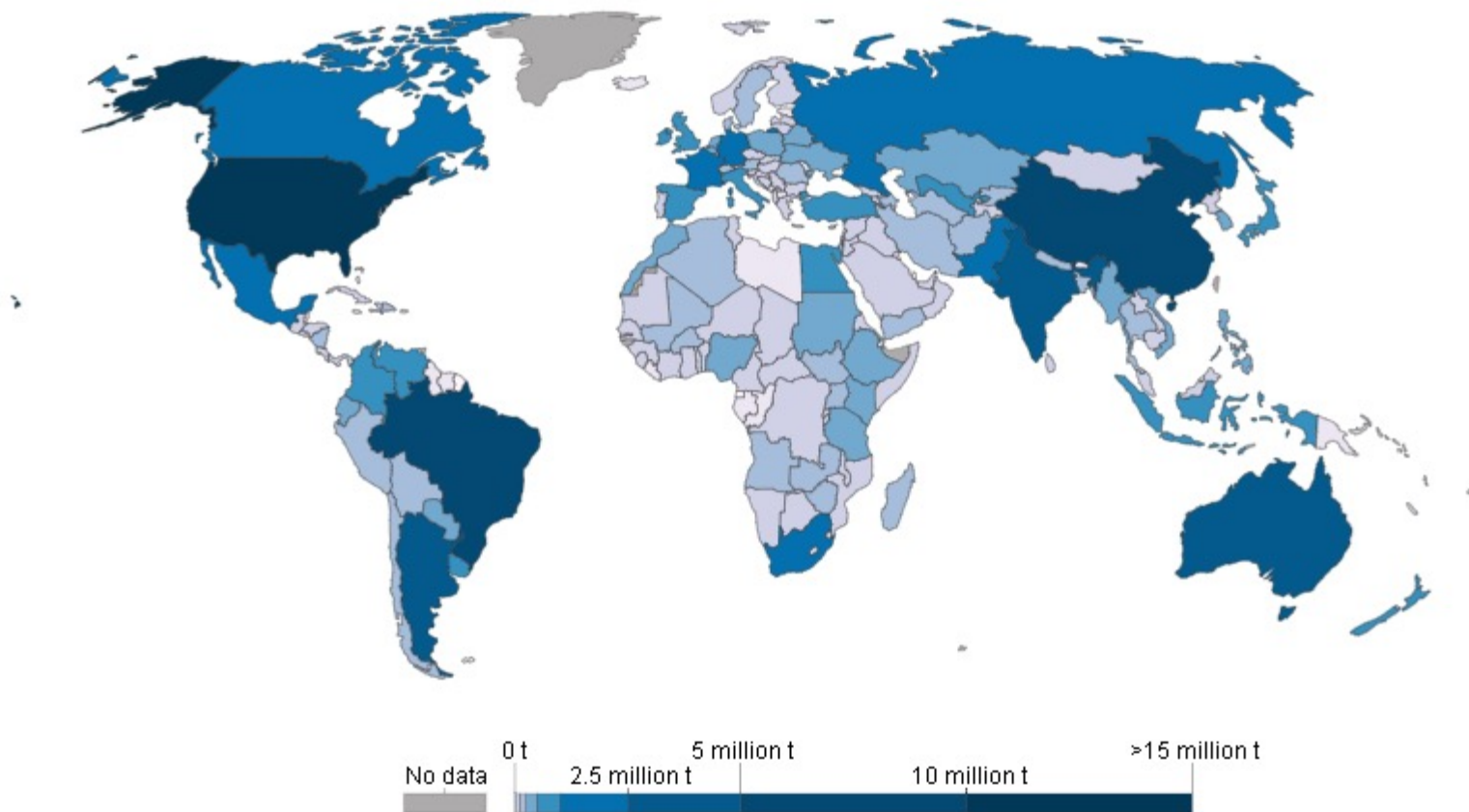
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Fonte: Our World in data

# Produção mundial e carne bovina e bubalina, por região

## Beef and buffalo meat production, tonnes, 2014

Total beef and buffalo (cattle) meat production, measured in tonnes per year. All data shown relate to total meat production, from both commercial and farm slaughter. Data are given in terms of dressed carcass weight, excluding offal and slaughter fats.



Source: UN Food and Agricultural Organization (FAO)

[OurWorldInData.org/meat-and-seafood-production-consumption/](http://OurWorldInData.org/meat-and-seafood-production-consumption/) • CC BY-SA

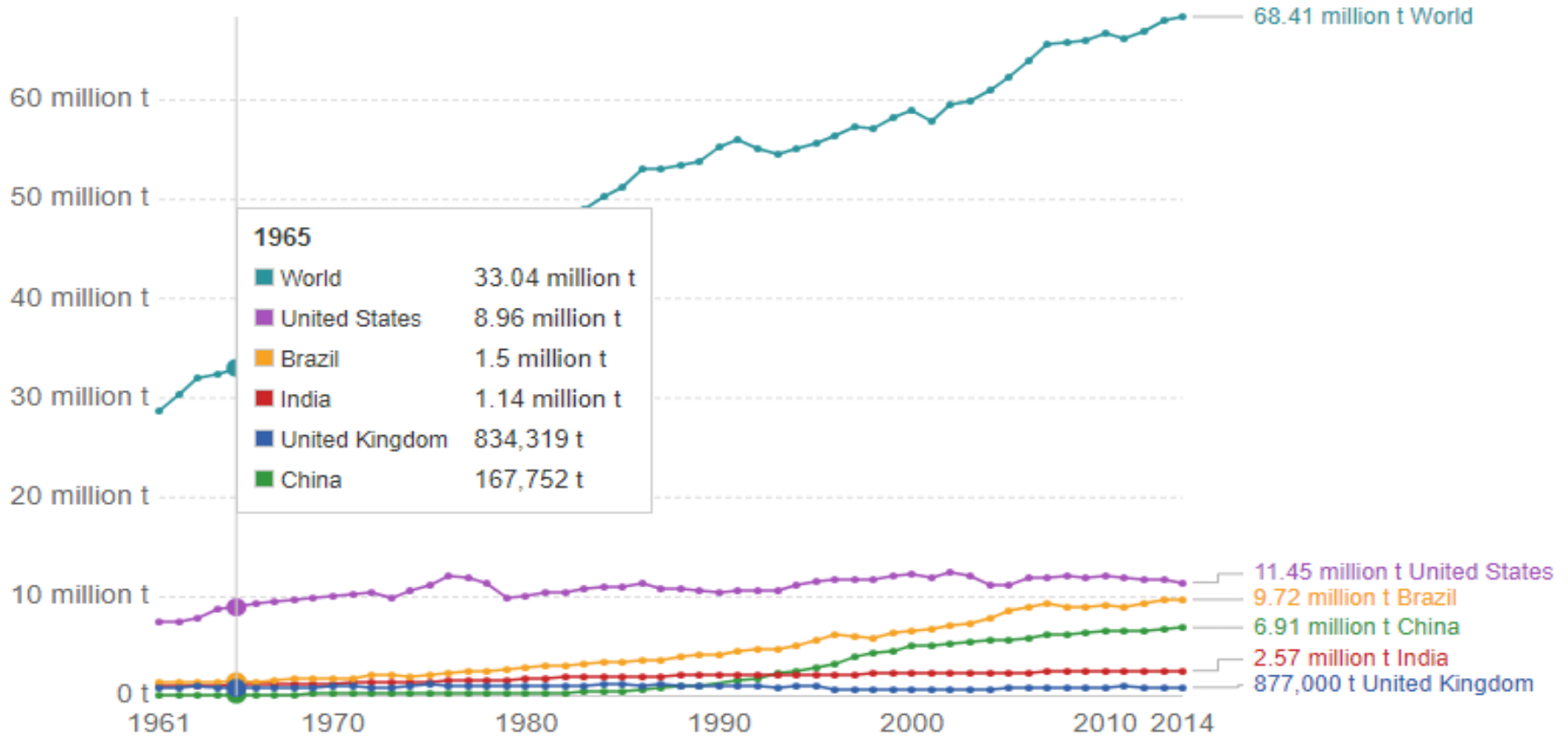
Fonte: Our World in data

# Produção mundial e carne bovina e bubalina, por região

## Beef and buffalo meat production, tonnes

Total beef and buffalo (cattle) meat production, measured in tonnes per year. All data shown relate to total meat production, from both commercial and farm slaughter. Data are given in terms of dressed carcass weight, excluding offal and slaughter fats.

Our World  
in Data

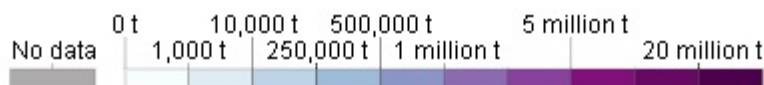
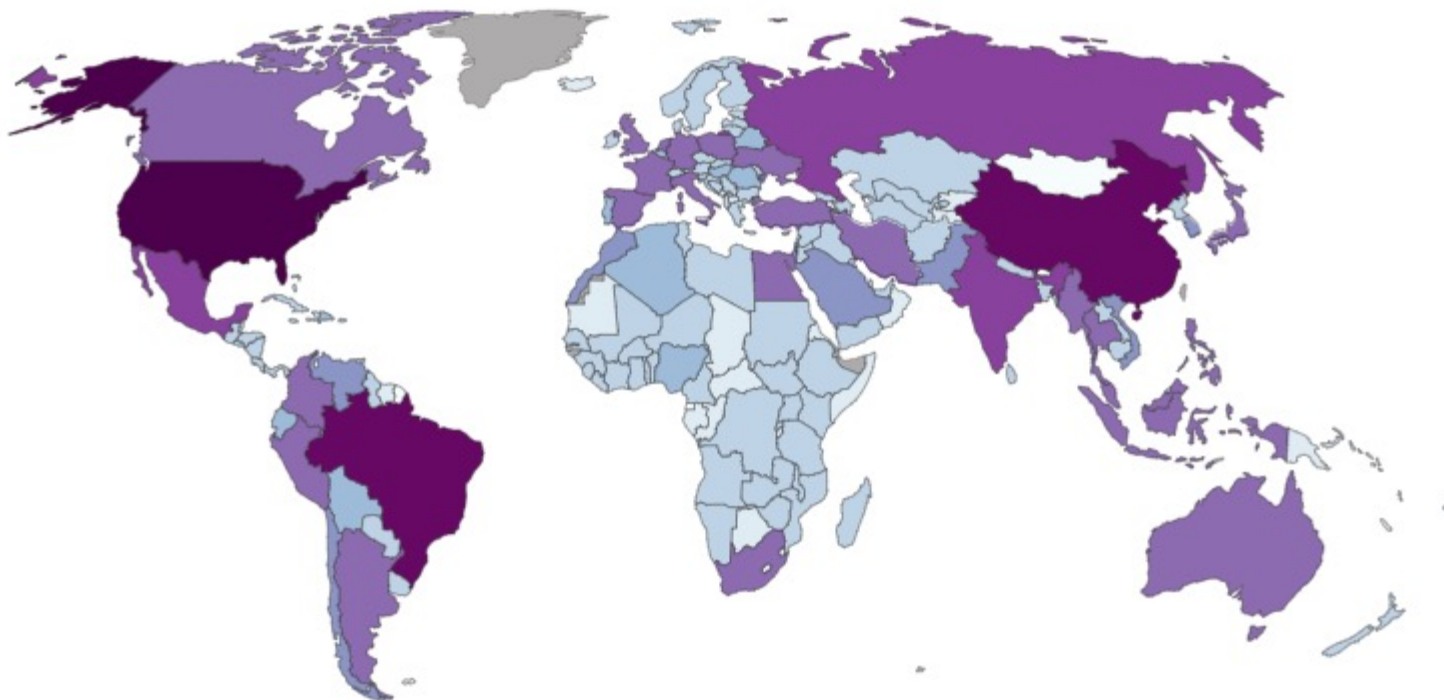
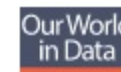


Source: UN Food and Agricultural Organization (FAO)

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## Poultry production, tonnes, 2014

Total poultry production, measured in tonnes per year. All data shown relate to total meat production, from both commercial and farm slaughter. Data are given in terms of dressed carcass weight, excluding offal and slaughter fats.



Source: Livestock Primary - FAO (2017)

[OurWorldInData.org/meat-and-seafood-production-consumption/](http://OurWorldInData.org/meat-and-seafood-production-consumption/) • CC BY-SA

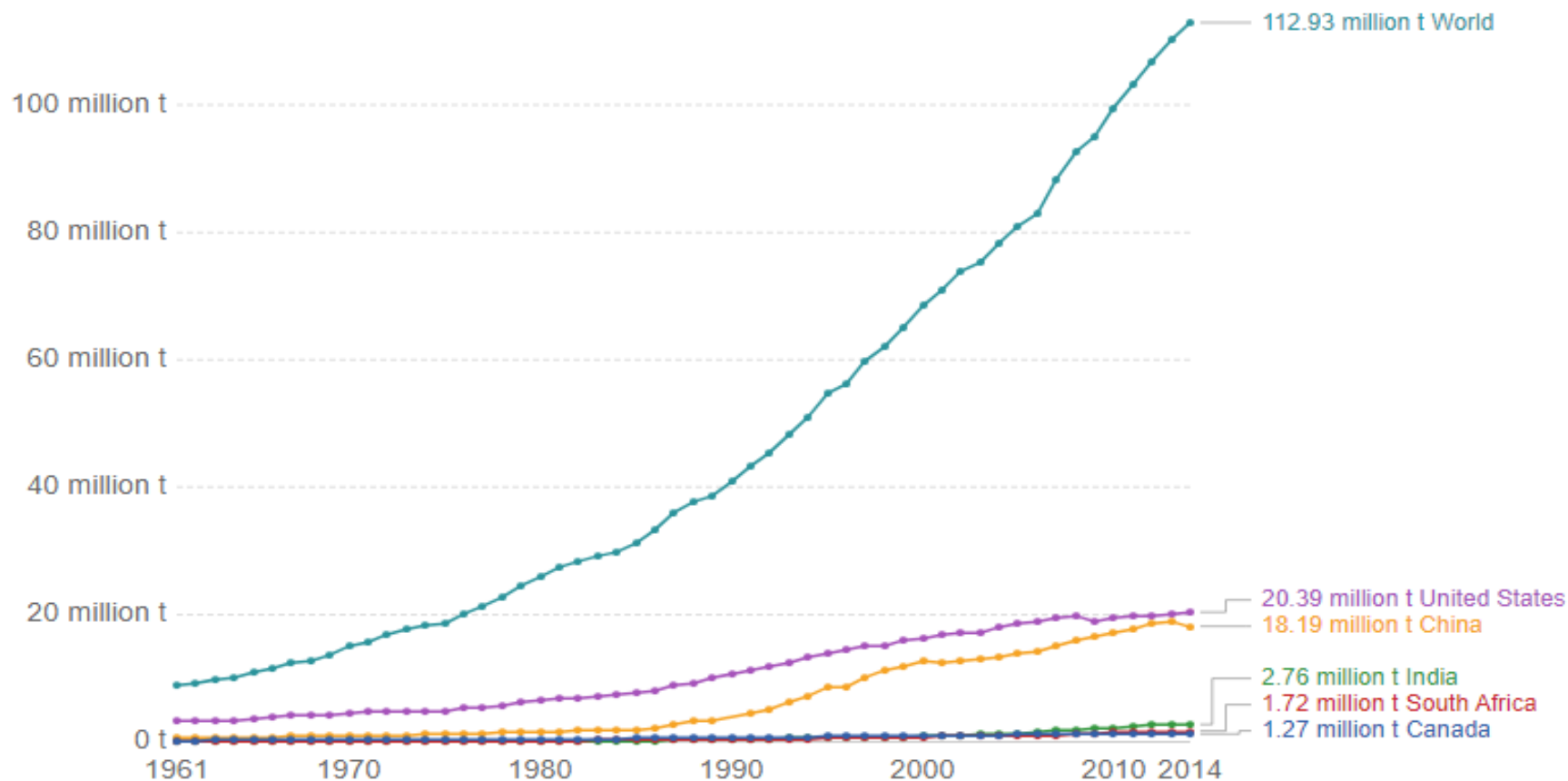
Fonte: Our World in data

# Produção mundial e carne de frango, por região

## Poultry production, tonnes

Total poultry production, measured in tonnes per year. All data shown relate to total meat production, from both commercial and farm slaughter. Data are given in terms of dressed carcass weight, excluding offal and slaughter fats.

Our World  
in Data



Source: Livestock Primary - FAO (2017)

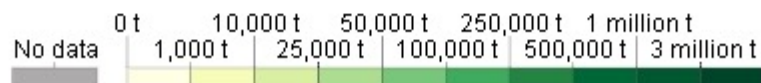
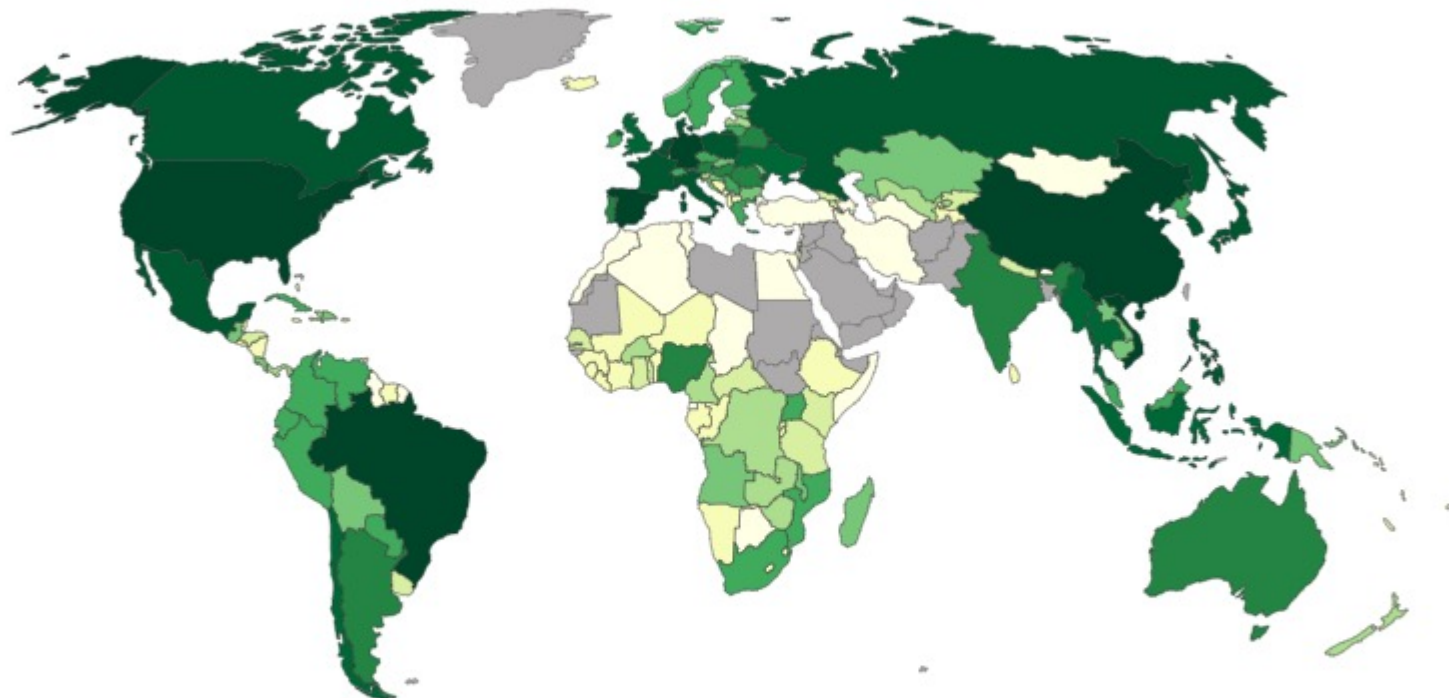
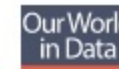
Fonte: Our World in data

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# Produção mundial de carne suína, por região

## Pigmeat production, tonnes, 2013

Total pigmeat production, measured in tonnes per year. All data shown relate to total meat production, that is, from both commercial and farm slaughter. Data are given in terms of dressed carcass weight, excluding offal and slaughter fats.



Source: UN Food and Agricultural Organization (FAO)

[OurWorldInData.org/meat-and-seafood-production-consumption/](http://OurWorldInData.org/meat-and-seafood-production-consumption/) • CC BY-SA

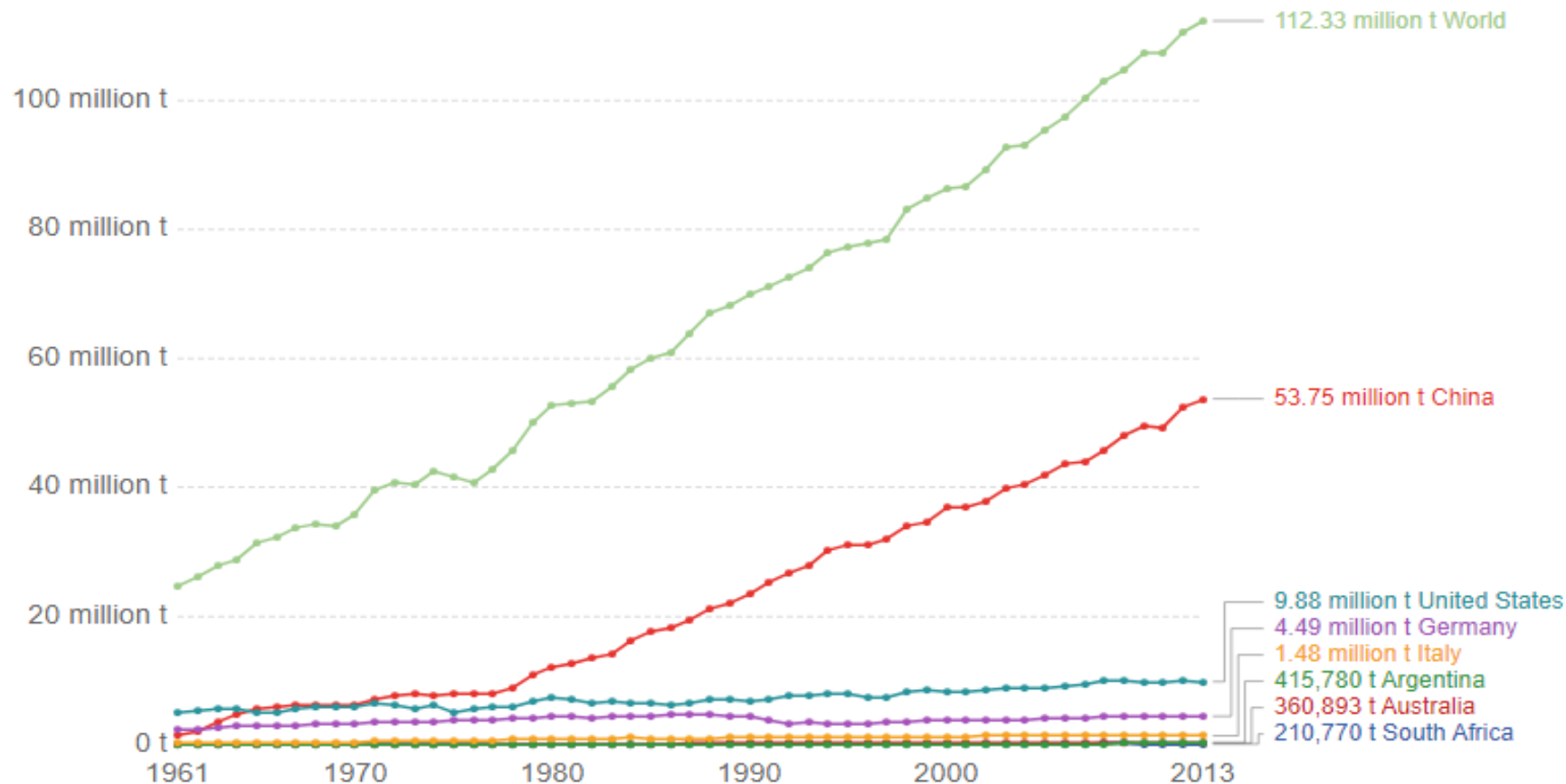
Fonte: Our World in data



# Produção mundial de carne suína, por região

## Pigmeat production, tonnes

Total pigmeat production, measured in tonnes per year. All data shown relate to total meat production, that is, from both commercial and farm slaughter. Data are given in terms of dressed carcass weight, excluding offal and slaughter fats.



Source: UN Food and Agricultural Organization (FAO)

Fonte: Our World in data

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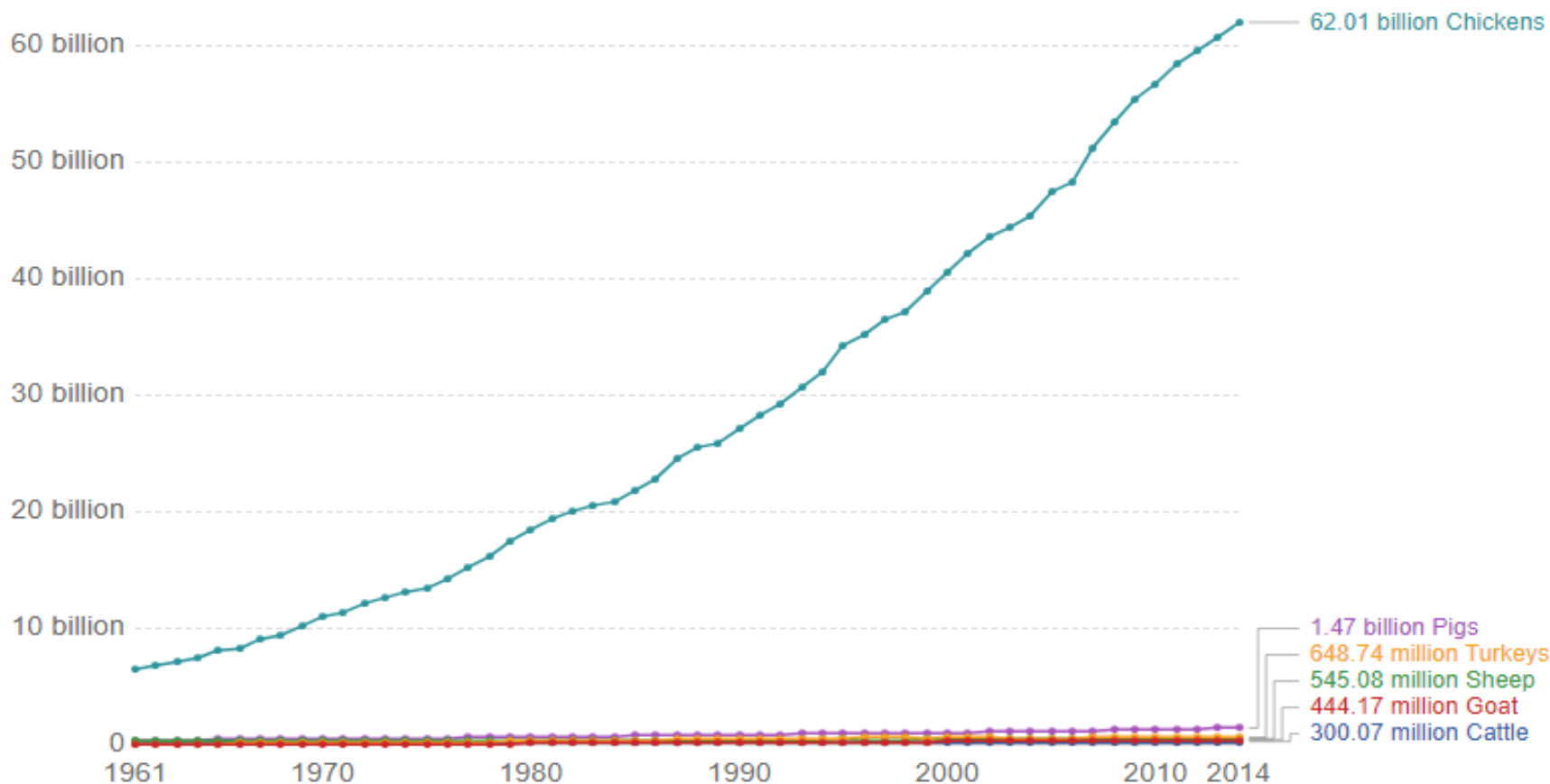


# Produção mundial de carne suína, por região

## Number of livestock animals slaughtered for meat, World

The annual number of animals slaughtered for meat production across various livestock groups. This is based on livestock production for meat (and therefore does not include dairy or egg production).

Our World  
in Data



Source: UN Food and Agriculture Organization (2017)

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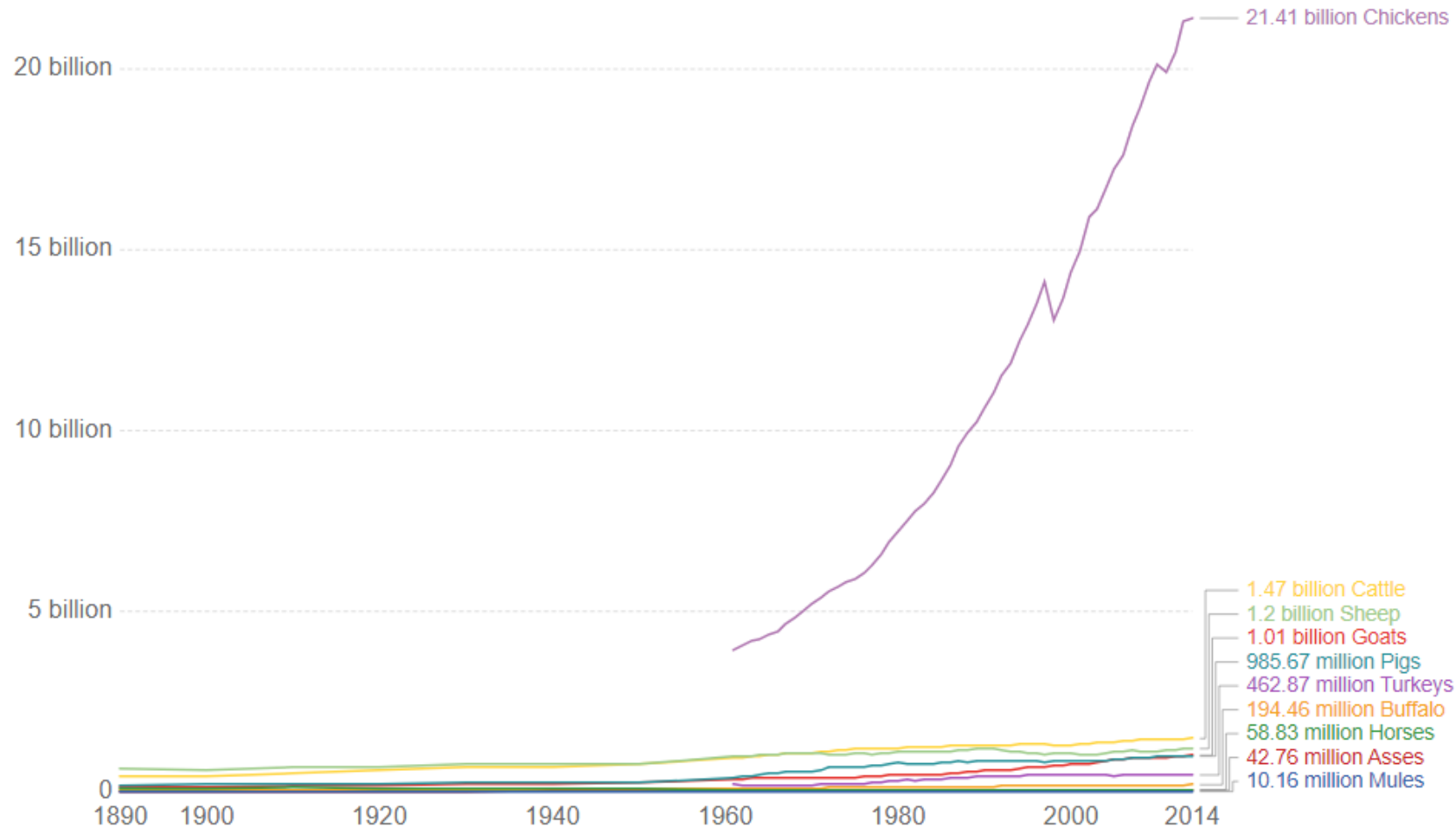
Fonte: Our World in data

# Evolução do número de animais de acordo com a espécie

Our World  
in Data

## Livestock counts, World

Total number of livestock animals, measured as the number of live animals at a single point in any given year.



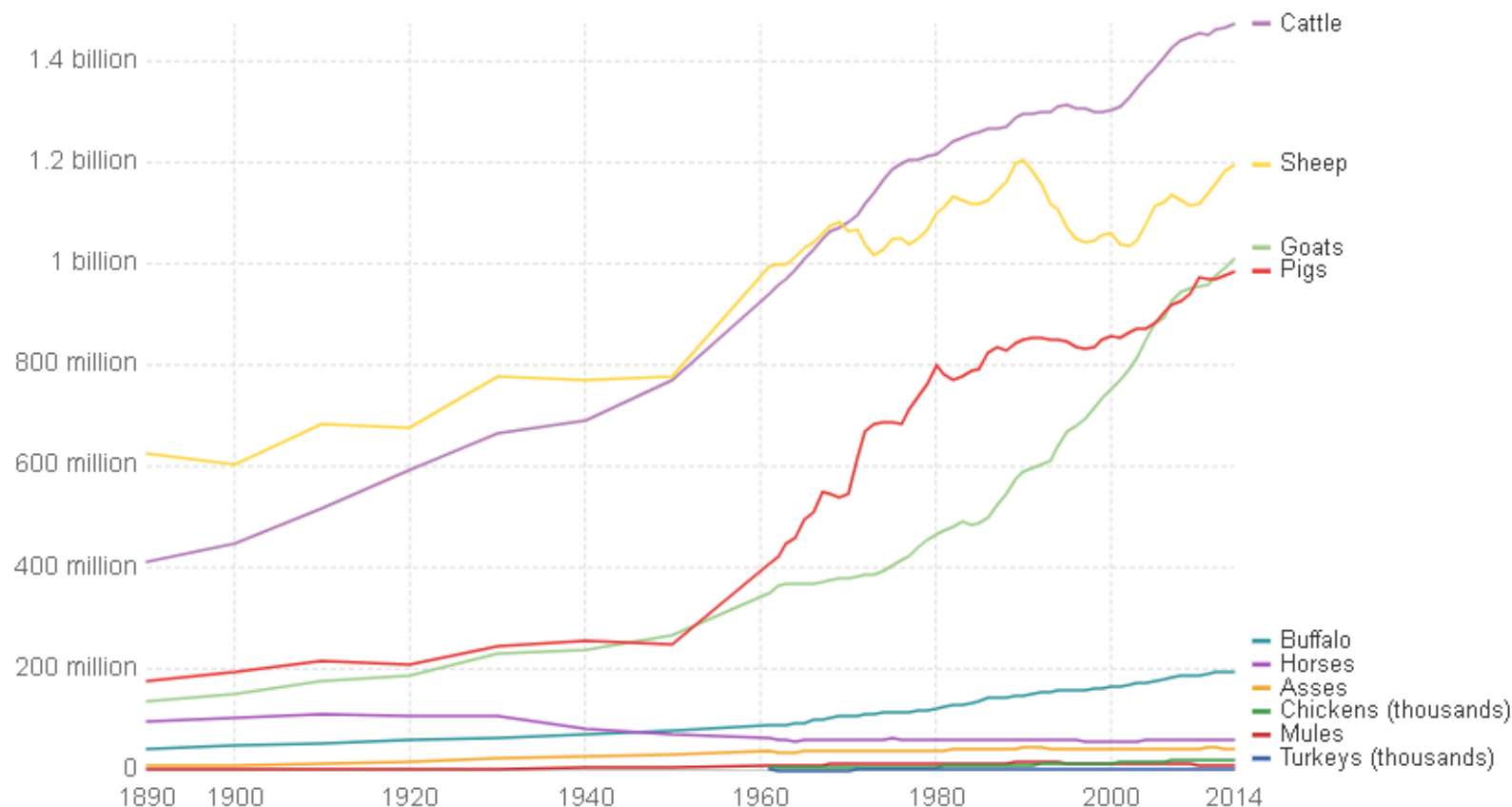
Source: HYDE Database and UN FAO Statistics

OurWorldInData.org/meat-and-seafood-production-consumption/ • CC BY

# Evolução do número de animais de acordo com a espécie

## Livestock counts, World

Total number of livestock animals, measured as the number of live animals in any given year. All figures are given as the number of heads, with exception to chicken and turkey figures which are reported in thousand heads.



Source: HYDE Database and UN FAO Statistics

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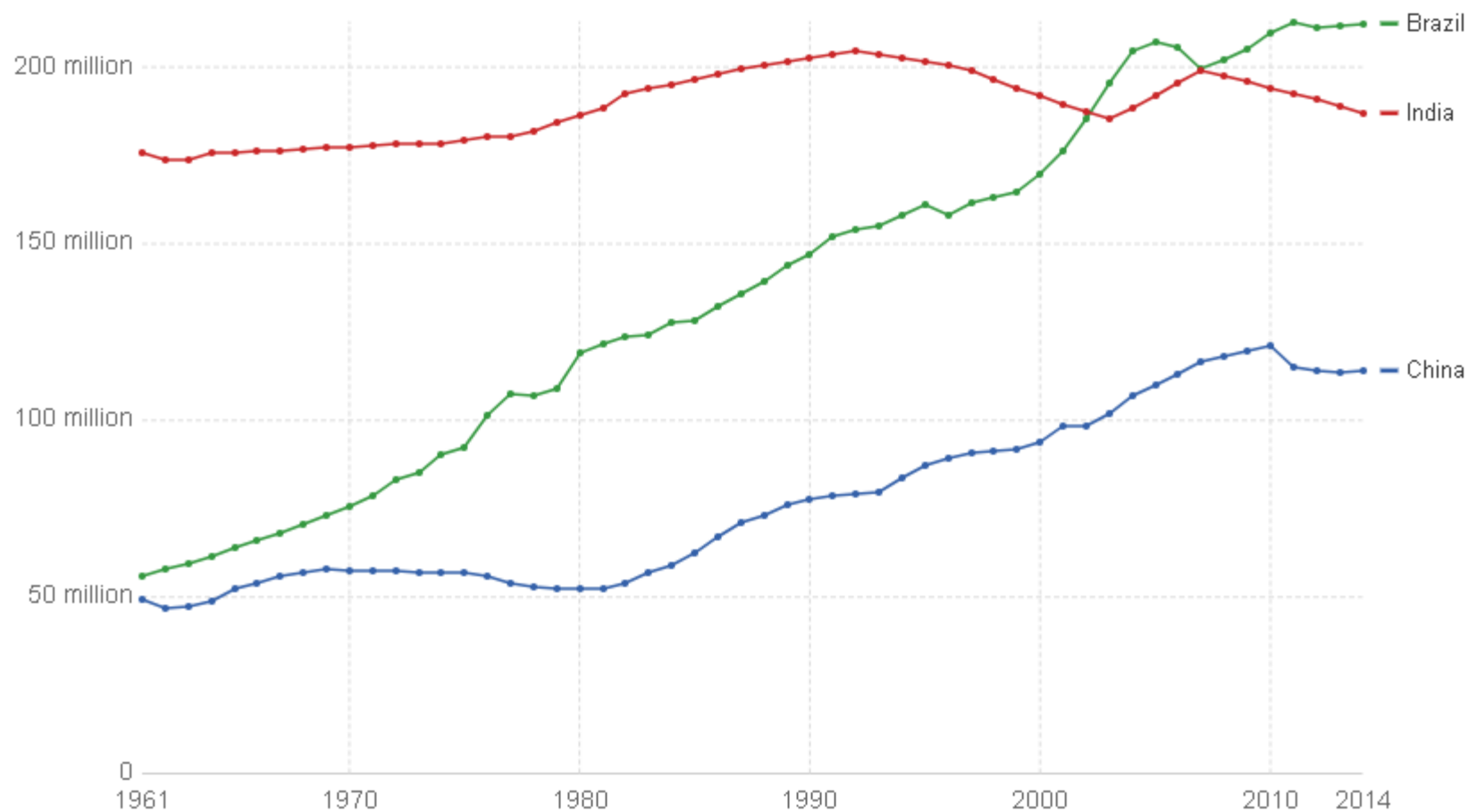
Fonte: Our World in data

# Evolução do número de bovinos em alguns países

## Cattle livestock count (heads)

Total livestock count of live cattle, measured as the total number of live animals in any given year.

Our World  
in Data



Source: UN Food and Agricultural Organization (FAO)

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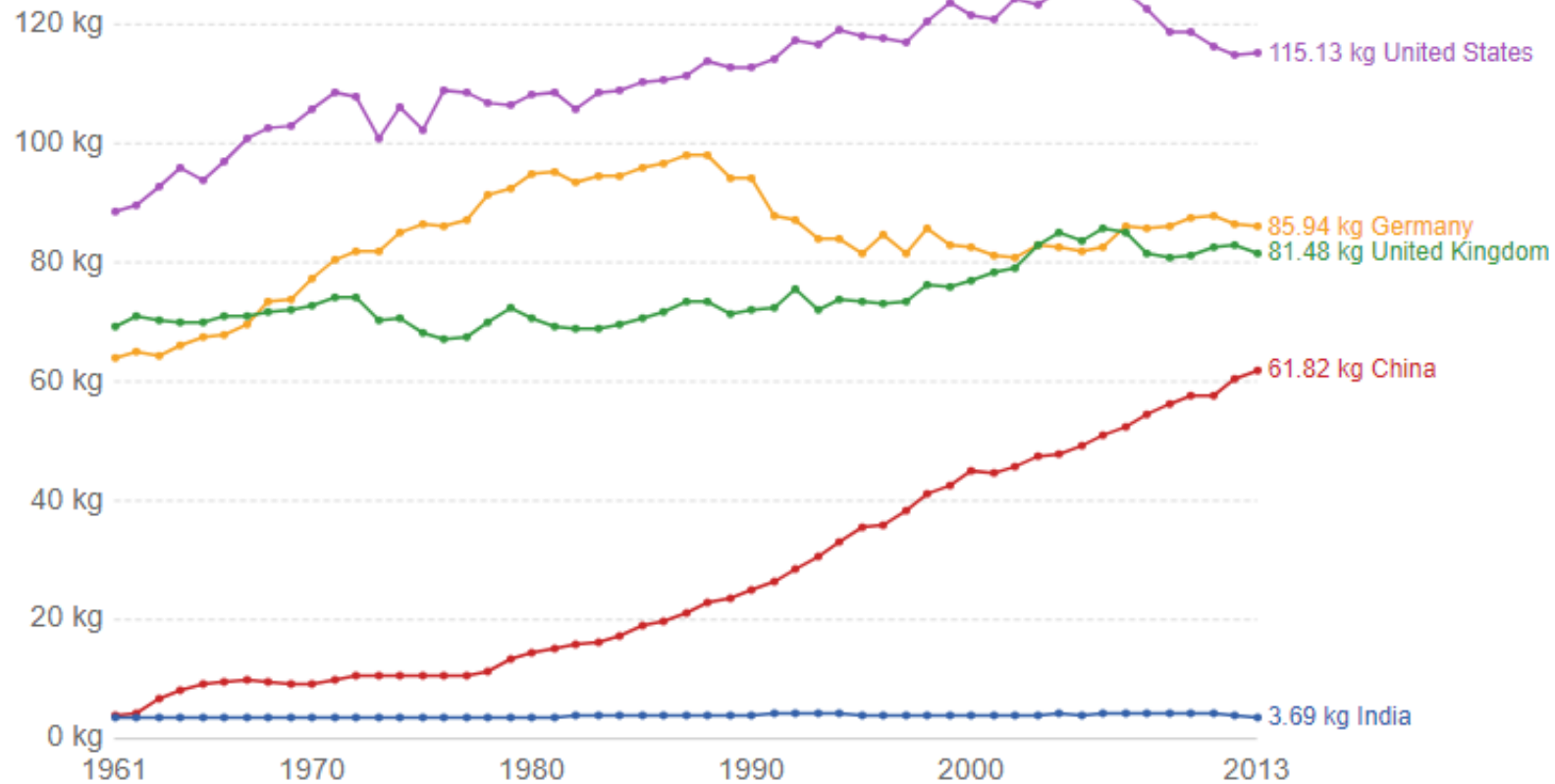
Fonte: Our World in data

# Consumo\* de carne por pessoa por ano, em diferentes países

## Meat supply per person

Average total meat supply per person measured in kilograms per year. Note that these figures do not correct for waste at the household/consumption level so may not directly reflect the quantity of food finally consumed by a given individual.

Our World  
in Data



Source: UN Food and Agriculture Organization (FAO)  
Note: Data excludes fish and other seafood sources

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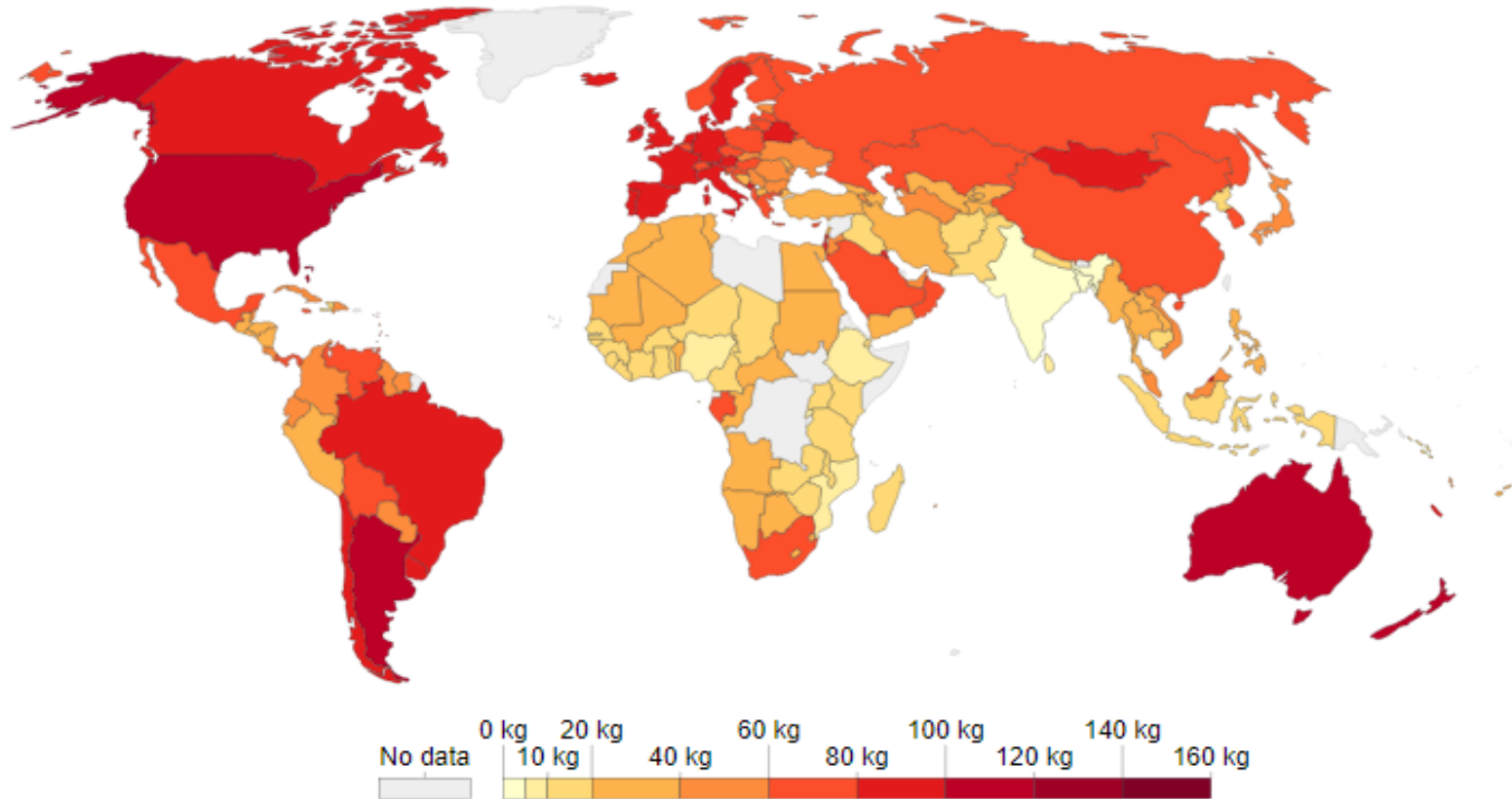
Fonte: Our World in data

# Consumo\* de carne por pessoa por ano, em diferentes países

Our World  
in Data

## Meat supply per person, 2013

Average total meat supply per person measured in kilograms per year. Note that these figures do not correct for waste at the household/consumption level so may not directly reflect the quantity of food finally consumed by a given individual.



Source: UN Food and Agriculture Organization (FAO)  
Note: Data excludes fish and other seafood sources

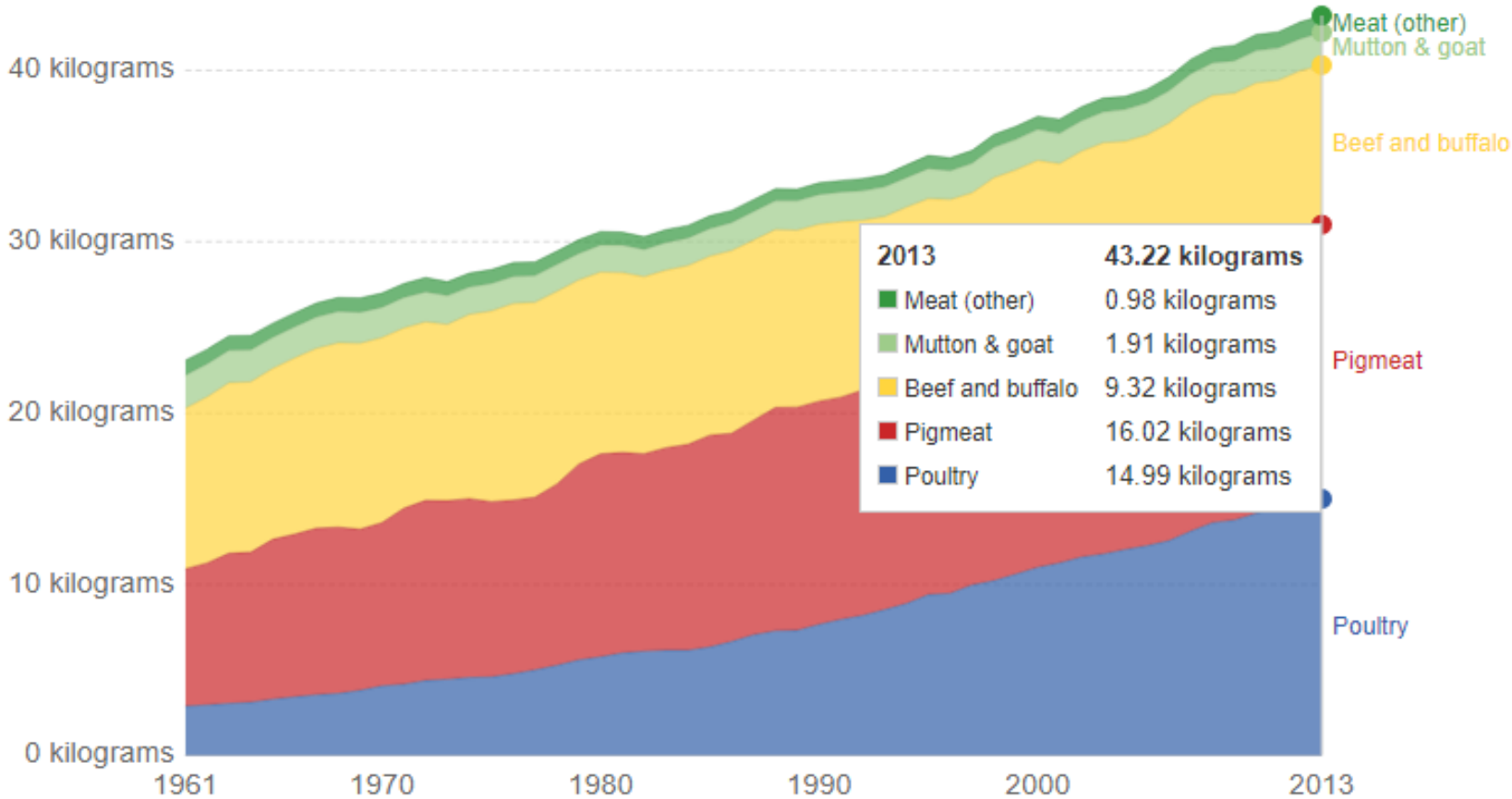
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# Consumo e carne per capita por ano, de acordo com a espécie

Our World  
in Data

## Per capita meat consumption by type, kilograms per year, World

Average per capita meat consumption broken down by specific meat types, measured in kilograms per person per year. Data is based on per capita food supply at the consumer level, but does not account for food waste at the consumer level.



Source: UN Food and Agricultural Organization (FAO)

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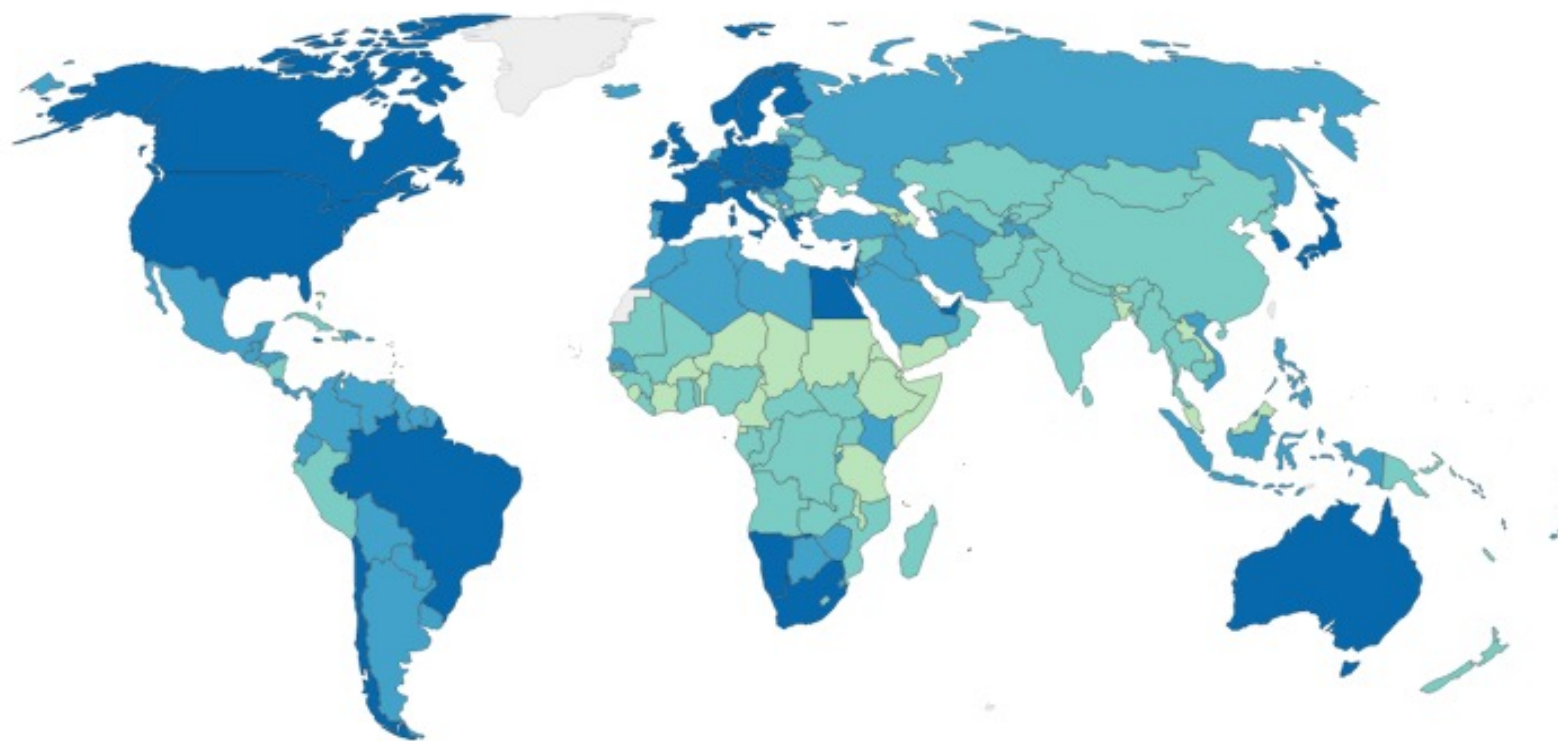




# Produção de carne bovina, por região

Our World  
in Data

**Cattle meat yields, kilograms per animal, 2014**  
Average meat yields of cattle (beef and buffalo), measured in kilograms per animal.

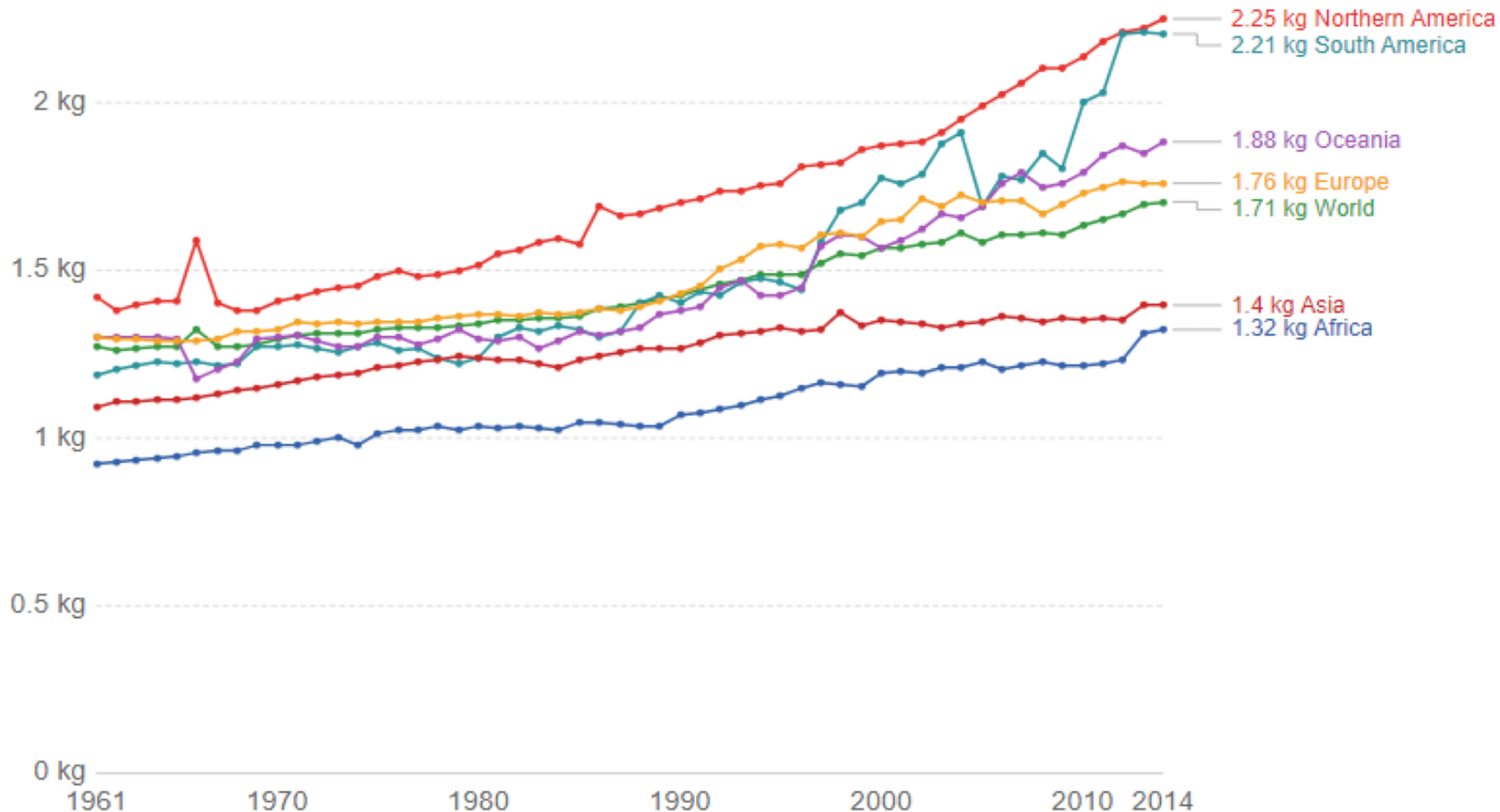


# Produção de carne de frango, por região

## Poultry yields, kilograms per animal

Yields of poultry meat, measured in kilograms per animal.

Our World  
in Data



Source: UN Food and Agricultural Organization (FAO)

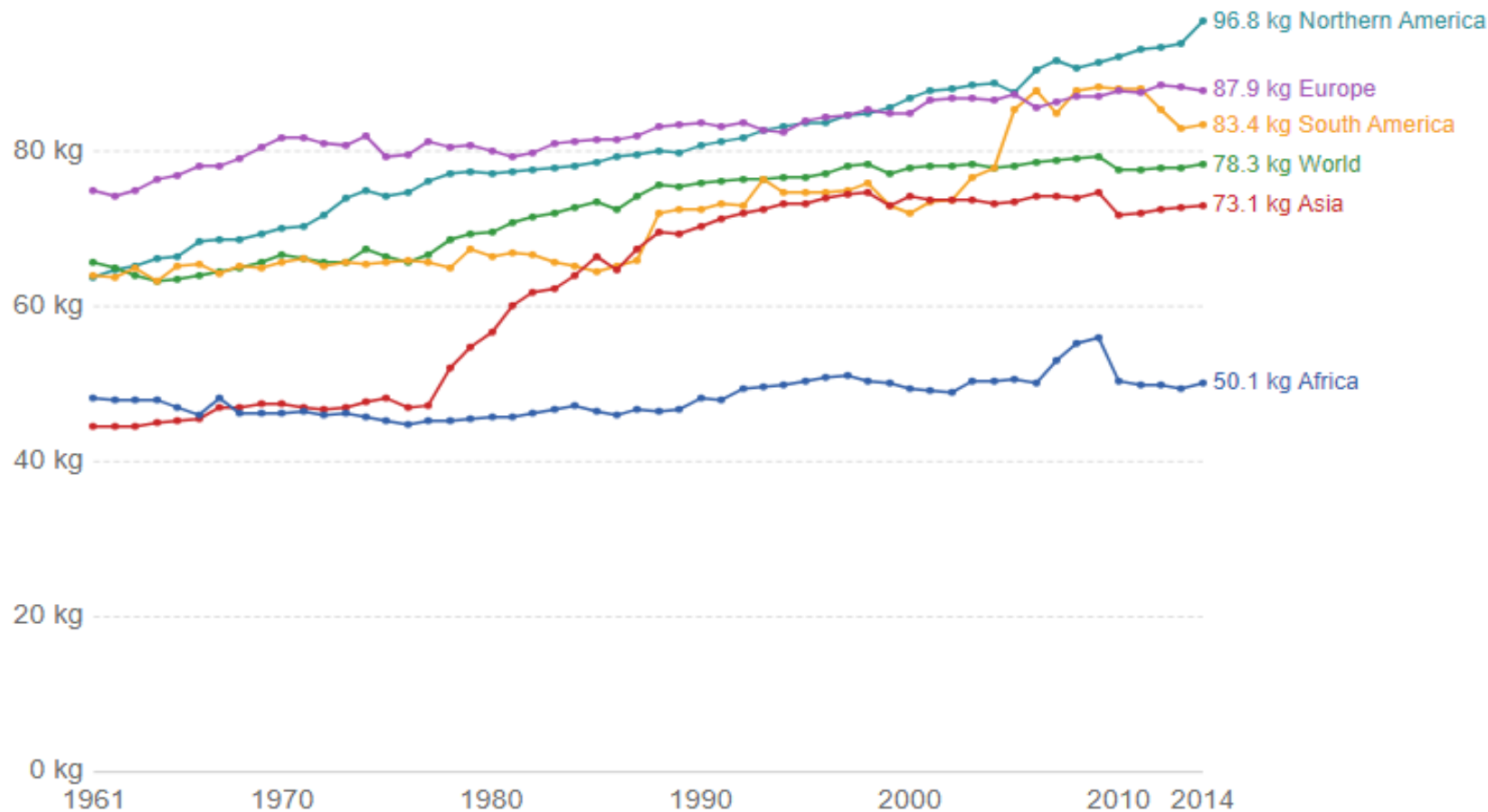
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# Produção de carne suína, por região

Our World  
in Data

## Pig meat yields, kilograms per animal

Pigmeat yields, measured in kilograms produced per animal.



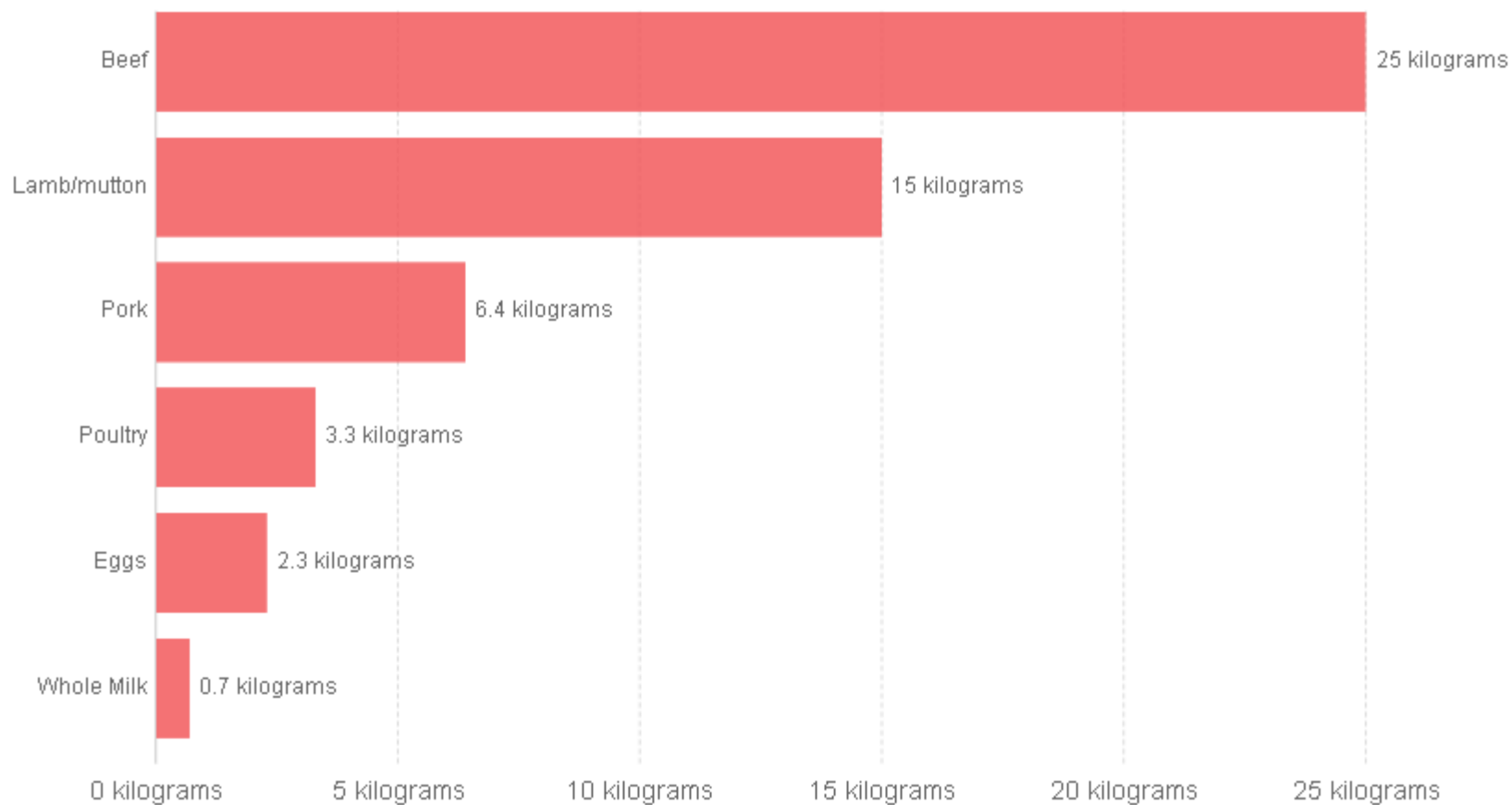
Source: UN Food and Agricultural Organization (FAO)

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# Eficiência de produção de alguns alimentos de origem animal

## Feed required to produce one kilogram of meat or dairy product

Quantity of animal feed required to produce one kilogram of meat, egg or milk product. This is measured as dry matter feed in kilograms per kilogram of edible weight output.



Source: Meat conversion efficiencies - Alexander et al. (2016)

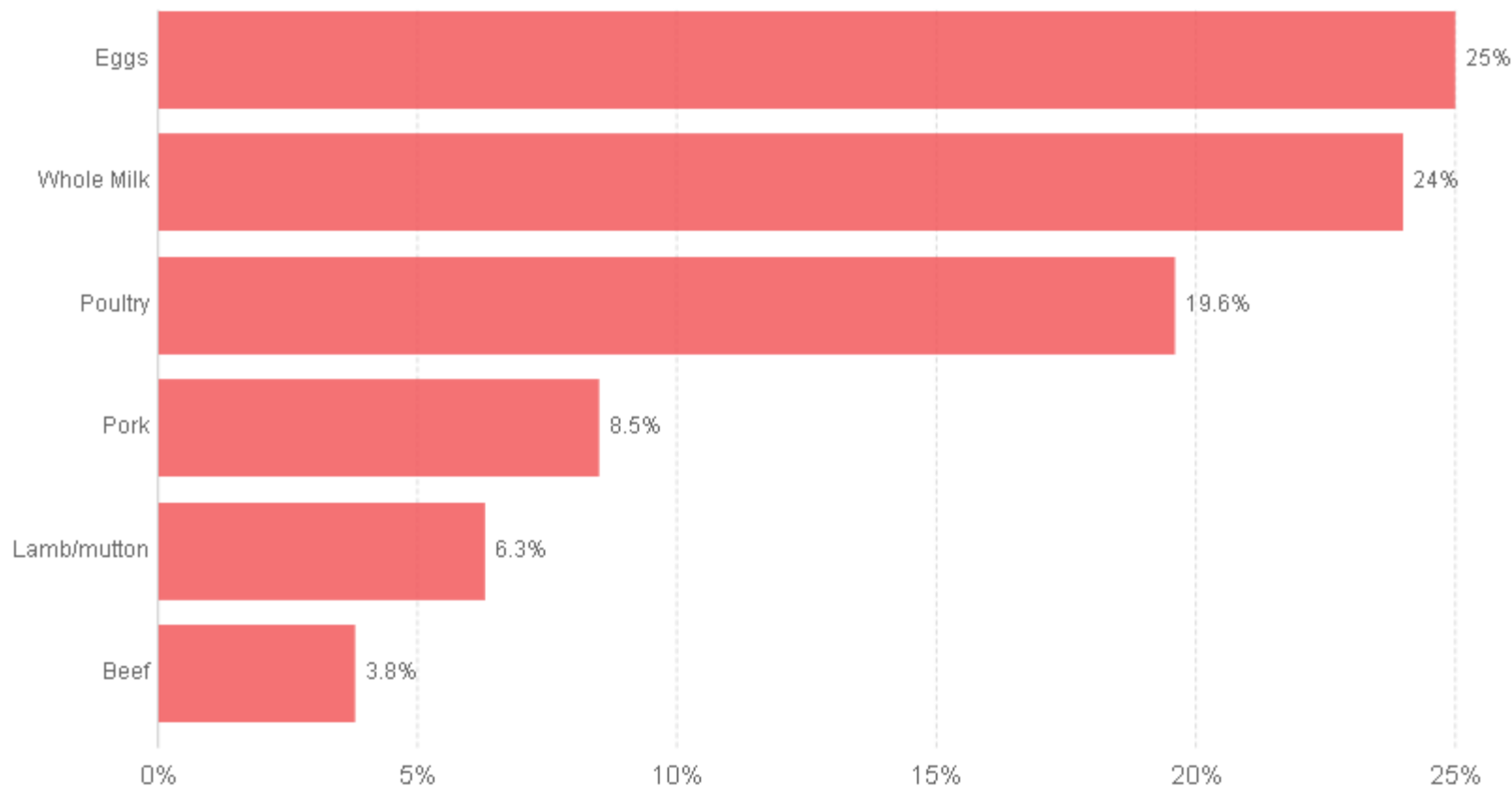
OurWorldInData.org/meat-and-seafood-production-consumption/ • CC BY-SA

Fonte: Our World in data

## Protein efficiency of meat and dairy production

Our World  
in Data

The protein efficiency of meat and dairy production is defined as the percentage of protein inputs as feed effectively converted to animal product. An efficiency of 25% would mean 25% of protein in animal feed inputs were effectively converted to animal product; the remaining 75% would be lost during conversion.



Source: Meat conversion efficiencies - Alexander et al. (2016)

OurWorldInData.org/meat-and-seafood-production-consumption/ • CC BY-SA

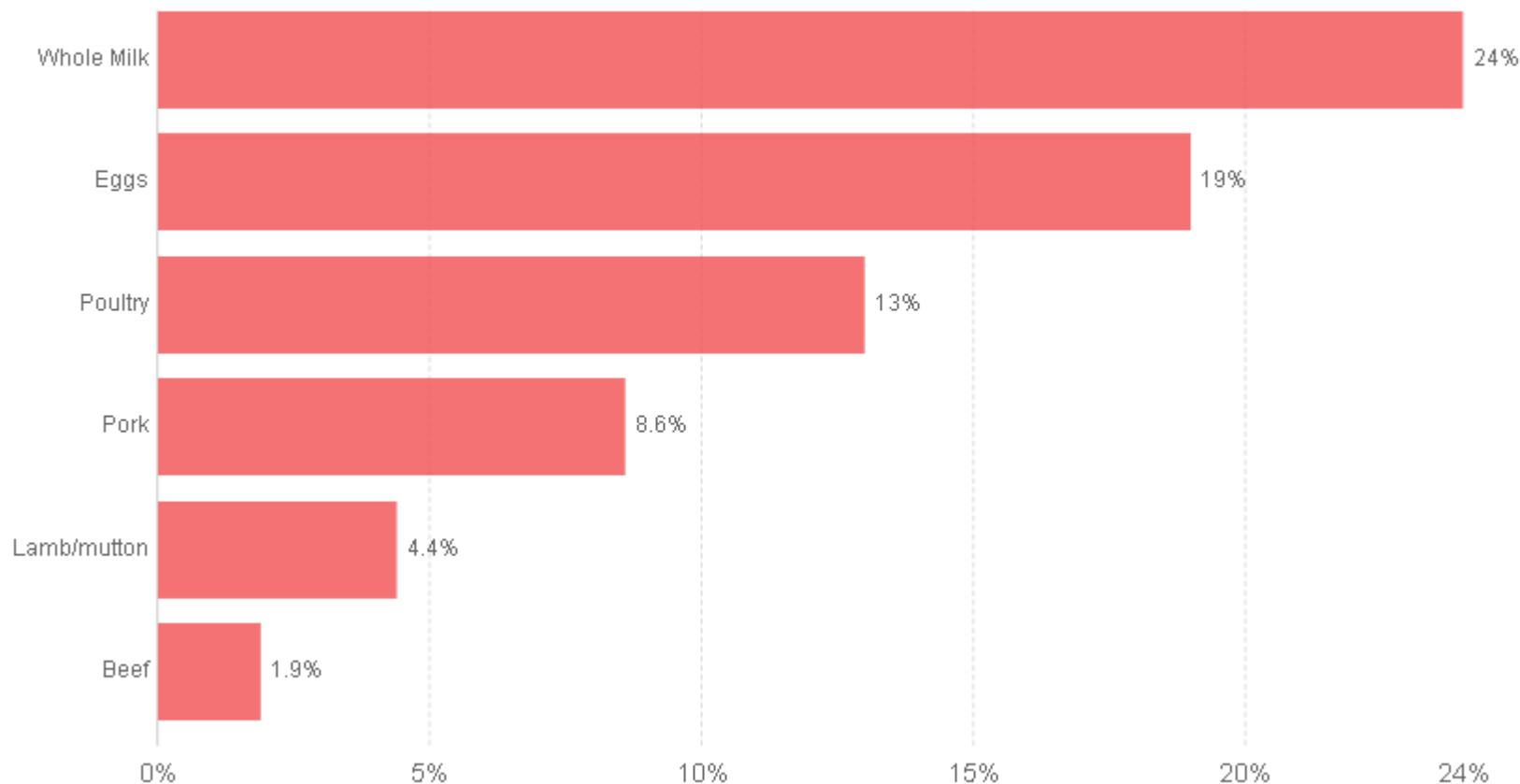
Fonte: Our World in data

# Eficiência na produção de proteína de alguns produtos de origem animal

## Energy efficiency of meat and dairy production

Our World  
in Data

The energy efficiency of meat and dairy production is defined as the percentage of energy (caloric) inputs as feed effectively converted to animal product. An efficiency of 25% would mean 25% of calories in animal feed inputs were effectively converted to animal product; the remaining 75% would be lost during conversion.



Source: Meat conversion efficiencies - Alexander et al. (2016)

OurWorldInData.org/meat-and-seafood-production-consumption/ • CC BY-SA

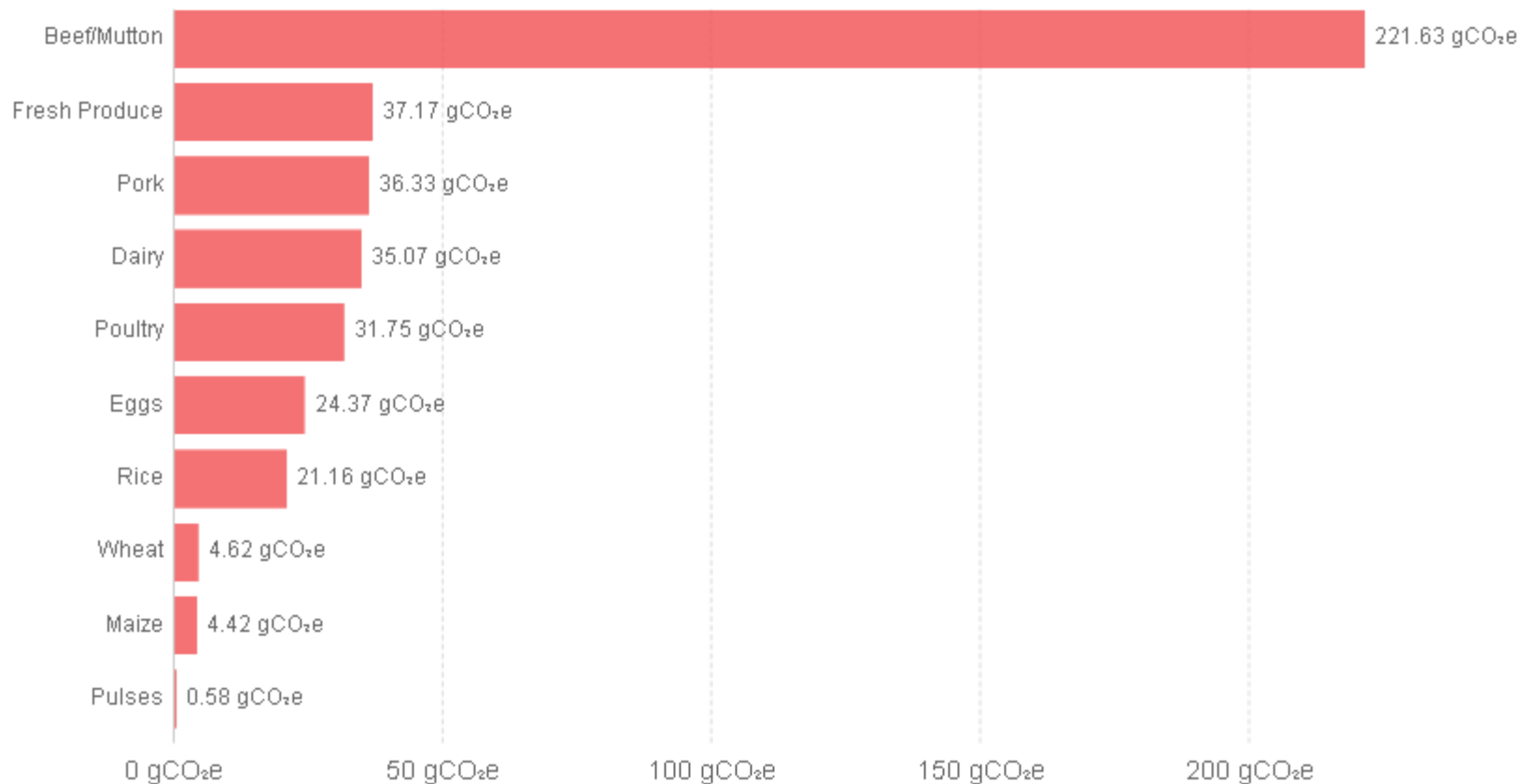
Fonte: Our World in data

# Produção de gases de efeito estufa por diferentes espécies

## Greenhouse gas emissions per gram of protein, by food type

Our World  
in Data

Average greenhouse gas emissions per unit protein, by food type measured in grams of carbon dioxide equivalents (CO<sub>2</sub>e) per gram of protein. Average values are based on a meta-analysis of studies across 742 agricultural systems and over 90 unique foods.



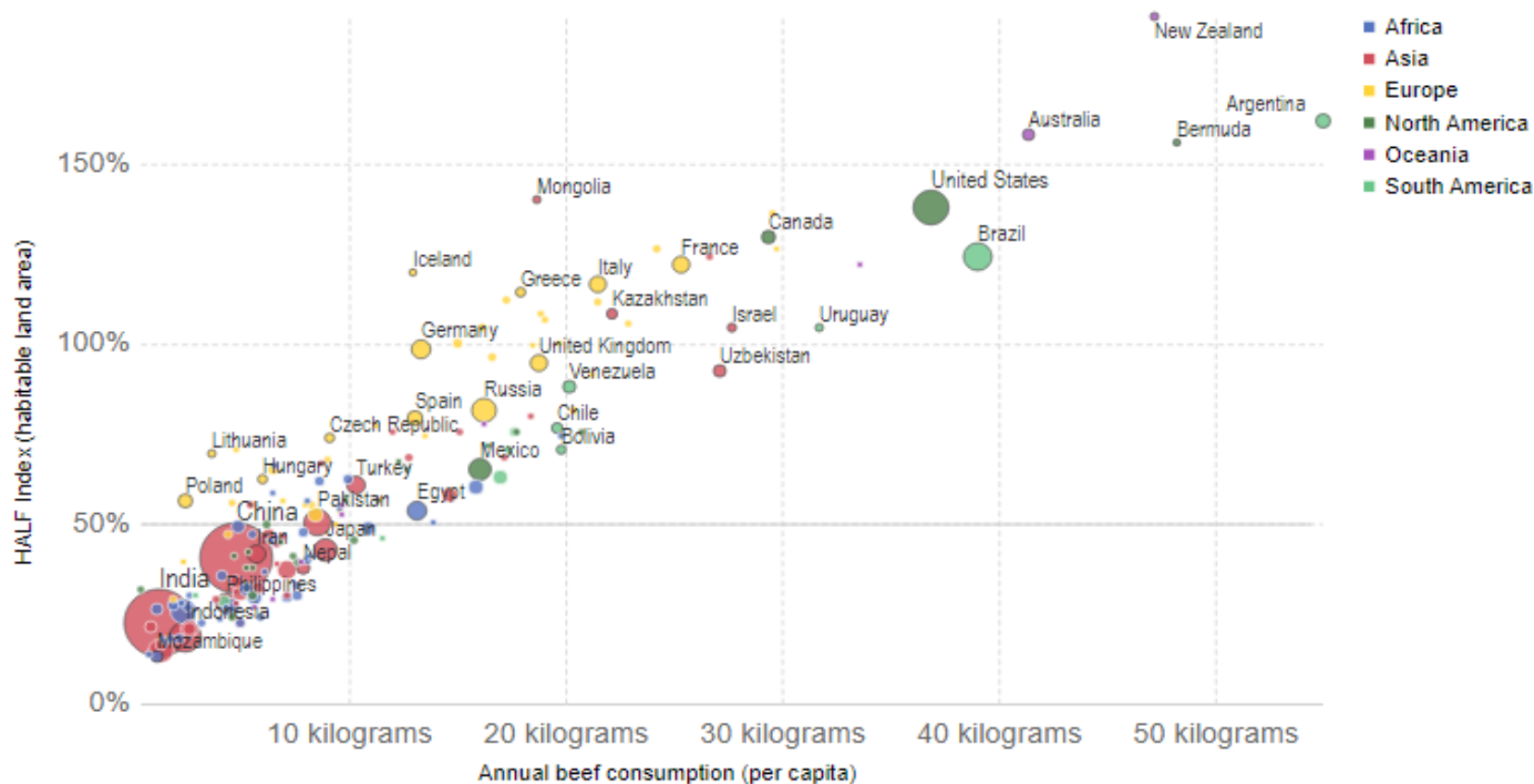
Source: Environmental footprint by food type (protein) - Clark & Tilman (2017)

OurWorldInData.org • CC BY-SA

Fonte: Our World in data

## Dietary land use vs. beef consumption, 2011

The percentage of global habitable land area needed for agriculture if the total world population was to adopt the average diet of any given country versus annual per capita beef consumption, measured in kilograms per year. We currently use approximately 50% of habitable land for agriculture, as shown by the grey horizontal line.



Source: Food Balance Sheets - FAO (2017), HALF Index (Land Use) - Alexander et al. (2016)

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- Mudanças no clima;
- Escassez de água;
  - 28 países atualmente (300 milhões de pessoas).
  - 50 países em 2025 (3 bilhões de pessoas).
- Redução da fertilidade do solo;
- Redução do apoio governamental;
- Liberalização do comércio internacional.

# E o Brasil nessa história?



# Situação da produção brasileira



## Distribuição territorial – Estimativa

(milhões de ha)

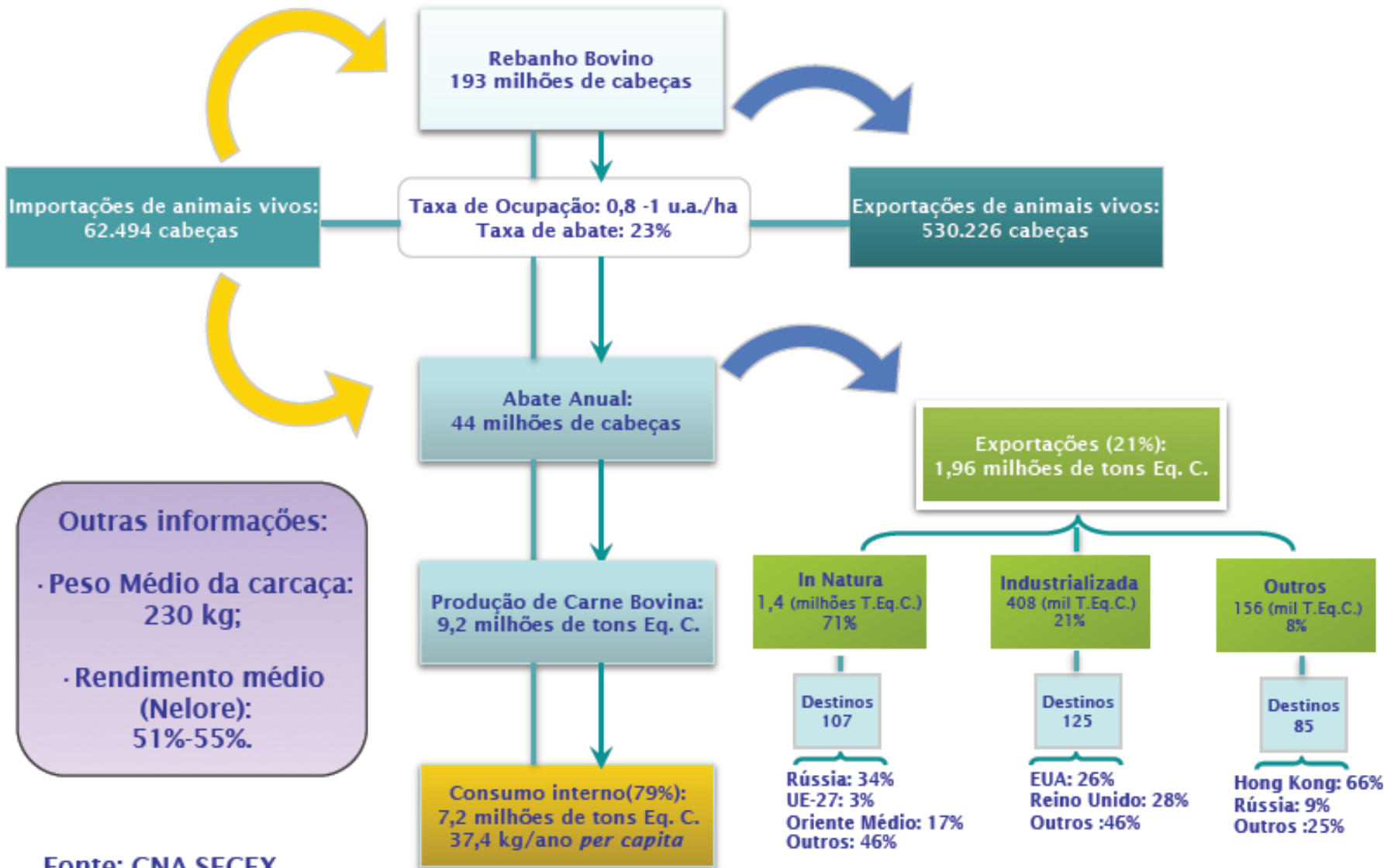
Floresta Amazônica	345
Pastagens	220
Áreas protegidas	55
Culturas anuais	47
Culturas permanentes	15
Cidades, lagos e estradas	20
Florestas cultivadas	5
Sub-total	707
Outros usos	38
Áreas não exploradas ainda disponíveis para a agricultura	106
<b>TOTAL</b>	<b>851</b>

Fontes: IBGE e CONAB  
Adaptação: MAPA

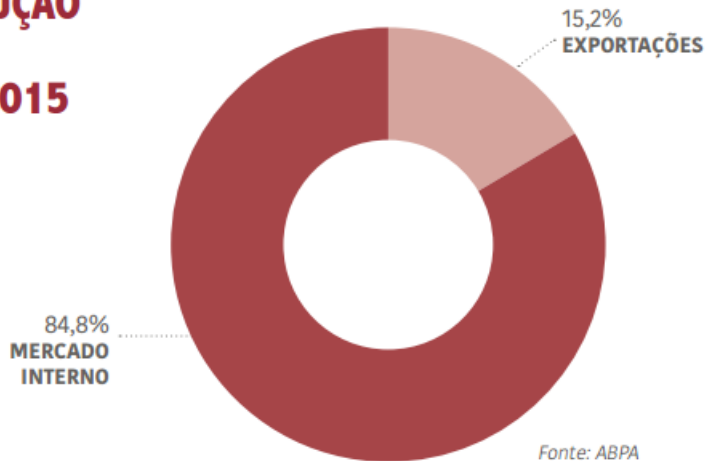
# Brasil – Oportunidade/potencialidade



# Estrutura da cadeia da carne bovina brasileira

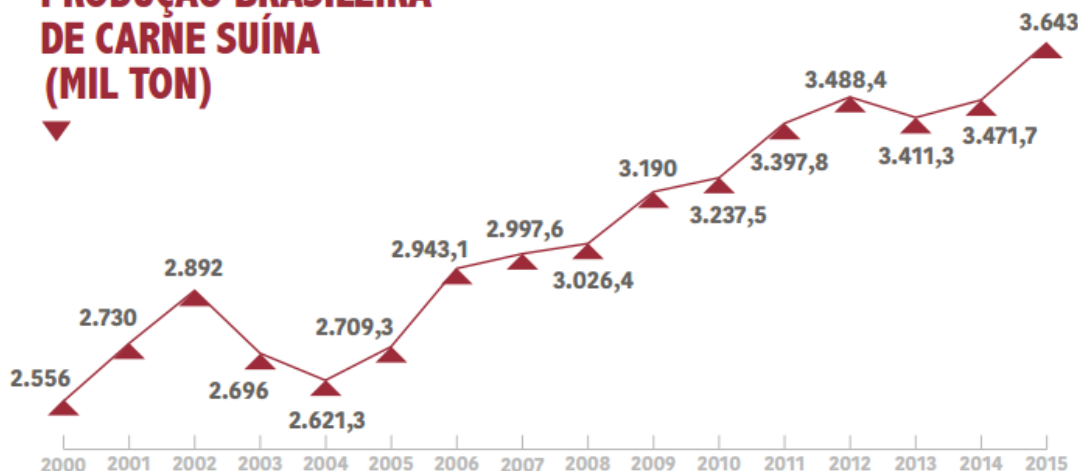


## DESTINO DA PRODUÇÃO BRASILEIRA DE CARNE SUÍNA EM 2015

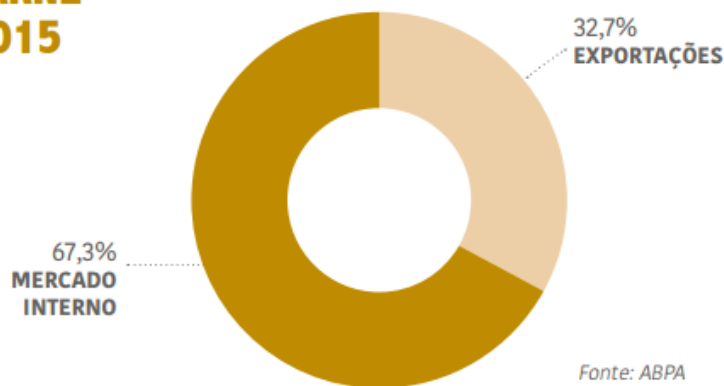


Fonte: ABPA

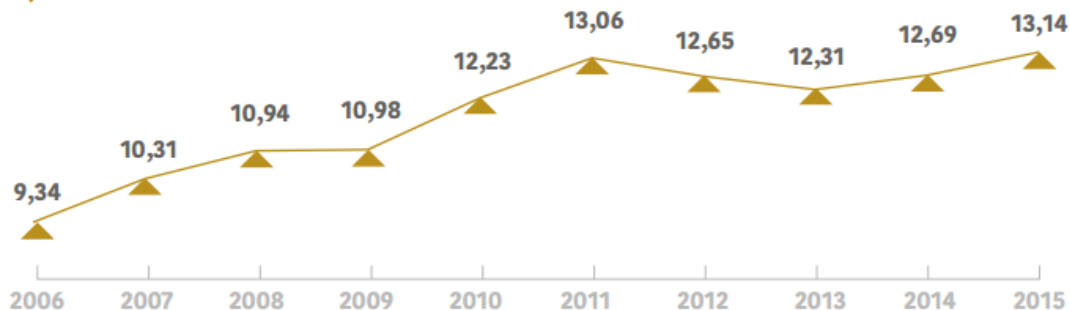
## PRODUÇÃO BRASILEIRA DE CARNE SUÍNA (MIL TON)



## DESTINO DA PRODUÇÃO BRASILEIRA DE CARNE DE FRANGO EM 2015

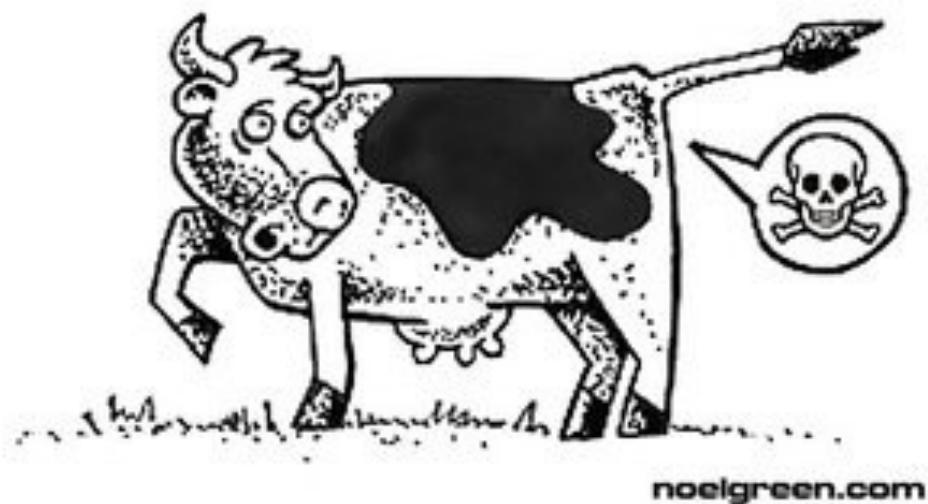


## PRODUÇÃO BRASILEIRA DE CARNE DE FRANGO (MILHÕES TON.)

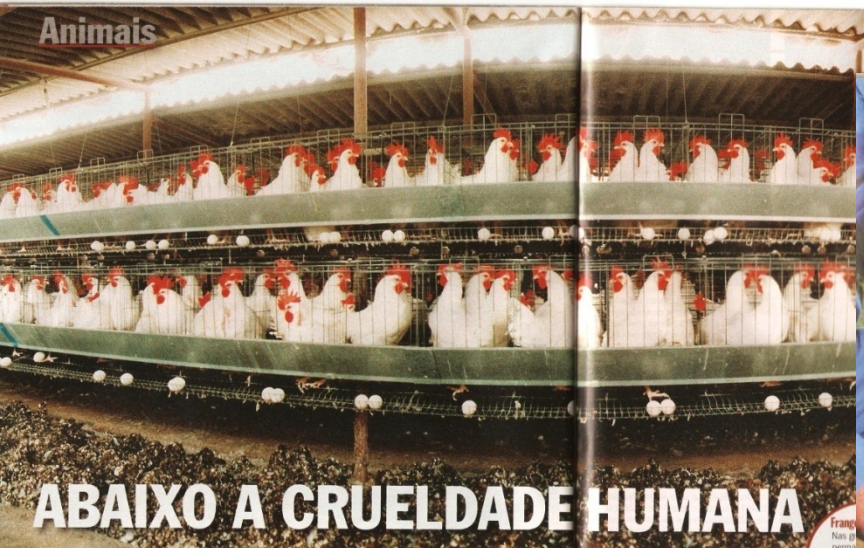


Fonte: ABPA

“O pum do boi”







## ABAIXO A CRUELDADE HUMANA

Novas leis procuram atenuar os maus-tratos impostos aos

**U**ma lei aprovada nos Estados Unidos há dois meses dá sinais de que está em curso uma mudança nas re-

para se movimentar. As galinhas poedeiras permanecem espremidas em gaiolas e, frequentemente, têm o bico cortado para não se bicarem. A União Europeia se sensibilizou com o assunto

mais. Leis que os protegem existem desde a Inglaterra vitoriana — quando se proibiu a tosquia de ovelhas arrancando-se o pelo com as mãos. O movimento em defesa dos animais que ago-

Frangos Nas g... perna... cor... de desesse... quadra... para... no...



Gansos



Vitelos

Até o abate, vivem confinados em cercados exatamente do seu tamanho, com a cabeça presa. Isso para que não se exercitem e sua carne permaneça macia



série de procedimentos que lhes causam sofrimento. O que as entidades defensoras dos animais alegam, e seus argumentos têm convencido governos e cidadãos, é que boa parte desses maus-tratos pode ser evitada.

Na Califórnia, uma lei promulgada há dois anos determina o fim da criação de galinhas poedeiras em gaiolas a partir de 2015. Os estados da Flórida, Arizona e Michigan seguem pelo mesmo caminho. Uma das carnes mais apreciadas pelos gourmets americanos é a de vitelo. Seu consumo caiu drasticamente em meados desta década depois que se tornou público que, para produzir essa carne branca e macia, os bezerros são separados da mãe pouco depois do nascimento e confinados em cercados em



Bois

A lei brasileira manda que sejam sedados com tiros pneumáticos antes do abate. Na prática, só os grandes abatedouros o fazem. A maioria é sedada ao estilo antigo: com maretadas na cabeça, em pânico por assistir à morte de outros bois à sua frente



força pela goela para que seu fígado inchê e se torne mais gorduroso. A Califórnia já proibiu esse procedimento. Na última década, vários países europeus criaram legislações específicas para defender os direitos dos animais, sejam eles para corte ou não. Em partes da Suíça, os animais podem ter representantes legais caso seus direitos sejam transgredidos. Disse a VEJA o filósofo australiano Peter Singer, especialista em ética e autor do best-seller *Libertação Animal*: "Usamos os animais como máquinas de produzir comida. A grande maioria das pessoas não atenta às suas necessidades e ao seu bem-estar. Mas esse quadro está mudando". No Brasil, a única regulamentação obrigatória que contempla o direito dos animais, criada



Porcos

Para diminuir o risco de perder as crias, as porcas gestantes são colocadas em cercados de 2 metros por 60 centímetros. O espaço reduzido não dá ao animal

Fonte: Revista Veja, Setembro 2010

# Desafios

## CÂNCER



## Carne processada e vermelha pode causar câncer, diz OMS

Presunto, hambúrguer, bacon e salsicha estão na mesma lista que tabaco, amianto e fumaça de diesel

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Texto: -A +A

REUTERS



Comer carnes processadas pode causar câncer de intestino em humanos, enquanto a carne vermelha é uma possível causa da doença, disseram especialistas da OMS (Organização Mundial de Saúde) nesta segunda-feira (26), em uma descoberta que pode aumentar os debates sobre os méritos de uma dieta baseada no consumo de carnes.

A Iarc (Agência Internacional de Pesquisa sobre Câncer), sediada na França, que faz parte da OMS, colocou carnes processadas, como presunto, bacon, linguiça, hambúrguer e salsicha, em sua lista de grupo 1, que inclui tabaco, amianto e fumaça de diesel, que possuem "evidências suficientes" de ligação ao

# Informação correta

Cientista que diz que carne dá câncer  
continua comendo bacon



7.216 views 1 Salvar notícia

Sheila Oliveira / Boa Forma



O segredo para se manter saudável, como explica Bernard Stewart, é a moderação:

"Para aqueles que estão comendo carne processada muito regularmente, vamos dizer, mais de cinco dias por semana, são essas pessoas que devem substituir esses alimentos com peixe ou até com alguma refeição vegetariana".

Tiras de bacon: "Eu também gosto de salame, b"

Ele completa: "Eu também gosto de salame, bacon e bife, ocasionalmente".

- Aumento do consumo
- Aumento da produção;
- Sustentabilidade
  - A produção deve, progressivamente, fundamentar-se em práticas conservacionistas.
  - Desenvolver-se-ão tecnologias que conservem água, florestas e a fertilidade natural das terras.
- *Utilizar e fornecer informações corretas!*