Economia circolare

Strategie di sviluppo e valorizzazione dei territori

PRESENTAZIONE DI RICCARDO VALENTINI
TORINO - 20 NOVEMBRE 2019

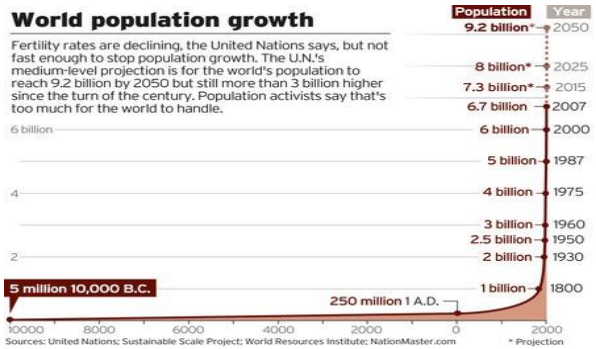
The European House Ambrosetti

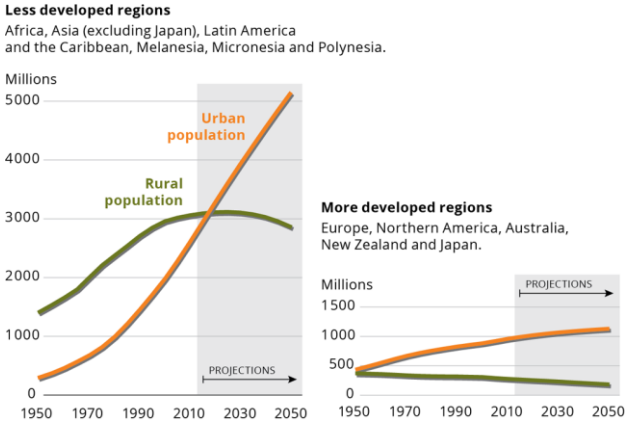
iren

La crisi climatica nel contesto dei cambiamenti globali : sfide ed opportunità

Prof. Riccardo Valentini
Università della Tuscia
CMCC
RUDN University Moscow

THE CHALLENGES 1/4



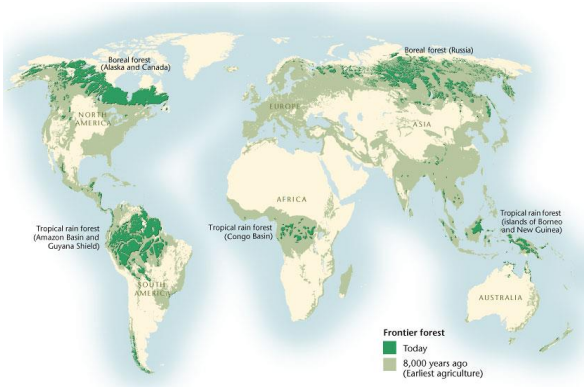


URBAN FOOD AND URBAN HUMANS
(Homo Urbanus)

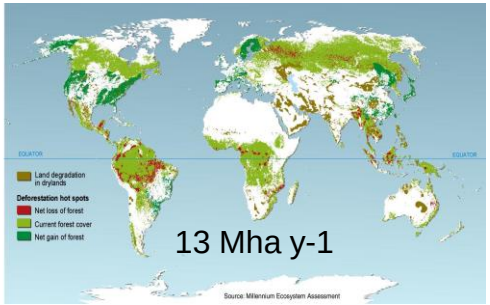
1. **The need of higher production with less labour requirements**
2. **Food processing and transformation for feeding urban humans**
3. **Changes in cultural lifestyles and food consumption patterns**
4. **Food and packaging waste**
5. **Energy consumption**
6. **Volatility of prices**
7. **Climate change impacts on food production**

THE CHALLENGES 2/4

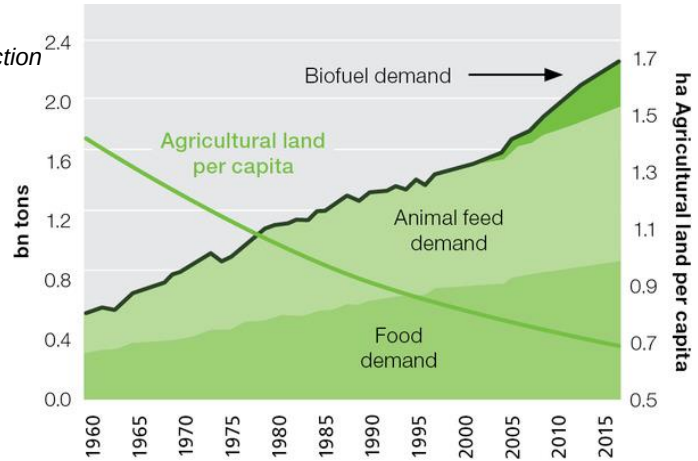
Frontier forests

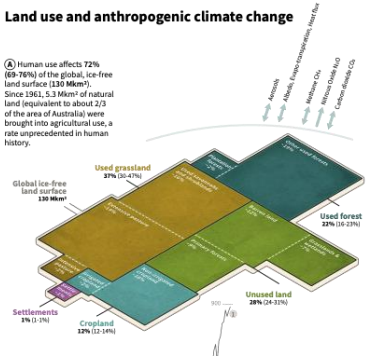


Tropical deforestation



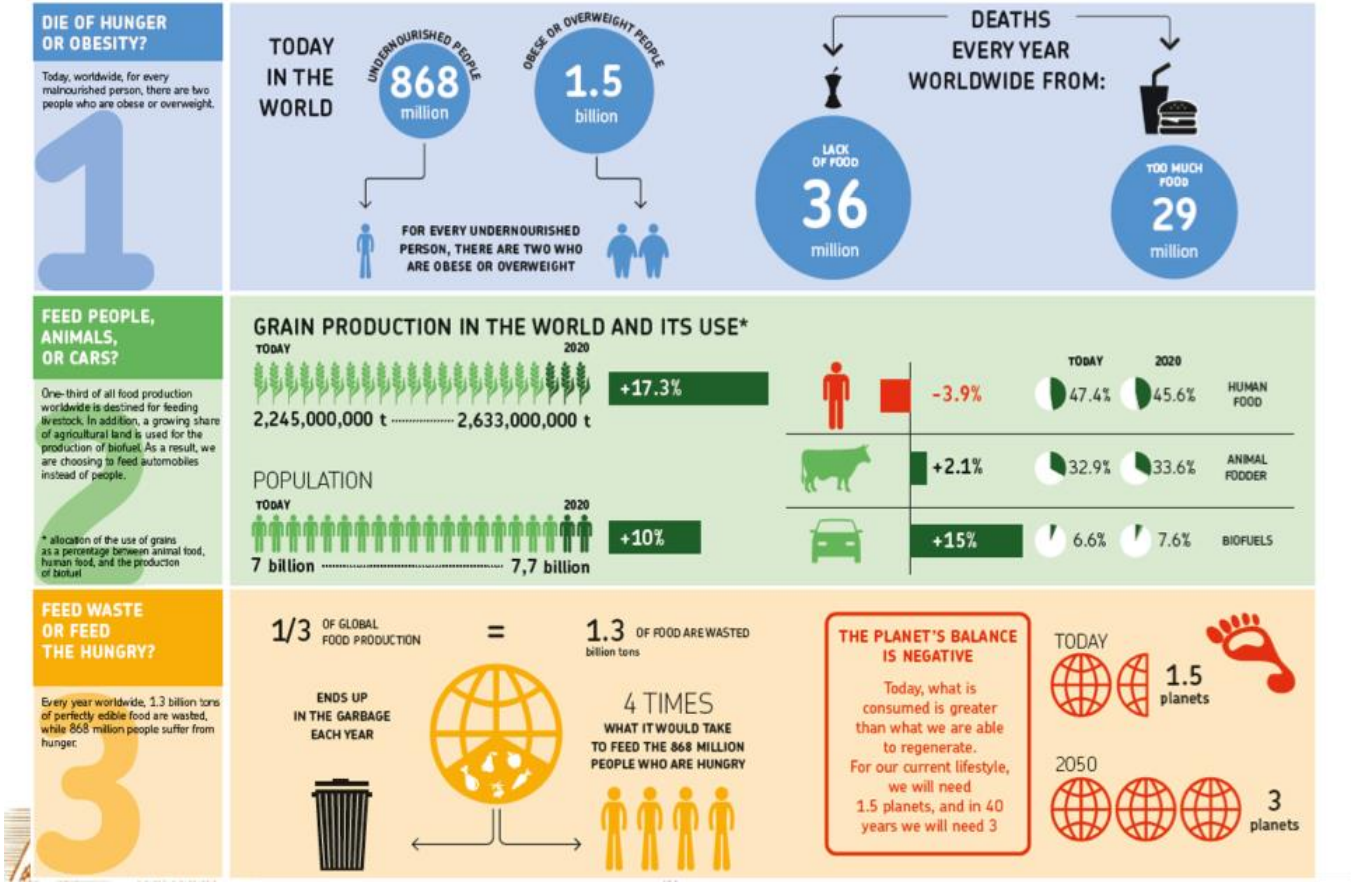
Land reduction



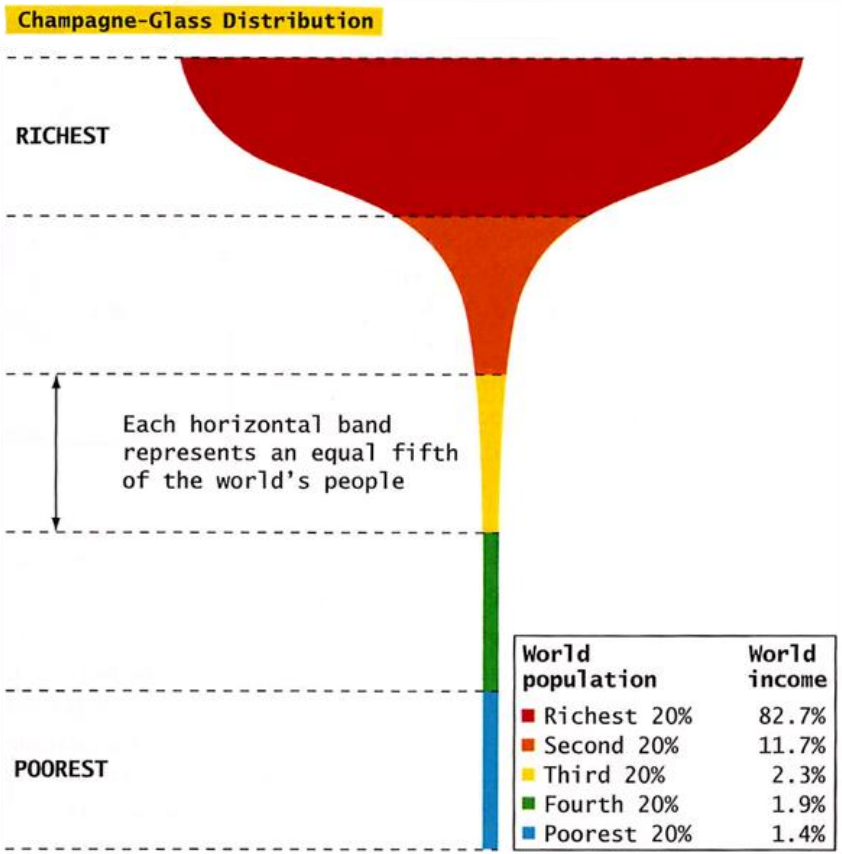


73% della superficie terrestre (senza ghiacci) è utilizzata dall'uomo

THE CHALLENGES 3/4

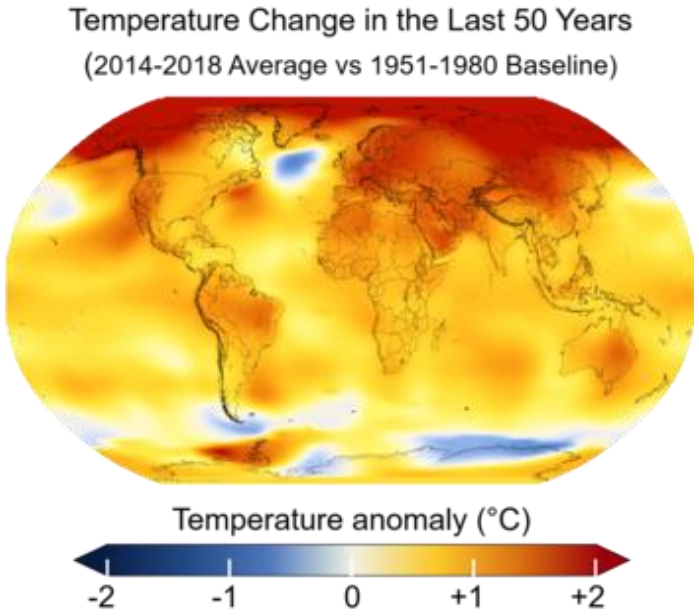


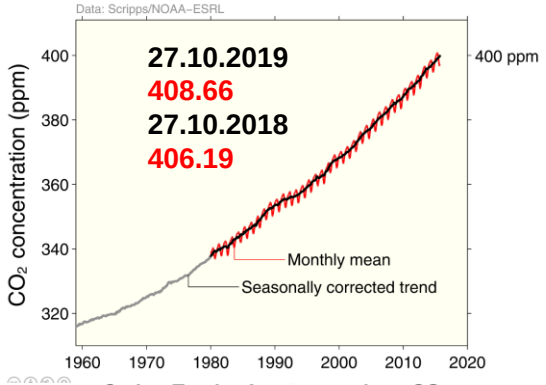
GDP unbalances (the champagne glass)

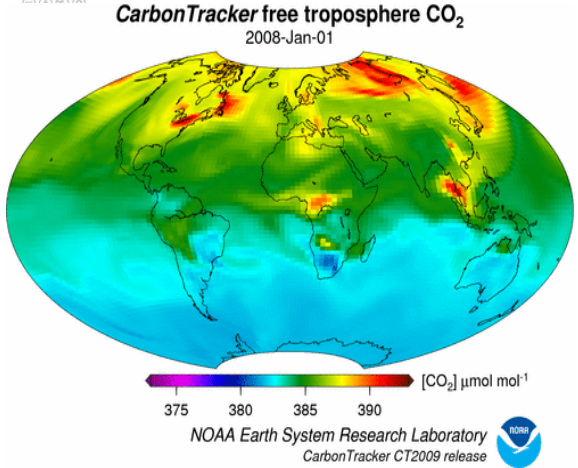


THE CHALLENGES 4/4

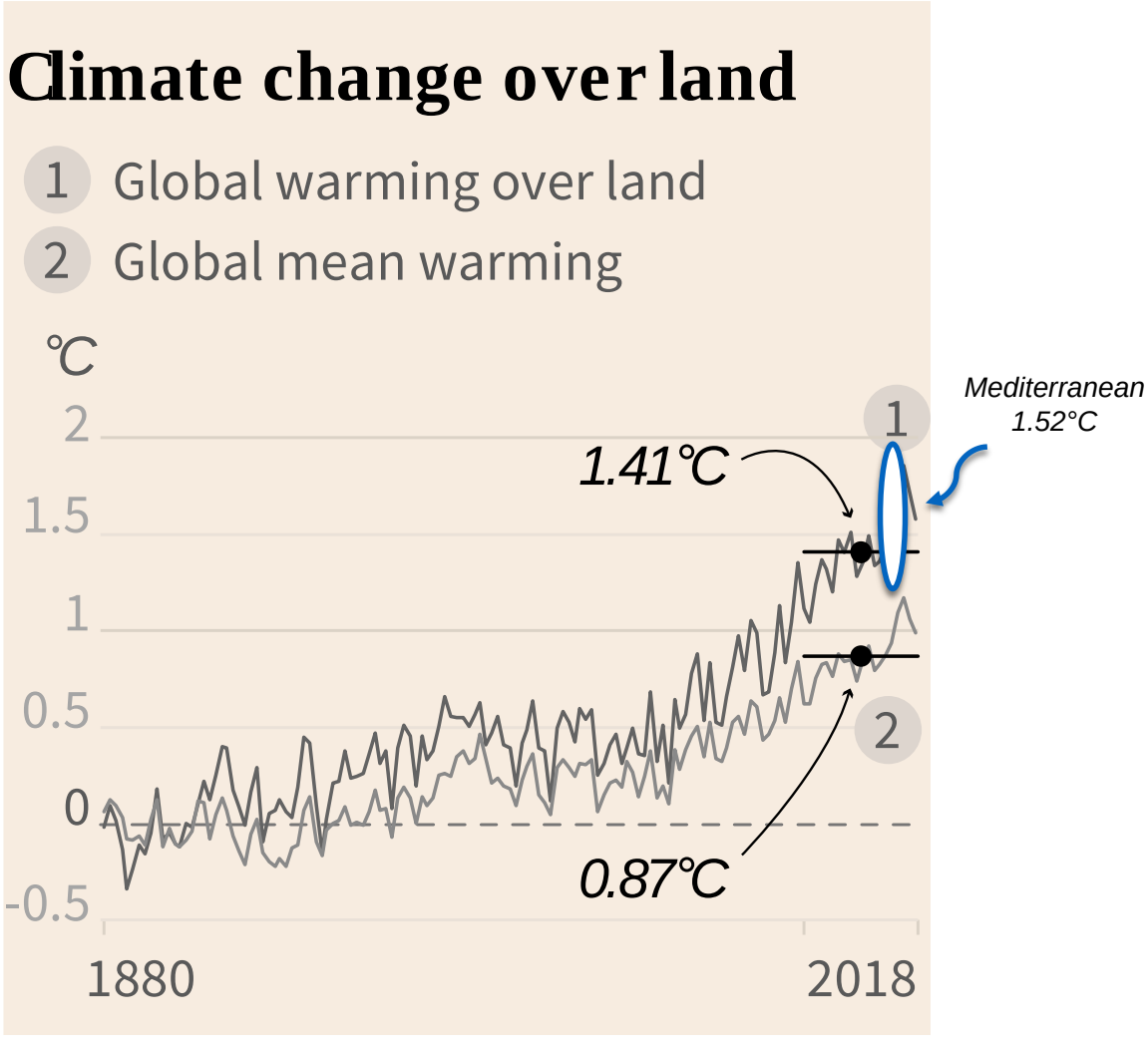
Climate Change

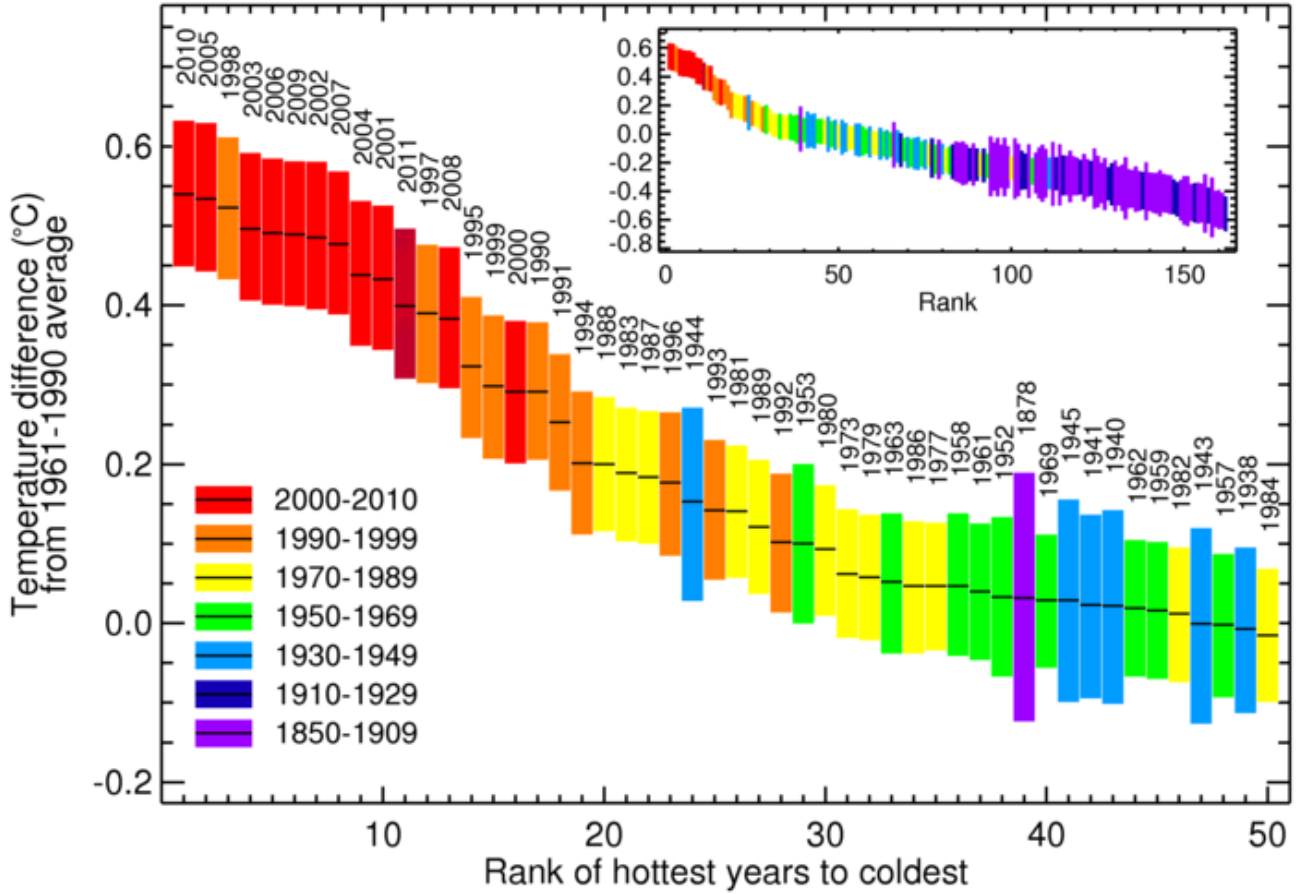


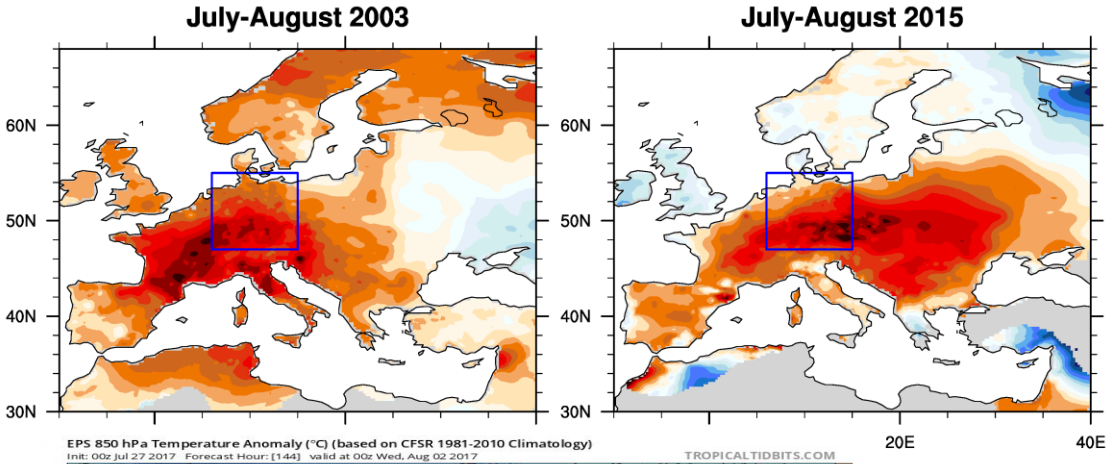


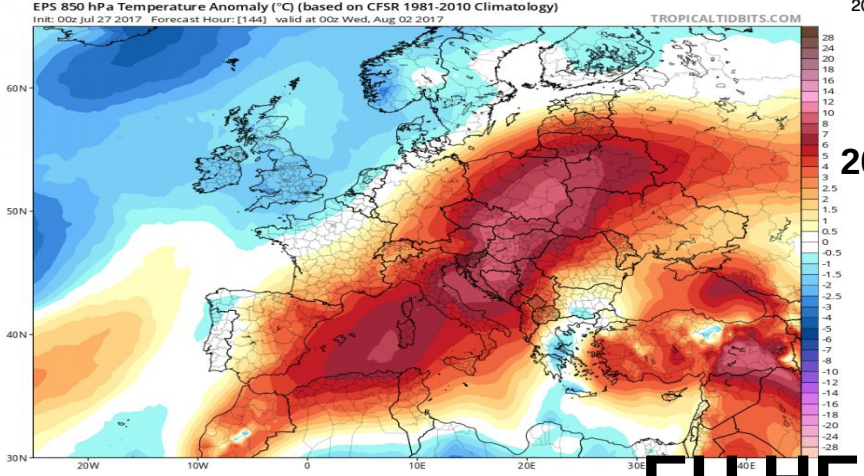


Climate change over land




Temperature difference (°C)
from 1961-1990 average
Rank of hottest years to coldest
Rank
2000-2010
1990-1999
1970-1989
1950-1969
1930-1949
1910-1929
1850-1909
2010 2005 1998 2003 2006 2009 2002 2007 2004 2001 2011 1997 2008 1995 1999 2000 1990 1991 1994 1988 1983 1987 1996 1944 1993 1981 1989 1992 1953 1980 1973 1979 1963 1986 1977 1958 1961 1952 1878 1969 1945 1941 1940 1962 1959 1982 1943 1957 1938 1984

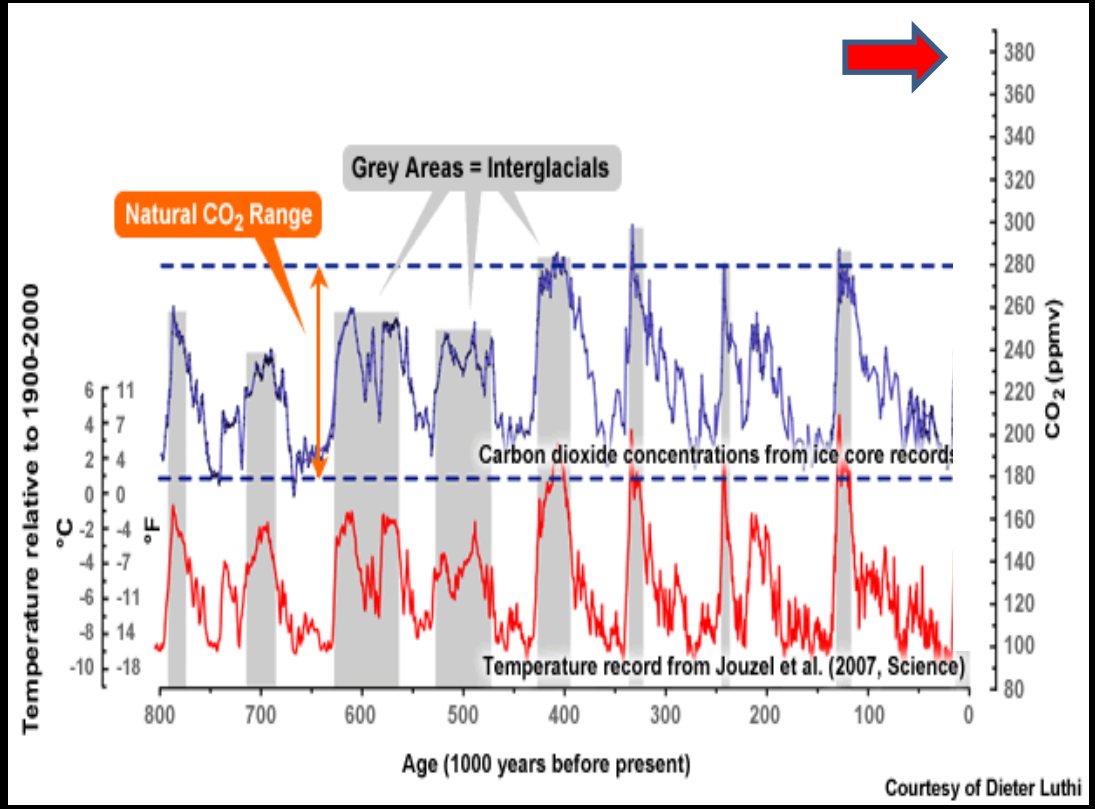


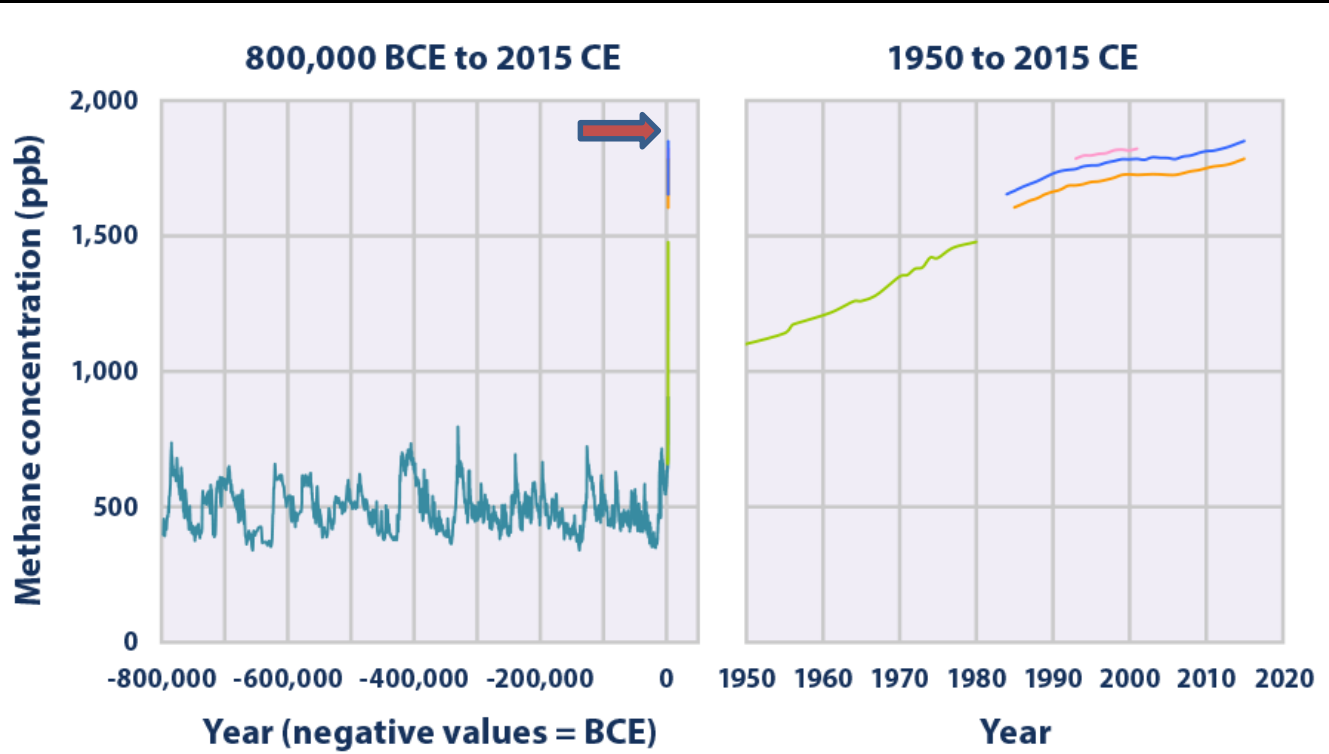


2017 July -August

EU HEAT WAVE S

Is it normal ?

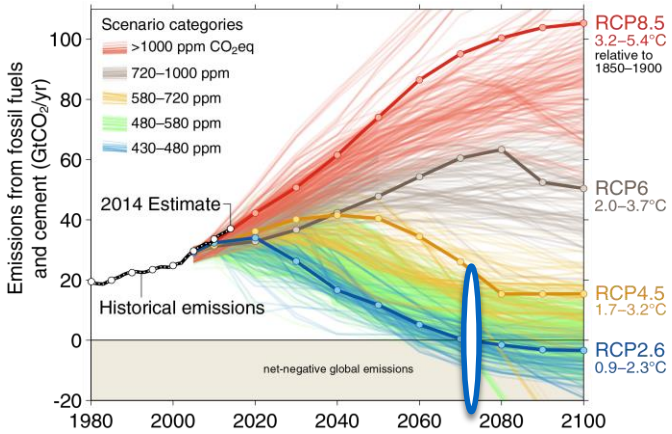

Grey Areas = Interglacials
Natural CO_2 Range
Carbon dioxide concentrations from ice core records
Temperature record from Jouzel et al. (2007, Science)
Temperature relative to 1900-2000
°C
°F
CO_2 (ppmv)
Age (1000 years before present)
Courtesy of Dieter Luthi

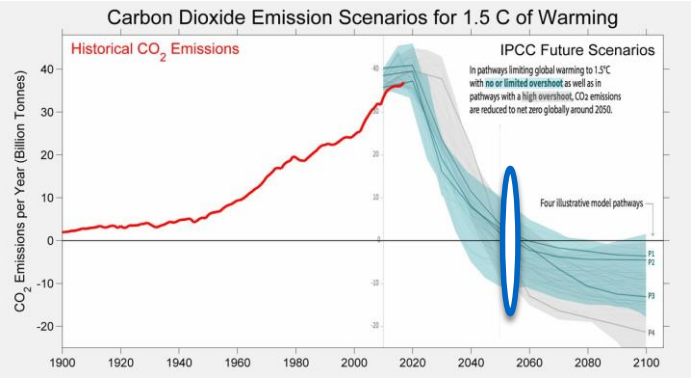

800,000 BCE to 2015 CE
1950 to 2015 CE
Methane concentration (ppb)
2,000
1,500
1,000
500
0
-800,000
-600,000
-400,000
-200,000
0
1950
1960
1970
1980
1990
2000
2010
2020
Year (negative values = BCE)
Year

Observed Emissions and Scenarios

- Emissions are on track for 3.2–5.4ºC “likely” increase in temperature above pre-industrial
- Large and sustained mitigation is required to keep below 2ºC

Data: CDIAC/GCP/IPCC/Fuss et al 2014

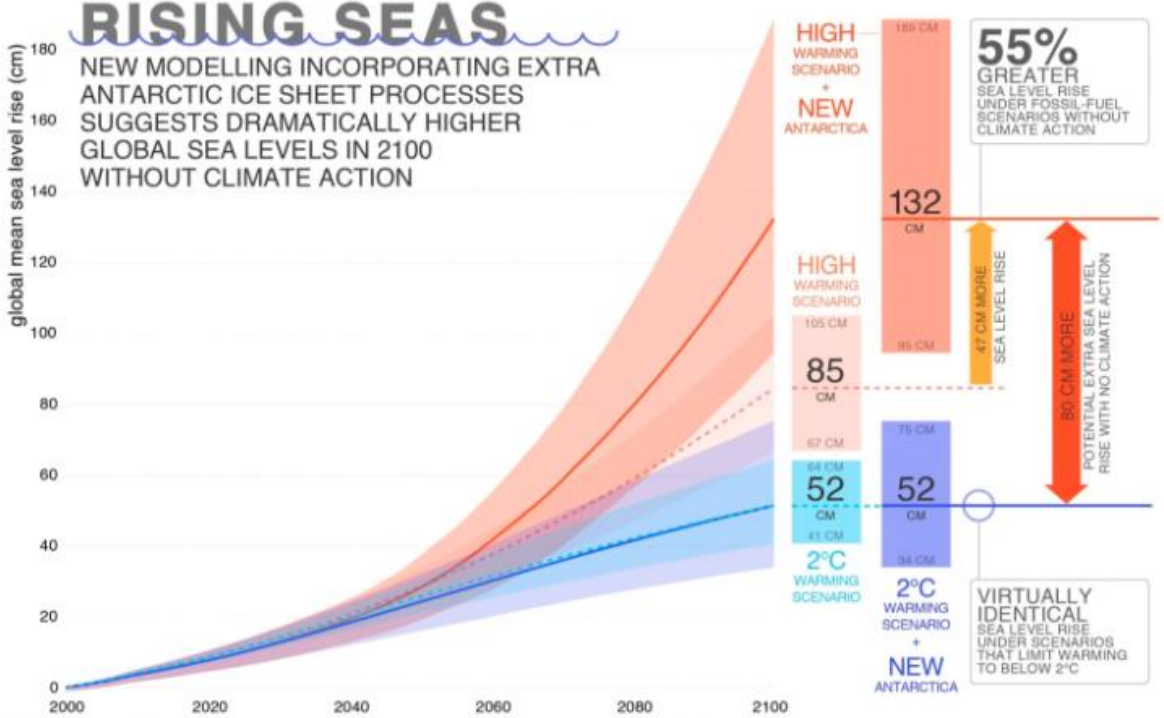




1.5°C

Over 1000 scenarios from the IPCC Fifth Assessment Report are shown

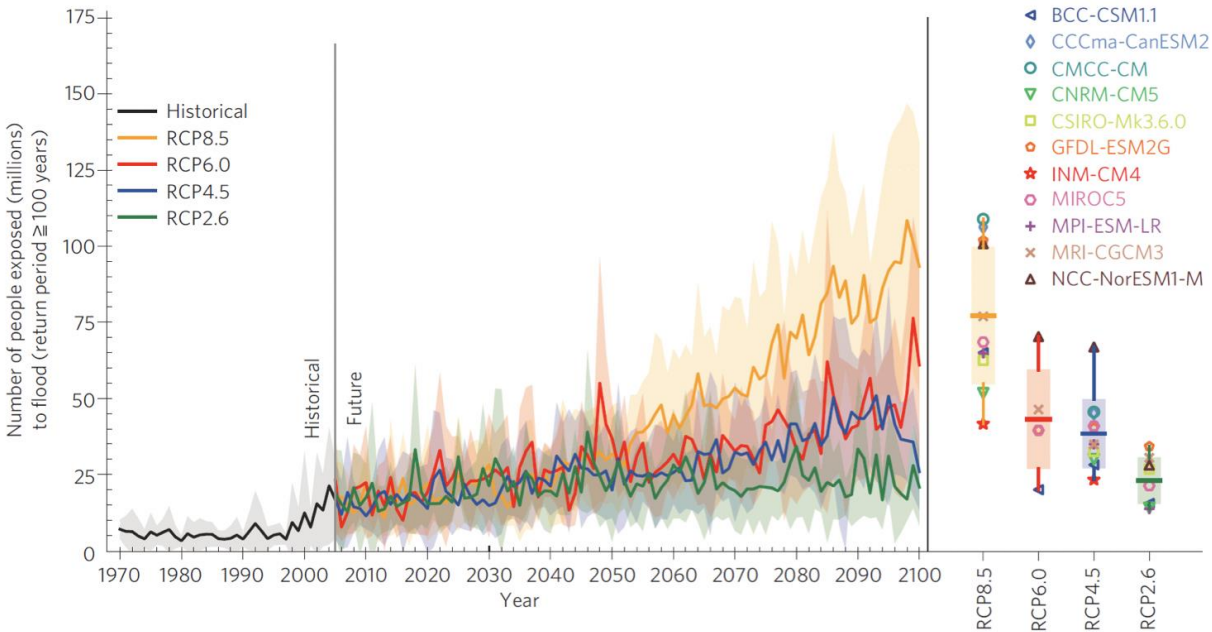
Source: Fuss et al 2014; CDIAC; Global Carbon Budget 2014



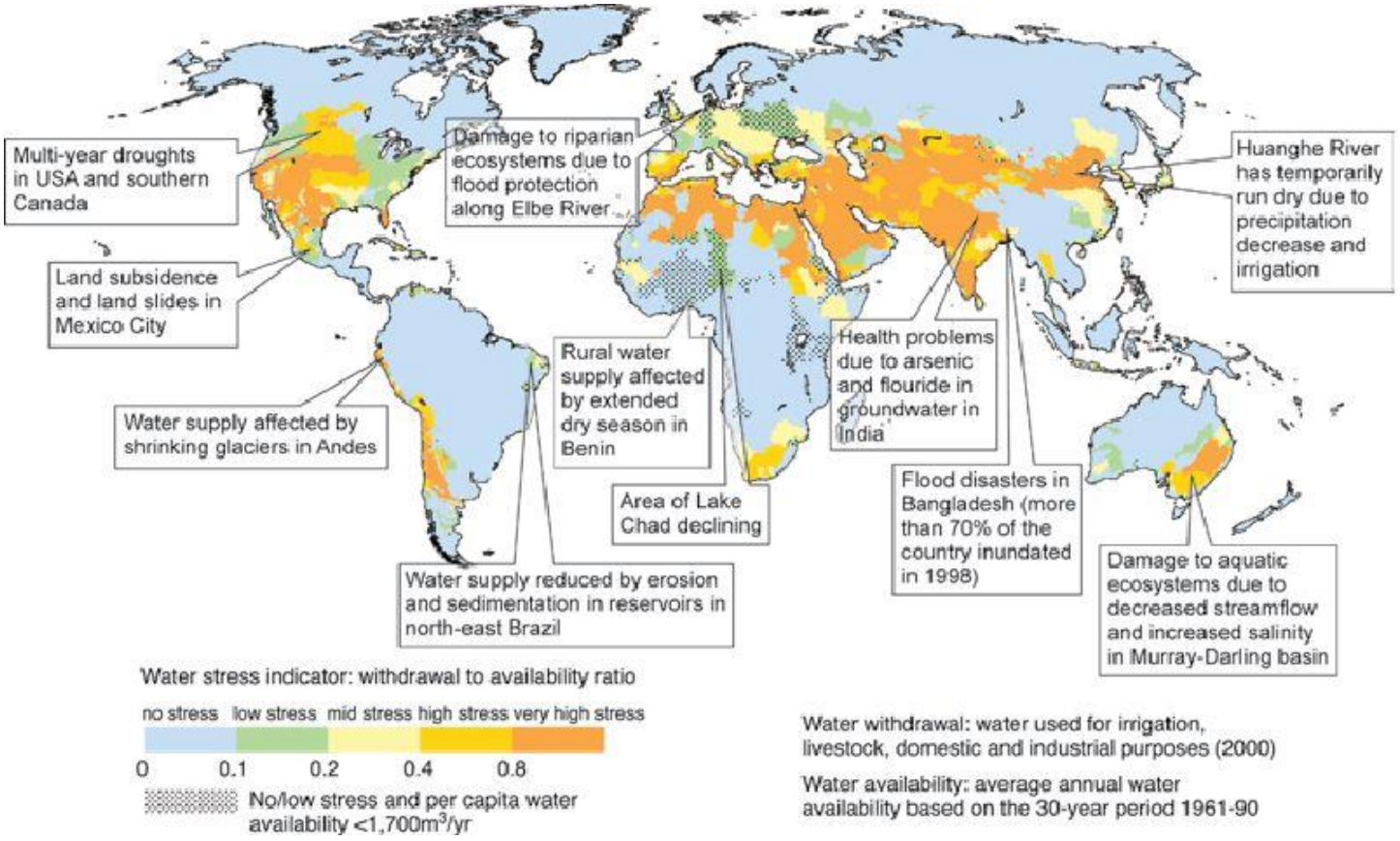
21st century global mean sea level rise projections with median and shaded 66 percent model ranges under a baseline high warming scenario and low warming scenario. The dashed lines represent scenarios consistent with the United Nations' Intergovernmental Panel on Climate Change's (IPCC) findings in 2013, while the solid lines present revised sea level rise modeling results based on Antarctic ice sheet contributions suggested by DeConto and Pollard (2016). The IPCC consistent sea level rise likely ranges are based on Nauels et al. (2017). Global mean sea level rise is provided in centimeters relative to the 1986-2005 mean. (Nauels et al.)

Migration due to floods

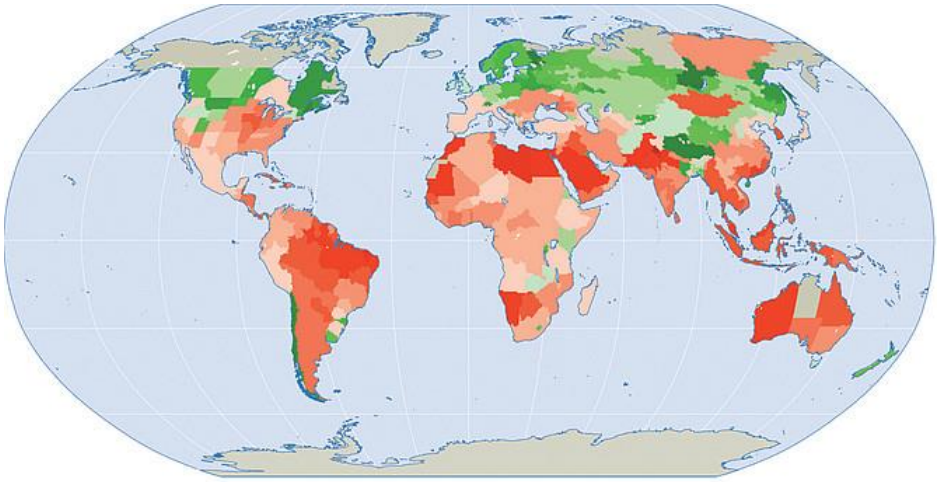
(B)



Disponibilità Idrica

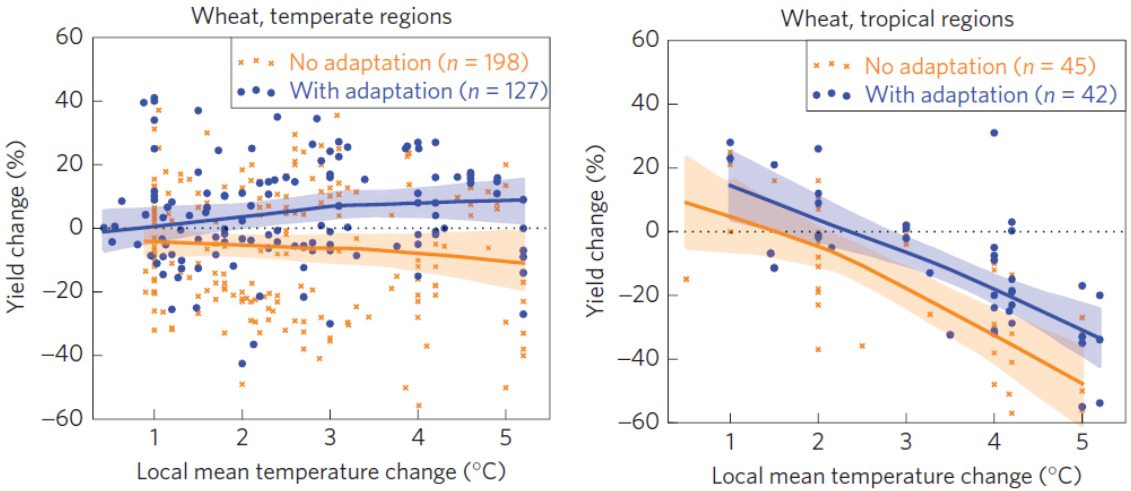


Cambiamenti climatici
e Produzione agricola



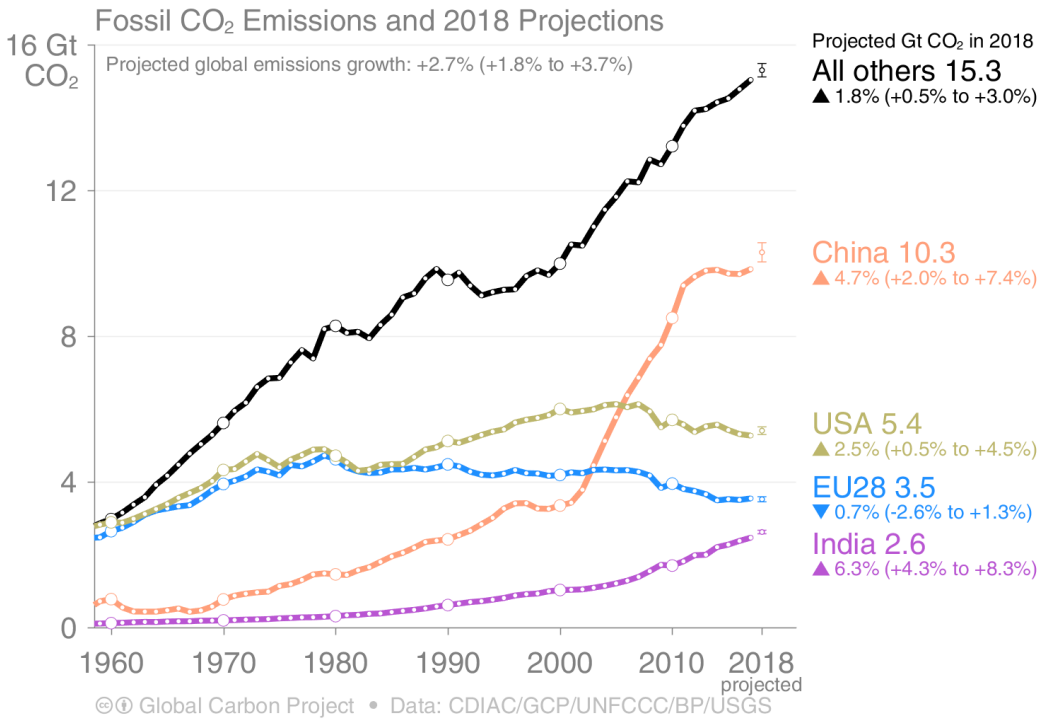
Possiamo adattarci ai cambiamenti climatici ?

Future impacts vary by region, adaptation important



Emissions Projections for 2018

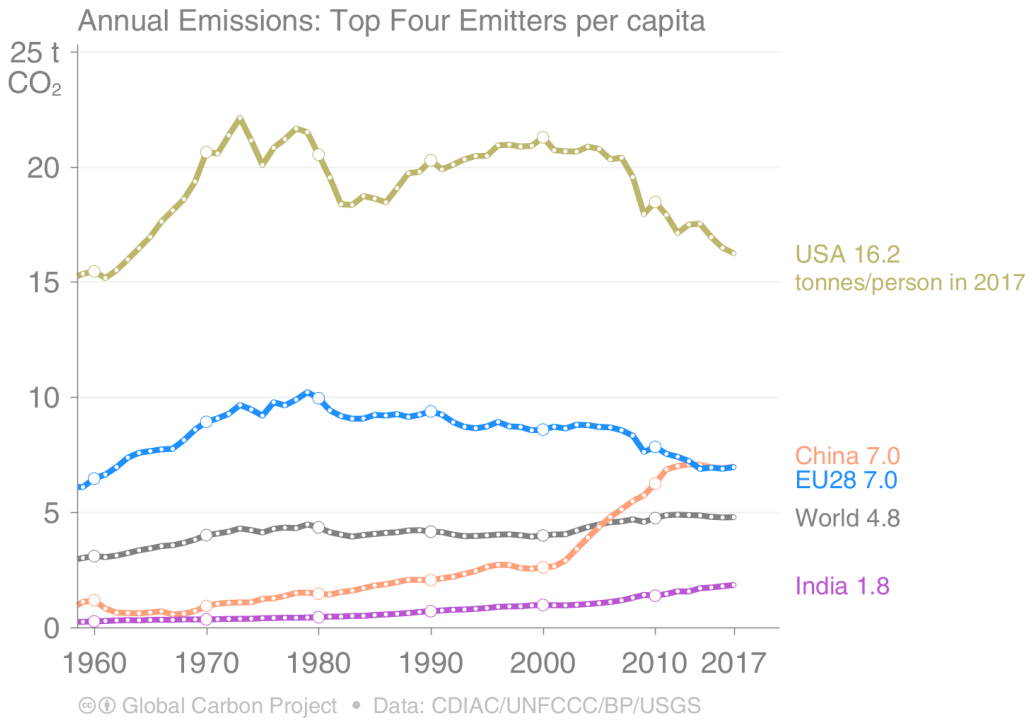
Global fossil CO_2 emissions are projected to rise by 2.7% in 2018 [range: +1.8% to +3.7%]
The global growth is driven by the underlying changes at the country level.



Source: CDIAC; Jackson et al 2018; Le Quéré et al 2018; Global Carbon Budget 2018

Top emitters: Fossil CO_2 Emissions per capita

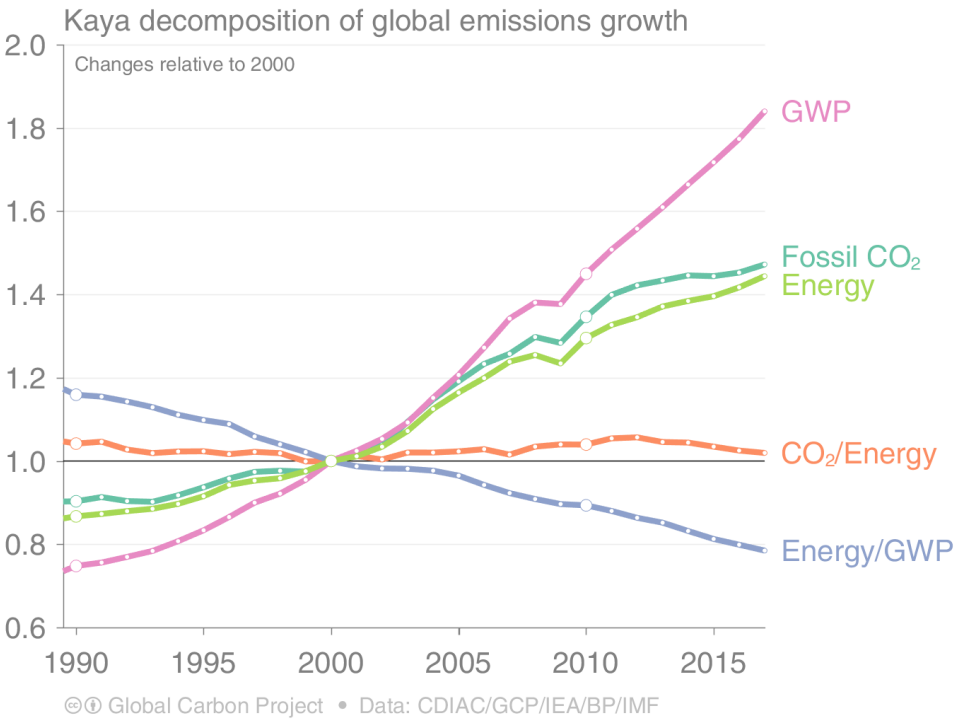
Countries have a broad range of per capita emissions reflecting their national circumstances



Source: CDIAC; Le Quéré et al 2018; Global Carbon Budget 2018

Kaya decomposition

The Kaya decomposition illustrates that relative decoupling of economic growth from CO_2 emissions is driven by improved energy intensity (Energy/GWP)

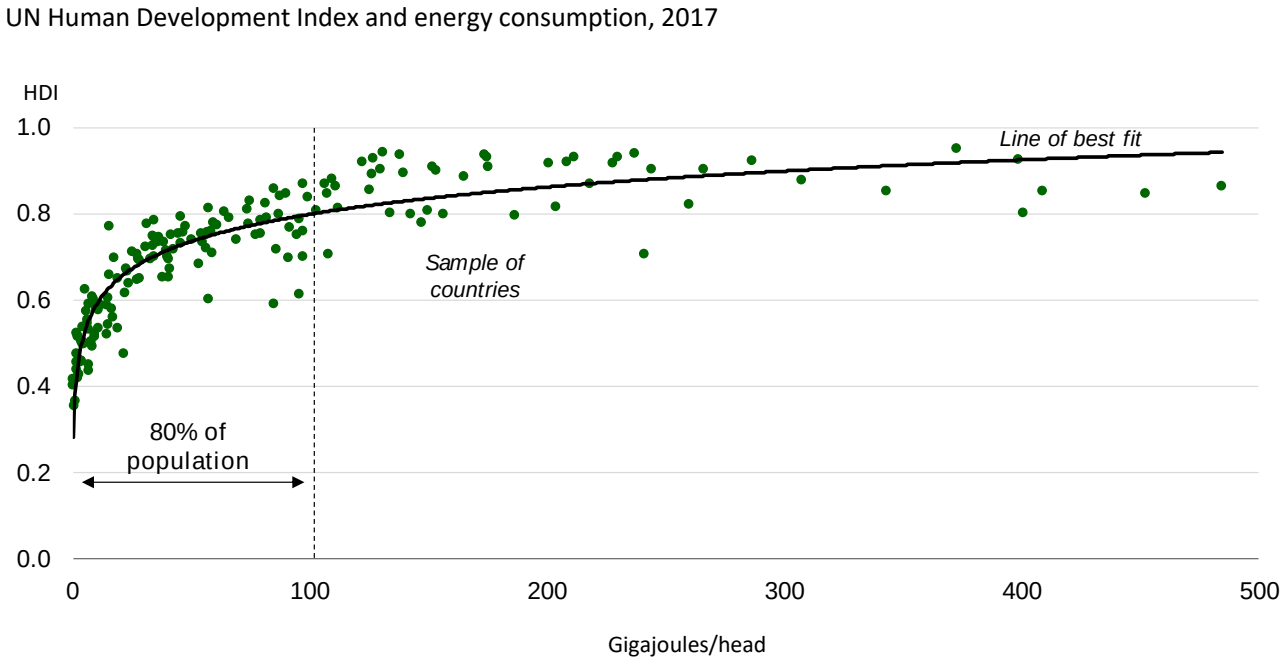


GWP: Gross World Product (economic activity)

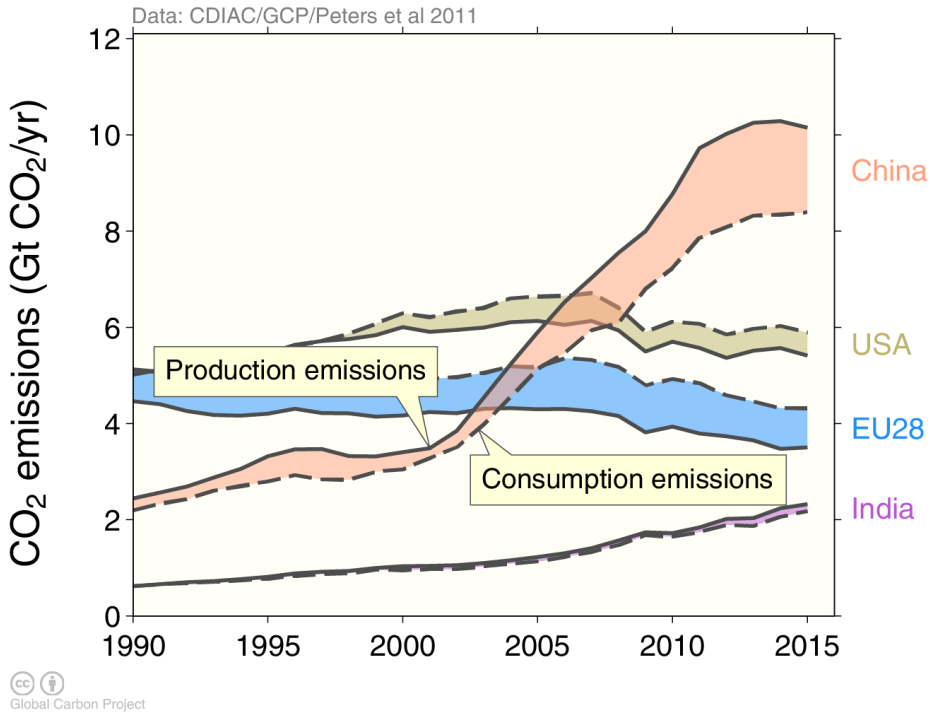
Energy is Primary Energy from BP statistics using the substitution accounting method

Source: Jackson et al 2018; Global Carbon Budget 2018

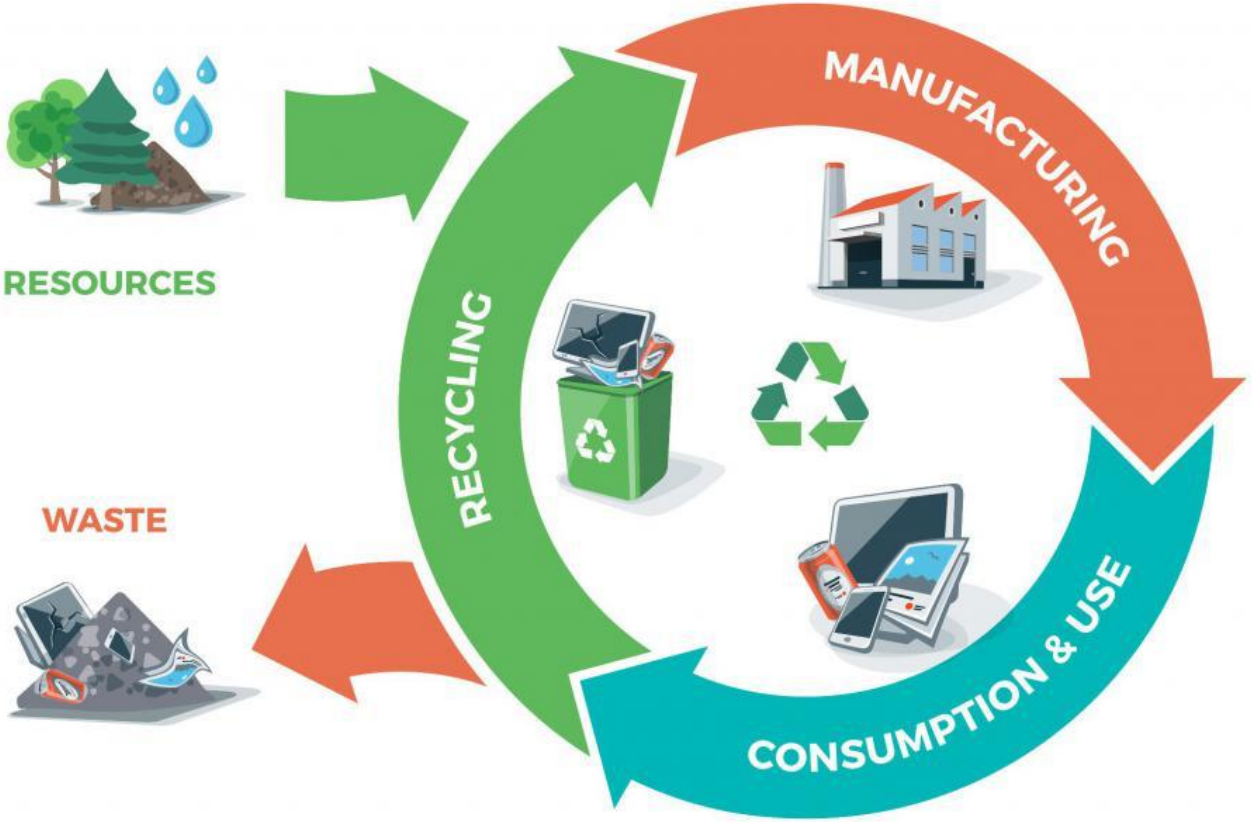
Human development and energy consumption



Emission balance between production and consumption



CIRCULAR ECONOMY



RED ECONOMY

Exogen high impact technologies

(linear,unscalable,unsustainable)

GREEN ECONOMY

Exogen low impact technologies

(linear ,scalable,high cost, incentives)

CIRCULAR ECONOMY

Endogen technologies

(high efficiency, recycle, low cost, high added value, multi-disciplinary)

HERE IS A QUOTE WE RATHER LIKE:

“The goods of today are the resources of tomorrow at the resource prices of yesterday”

- WALTER STAHEL

European citizen :

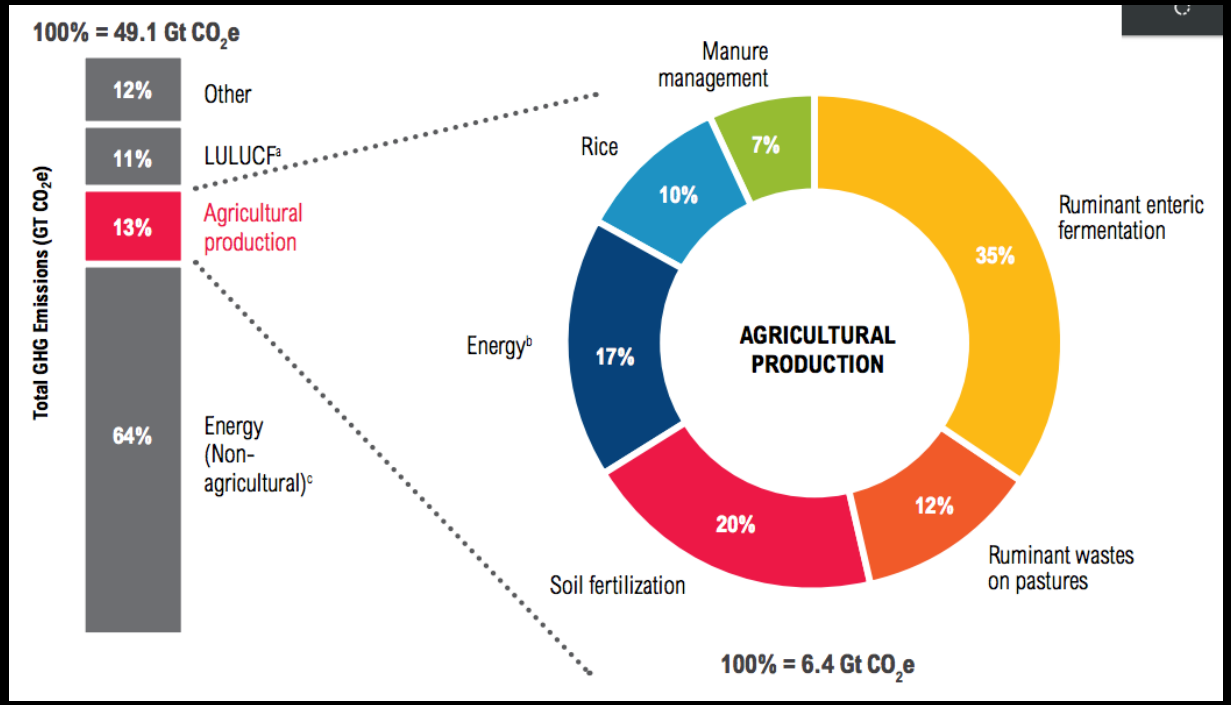
16 t material per year consumed
60% is discarded in land fills, incenireted
40% is recycled

WE LOST 95% OF THE ECONOMIC VALUE

Some examples :

Car are parked 92 % of the time
We loose 31% of food in losses
The office space is used from 35 to 50% of time

Emissioni di gas serra dell'agricoltura



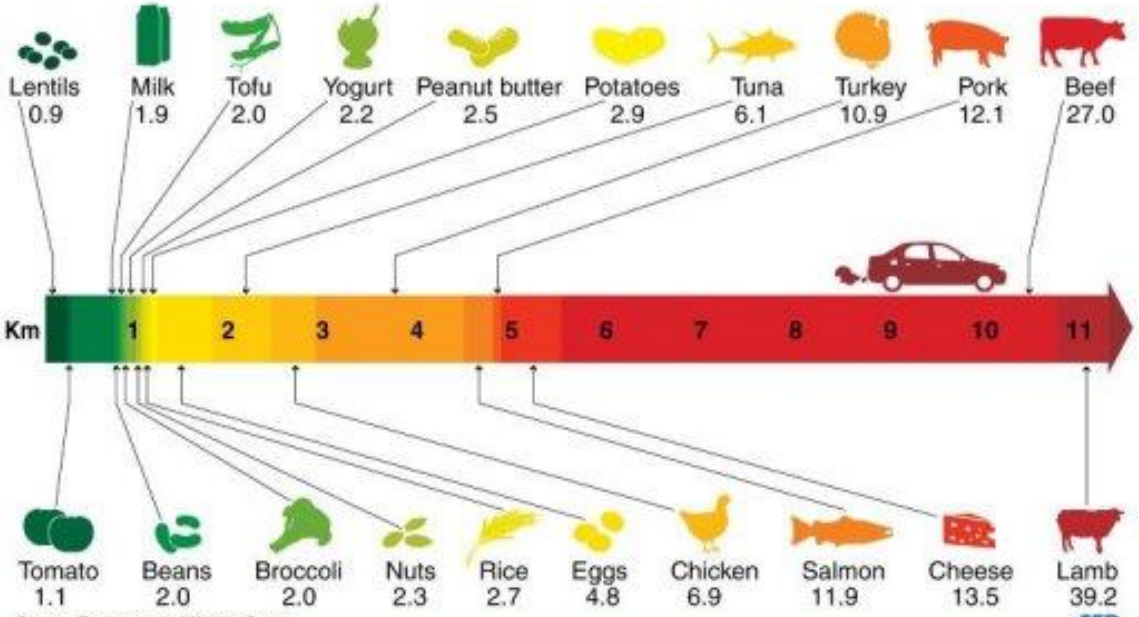
Produzione Agricola = 13%
Deforestazione tropicale = 11%
Trasformazione e perdita di cibo = 13%

→ 37% delle emissioni !

Carbon footprint of what you eat

Calculations of greenhouse gas emissions from the production, processing and transportation of specific food items

- Main chart compares 110g of food against a journey in a midsized car
- Number shows kg of carbon dioxide equivalent produced per 1kg of food



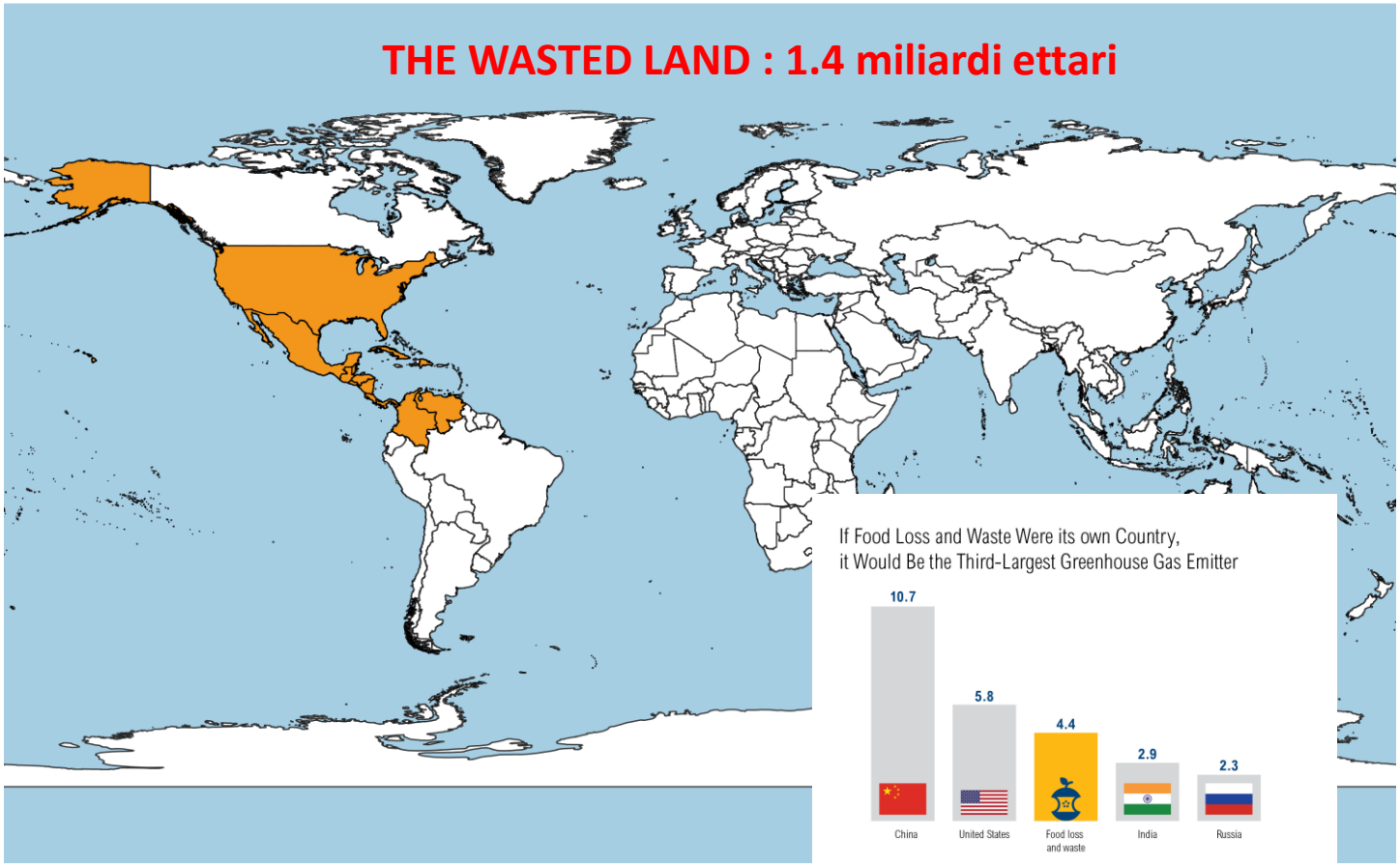
Source: EnvironmentalWorkingGroup

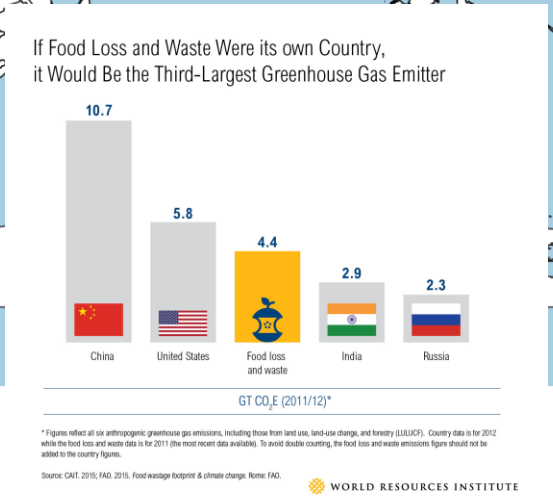
AFP

Do you know the Water Footprint of…?

Global average Water Footprint of some types of commonly used products (expressed in liters)

THE WASTED LAND : 1.4 miliardi ettari





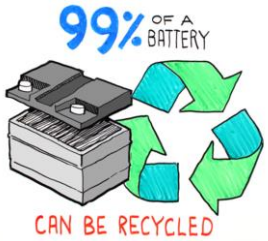
EU Life – SU-EATBLE Project

Possiamo ridurre il 30% delle emissioni con una dieta bilanciata !

TOP 5 CIRCULAR ECONOMY IDEAS

Timberland – recycling tyres rubber

Vigga- shared economy (clothes)



Johnson Controls - battery recycled

RAW plastic ocean (clothes)

Aquazone- turning waste water in fertilizer

Conclusioni

1. **Le risorse del Pianeta sono finite a fronte di uno sviluppo demografico in rapida espansione accompagnato da una crescita dei consumi per capita**

2. I sistemi urbani saranno le aree più sensibili ai fattori di squilibrio planetario (climate change, povertà, sicurezza alimentare etc.)

3. Ridurre il riscaldamento globale può avvenire solo attraverso un disaccoppiamento delle emissioni di gas serra dalla crescita economica (intensità di carbonio, efficienza energetica, riduzione dei consumi

4. Includere il costo delle esternalità negative nel costo dei prodotti (pagare di più ciò che fa male alla salute e al Pianeta)

5. Piena transizione verso una economia circolare (e sharing economy)