



Dipartimento di Scienze e
Tecnologie Agro-Alimentari



A sustainable food supply chain to prevent food waste: target EXPO 2015

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UniBo-Distal responsible for the Fusions Project

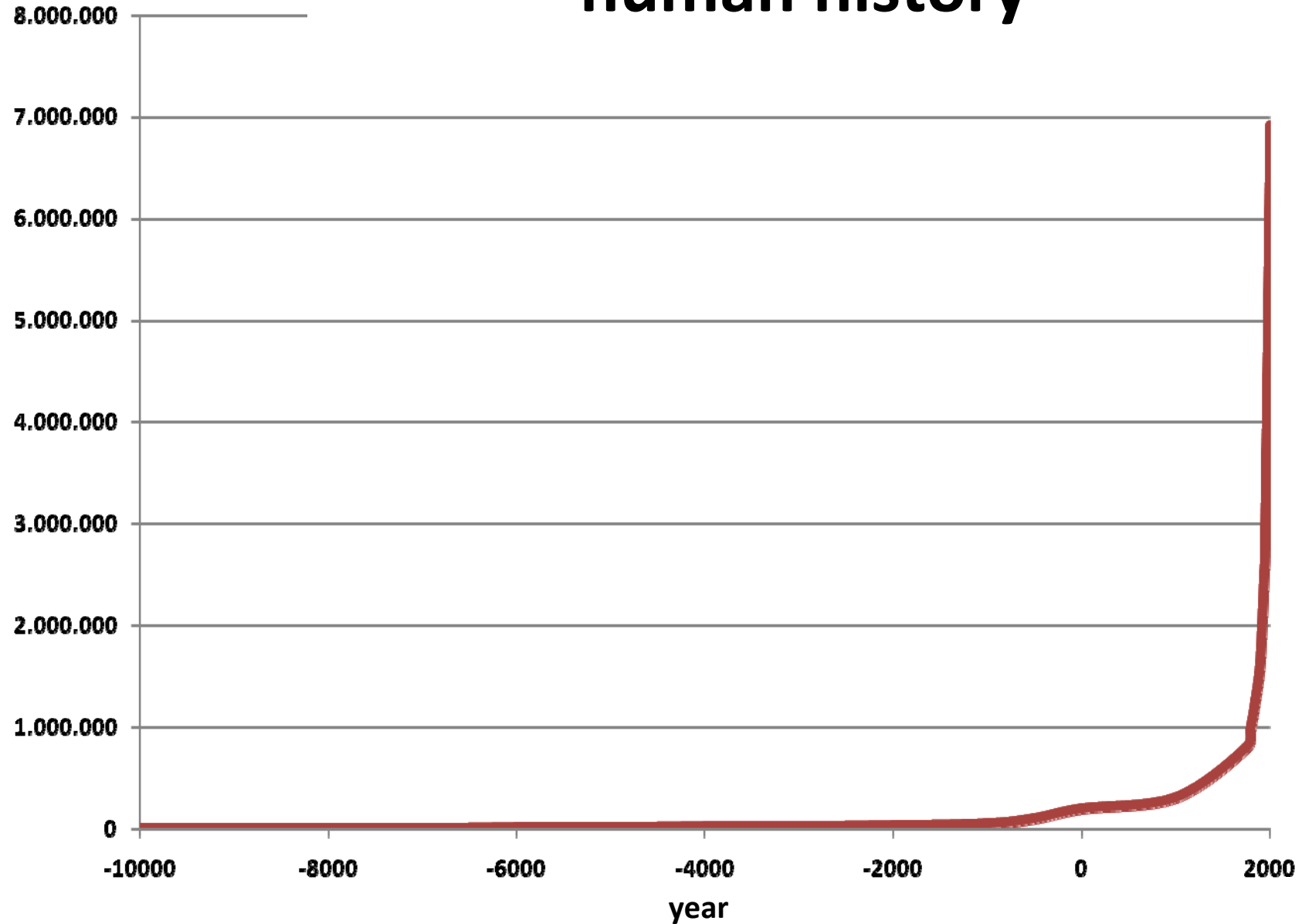


**“Be fruitful and
increase in
number and fill
the earth”
(Genesis, 9:1)**



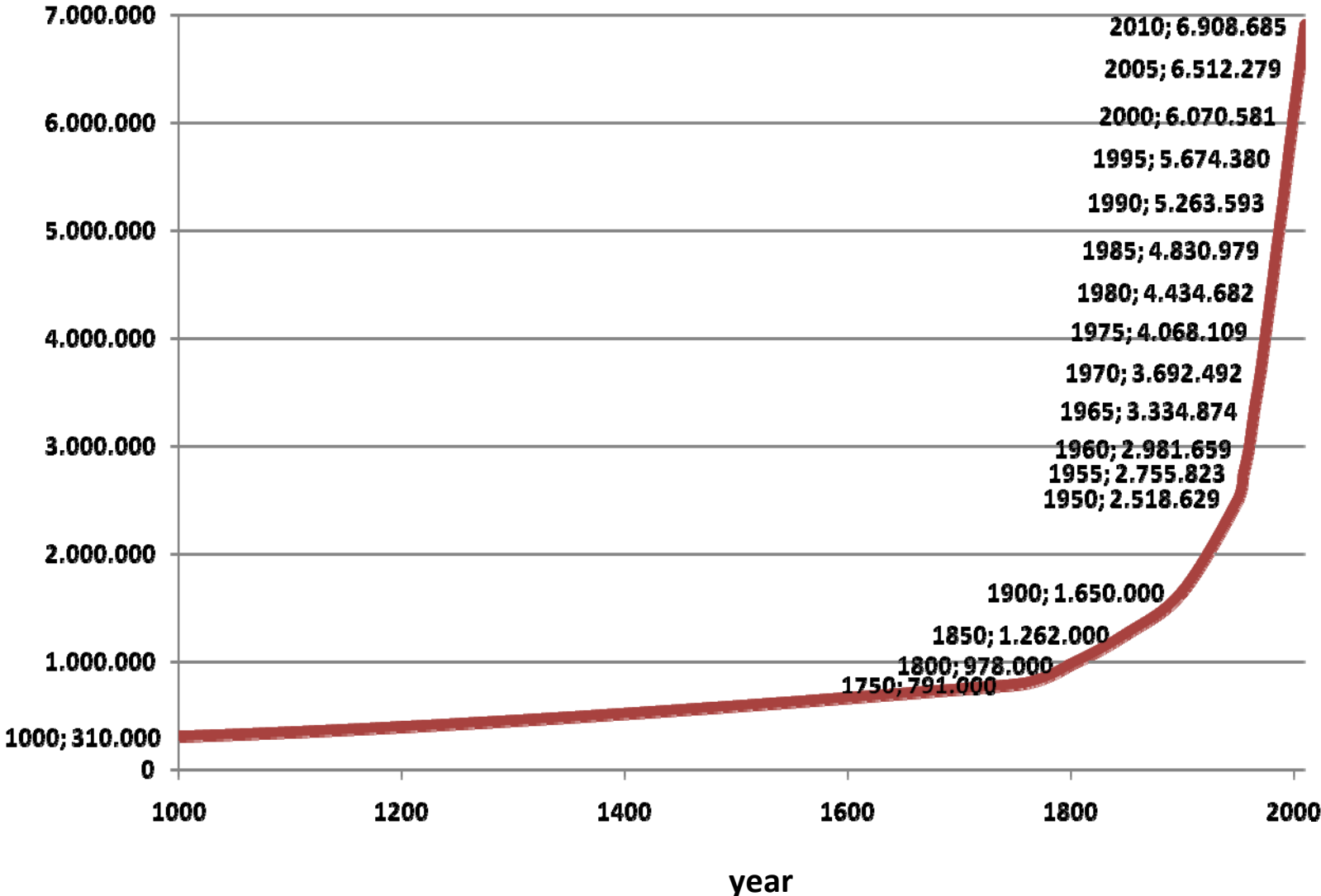
Population: figures along human history

World population (000)



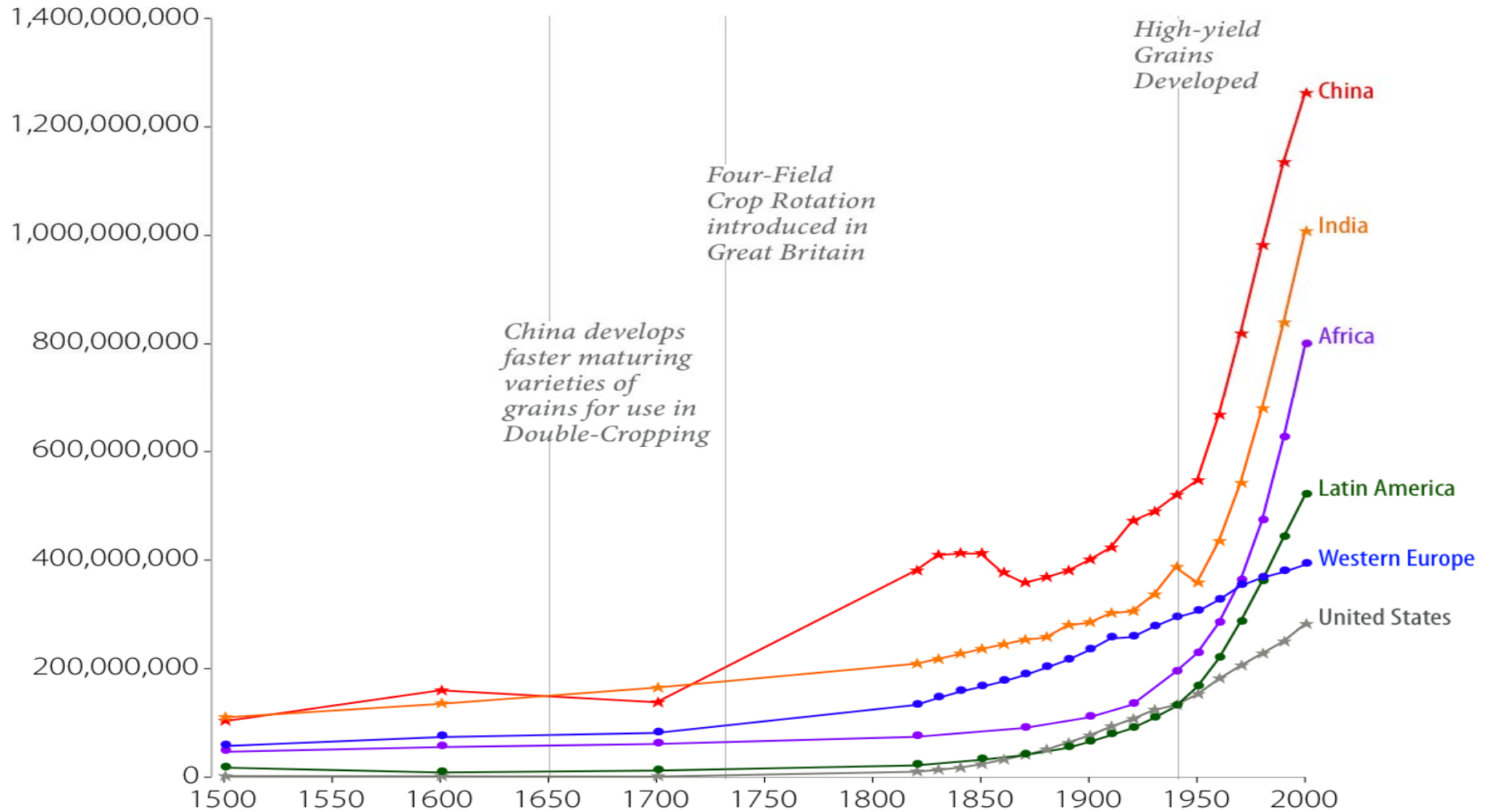
Population boom: a very recent phenomenon

World
population
(000)



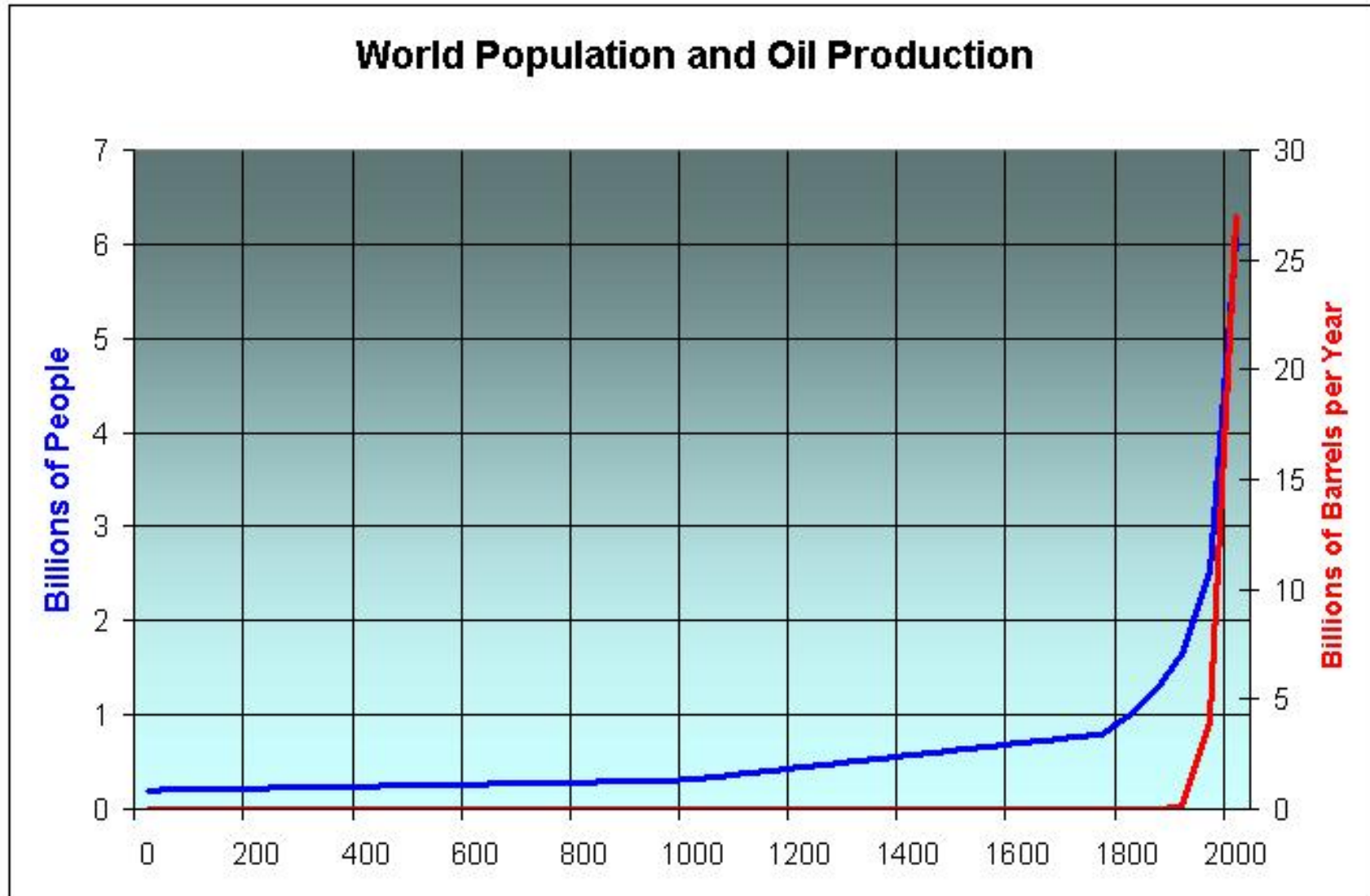
Eat and grow in number!

Population Growth over the Last 500 Years
China, India, Africa, Latin America, Western Europe, and United States



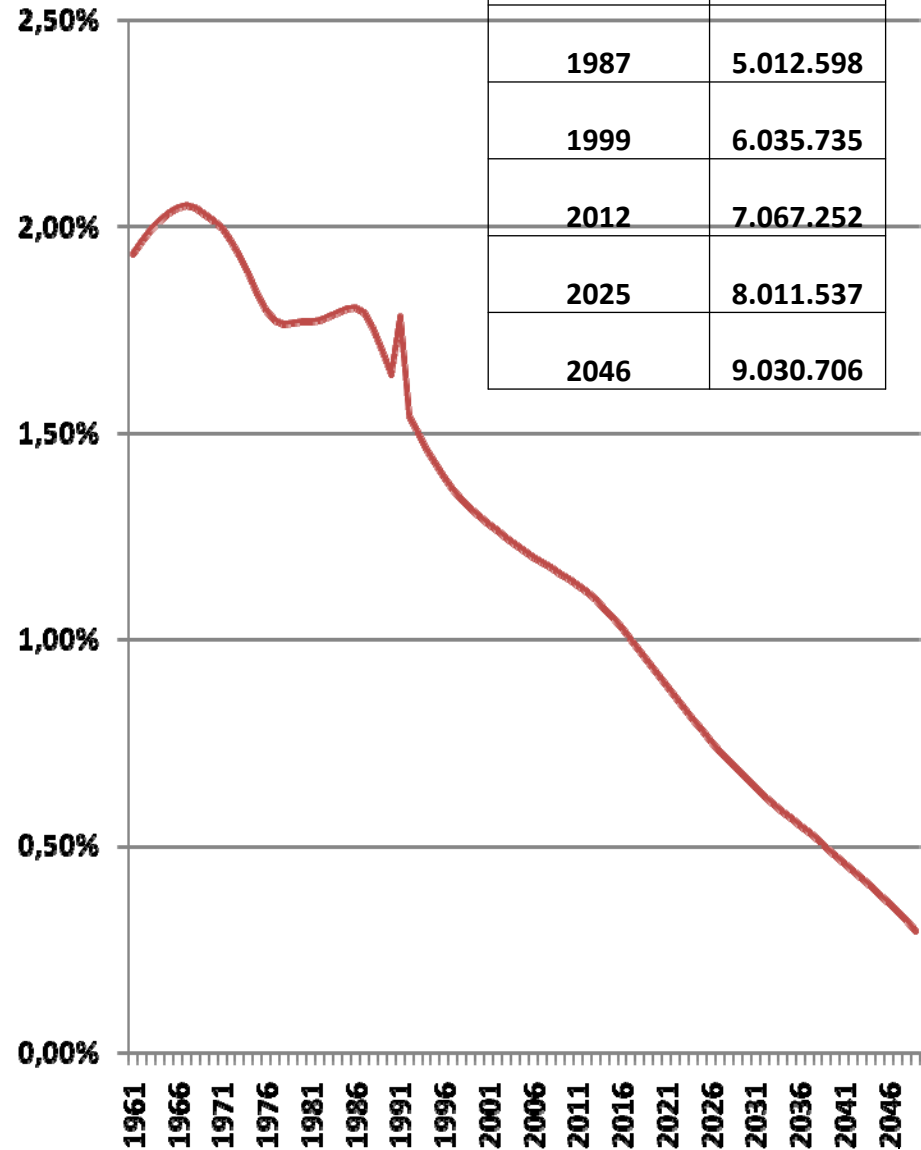
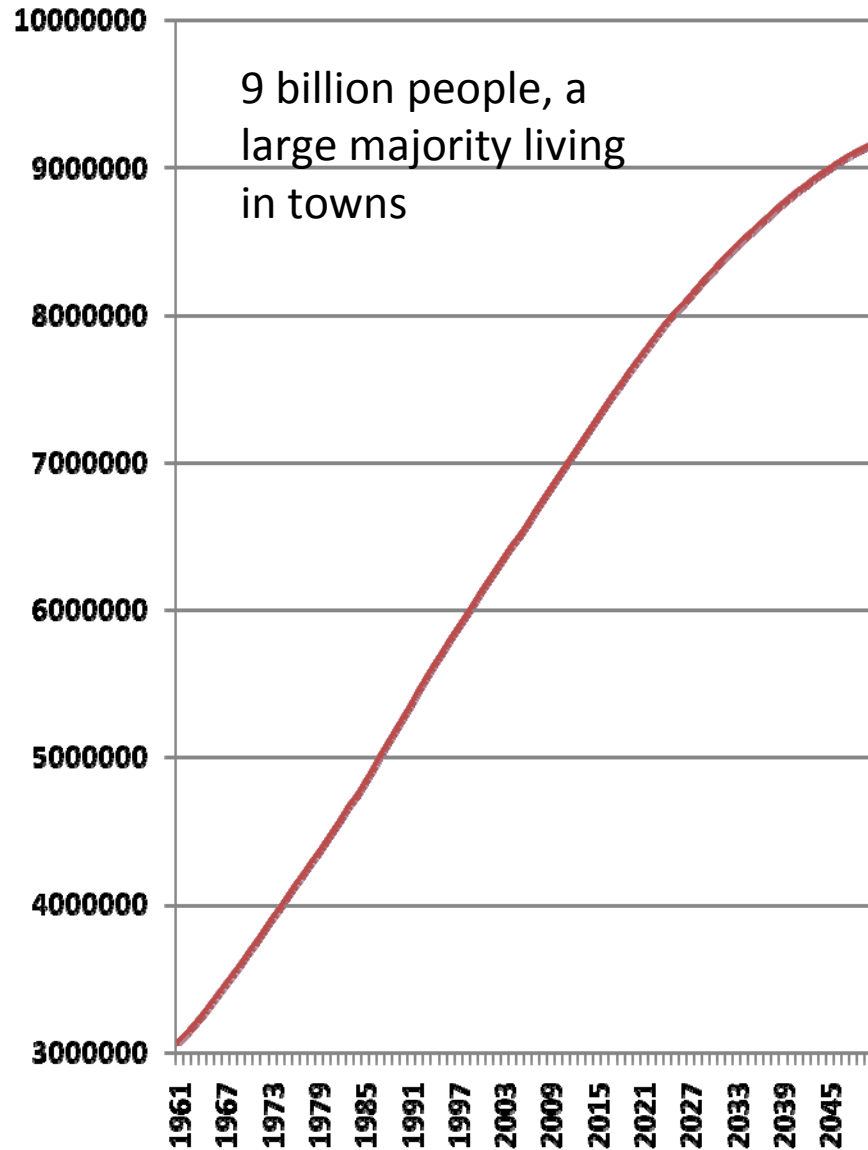
Source: Angus Maddison, University of Groningen

Extract oil and grow in number!



World population in 2050:

1961	3.072.759
1975	4.052.231
1987	5.012.598
1999	6.035.735
2012	7.067.252
2025	8.011.537
2046	9.030.706



Food unbalances and wastage

Balanced vegetarian diet = 2,200 cal./day = **200 kg of cereal/year**

Food consumption in Western industrialised countries

Total consumption = 3,200 cal./day

- from crop products = 2,200 cal./day

- from animal products = 1,000 cal./day = 7,000 cal. from crop products

total = 9,200 cal./day from crop products = **840 kg of cereal/year**

Food unbalances and wastage

World deaths caused by:

- lack of food = 36 million people / year
- overeating = 29 million people / year

Children in the world:

- overweight and obese = 155 million
- underweight = 148 million

Undernourished people in the World = 1 billion

Livestock units in the world = 3 billion

World food production destined to livestock feeding = 1/3 of total

World water needs for livestock production =

- 27.5 billion m³ in 2000
- 45.0 billion m³ in 2050 (+ 64%)

World population without access to fresh water = 1 billion

US corn production destined to bio-fuel = 45% of total

A societal issue of growing importance

Total amount of food produced for human consumption per year

654 million tons

Total amount of food wasted per year

205 million tons

Waste by consumer:

34%

Waste during production, harvesting, processing and trade: **66%**



Food waste in Europe



An avoidable waste of resources ...

In the end of the 2000s decade **total food waste in the EU27** was estimated at **89 million tons/year**, i.e. **179 kg per capita** (BIOIS/EU Commission Study, 2010)



- **76 kg per capita** (42% of total food waste) are **from households**
- **60%** of household food waste could be avoidable



... and a growing environmental matter

- In terms of **environmental impact**, the EU27 food waste corresponds to **170 million tons CO₂ eq./year**, i.e. **3% of total GHG** emissions of the EU27



- **By 2020, EU27 food waste is expected to grow to 126 million tons/year**, i.e. **40% increase**

Why food is wasted?

Causes of food waste are extremely varied:

- perishability of food;
- technical failures (e.g. in the cold chain);
- errors in labelling/changes in labelling;
- low cost of disposal
- consumers over-shopping (induced)
- contract relations charging cost of disposal on weakest suppliers/customers



Why food is wasted?

- avoid food wastage is a secondary priority with respect to:
 - save other more costly factors (workforce; energy; etc.)
 - risks of penalties for non complying with safety standards
 - non complying with marketing and cosmetic standards
 -
- misleading label information (use by/best before dates)



Why food is wasted?

- obstacles in legislation to waste reduction/prevention:
 - Marketing standards
 - Import controls
 - Hygiene requirements
 - Norms and quotas in fisheries
 - Contamination in food
 - Phyto-sanitary rules
 - Provision of food information (labelling)
 - other?

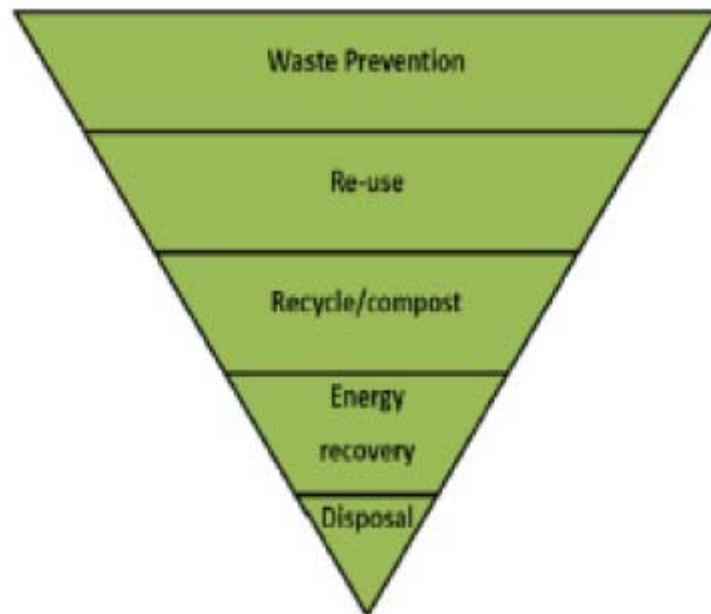


How to reduce food waste?

- the 3 Rs: reduce, reuse, recycle

EU Approach (for all waste)

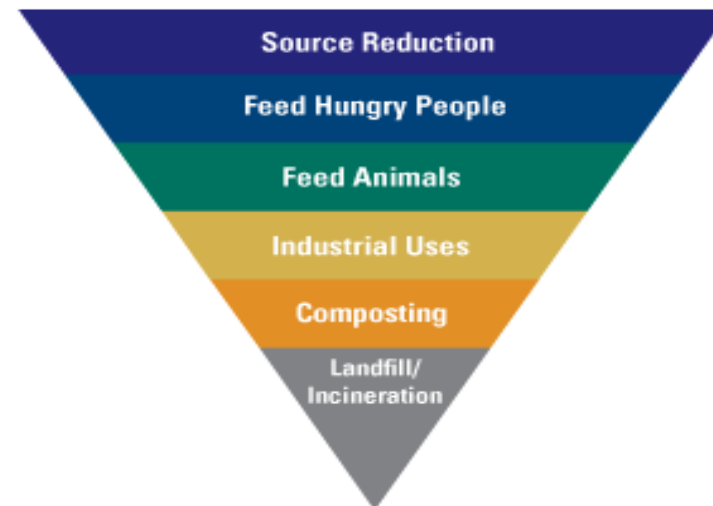
The Revised Waste Framework Directive (Directive 2008/98/EC) applies the “**waste hierarchy**” :



US Approach

(specific for food waste)

Food waste hierarchy EPA



The US EPA hierarchy does not differentiate between waste treatment options; anaerobic digestion is likely to be environmentally preferable to incineration and land-filling.



Reducing food waste through social innovation



European policy initiatives

- The **European Parliament Resolution** of 19 January 2012 asks for a **50% reduction of food waste by 2025**, through a coordinated strategy with European and national measures to reduce losses at every stage of the food chain
- The **European Commission Communication *Roadmap to a Resource Efficient Europe*** (COM(2011) 571 final) calls on the Member States to solve the problem of food waste in the context of their national waste prevention plans. It is stated here that **food waste should be halved by 2020**
- The **European Commission** has published the ***Guidelines on the Preparation of Food Waste Prevention Programmes*** (August 2011) to help Member States to develop national waste prevention programmes in the domain of food waste
 - the development of **national waste prevention programmes by 2013** is a provision of the Revised Waste Framework Directive (Dir. 2008/98/EC, art. 29)



Reducing food waste through social innovation



Food waste in current European policy consultation

- In Autumn 2012, the Commission established, within the **Advisory Group on the Food Chain, Animal & Plant Health**, a **Working Group on Food Waste** to discuss with stakeholders, experts and Member States how to reduce food waste without compromising food safety;
- In March 2013, the **European Economic and Social Committee** has produced an own-initiative opinion on *Civil society's contribution to a strategy for prevention and reduction of food losses and food waste*
- A **Commission Communication on food waste best practices** is expected to be issued **by 2013**



Reducing food waste through social innovation



FUSIONS

- Food Use for Social Innovation by Optimising waste prevention Strategies
- Type of funding scheme: FP7 / KBBE.2012.2.5-02
Coordination and Support Action – Supporting (CSA/SA)
- EU Grant: 4 million €
- Project duration: 48 monts (2012 – 2016)



Aims of the FUSIONS Project

Overall aim of the project is to contribute significantly to:

- harmonisation of food waste monitoring in the European countries;
- investigation on feasibility of socially innovative measures for optimised food use in the food chain;
- guidelines for a Common Food Waste Policy for the EU27;

The FUSIONS' **European Multi-stakeholder Platform** will enable, encourage, engage and support key actors across Europe in delivering a 50% reduction in food waste and a 20% reduction in the food chains resource inputs by 2020.





FUSIONS partners



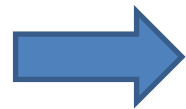
FUSIONS Partners



<i>Participant no.</i>	<i>Participant organisation name</i>	<i>Organisation short name</i>	<i>Country</i>
1 (Coordinator)	Stichting Dienst Landbouwkundig Onderzoek - WUR	DLO - WUR	Netherlands
2 (Wp Leader)	The Waste and Resources Action Programme LBG	WRAP	UK
3 (Wp Leader)	Alma Mater Studiorum – Università di Bologna	UniBO	Italy
4 (Wp Leader)	SIK – Institutet foer livsmedel och bioteknik	SIK	Sweden
5	Institute National de la Recherche Agronomique	INRA	France
6 (Wp Leader)	BIO Intelligence Service SA	BIOIS	France
7	Ostfoldforskning AS	OSTFOLD	Norway
8	Selina Juul - Stop Spild af Mad	SWF	Denmark
9	Universitaet fuer Bodenkultur Wien	BOKU	Austria
10	Institute of Food Research	IFR	UK
11	Food and Agriculture Organization of the United Nations FAO	FAO	Italy
12	IVL Svenska Miljoeinstitutet AB	IVL	Sweden
13	Maa Ja Elintarviketalouden Tutkimuskeskus	MTT	Finland
14	Hacettepe Universitesi	HAC	Turkey
15	Magyar Élelmiszerbank Egyesület	HFA	Hungary
16	Anatoliki SA Development Company	Anatoliki	Greece
17	Universitaet Hohenheim	UHOH	Germany
18	Last Minute Market s.r.l	LMM	Italy
19	Koninklijke Ahold NV	AHOLD	The Netherlands
20	Communiqué SA	Communiqué	Denmark
21	STUART TRISTRAM JAMES – Feeding the 5000	TRISTRAM	UK

National programs for food waste reduction and prevention in the EU

Finland
France
Nederland
Norway
Spain
Sweden
United Kingdom



- National targets
- Awareness campaigns
- Voluntary actions/initiatives
(Food supply chain agreements)
- Research for measuring and monitoring food waste

Initiatives in Italy



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*THANK YOU
FOR ATTENTION !*

