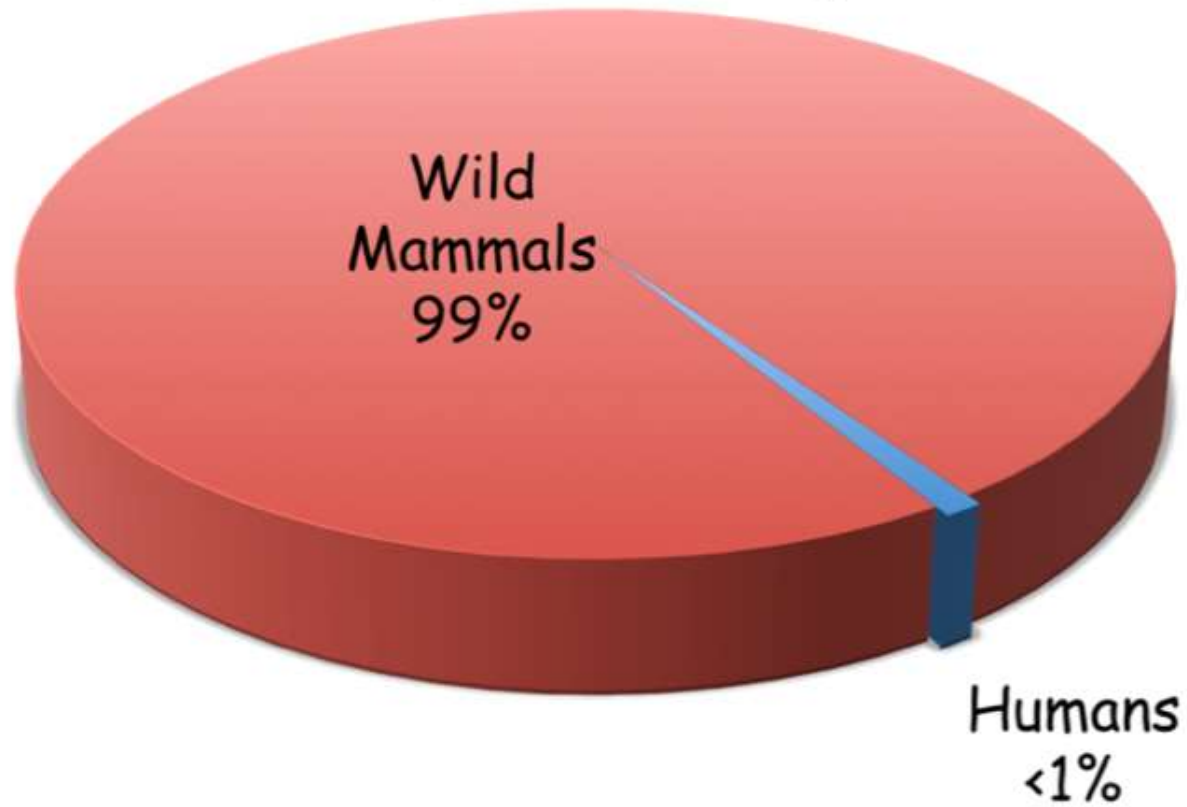
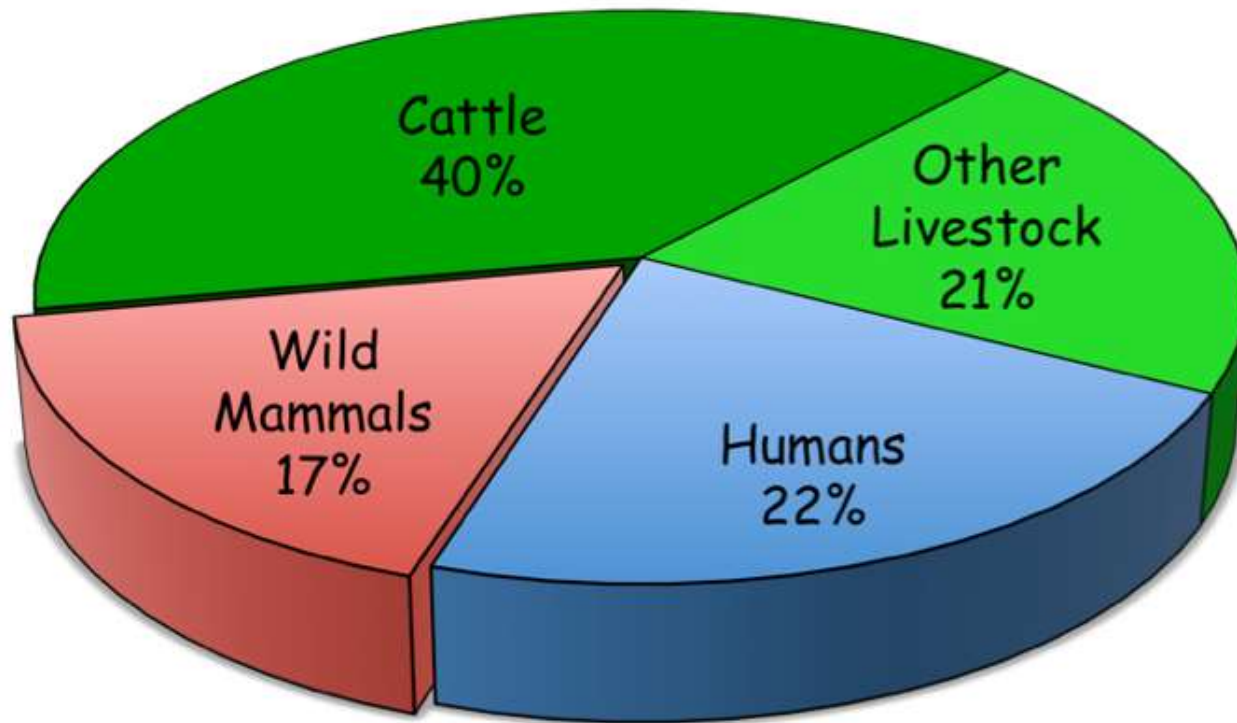


Terrestrial Mammal Biomass 10,000 Years Ago

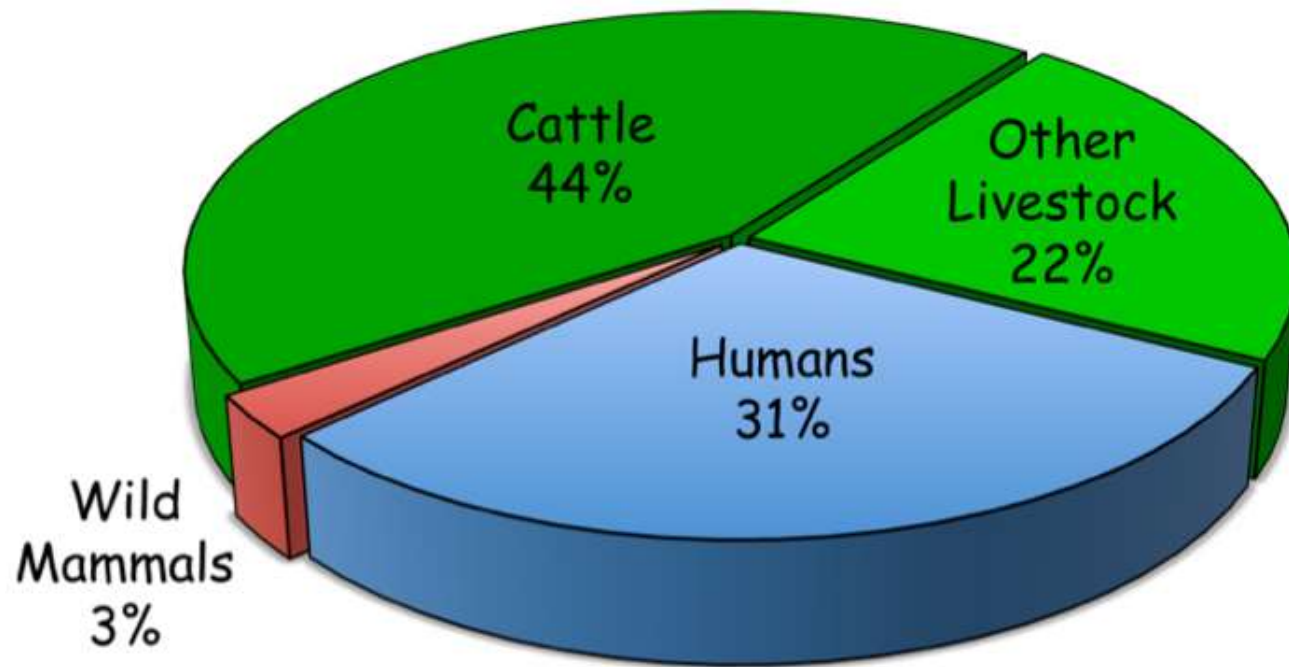


Terrestrial Mammal Biomass 1900



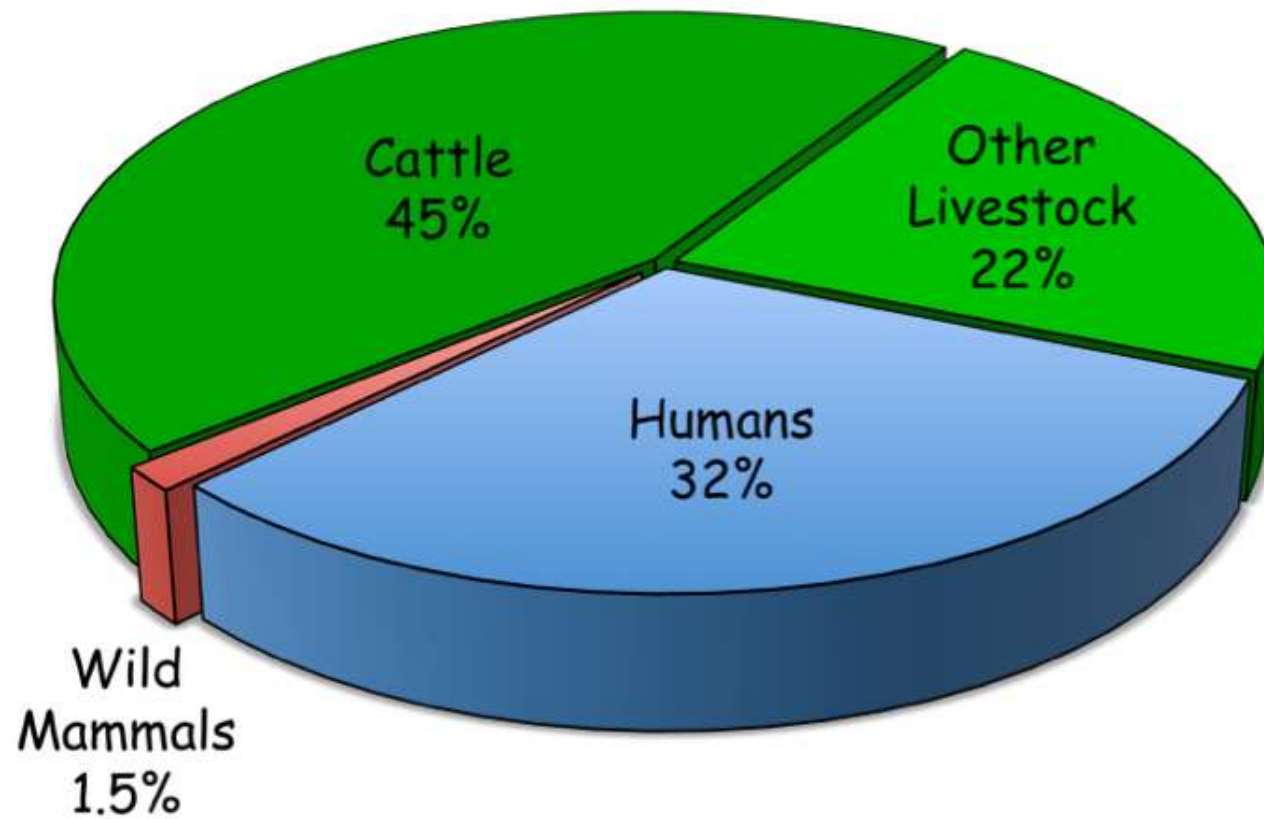
Source Vaclav Smil 2016

Terrestrial Mammal Biomass 2000



Source Vaclav Smil 2016

Terrestrial Mammal Biomass 2015

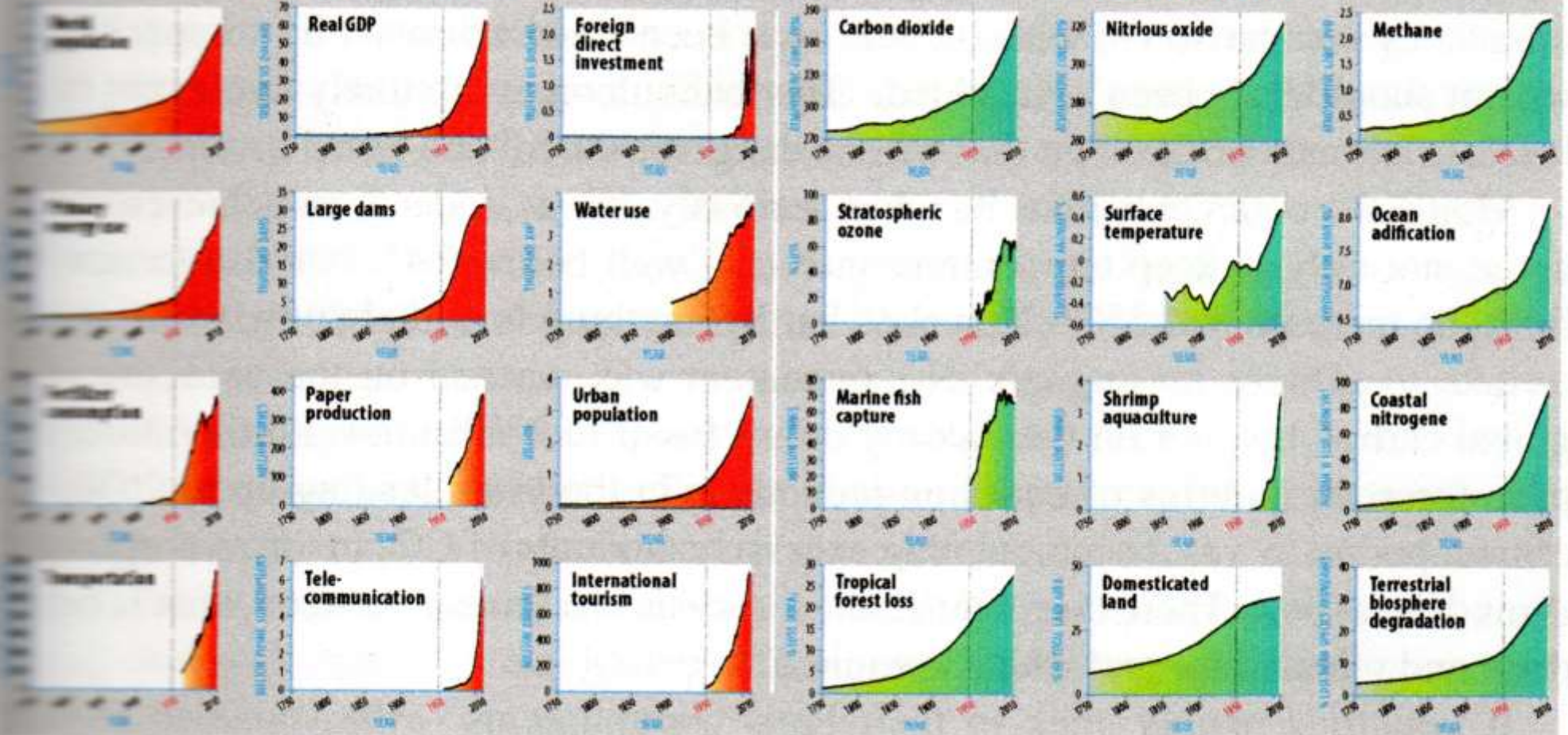


Source Vaclav Smil 2016

SOCIO-ECONOMIC TRENDS

The Great Acceleration

EARTH SYSTEM TRENDS

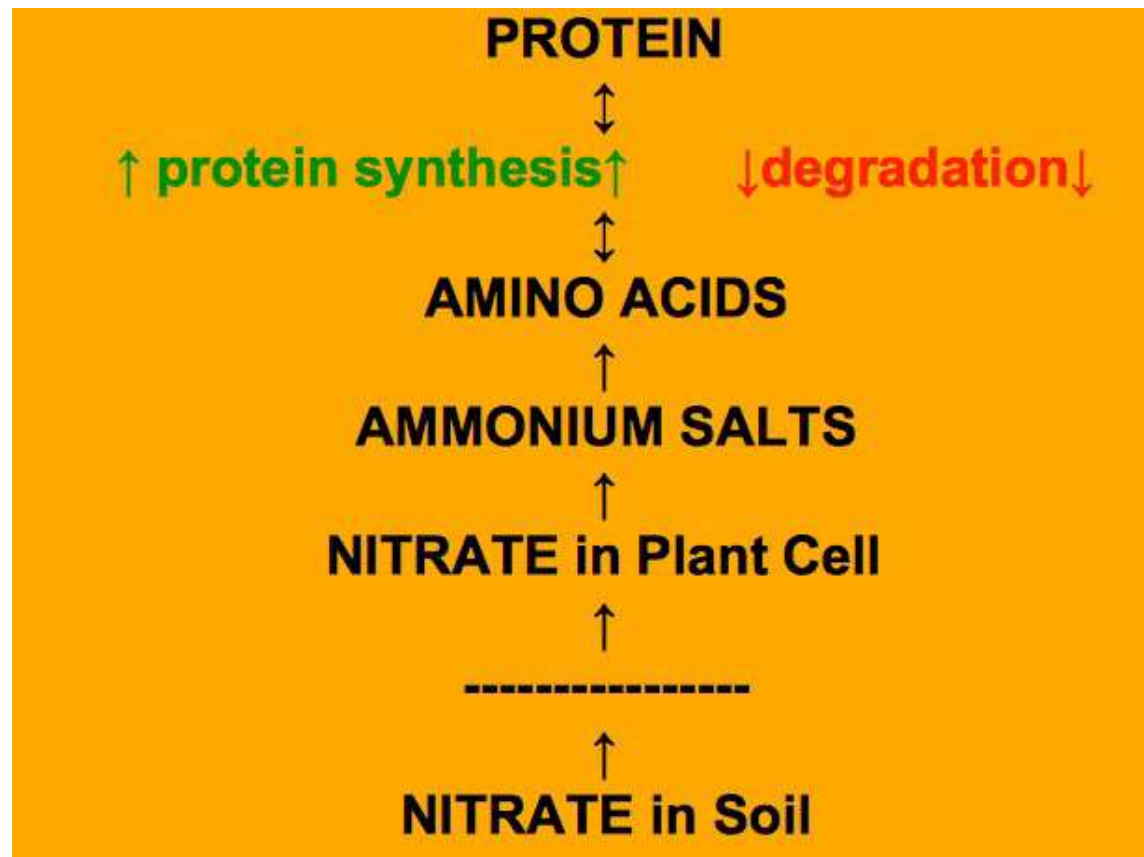


Healthy Crops



A New Agricultural Revolution

**FRANCIS
CHABOUSSOU**





HOW'S IT
GOIN'?

INSECT-
ICIDE

RASMUS

Criteria for a convivial science/technology

	CONVIVIAL SCIENCE NATURAL PROCESSES	CONVENTIONAL INDUSTRIAL SOCIETY
1.	Driven by solar energy	Driven mainly by stored fuel, fossil or biomass
2.	Works in cycles	Works linearly
3.	All materials are recycled, there is no waste	Resources are consumed to waste
4.	Competition and Co-operation in ecosystems	Conquest by over-riding natural systems
5.	No great excesses	Large excesses
6.	Increases biological diversity	Decreases diversity
7.	Global stability	Global changes
8.	Multiple feed-back controls, mostly negative	Little feed-back control, mostly positive

Two Sciences

- **CONVENTIONAL** is the dominant history
- **CONVIVIAL** is the new enlightenment