

Spatialisation des disponibilités et géostratégie de l'utilisation des aliments des animaux dans le monde

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**La journée de printemps de
l'Association Française de Zootechnie
FEEDIPEDIA**

**Première encyclopédie évolutive en ligne sur les aliments
des animaux d'élevage du monde entier**

30 janvier 2013, AgroParisTech, PARIS

Le poids de l'élevage dans l'écosystème global

Ressources

- Le secteur élevage utilise > **3.9 10⁹** ha (30% surf. terrestre).
- **1,4. 10⁹** ha : prairies améliorées et **2. 10⁹** ha pâturages naturels extensif
- **500** millions d'hectares cultures vocation aliments et fourrages (35% terres cultivables),

Animaux

- Veaux, vaches, cochons, couvées... en 2010 : **23 .10⁹** têtes vs **6. 10⁹** en 1960 (Faostat)
- Croissance monogastriques forte: volailles **x 5**, porcs **x 2.4** , bovins **x 1.5**

Produits

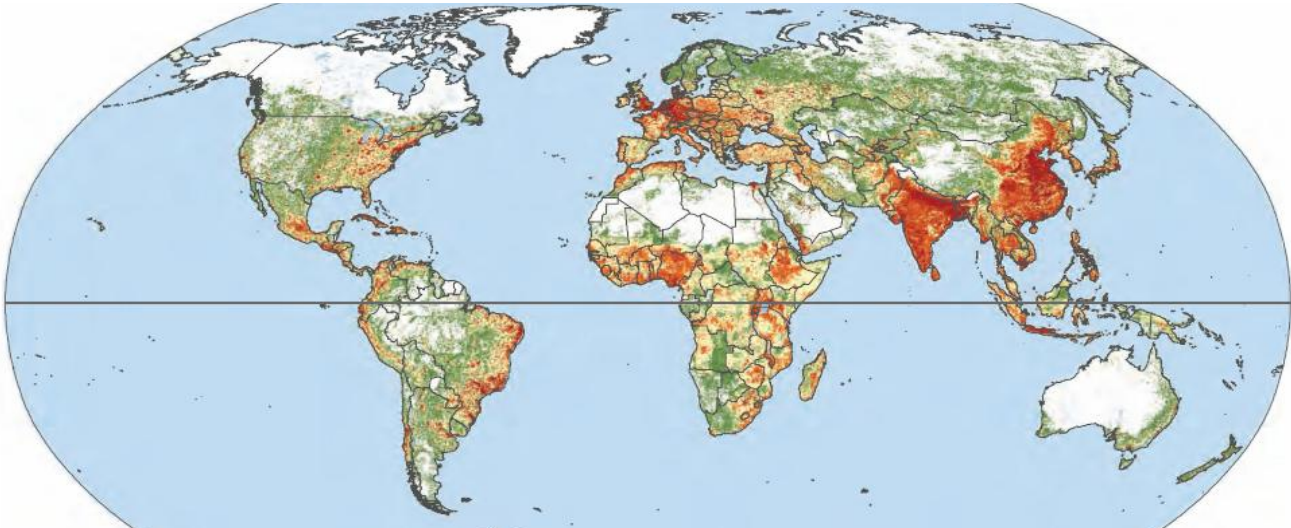
- Demande croissante : démographie, urbanisation, revenus en pays émergents

Tendances / espaces

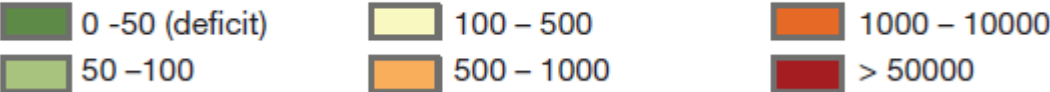
- relocalisation ressources animaux, intensification, Intégration, financiarisation concentrations importance du transport et flux



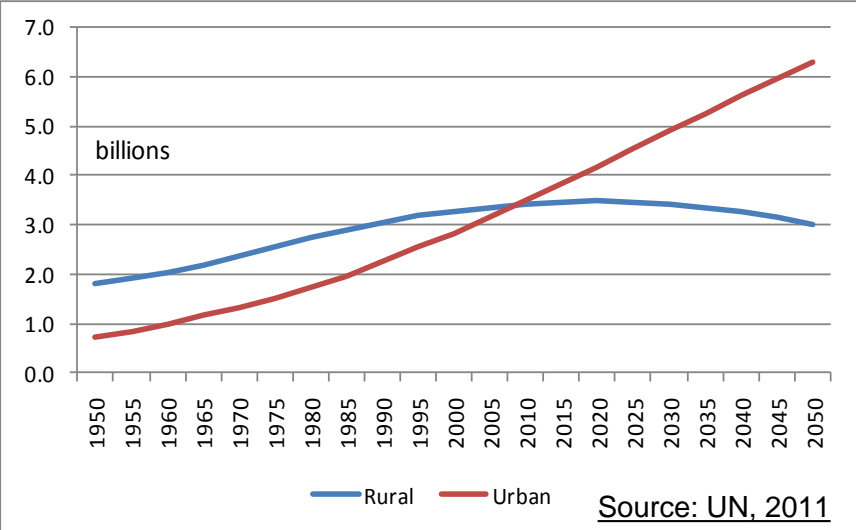
Une population qui croît et s'urbanise



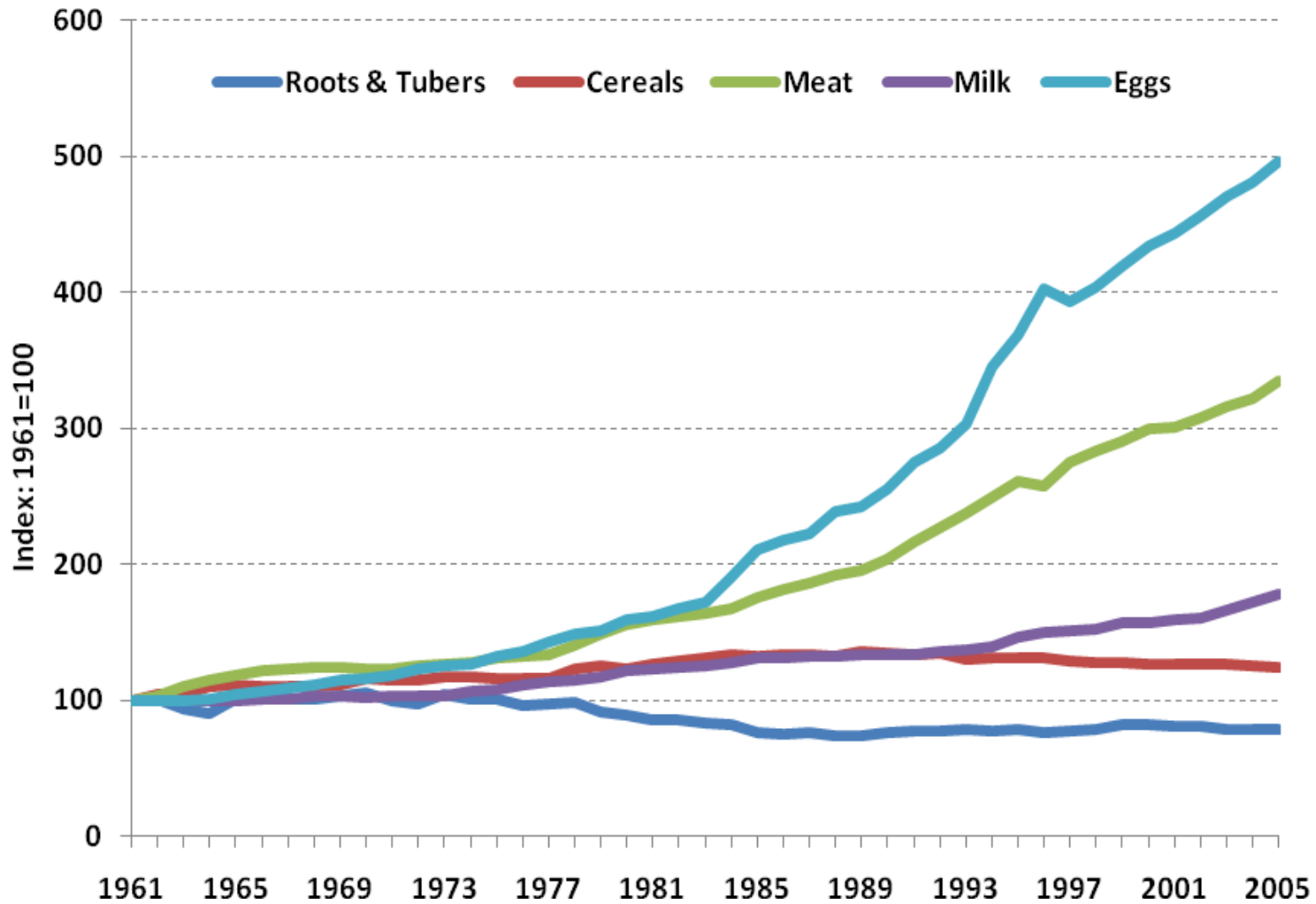
Persons per square km



FAO, 2006

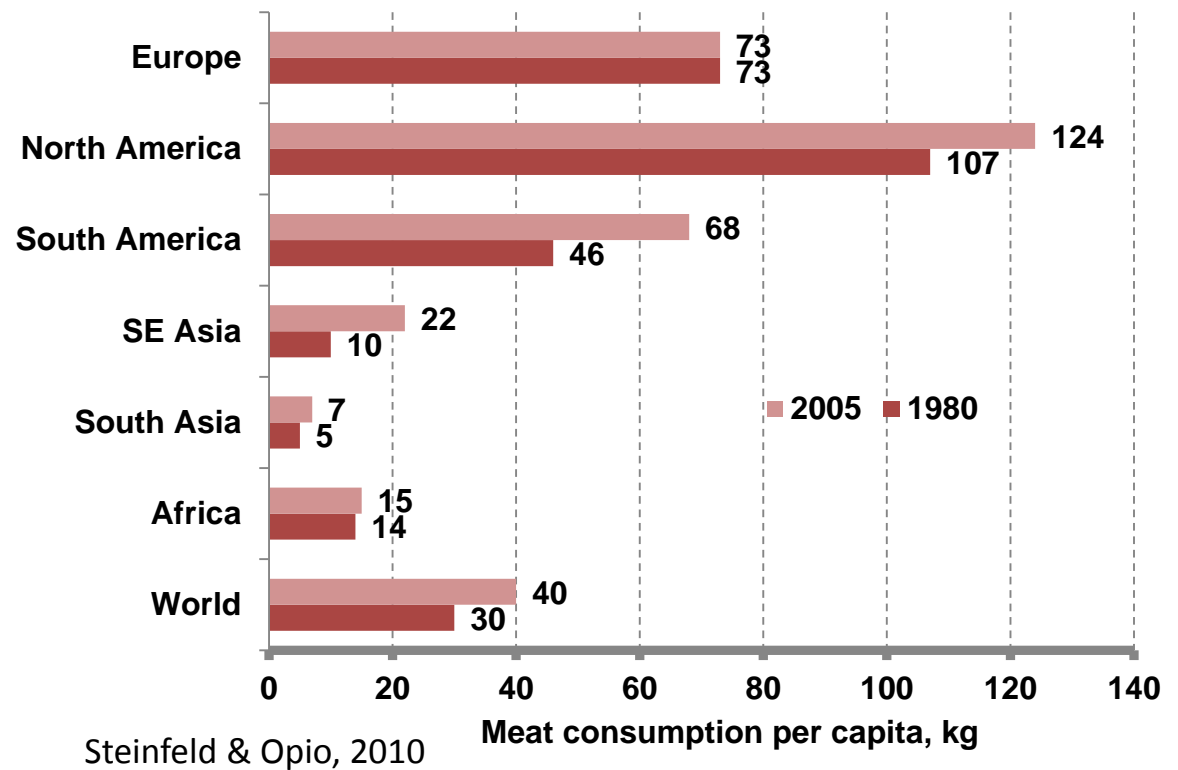


Des profils de consommation qui évoluent

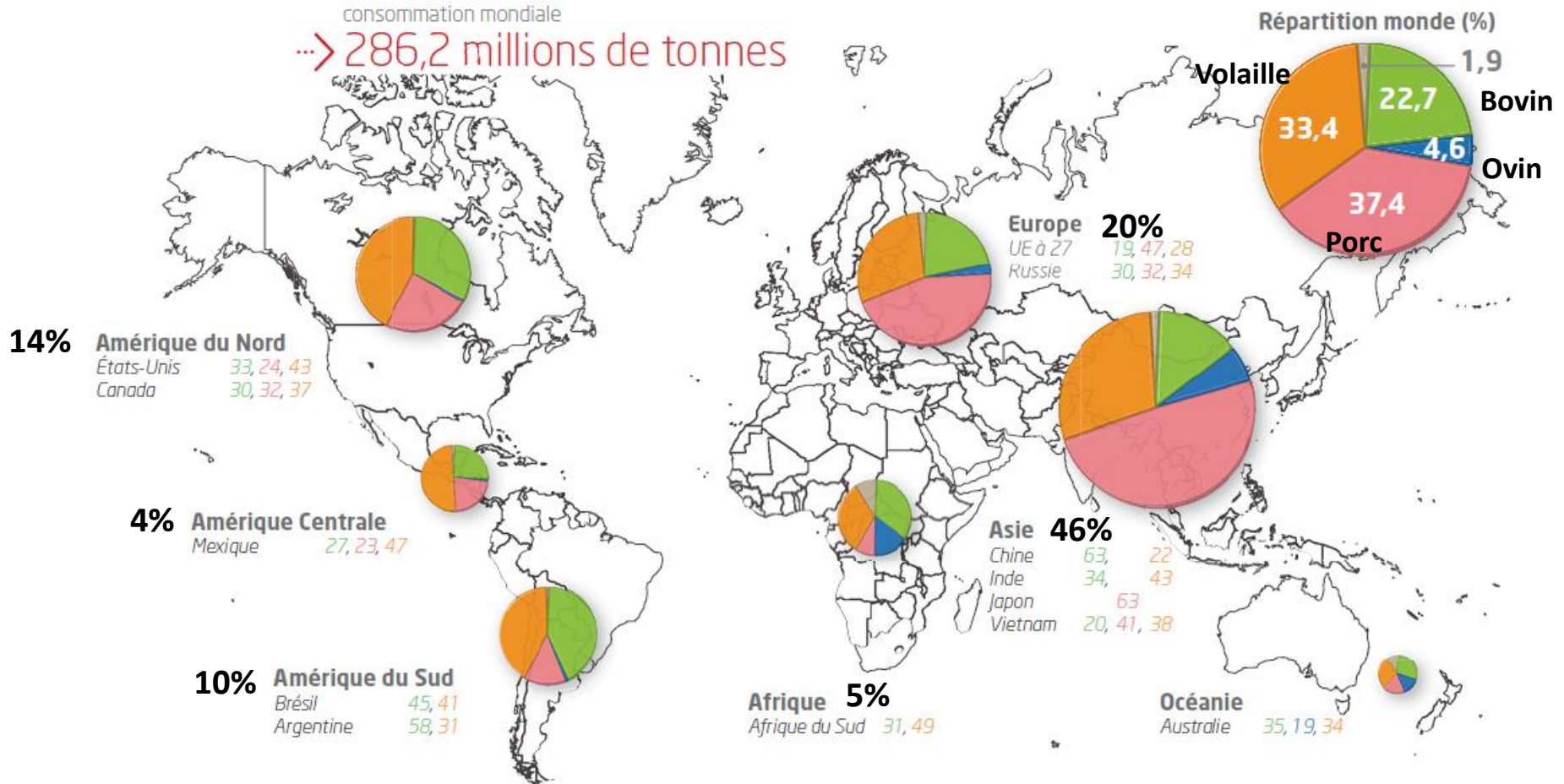


Inégalités spatiales

| | 1980 | 2006/08 (forecast) | 2015 |
|--------------------------------------|-------|-----------------------|-------|
| Per caput consumption, Developing | 14 kg | 29 kg | 33 kg |
| Per caput consumption, Developed | 77 kg | 80 kg | 85 kg |

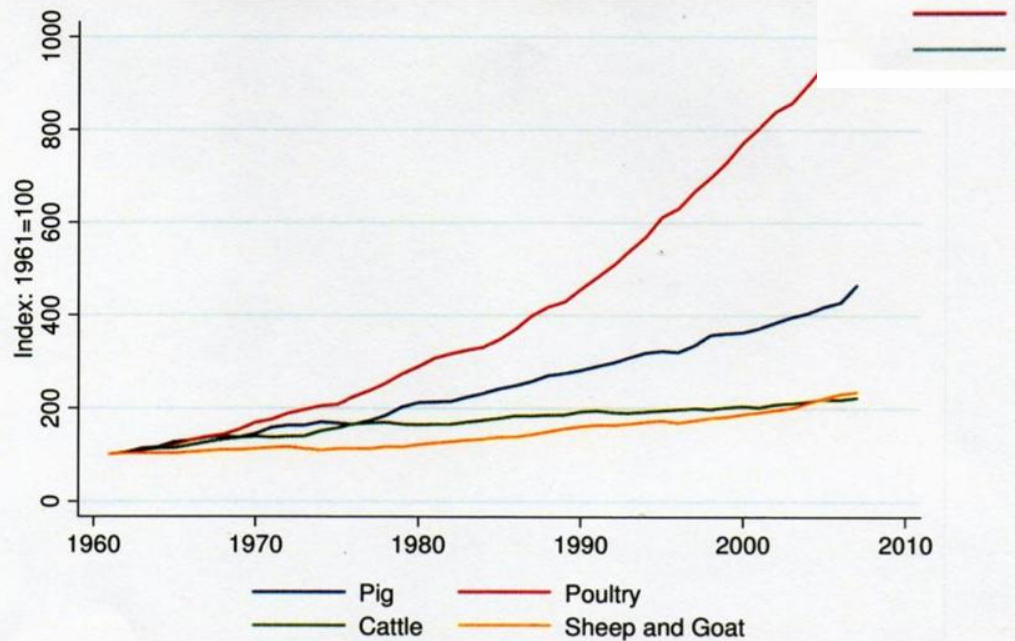
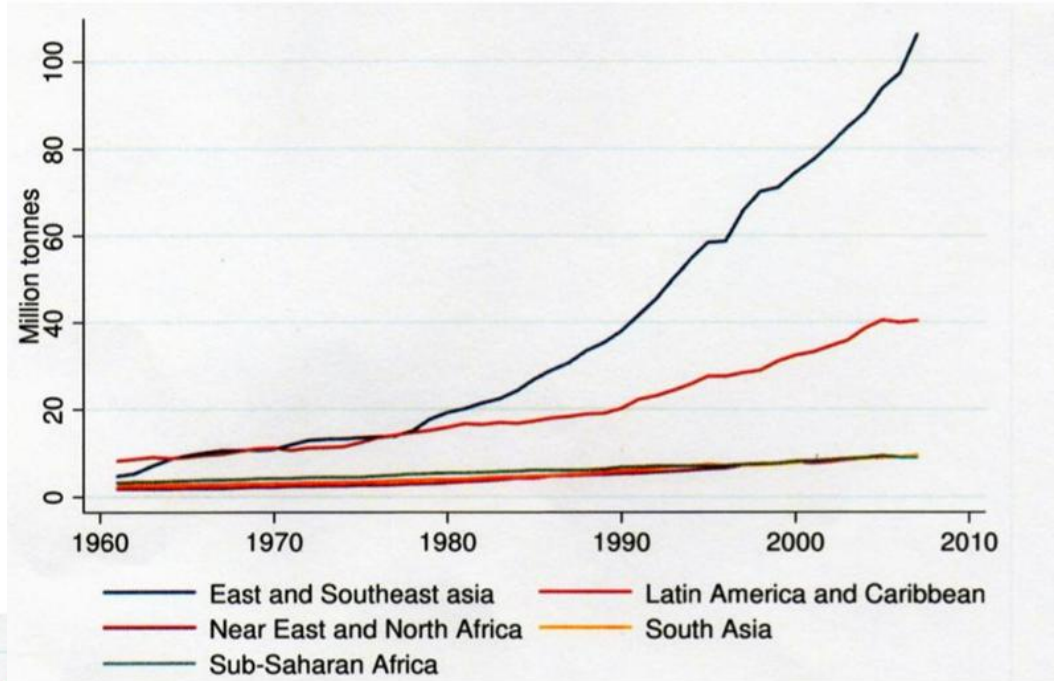


Consommation de produits carnés à travers le monde



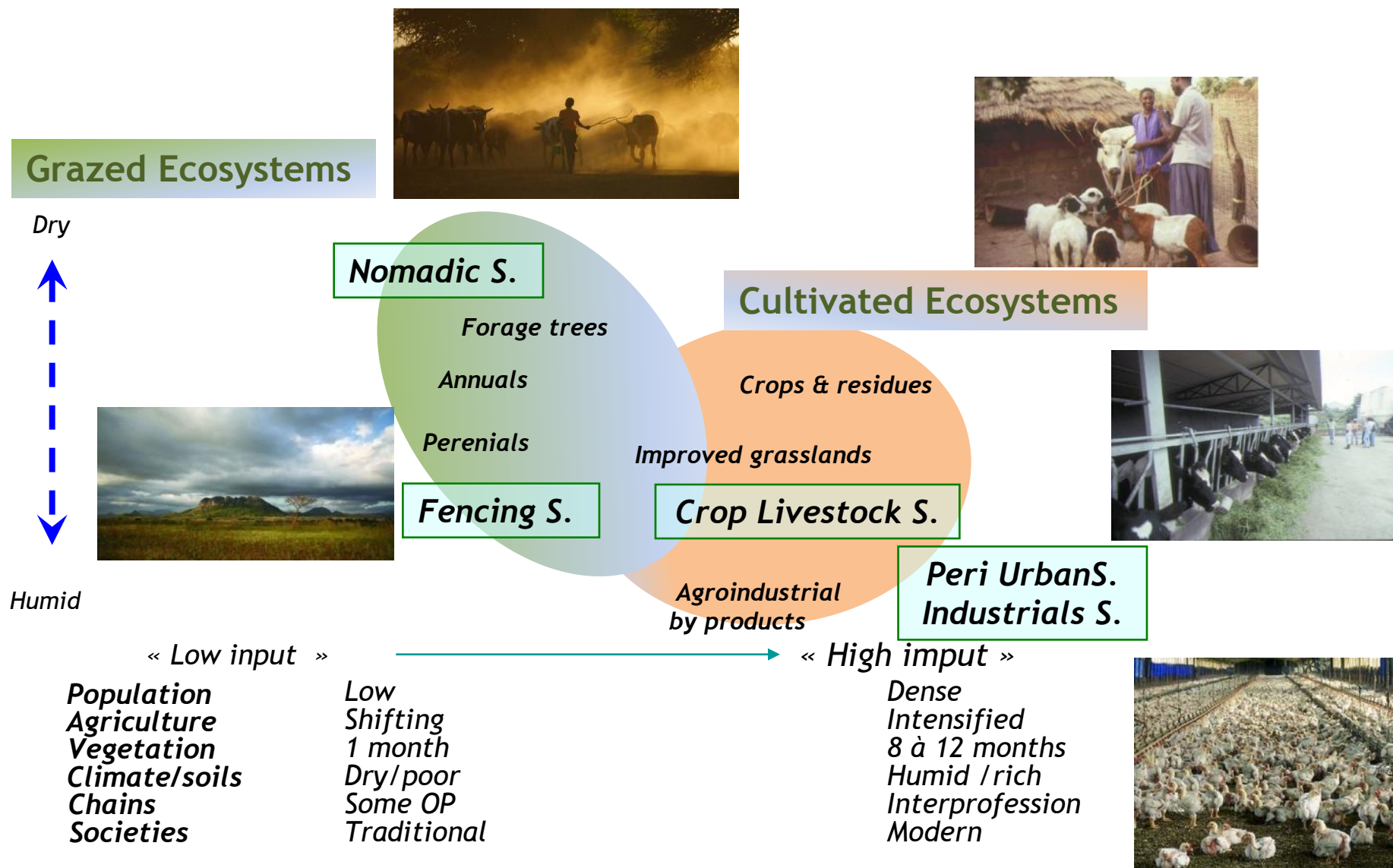
Source : FranceAgriMer d'après FAO (estimation 2010)

Les nouveaux grands acteurs de la production

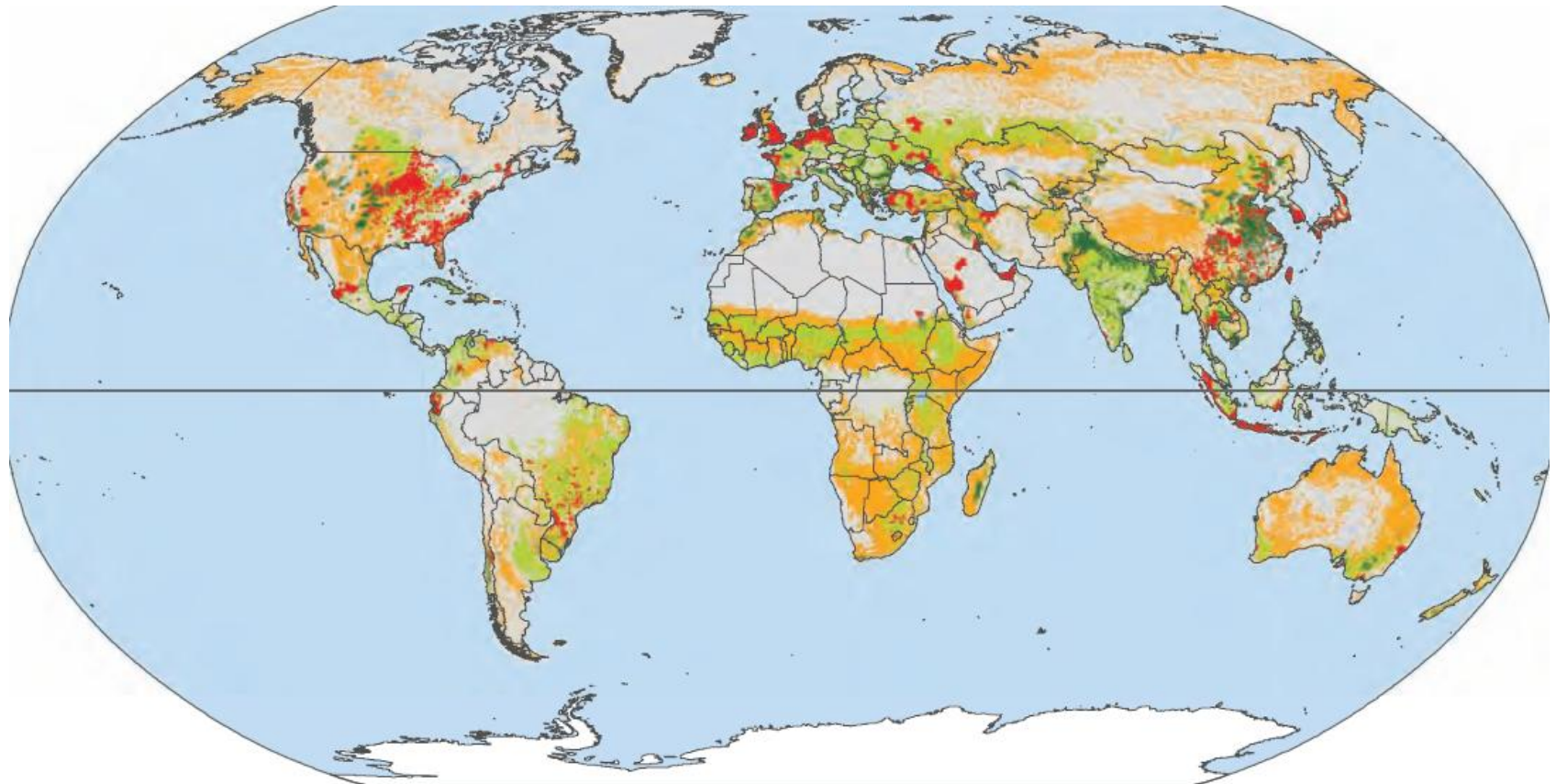




Quels systèmes, quelles ressources

Diversité des systèmes et usages des ressources naturelles





Géographie des systèmes de production animale

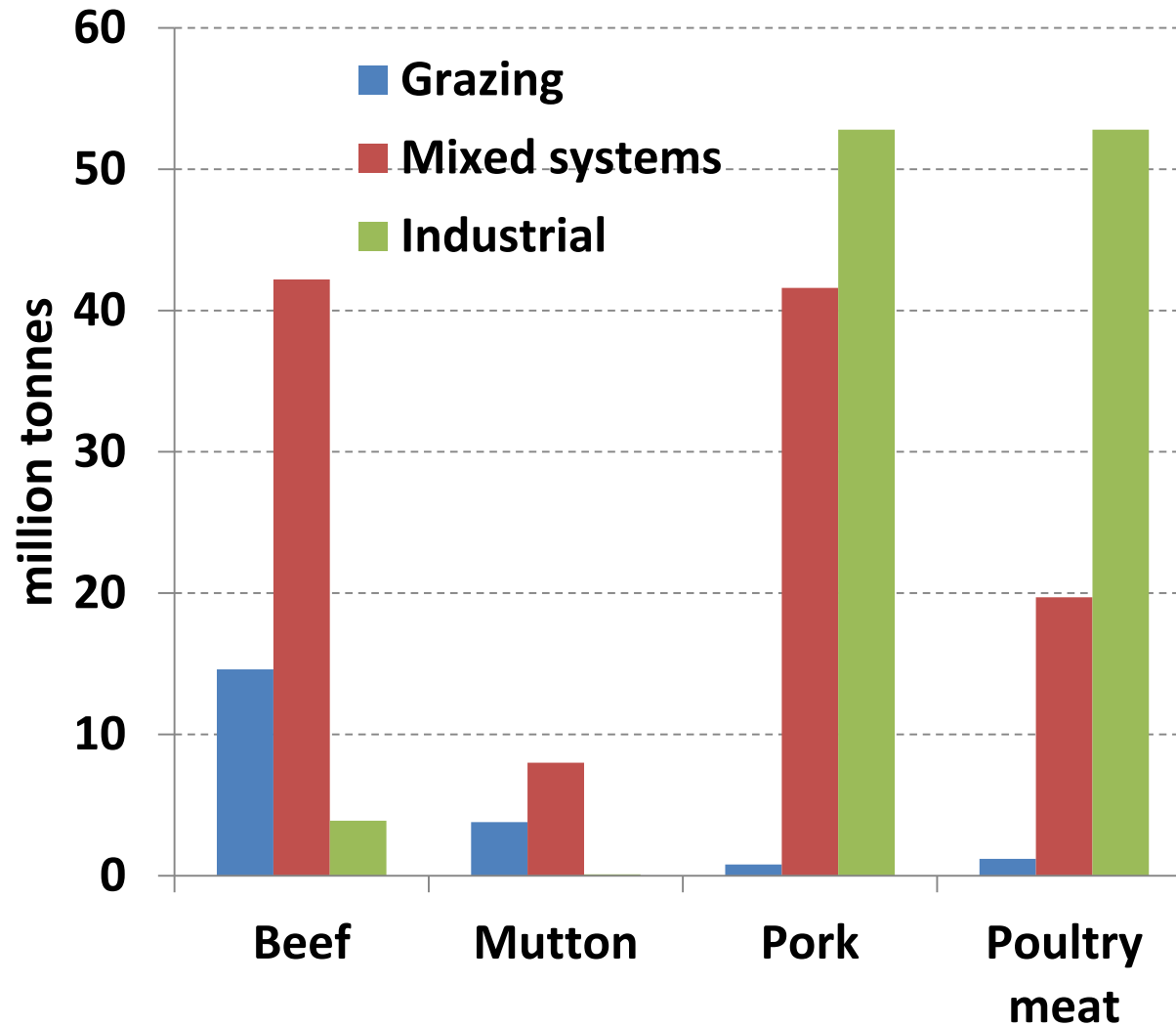


 Mixed, irrigated
 Mixed, rainfed

 Grazing
 Other type

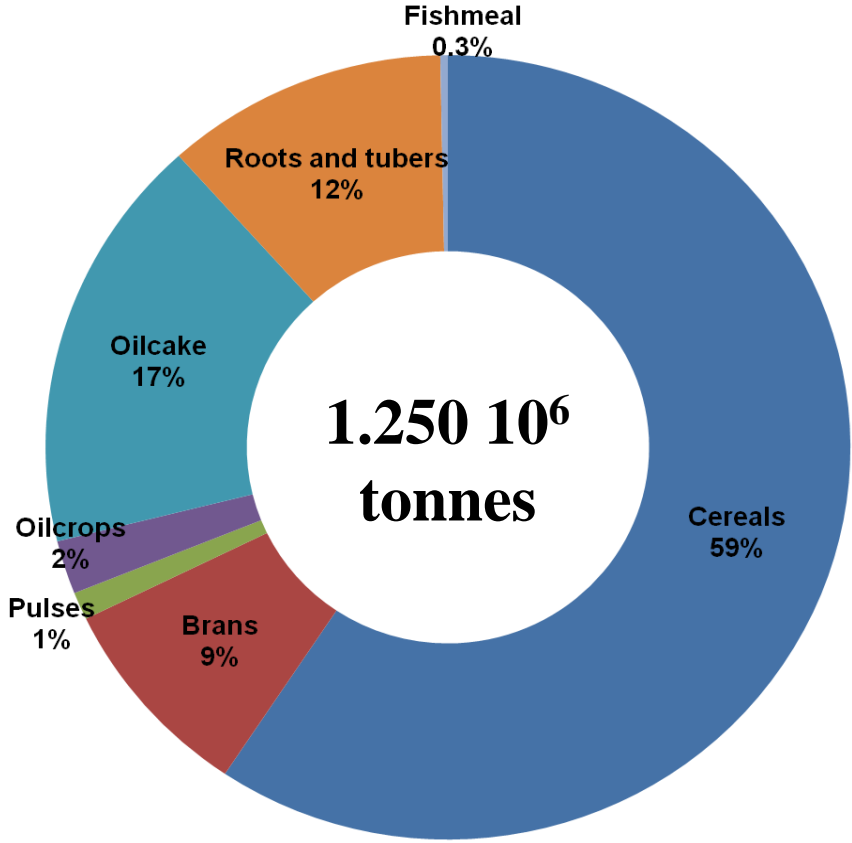
 Areas dominated by landless production
 Boreal and arctic climates

Contributions systèmes à la production de viande



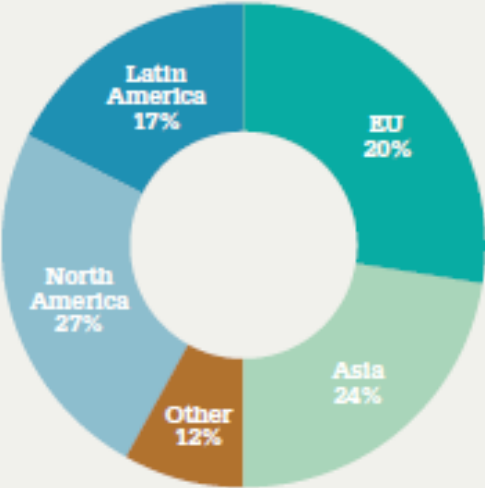
Aliments bétail et aquaculture, 2005

Consommations globales



Steinfeld & Opio, 2010

WORLDWIDE COMPOUND FEED PRODUCTION 2010



| Top Ten | tonnes in millions |
|--------------|--------------------|
| USA | 160 |
| EU 27 | 150 |
| China | 160 |
| Brazil | 60 |
| Mexico | 28 |
| Canada | 25 |
| Japan | 24 |
| Russia | 18 |
| Korea | 16 |
| India | 15 |
| Total | 720 |

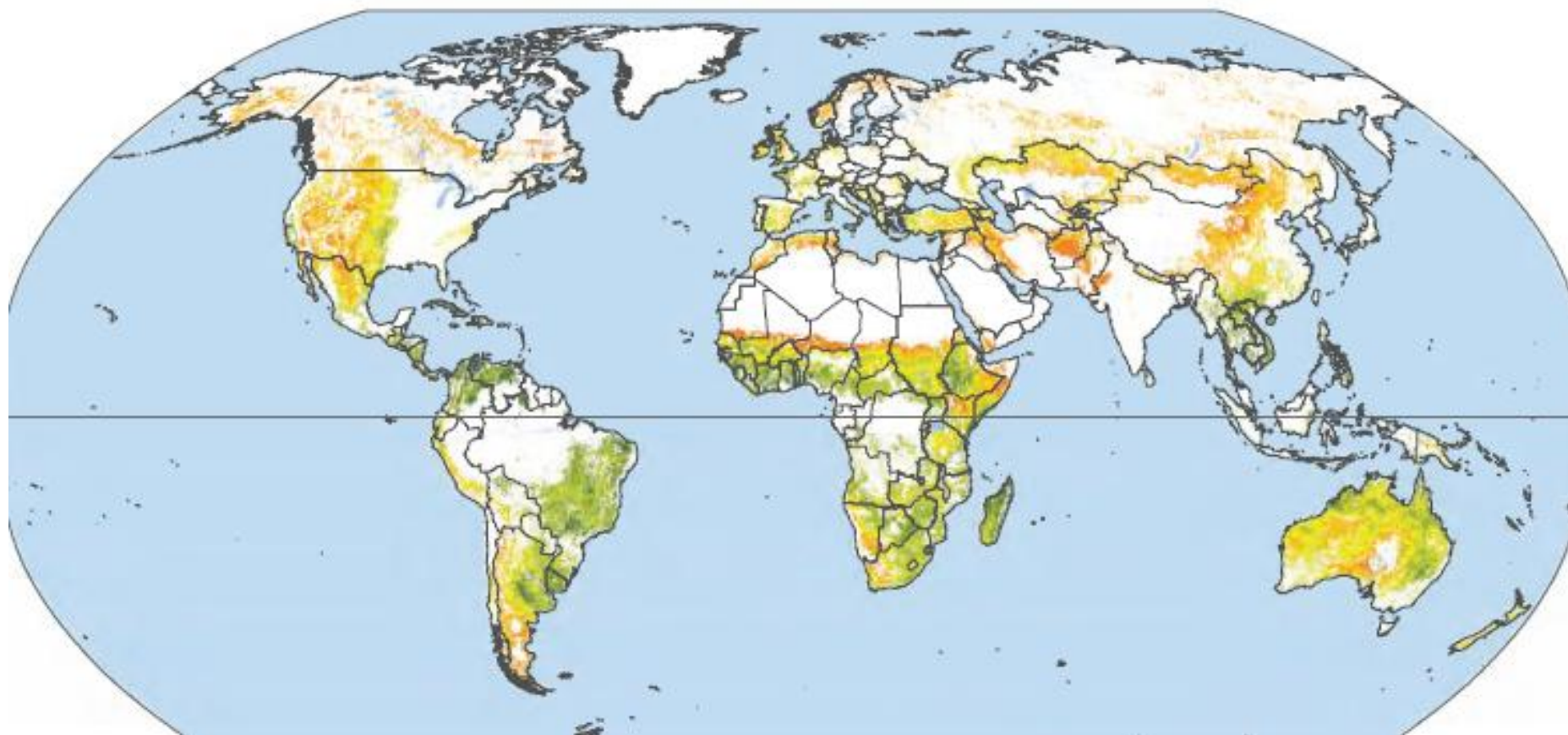
International Feed Industry Federation Annual Report 2011

Des ressources et des produits

| Viandes/Fourrages et aliments Millions tonnes | Ruminants | | Nonruminants | | Total | |
|--|-----------|-----------------|--------------|------------------|-------|-----------|
| | Beef | Sheep and goat | Pork | Poultry | | |
| Production (carcass weight) | 61 | 12 | 95 | 75 | 243 | |
| Production, industrialized (%) | 7 | 1 | 57 | 72 | 0.15 | |
| <i>Estimated concentrate feed inputs</i> | | | | | | % |
| Cereals | 87 | 7 | 221 | 121 | 436 | 21 |
| Oilseed meals | 36 | 2 | 91 | 50 | 179 | 8 |
| Roots and tubers | — | — | 85 | 14 | 99 | 5 |
| <i>Subtotal</i> | 123 | 9 | 397 | 185 | 714 | |
| <i>Estimated nonconcentrate feed inputs</i> | | | | | | |
| Forage (arable) | | 90 | — | | 90 | 4 |
| Forage (nonarable) | | 813 | — | | 813 | 38 |
| By-products | | 75 | 75 | | 150 | 7 |
| Crop residues | | 350 | — | | 350 | 17 |
| <i>Subtotal</i> | | 1328 | 75 | | 1403 | |
| <i>Total feed inputs</i> | | 1460 | 657 | | 2117 | |
| FAO, 2006 | | 20 kg/kg | | 3.8 kg/kg | | |

2. 10⁹ tonnes fourrages et aliments; 8.8 kg F&A/ kg viande carcasse

L'espace paturé, diversité des productivités primaire



Grams of carbon per square meter per year

2000 – 5000

1600 – 2000

1200 – 1600

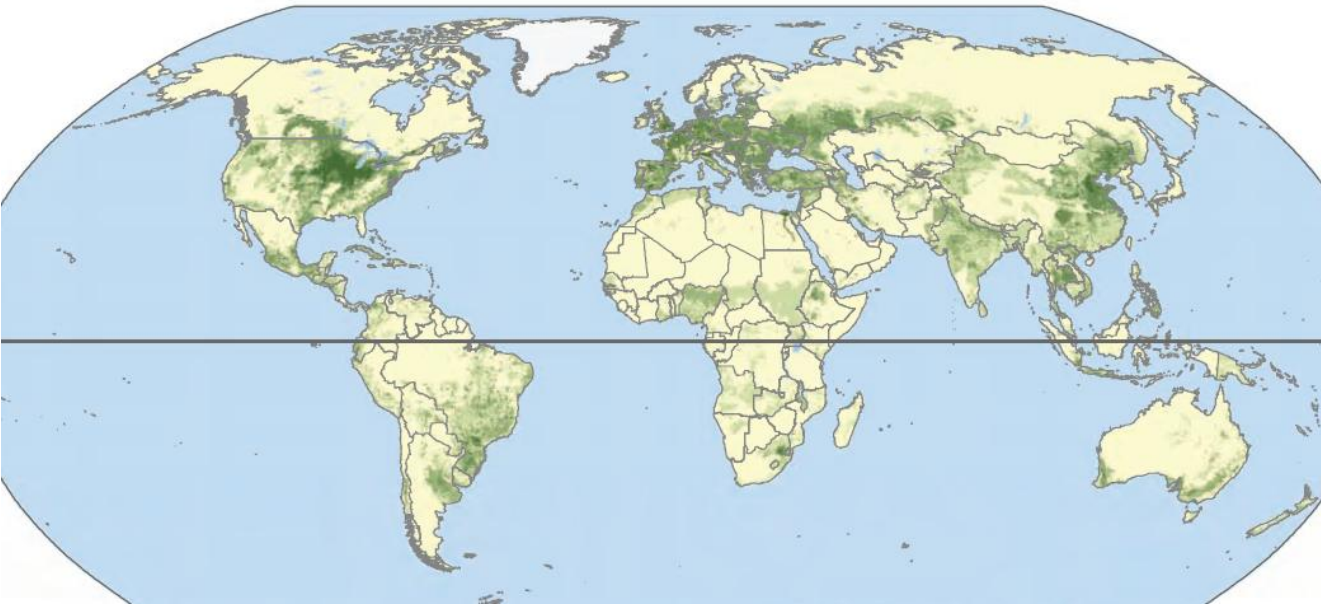
800 – 1200

400 – 800

0 – 400

Productions Aliments / espace

Céréales



Tonnes per square km

0

0 - 1

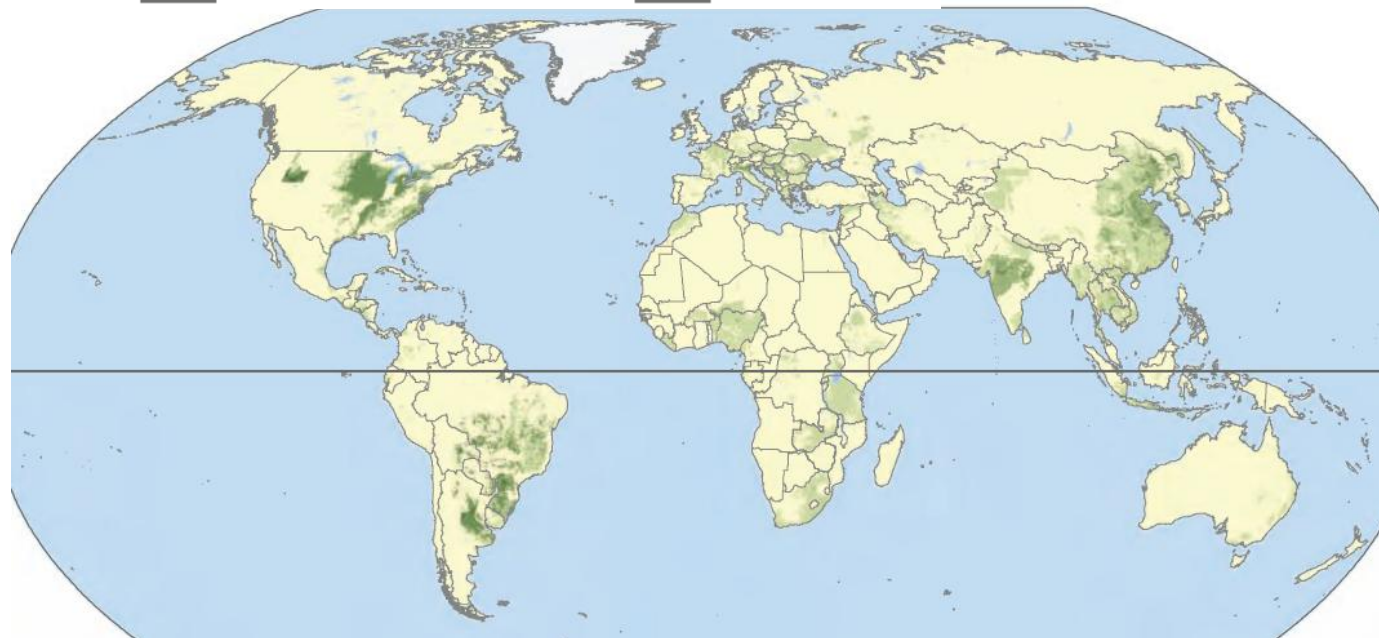
1 - 10

10 - 100

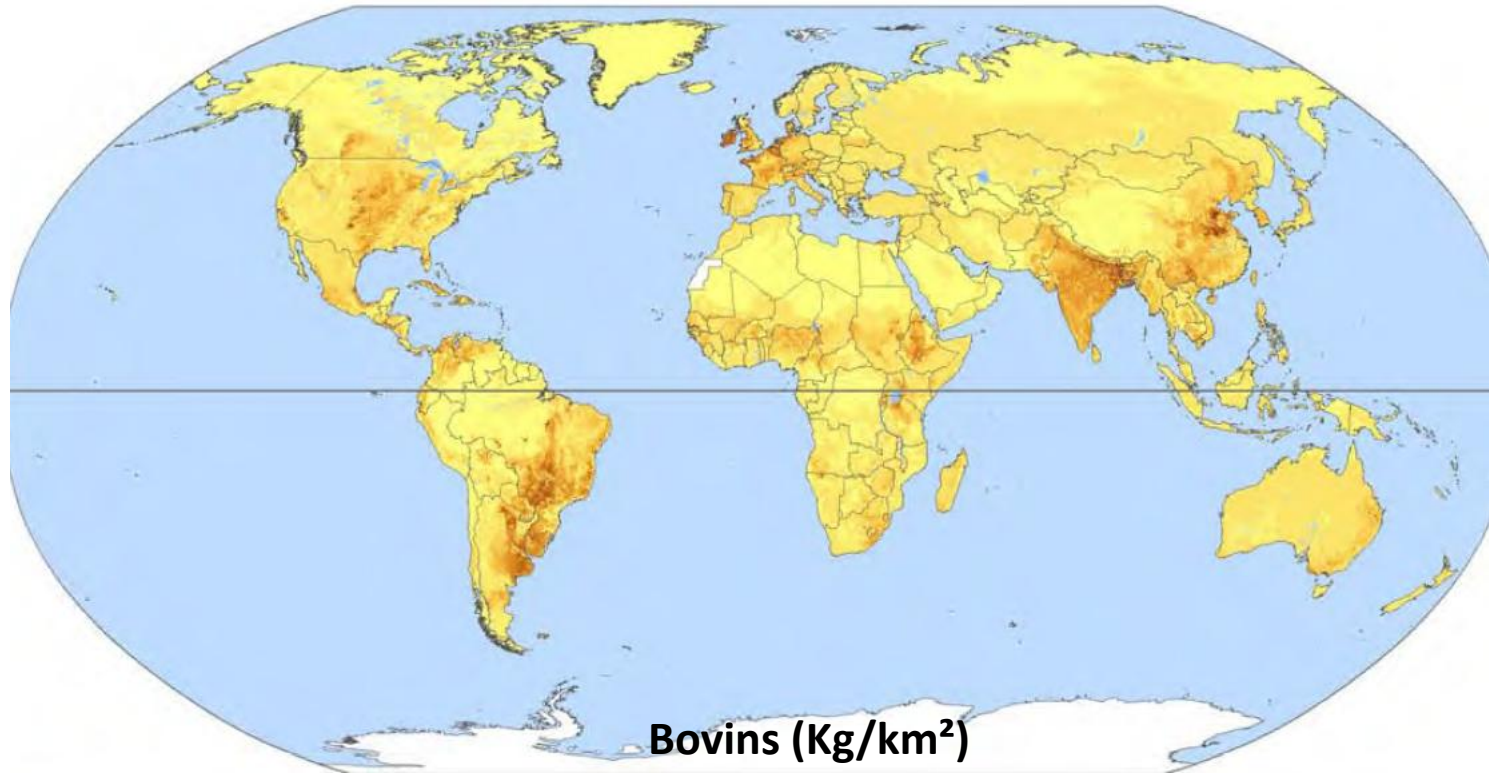
> 100

No data available

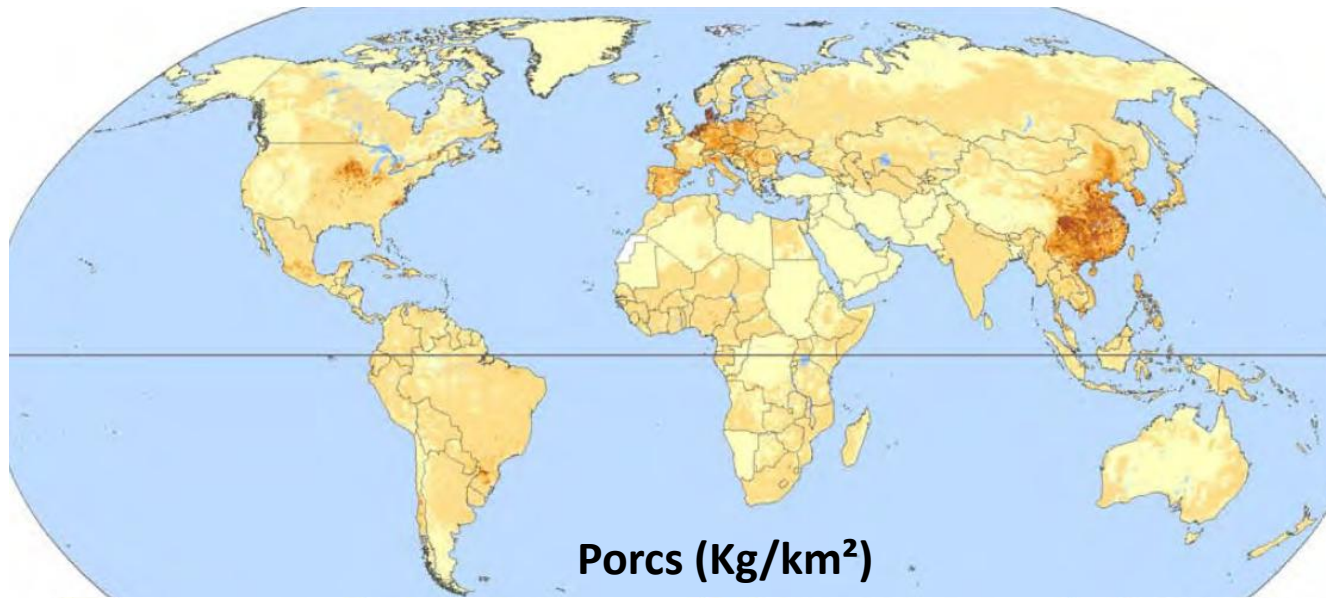
Soya



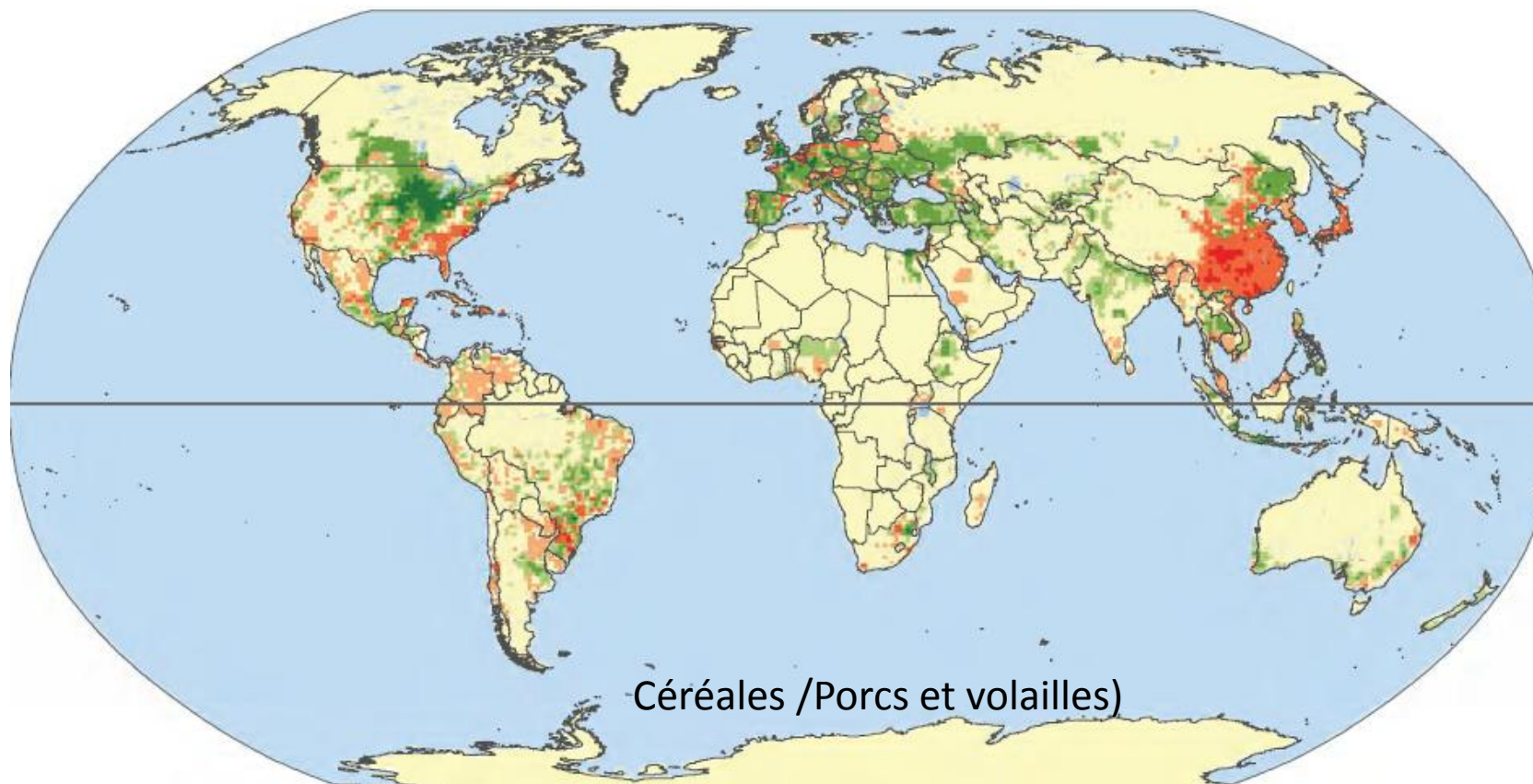
Densités animales



Densités animales







Surplus/déficits en ressources locales







Céréales /Porcs et volailles)

Kgs per square km

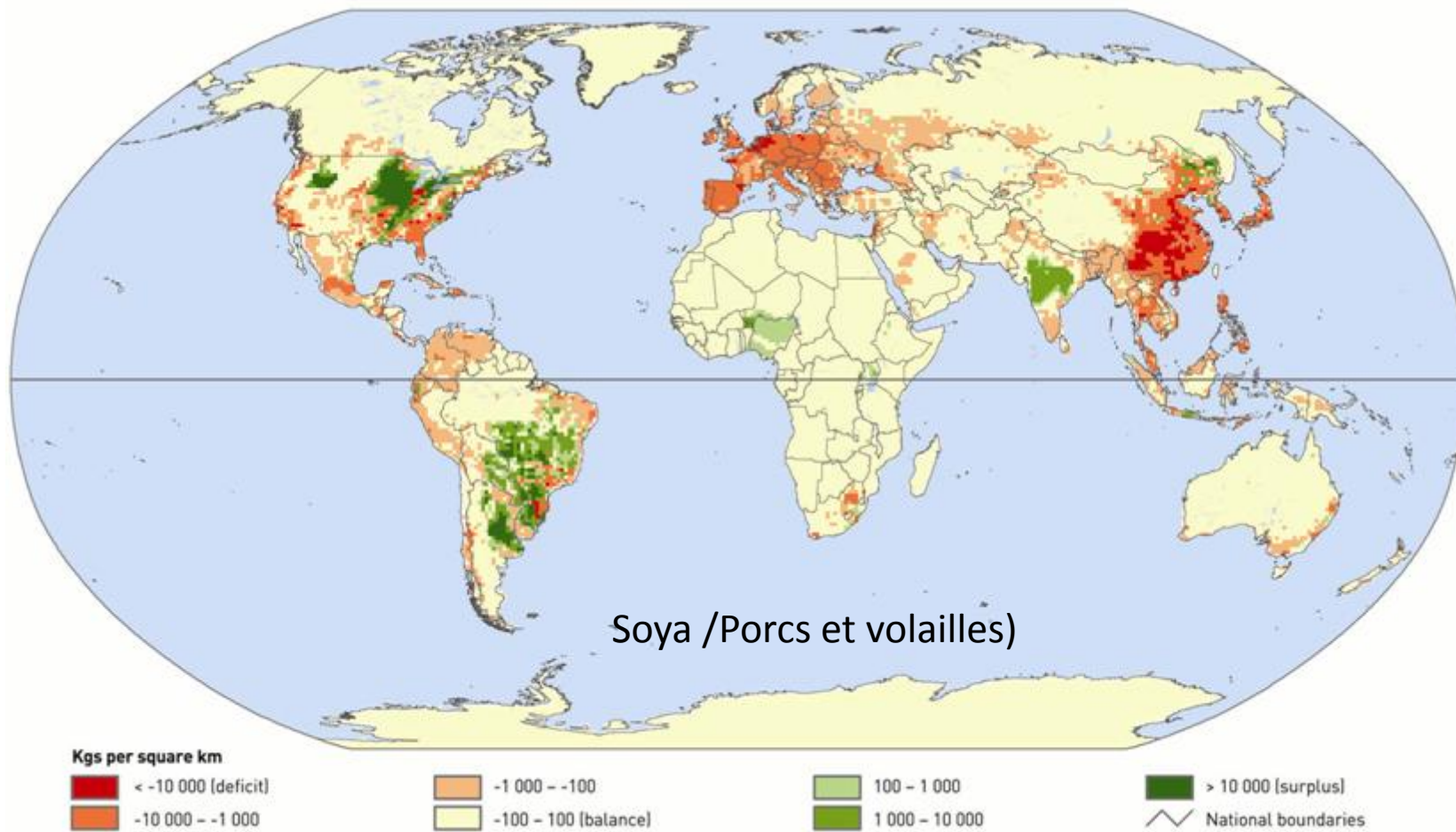
 < -50000 (deficit)
 -50000 – -5000

 -5000 – -500
 -500 – 500 (balance)

 500 – 5000
 5000 – 50000

 > 50000 (surplus)
 National boundaries

Surplus/déficits en ressources locales



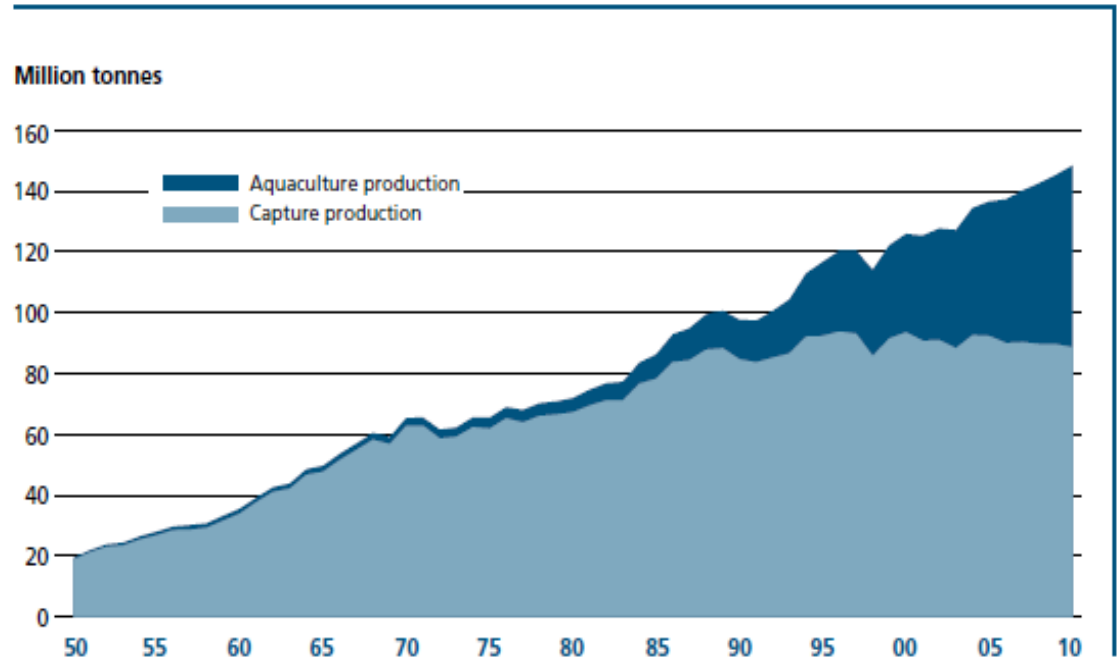
Acteurs nouveaux

2008

708 10⁶ t. industrial feeds

29.2 10⁶ t. “aquafeeds” (4.1 %)

World capture fisheries and aquaculture production



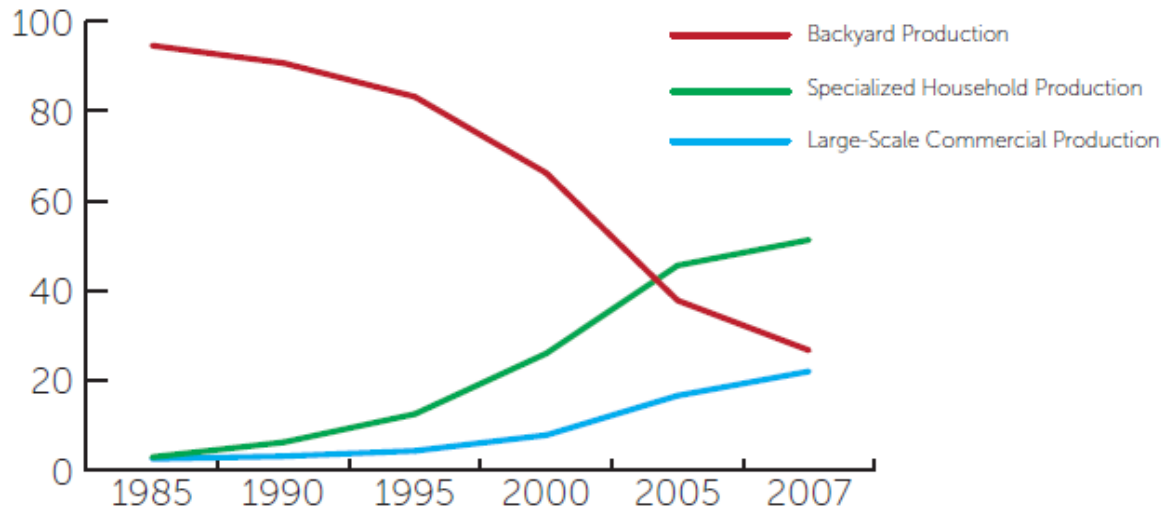
In order to keep pace with fed aquaculture production, global aquafeed production will continue to grow, and it is expected to reach 71.0 million tonnes by 2020. with important reduction of fish meal/oil proportion

Concentration intégration

Chinas's strategic « Hog reserve »

China and World 2010 Pork Statistics at a Glance

| | China | World | |
|--|---------|-----------|-----|
| Pork Production (ktons) | 50,000 | 101,507 | 49% |
| Pork Consumption (ktons) | 50,050 | 101,126 | 49% |
| Pork Imports (ktons) | 350 | 5,645 | 6% |
| Pork Exports (ktons) | 250 | 6,052 | 4% |
| Swine Production (10 ³ heads) | 660,000 | 1,202,550 | 55% |



Source: Informa Economics and National Grain and Oil Information Center, 2009

M. Schneider 2011, Institute for Agriculture and Trade Policy



Feeding China's Pigs

Implications for the Environment, China's
Smallholder Farmers and Food Security

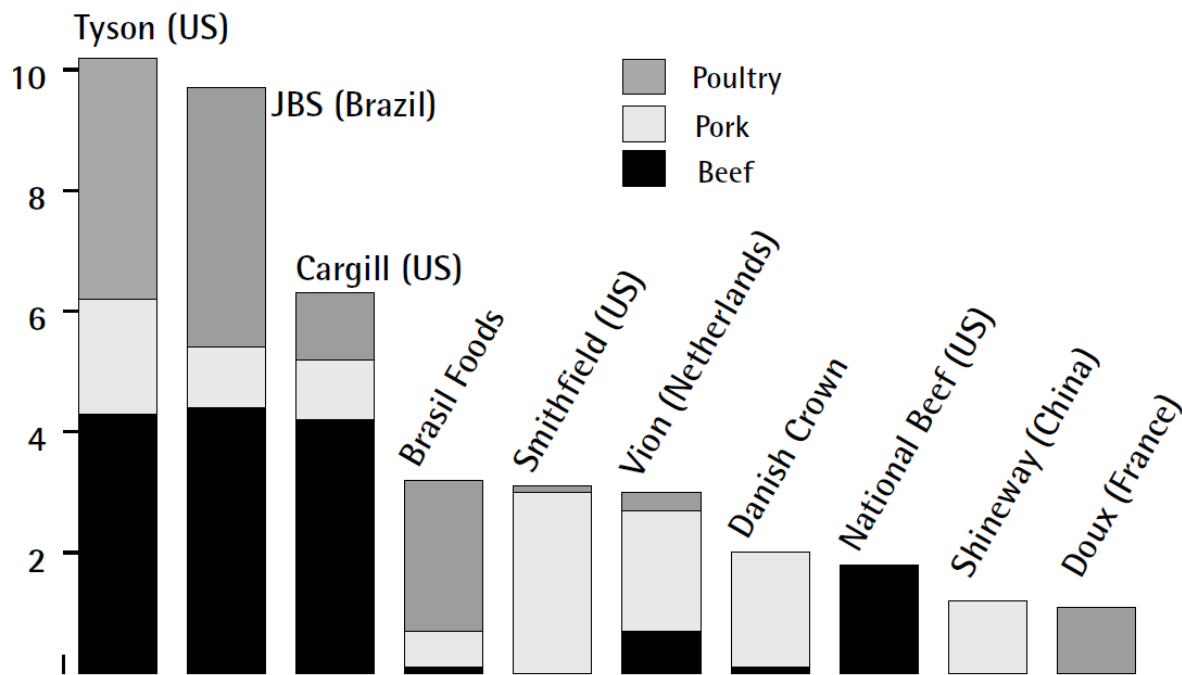
By Mindi Schneider
Institute for Agriculture and Trade Policy
May 2011

Intégration

« financiarisation »

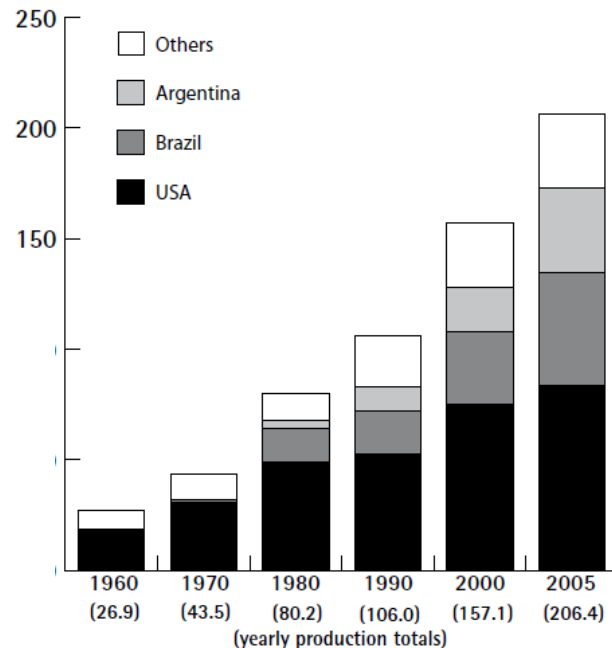
Big Meat is growing in the South

Graph 2: The top ten global meat corporations' production, 2009 (million tonnes)



Source: Gira, Rabobank, GRAIN

Graph 1: Global soya production, 1960–1985 (million tonnes)



Efficienne de la production de protéines

| Country 2005/07 | Human edible protein input | Human edible protein output | Output-input ratio |
|--------------------|-------------------------------|--------------------------------|-----------------------|
| | Million metric tonnes | | |
| China | 13.2 | 12.6 | 0.96 |
| Brazil | 3.3 | 3.1 | 0.92 |
| India | 1.0 | 4.4 | 4.30 |
| Ethiopia | 0.01 | 0.2 | 16.95 |
| Kenya | 0.01 | 0.2 | 21.16 |
| New Zealand | 0.1 | 0.7 | 10.07 |
| USA | 16.2 | 8.5 | 0.53 |
| Netherlands | 0.8 | 0.8 | 1.03 |

De grandes variations

Key feed sources in India: 2003 and 2020

| Feed Resource | % | |
|----------------------|------|---------|
| | 2003 | 2020 |
| Crop Residues | 44.2 | 69.0 |
| Planted fodder crops | 34.1 | n. diff |
| Greens (F/F/CPR/WL) | 17.8 | n. diff |
| Concentrates | 3.9 | 7.3 |

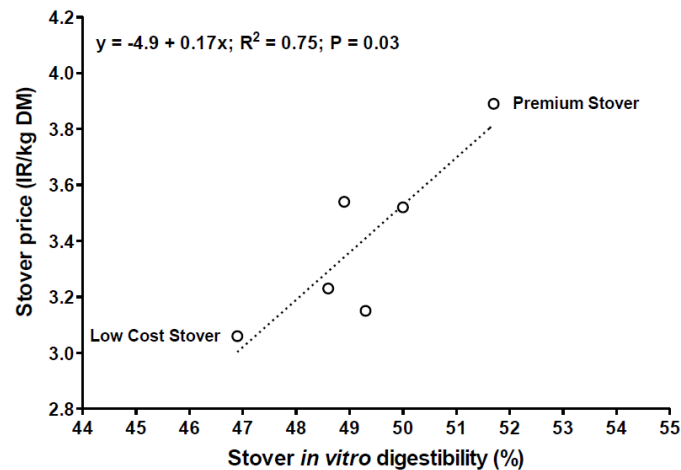
(summarized from NIANP, 2005 and Ramachandra et al., 2007)



| Ingredients | % |
|--------------------------|----|
| Sorghum stover | 50 |
| Bran/husks/hulls | 18 |
| Oilcakes | 18 |
| Molasses | 8 |
| Grains | 4 |
| Minerals, vitamins, urea | 2 |

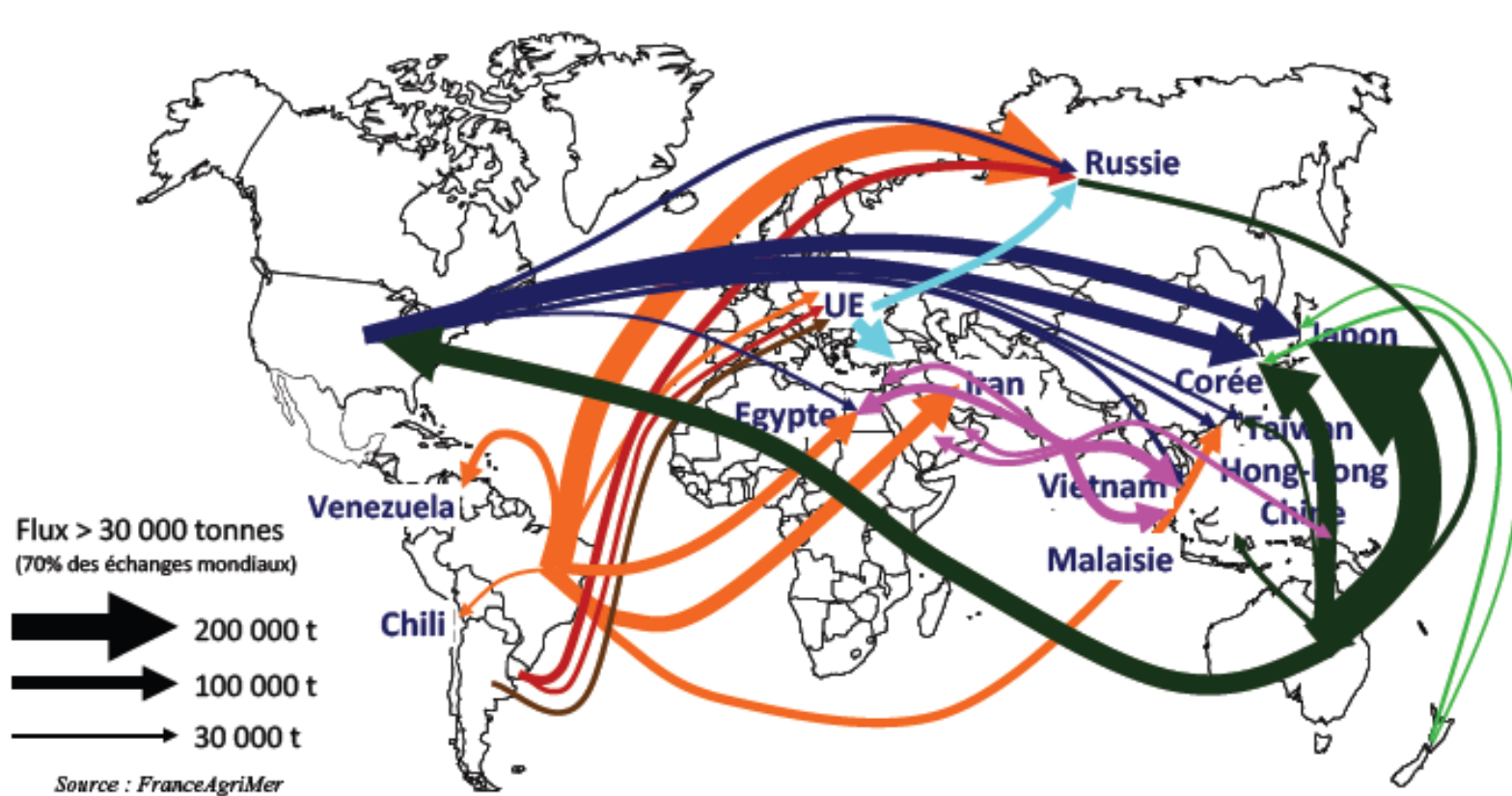
Courtesy: Miracle Fodder and Feeds PVT LTD

11



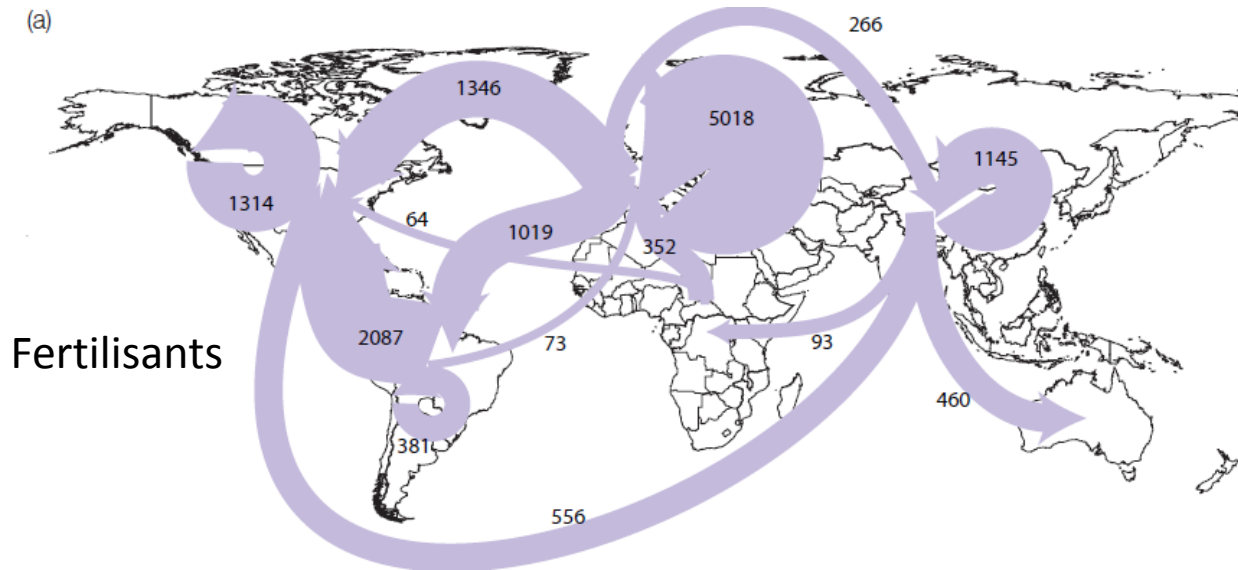
Flux internationaux de produits

Ex. Viande rouge



Fluxs internationaux et environnement

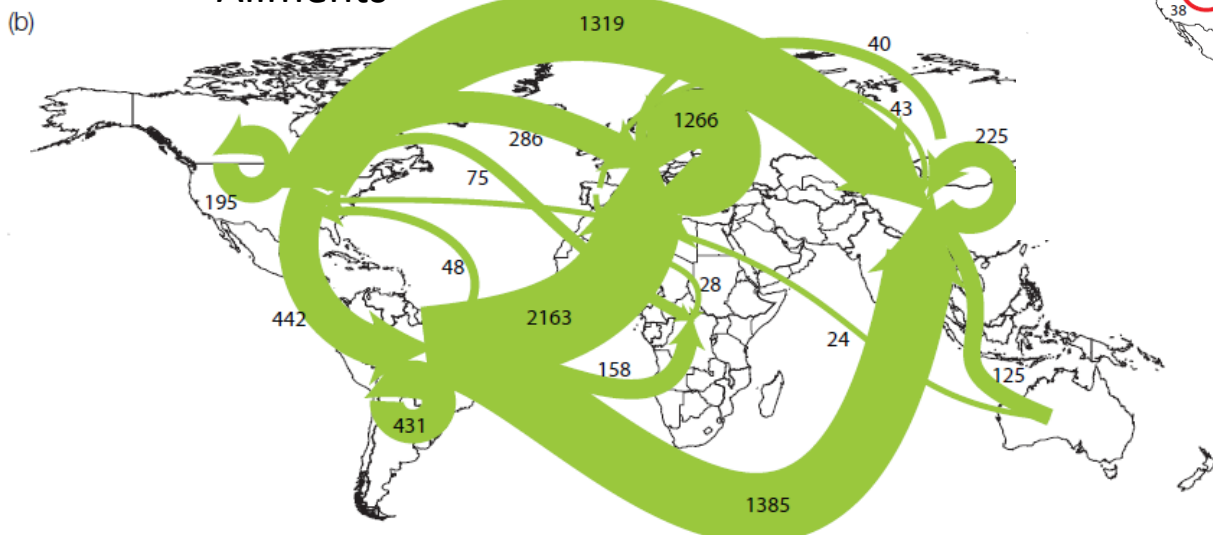
Ex. Azote



Meat



Aliments



Conclusions