

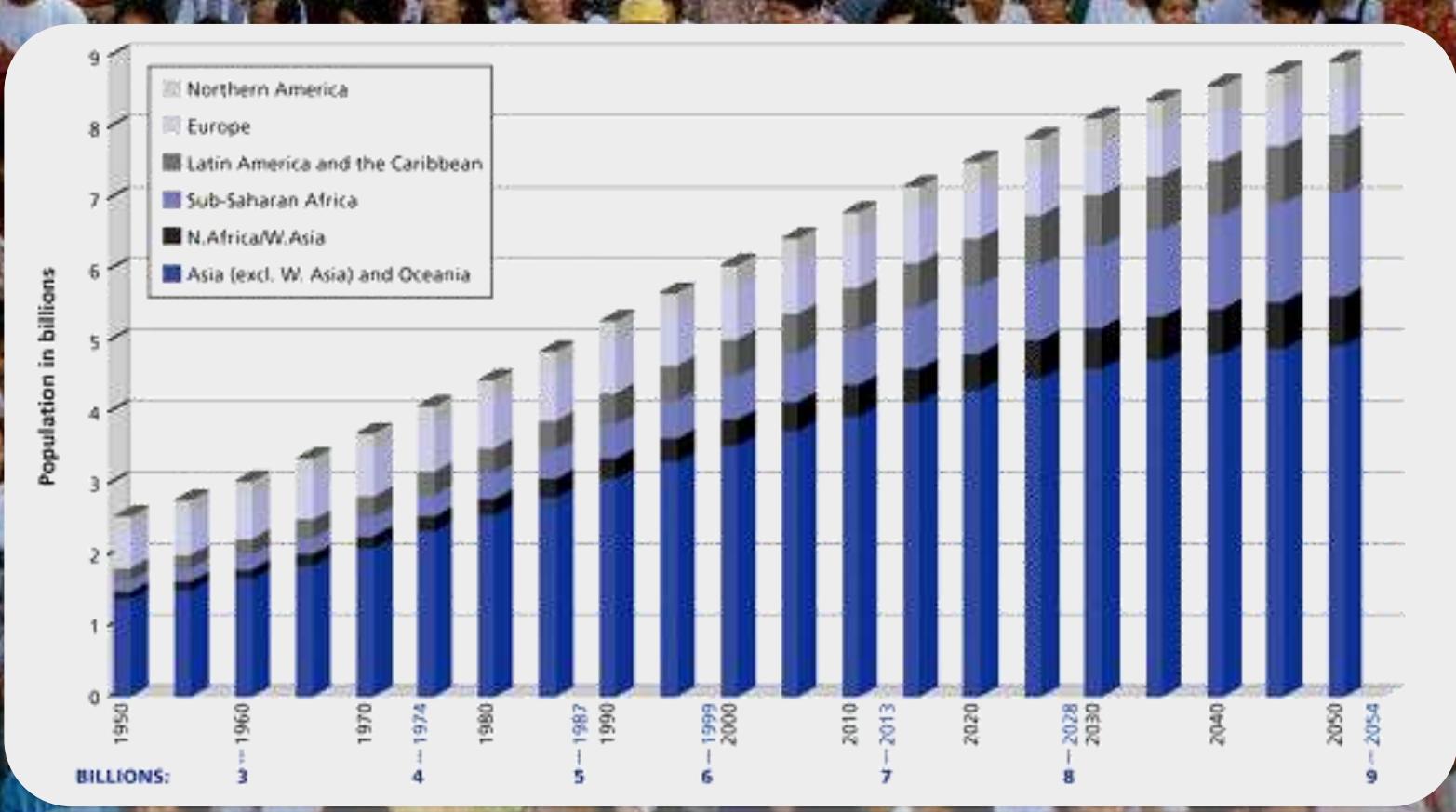
**“ Riflessioni sul futuro che ci
attende: invecchiamento,
nuovi mestieri, sviluppo
tecnologico ”**

Maurizio Fermeglia

Maurizio.Fermeglia@units.it

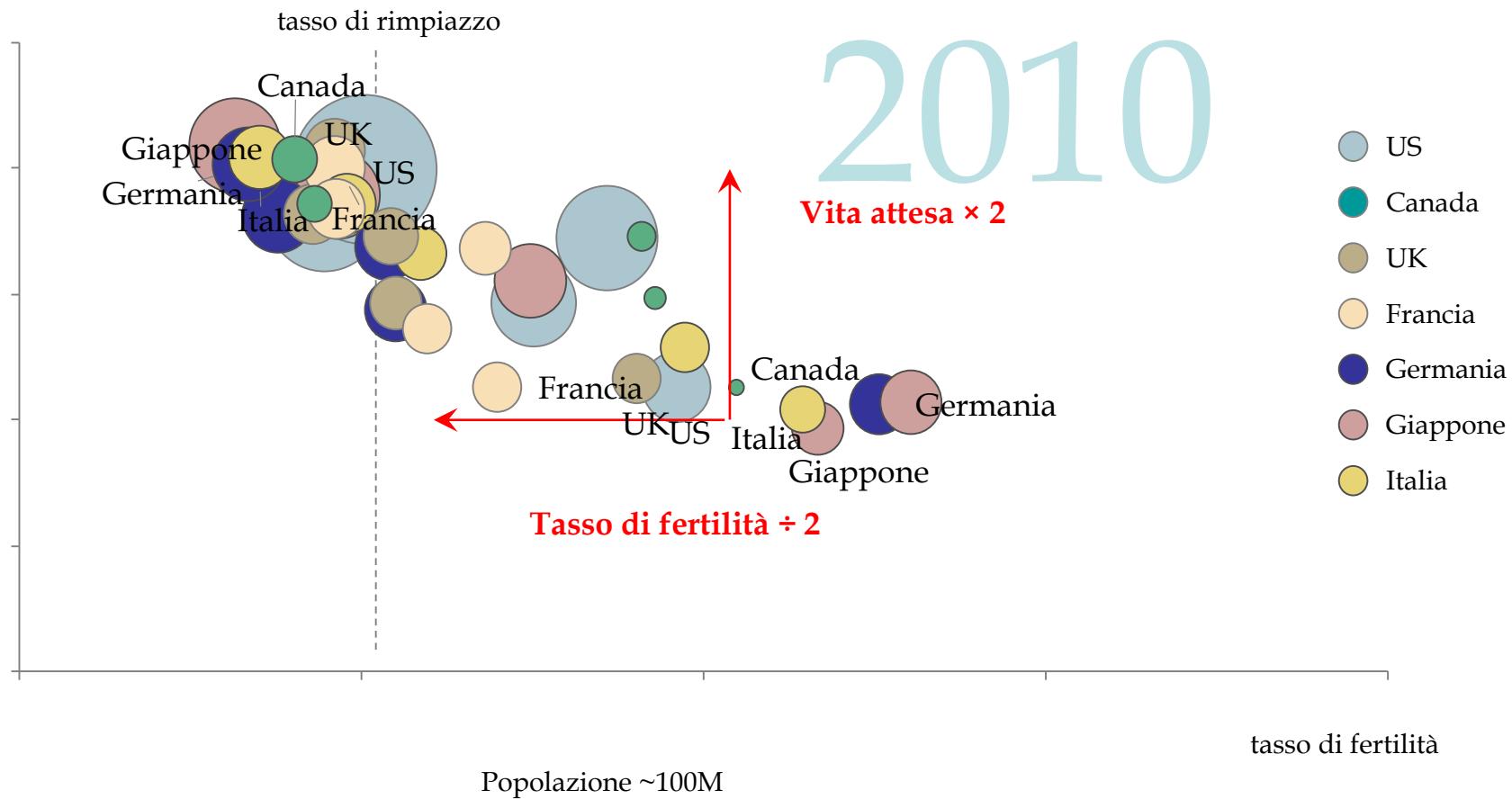


La popolazione mondiale cresce ...



Perchè la popolazione invecchia?

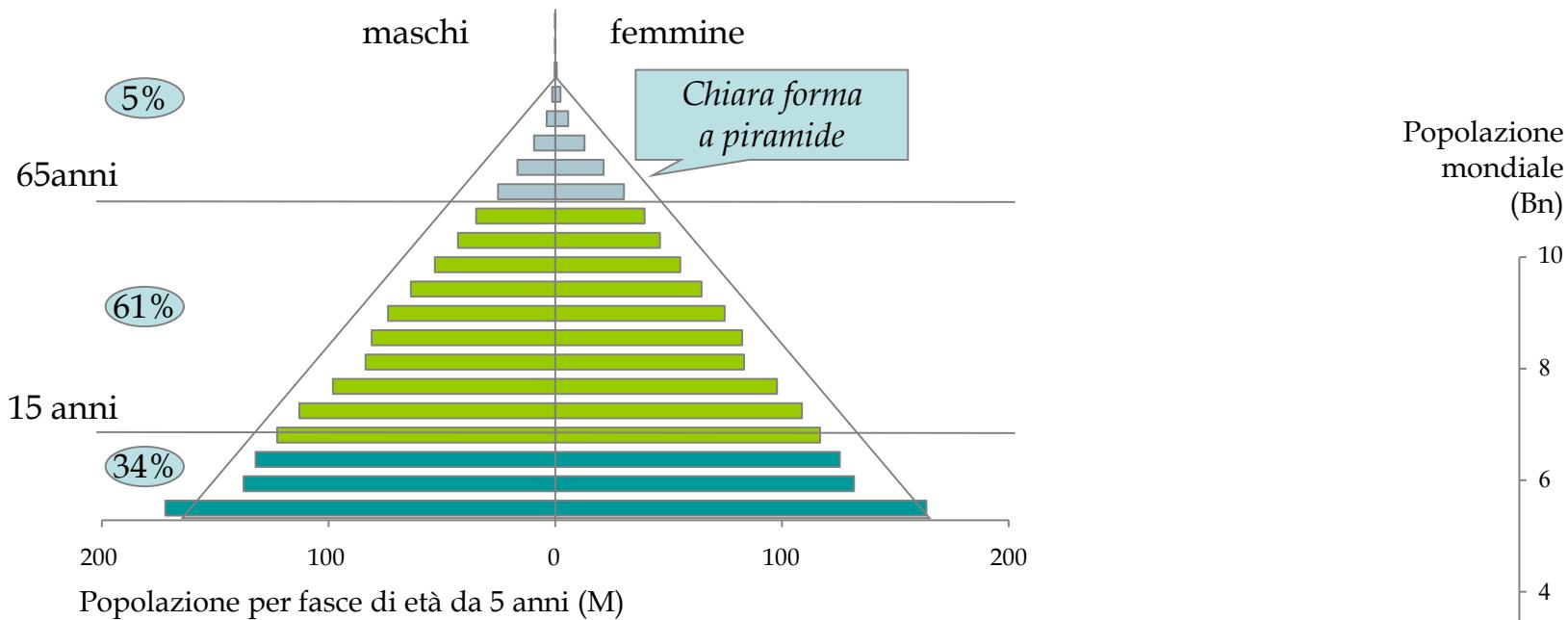
vita attesa alla
nascita (anni)



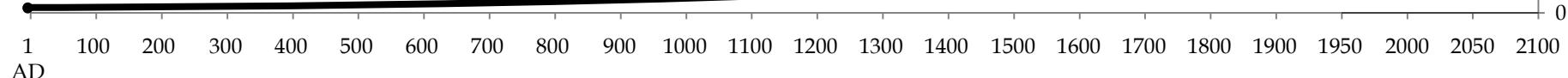
Note: Graphical representation courtesy of Gapminder (in presentations by Hans Rosling)
Source: UN 2008 Population Prospects, Gapminder

L'invecchiamento cambia la piramide degli ultimi 2 millenni

1950 Mondo



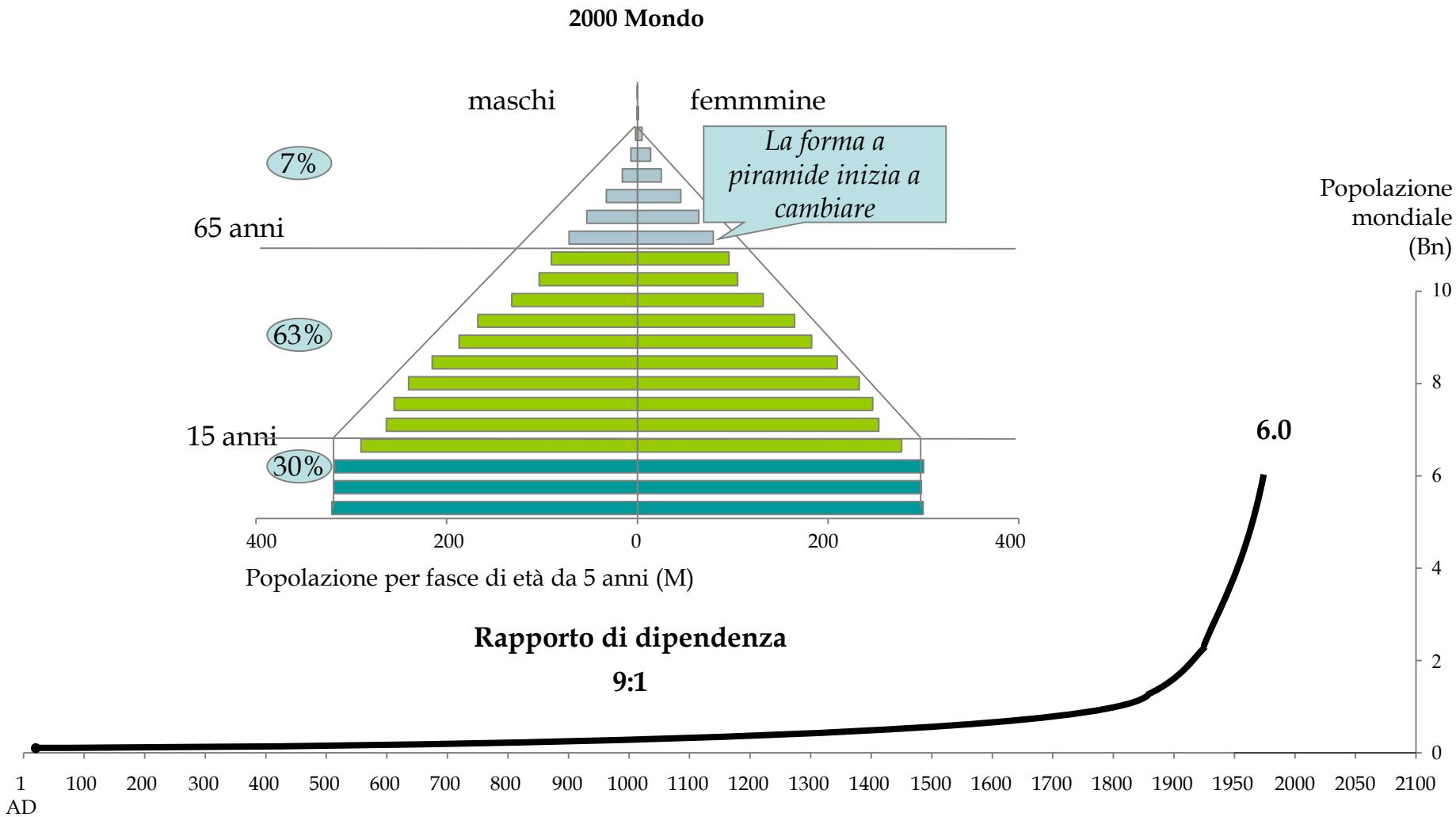
Rapporto di dipendenza
12:1



Fonte: UN 2008 Population Prospects, analisi BCG



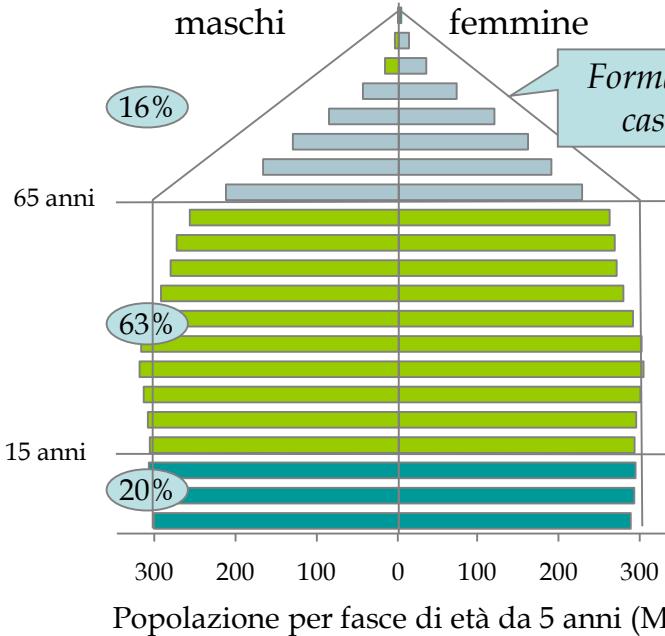
L'invecchiamento cambia la piramide degli ultimi 2 millenni



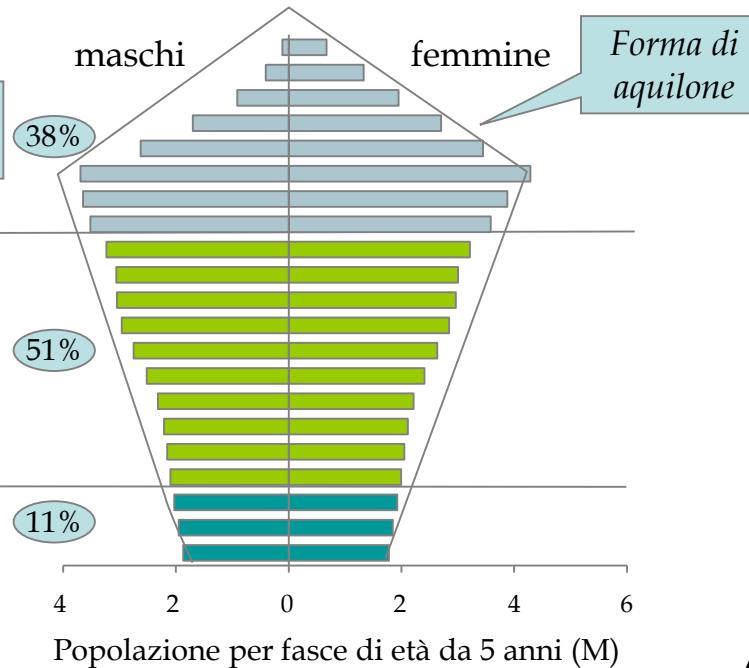
Fonte: UN 2008 Population Prospects, analisi BCG

L'invecchiamento cambia la piramide degli ultimi 2 millenni

2050 Mondo



2050 Giappone



Popolazione mondiale (Bn)

10

9.1

8

7

6

5

4

3

2

1

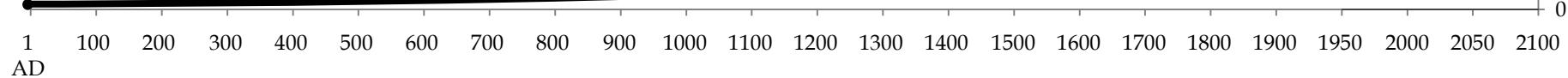
0

Rapporto di dipendenza

4:1

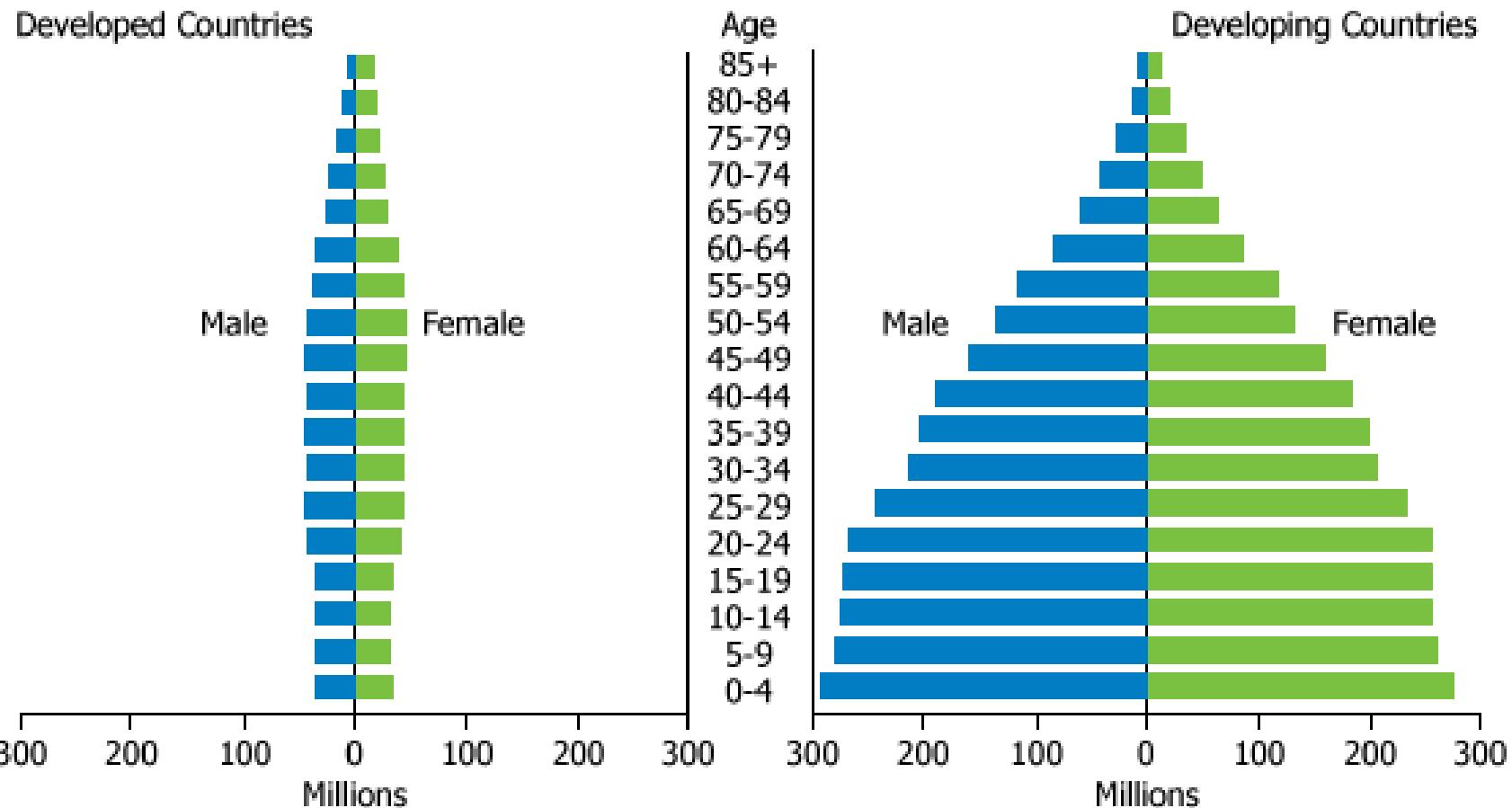
Rapporto di dipendenza

1.3:1





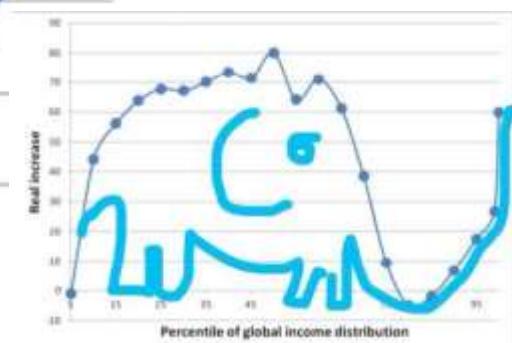
Distribuzione della popolazione per fasce di età: 2010

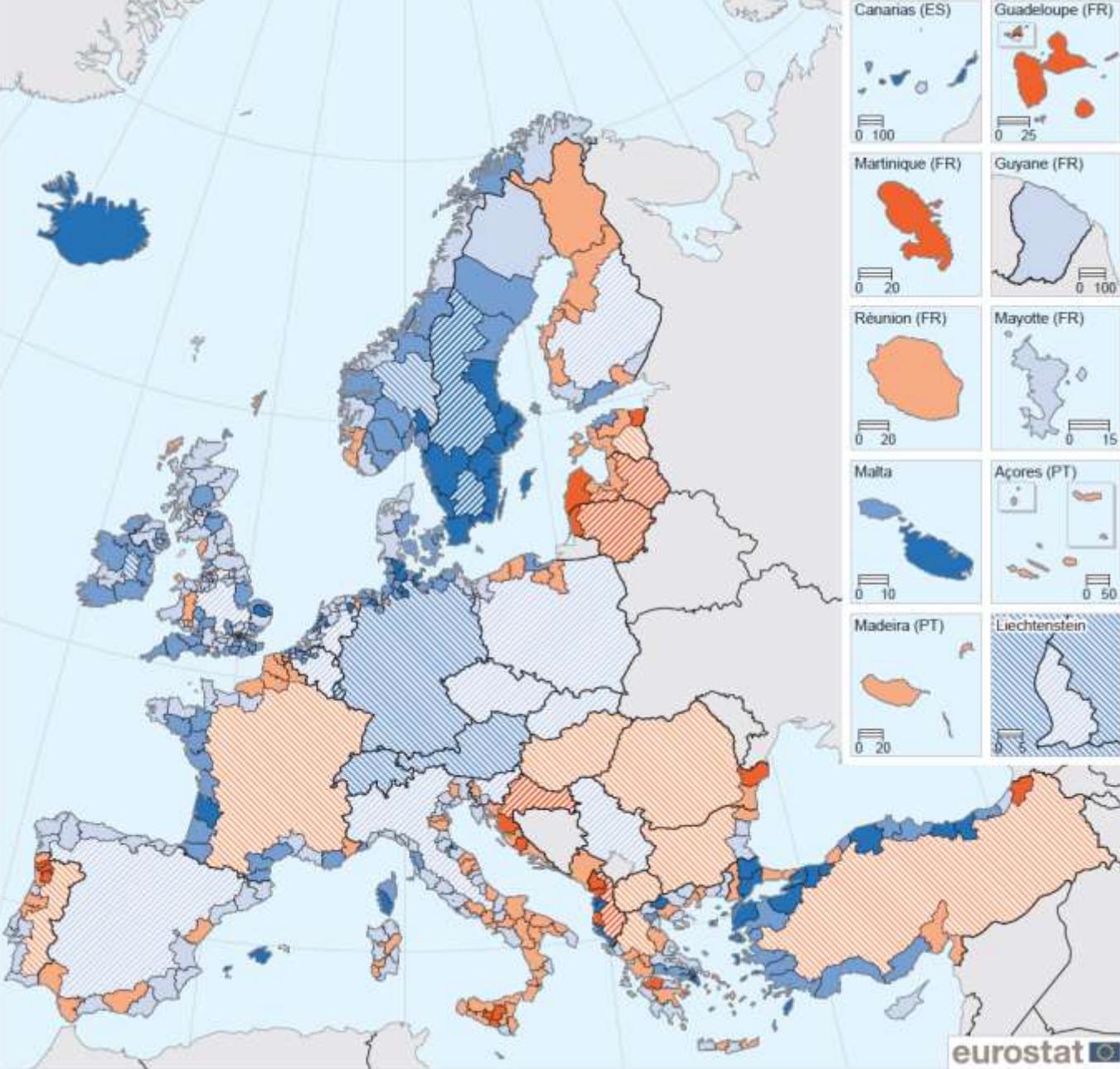


Vincitori e perdenti della globalizzazione



Fonte: Branko Milanovic, World Bank (2012)





Fonte: Eurostat Statistical Yearbook 2018,



Obiettivi di Lisbona

EUROPA 2020

La strategia Europa 2020 in sintesi > Obiettivi della strategia Europa 2020



A A+ A++



Versione stampabile



Mappa d

Obiettivi della strategia Europa 2020

I 5 obiettivi che l'UE è chiamata a raggiungere entro il 2020

1. Occupazione

- innalzamento al 75% del tasso di occupazione (per la fascia di età compresa tra i 20 e i 64 anni)

2. R&S

- aumento degli investimenti in ricerca e sviluppo al 3% del PIL dell'UE

3. Cambiamenti climatici e sostenibilità energetica

- riduzione delle emissioni di gas serra del 20% (o persino del 30%, se le condizioni lo permettono) rispetto al 1990
- 20% del fabbisogno di energia ricavato da fonti rinnovabili
- aumento del 20% dell'efficienza energetica

4. Istruzione

- Riduzione dei tassi di abbandono scolastico precoce al di sotto del 10%
- aumento al 40% dei 30-34enni con un'istruzione universitaria

5. Lotta alla povertà e all'emarginazione

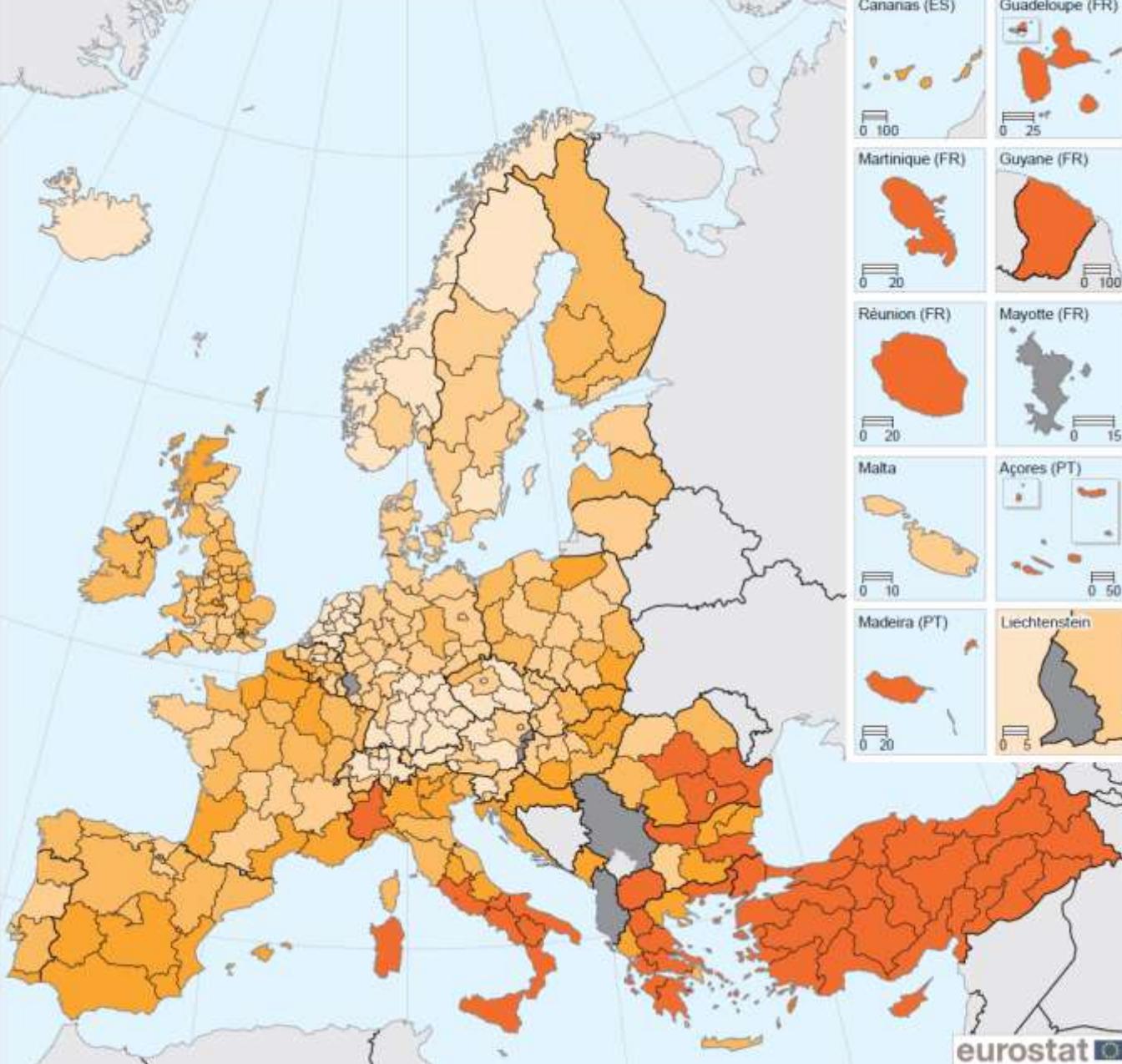
- almeno 20 milioni di persone a rischio o in situazione di povertà ed emarginazione in meno

«Vince l'idea che la laurea sia inutile
dobbiamo recuperare i giovani Neet»
Il rettore Manfredi: stiamo sprecando il capitale umano del Paese

• Istruzione:

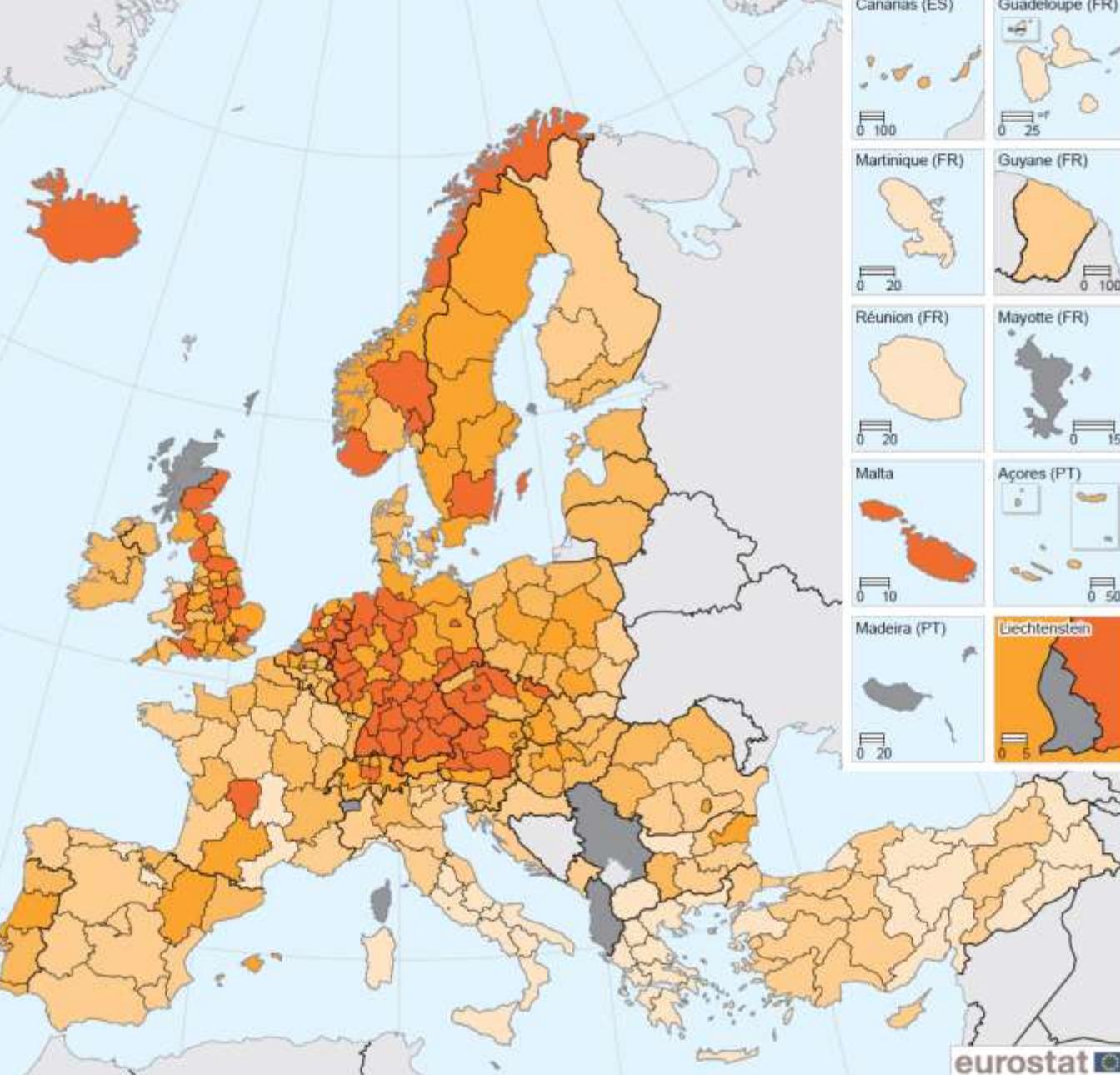
- Riduzione dei tassi di abbandono scolastico precoce al di sotto del 10%
- Aumento al 40% dei 30-34enni con istruzione universitaria





Percentuale di giovani tra 18 e 24 anni che non lavorano e non studiano (NEETs)

Fonte: Eurostat Statistical Yearbook 2018,



Percentuale di
impiegati con
diploma o
laurea tra 20 e
34 anni

Fonte: Eurostat Statistical Yearbook 2018,

Spesa ed investimenti per l'istruzione in Italia

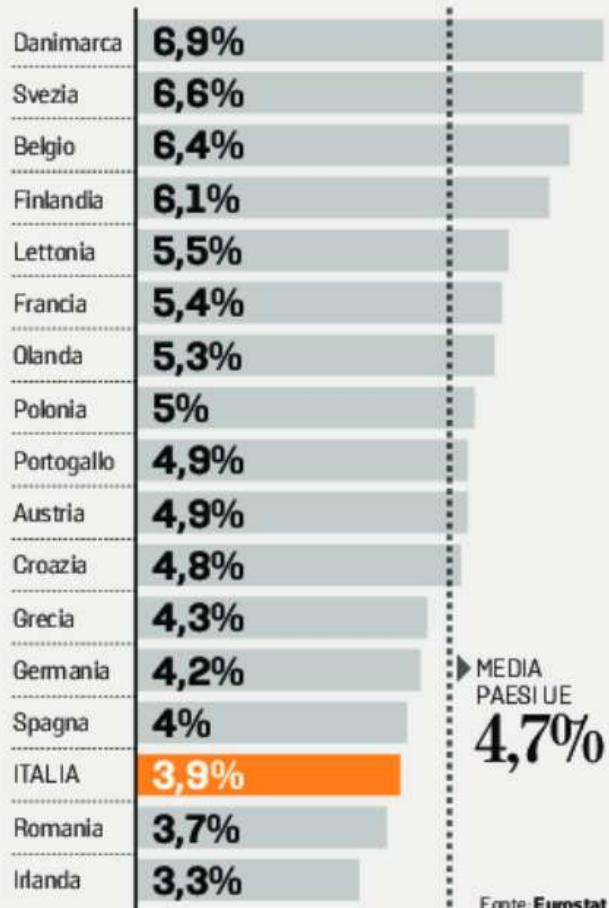
Spesa destinata all'istruzione in Italia

ANNO 2000=100



Gli investimenti in formazione

MAGGIORI PAESI EUROPEI

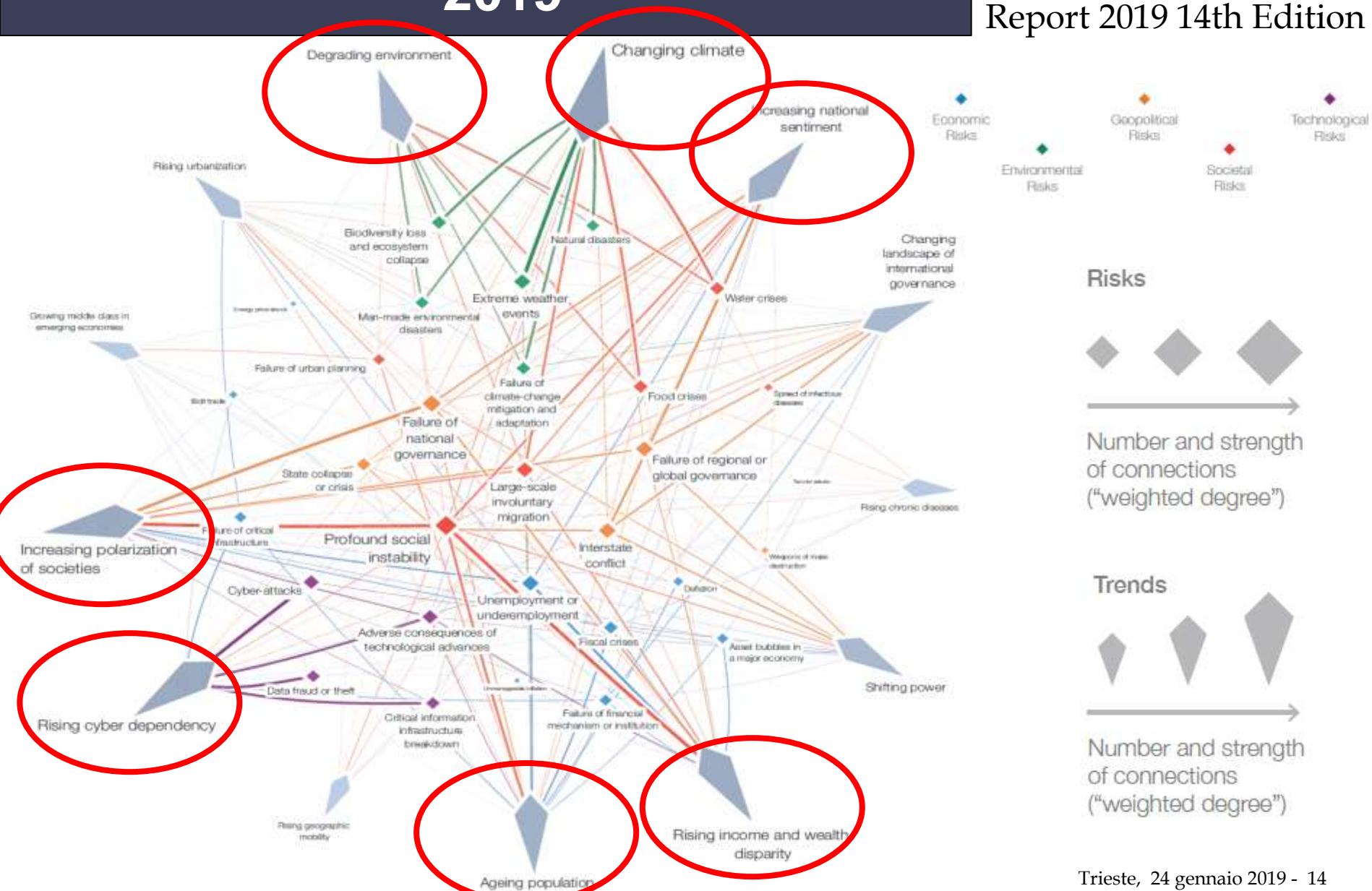


Global Risk interconnection map 2019



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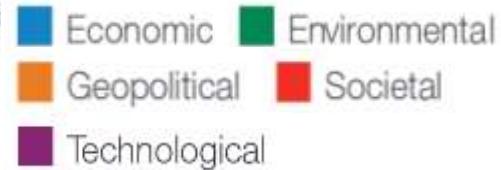
Source: The Global Risks Report 2019 14th Edition





Source: The Global Risks Report 2019 14th Edition

2019 I 5 maggiori rischi globali in termini di



Likelihood

Impact

Extreme weather events

Weapons of mass destruction

Failure of climate-change mitigation and adaptation

Failure of climate-change mitigation and adaptation

Natural disasters

Extreme weather events

Data fraud or theft

Water crises

Cyber-attacks

Natural disasters

| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|----------------------------------|---|---|--------------------------------------|---|---|
| Extreme weather events | Income disparity | Interstate conflict with regional consequences | Large-scale involuntary migration | Extreme weather events | Extreme weather events | Extreme weather events |
| Failure of climate-change mitigation and adaptation | Extreme weather events | Extreme weather events | Extreme weather events | Large-scale involuntary migration | Natural disasters | Failure of climate-change mitigation and adaptation |
| Natural disasters | Unemployment and underemployment | Failure of national governance | Failure of climate-change mitigation and adaptation | Major natural disasters | Cyber-attacks | Natural disasters |
| Data fraud or theft | Climate change | State collapse or crisis | Interstate conflict with regional consequences | Large-scale terrorist attacks | Data fraud or theft | Data fraud or theft |
| Cyber-attacks | Cyber-attacks | High structural unemployment or underemployment | Major natural catastrophes | Massive incident of data fraud/theft | Failure of climate-change mitigation and adaptation | Cyber-attacks |

| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|
| Fiscal crises | Fiscal crises | Water crises | Failure of climate-change mitigation and adaptation | Weapons of mass destruction | Weapons of mass destruction | Weapons of mass destruction |
| Climate change | Climate change | Rapid and massive spread of infectious diseases | Weapons of mass destruction | Extreme weather events | Extreme weather events | Failure of climate-change mitigation and adaptation |
| Water crises | Water crises | Weapons of mass destruction | Water crises | Water crises | Natural disasters | Extreme weather events |
| Unemployment and underemployment | Unemployment and underemployment | Interstate conflict with regional consequences | Large-scale involuntary migration | Major natural disasters | Failure of climate-change mitigation and adaptation | Water crises |
| Critical information infrastructure breakdown | Critical information infrastructure breakdown | Failure of climate-change mitigation and adaptation | Severe energy price shock | Failure of climate-change mitigation and adaptation | Water crises | Natural disasters |

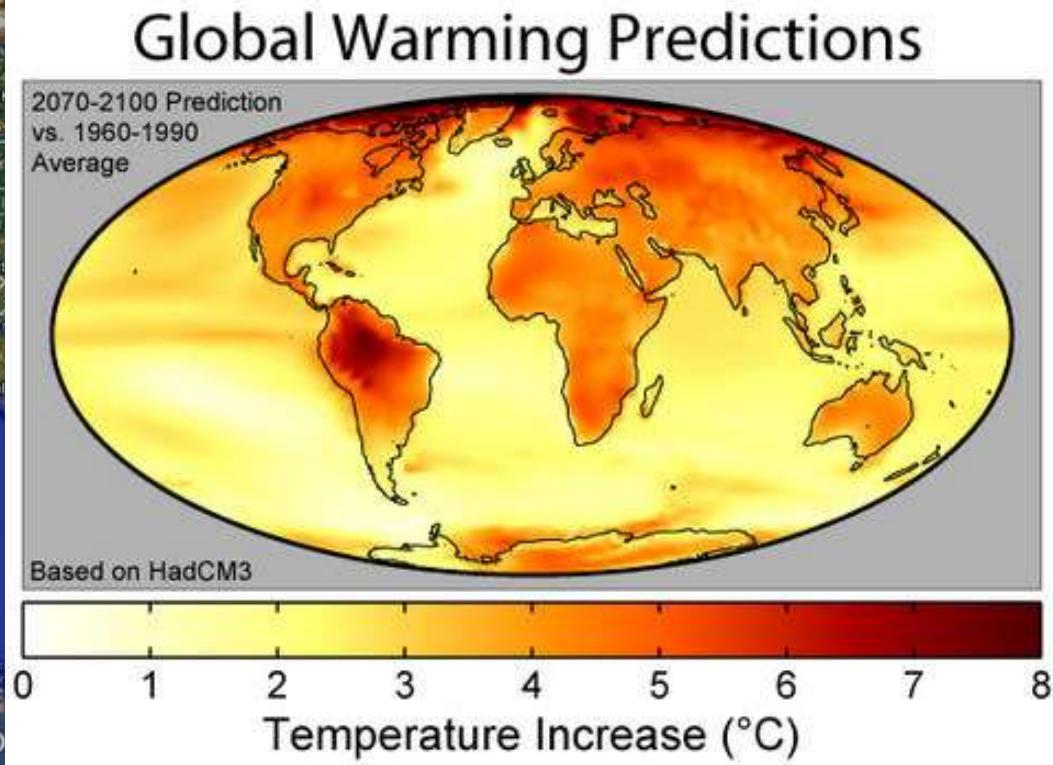
From: *The Global Risks Report 2019: January 2019*



The Future



Innalzamento del mare: scenario per il 230



La tempesta perfetta di John Beddington



- Aumento popolazione globale (da 6.8 miliardi a 8.3 miliardi).
- Richiesta di cibo aumentata del 50%, ma produzione non adeguata
- Richiesta di energia aumentata del 60% ma produzione non adeguata
- Domanda globale di acqua aumentata del 30%, problemi di approvvigionamento acqua potabile
- Riduzione delle emissioni di gas serra inferiori alle aspettative – cambiamenti climatici sempre più evidenti
- Scarsità di cibo, energia ed acqua portano a tensioni internazionali e migrazioni

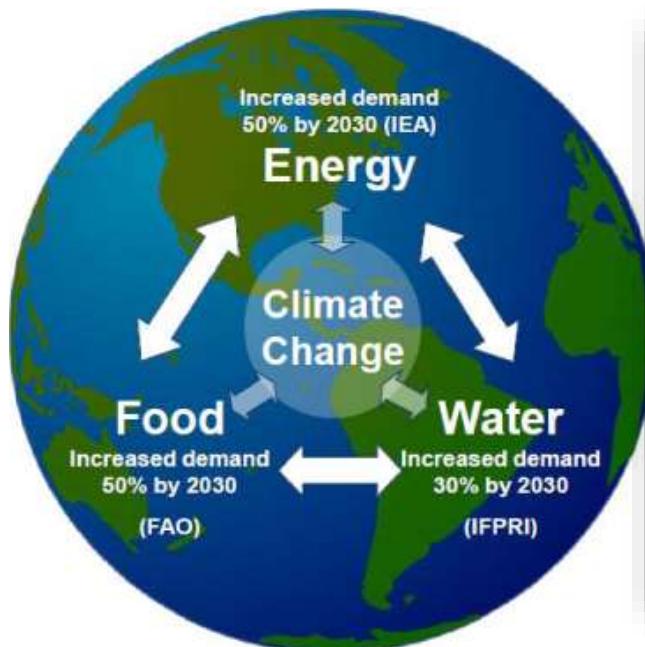
the guardian

News | Sport | Comment | Culture | Business | Money | Life & style |

News > Science

World faces 'perfect storm' of problems by 2030, chief scientist to warn

Food, water and energy shortages will unleash public unrest and international conflict, Professor John Beddington will tell a conference tomorrow



HOME FOTOGRAFIA ANIMALI AMBIENTE CULTURE VIAGGI E AVVENTURE SCIENZA

TRAVELER NG VINTAGE FOOD CONCORSO 2018 DESKTOP #SAPEVATELO FOTO DE

**RENZO PIANO**
L'ARCHITETTO DELLA LUCE14-15
EVENTI

Tweet



Consiglia 24.078



Email

Gli impatti dei cambiamenti climatici saranno peggiori del previsto

Il rapporto IPCC (Intergovernmental Panel on Climate Change) manda un nuovo monito: dovremo affrontare le conseguenze del riscaldamento globale molto presto. Per contrastarlo servono cambiamenti enormi e immediati

Major Climate Report Describes a Strong Risk of Crisis as Early as 2040

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EDITOR'S PICKS MAGAZINE

NEWS CLIMATE

Limiting global warming to 1.5 degrees versus 2 has big benefits, the IPCC says

Scientists hope a new climate report will jump-start policy decisions to reduce emissions.

CAROLYN GRANING / AFP / Getty Images



World » U.S. | Africa | Americas | Asia | Australia | China | Europe | Middle East | UK

International Edition +

Planet has only until 2030 to stem catastrophic climate change, experts warn

By Brandon Miller and Jay Croft, CNN

Updated 2254 GMT (0654 HKT) October 8, 2018

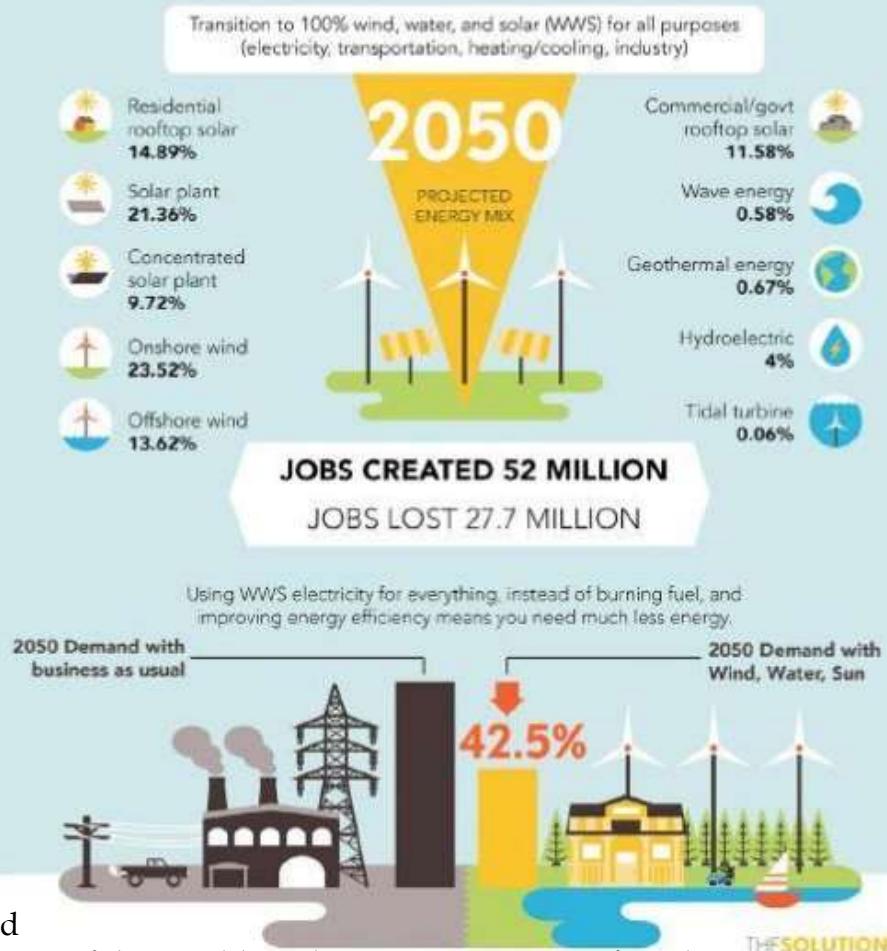


Ecco come 139 paesi saranno alimentati solamente da rinnovabili al 2050



- I punti chiave per la decarbonizzazione
 - Uso di geo e idro
 - Veicoli elettrici
 - Celle combustibile con H₂ da rinnovabili
 - Elettrificare il più possibile
- La vera sfida non è la tecnologia, ma l'opinione pubblica

100% IN 139 COUNTRIES



Jacobson et al. 100% Clean and Renewable Wind, Water, and Sunlight (WWS) All-Sector Energy Roadmaps for 139 Countries of the World. Joule, 2017 DOI: 10.1016/j.joule.2017.07.005

Trasformazione continua dell'industria

3rd Platform Drives Digital Transformation

**EMC²**



An Autonomous, 3D Printed Bus That Talks To Passengers? Olli Has it All

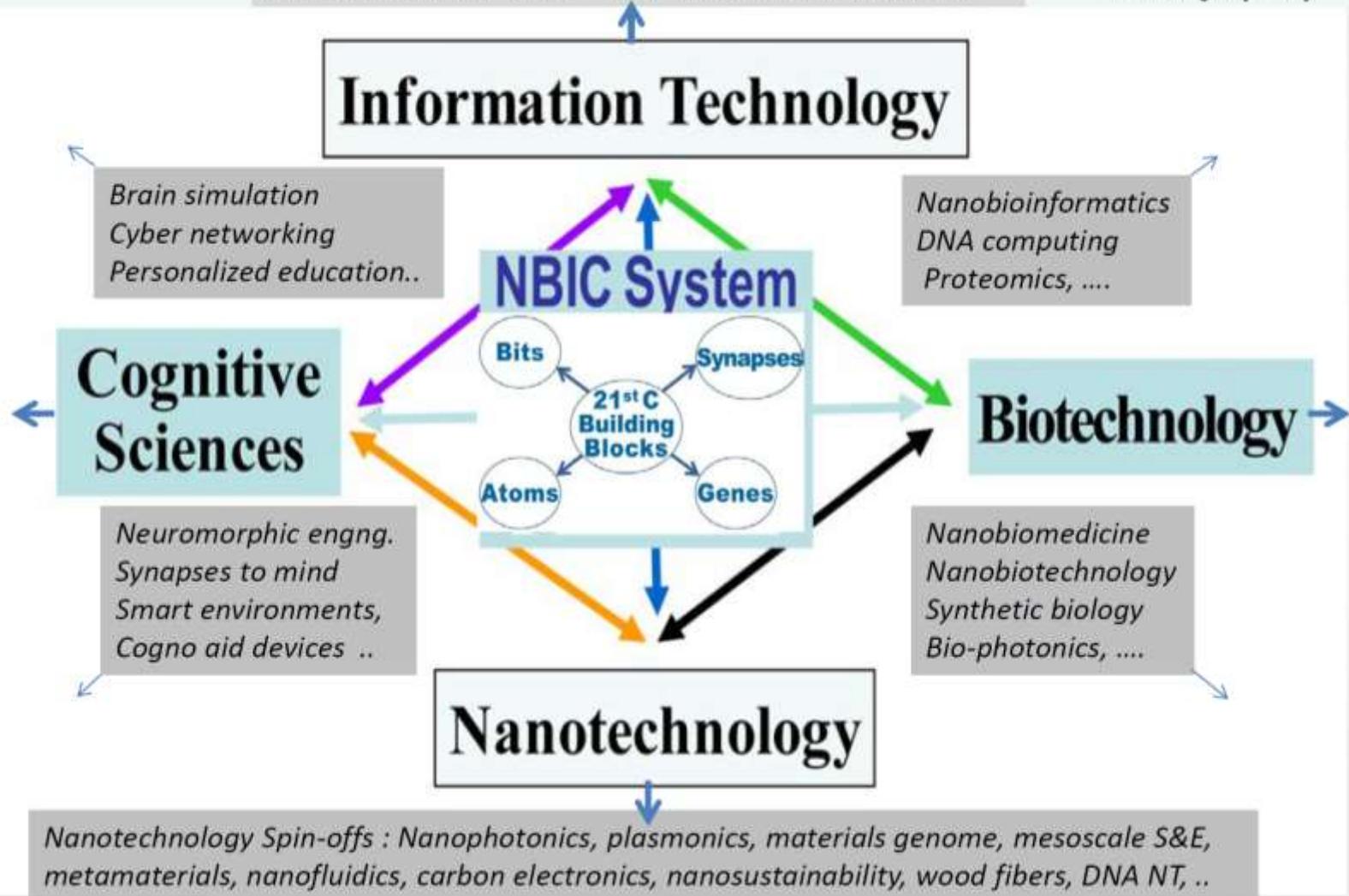


Convergenza di tecnologie tradizionali - NBIC



*Information Technology Spin-offs: Large-data bases,
topical computer-aided –design, cyber networks,*

Roco and Bainbridge,
2013 , Fig 2 [Ref 1]

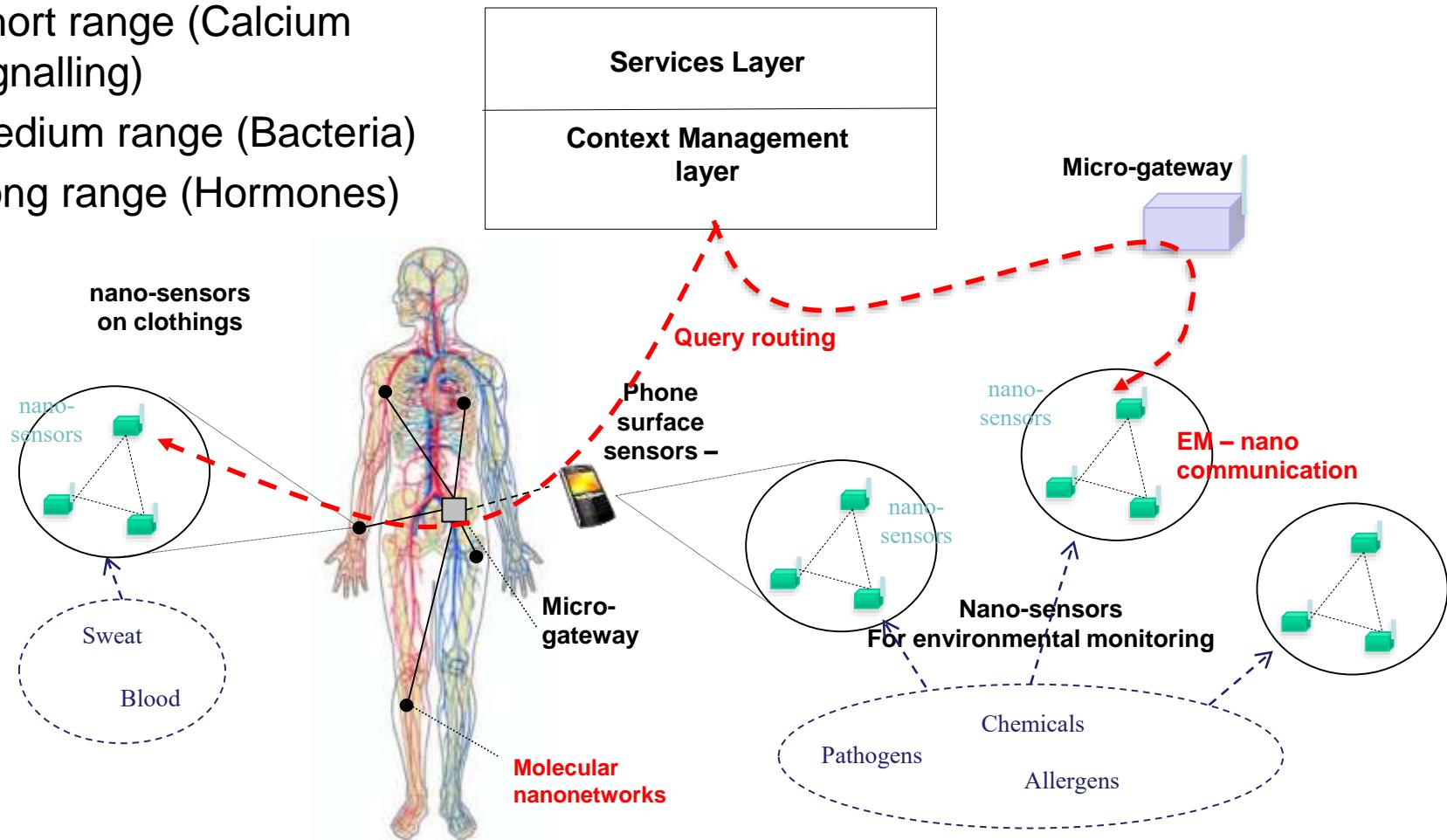


Internet of Nano Things (IoNT) per applicazioni healthcare

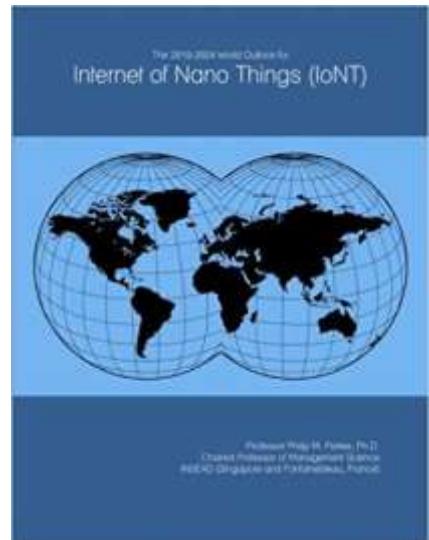
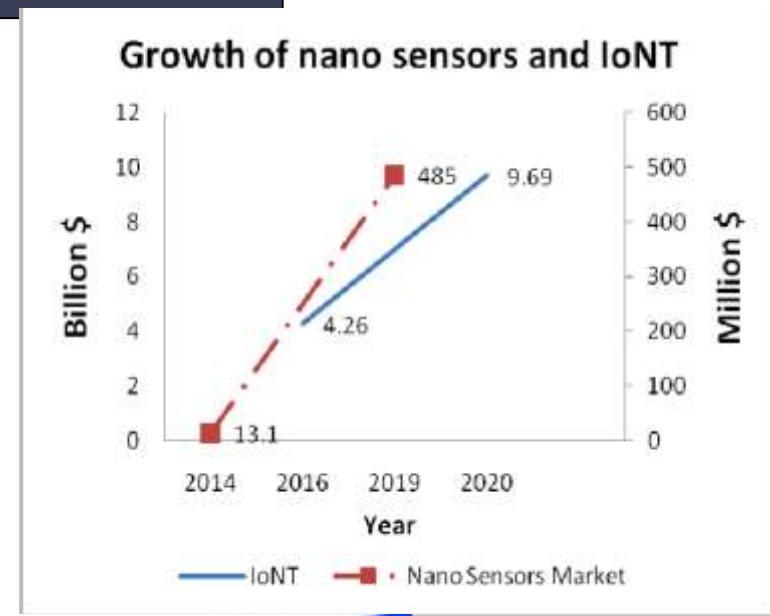
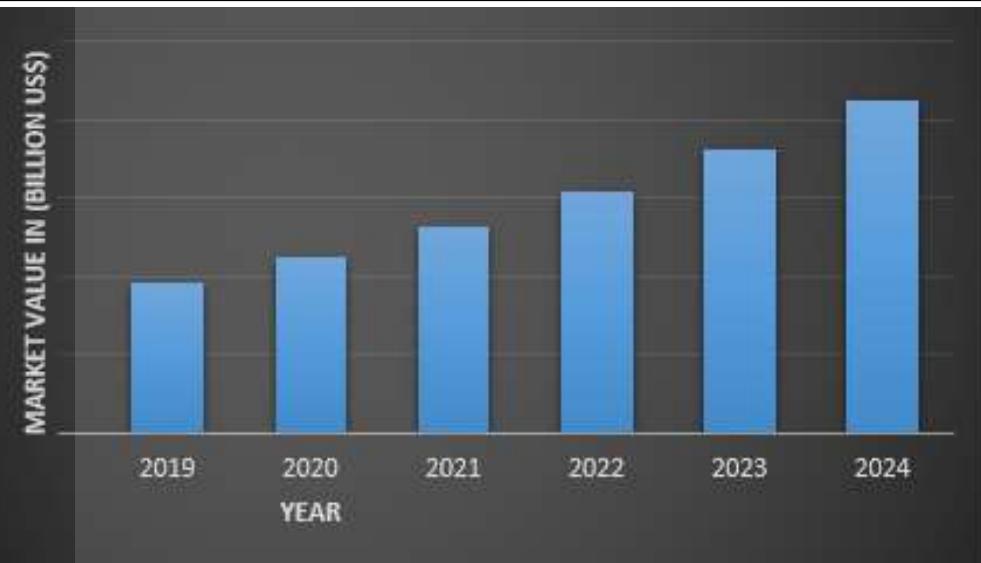


- Reti di comunicazione molecolare

- Short range (Calcium signalling)
- Medium range (Bacteria)
- Long range (Hormones)



Global IoNT market size



Digital twins: mirroring the real world virtually



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Digital Twin – Bridging the Spheres

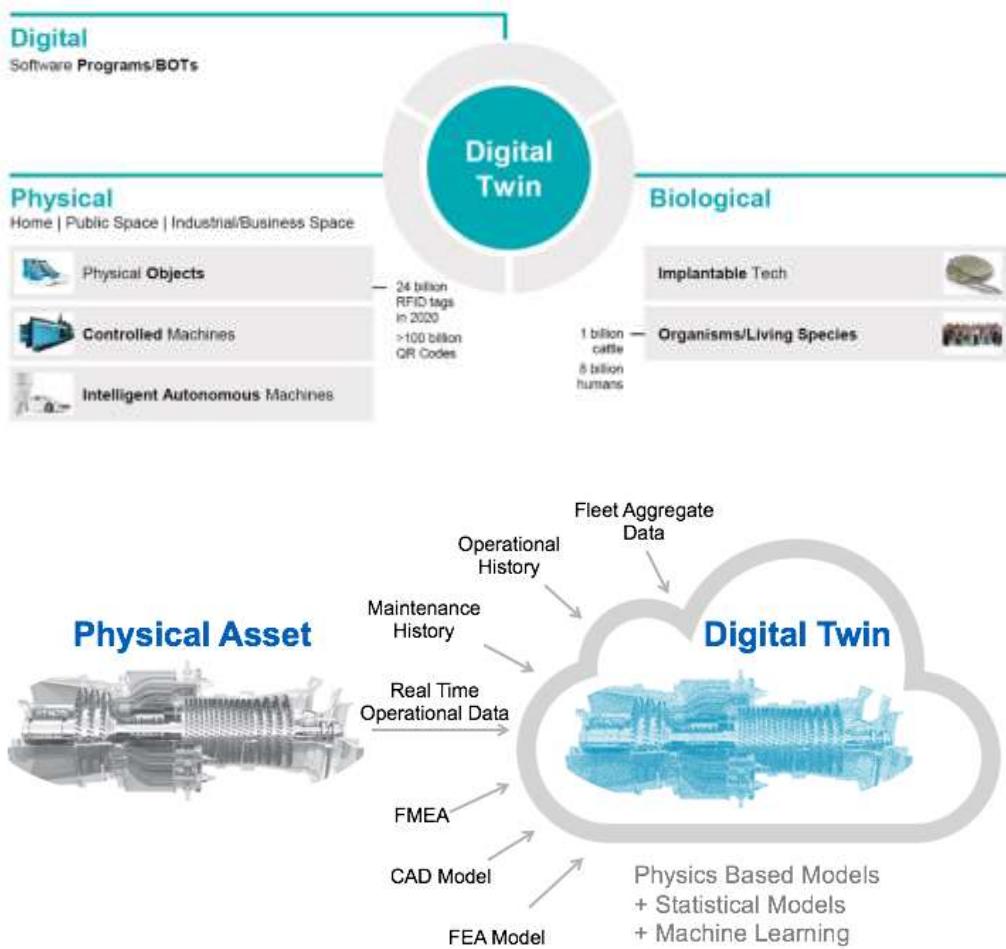
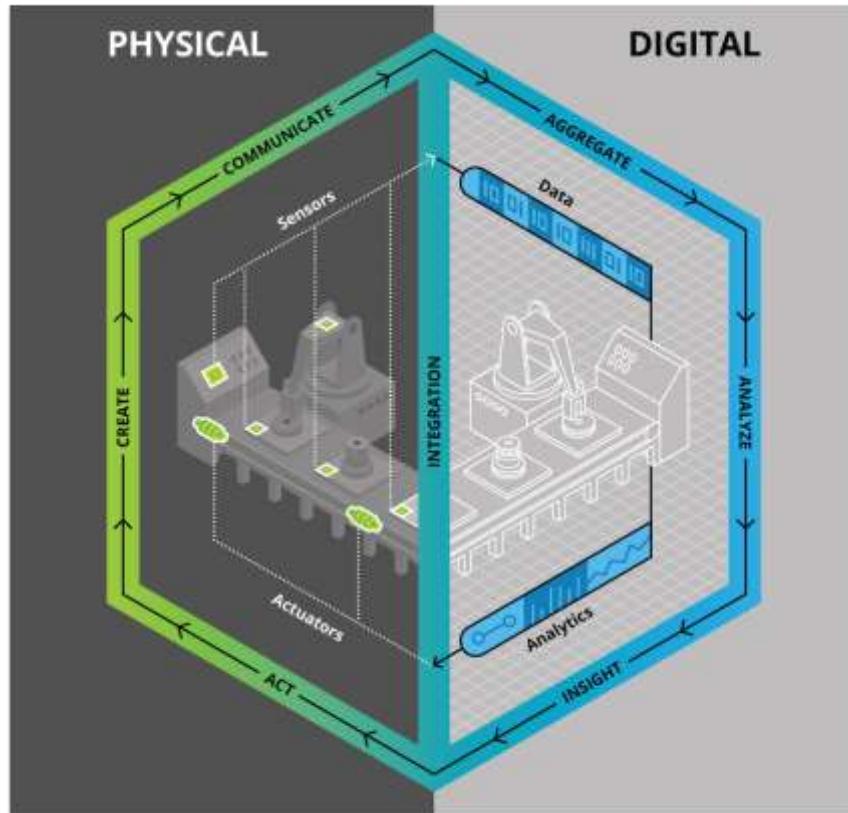


Figure 1. Manufacturing process digital twin model

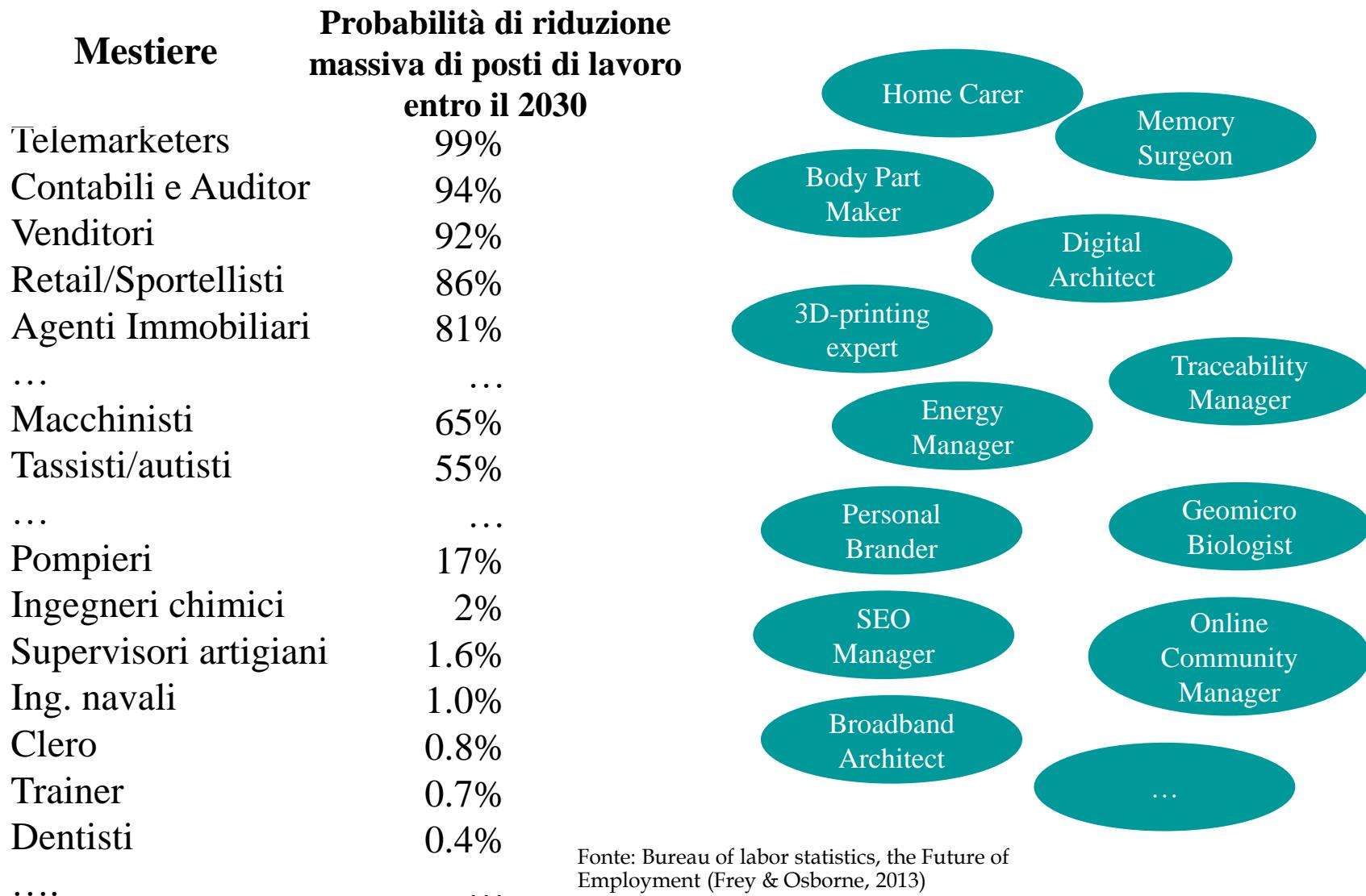


Source: Deloitte University Press.

Deloitte University Press | dupress.deloitte.com
Trieste, 24 gennaio 2019 - 29



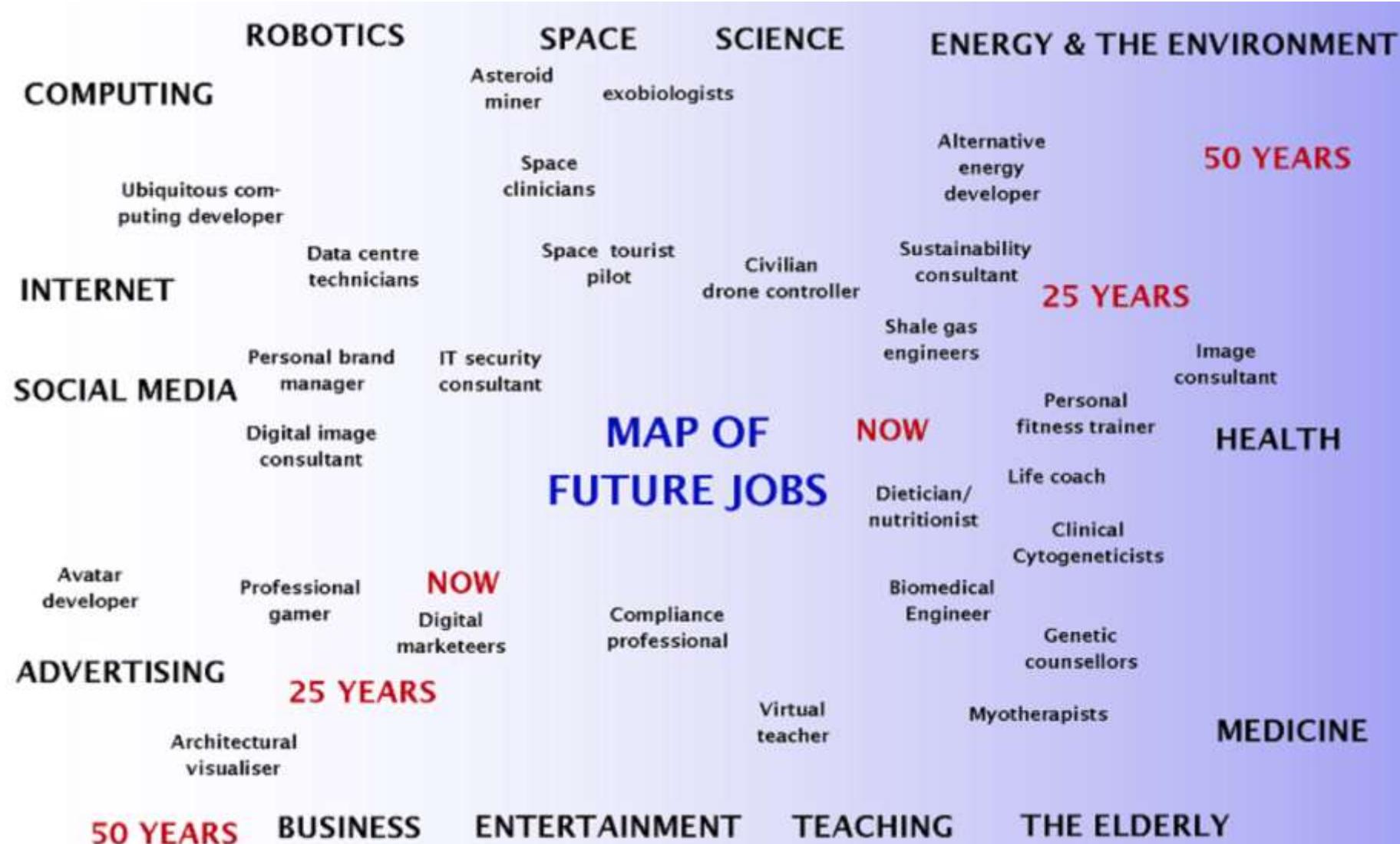
Alcuni mestieri scompariranno, altri ne nasceranno





Jobs of the future

(<https://www.kent.ac.uk/careers/Choosing/future-jobs.htm>)



Ottimizzazione vs. creatività e Sensibilità



Kai-Fu Lee | TED2018

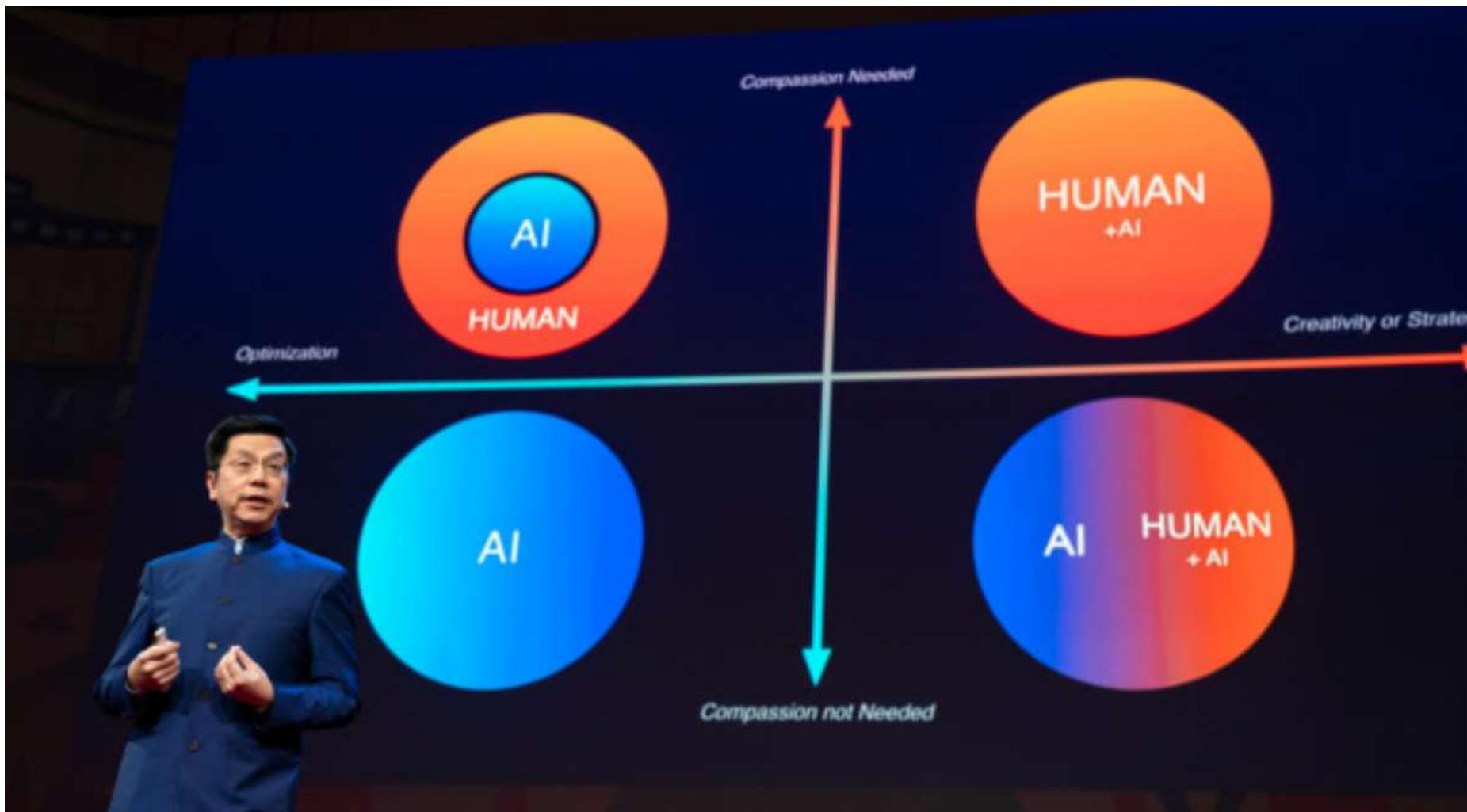
How AI can save our humanity



Intelligenza artificiale e mestieri del futuro



- Kai-Fu Lee: TED 2018 - Vancouver





Il Futuro dei mestieri e degli Skills

Top 10 skills

in 2020

1. Complex Problem Solving
2. Critical Thinking
3. Creativity
4. People Management
5. Coordinating with Others
6. Emotional Intelligence
7. Judgment and Decision Making
8. Service Orientation
9. Negotiation
10. Cognitive Flexibility

in 2015

1. Complex Problem Solving
2. Coordinating with Others
3. People Management
4. Critical Thinking
5. Negotiation
6. Quality Control
7. Service Orientation
8. Judgment and Decision Making
9. Active Listening
10. Creativity

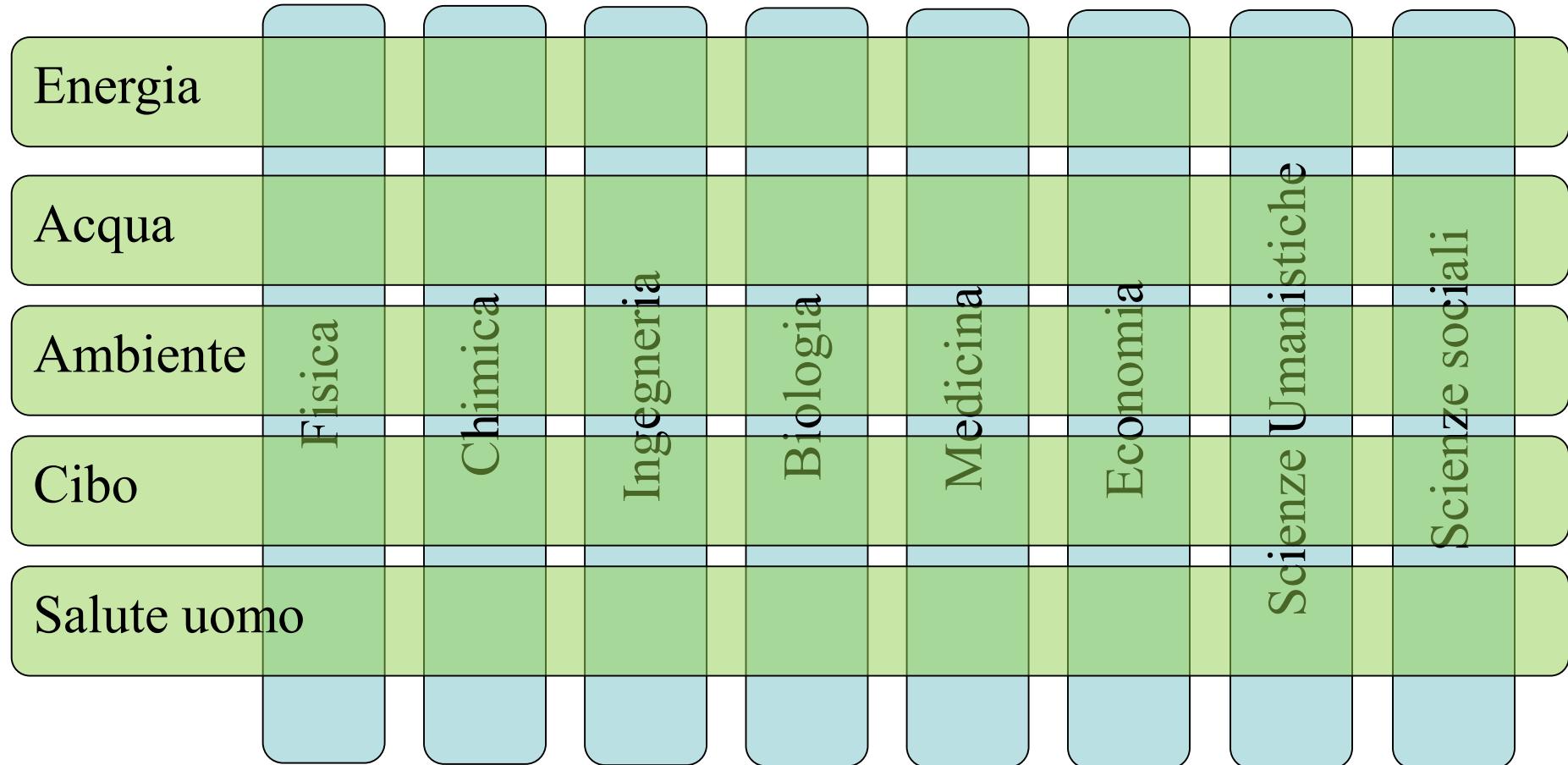


COMMITTED TO
IMPROVING THE STATE
OF THE WORLD

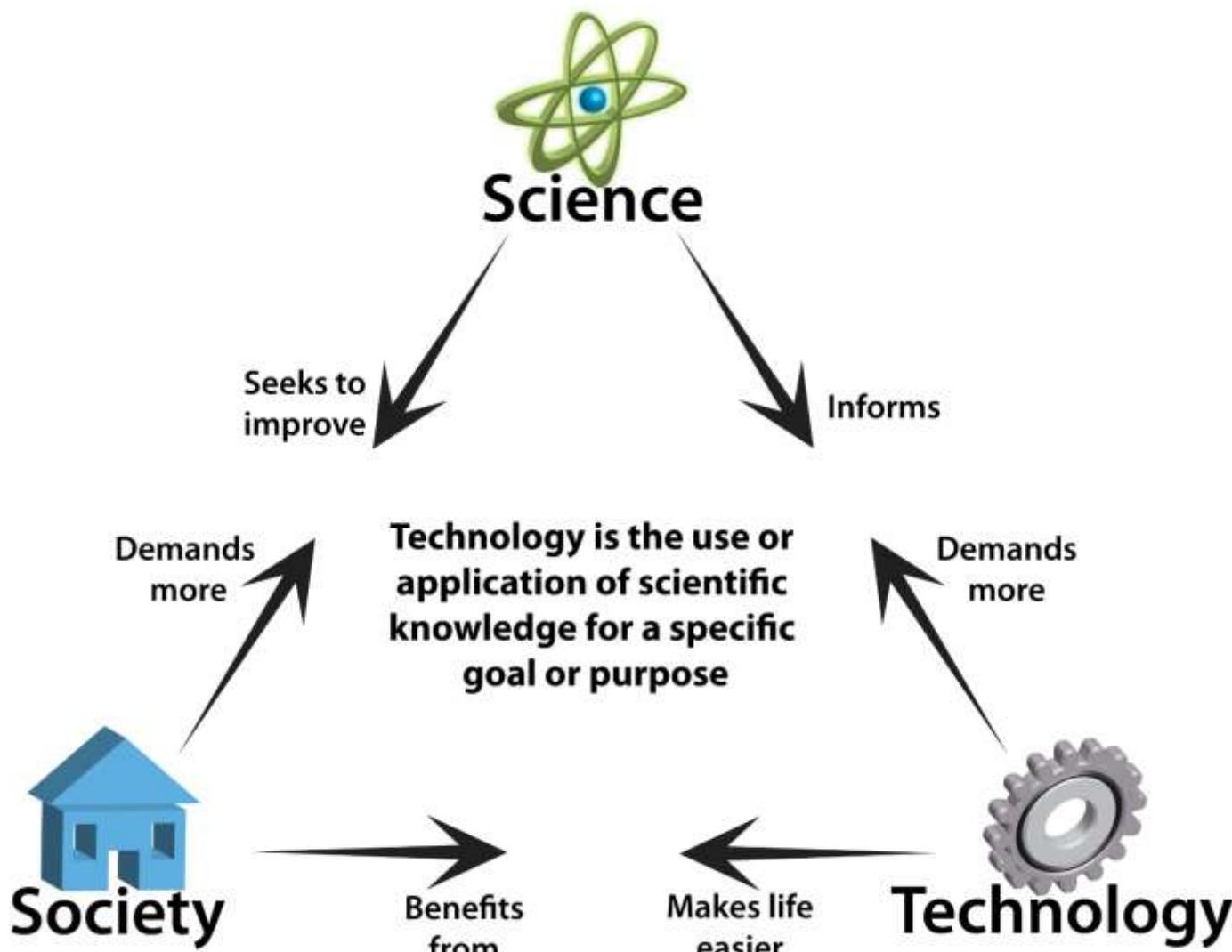
- **Emergeranno nuovi mestieri** che rimpiazzeranno totalmente o parzialmente quelli esistenti
- **65% dei bambini** che entrano le scuole elementari oggi saranno impiegati in mestieri completamente **nuovi che oggi non esistono.**



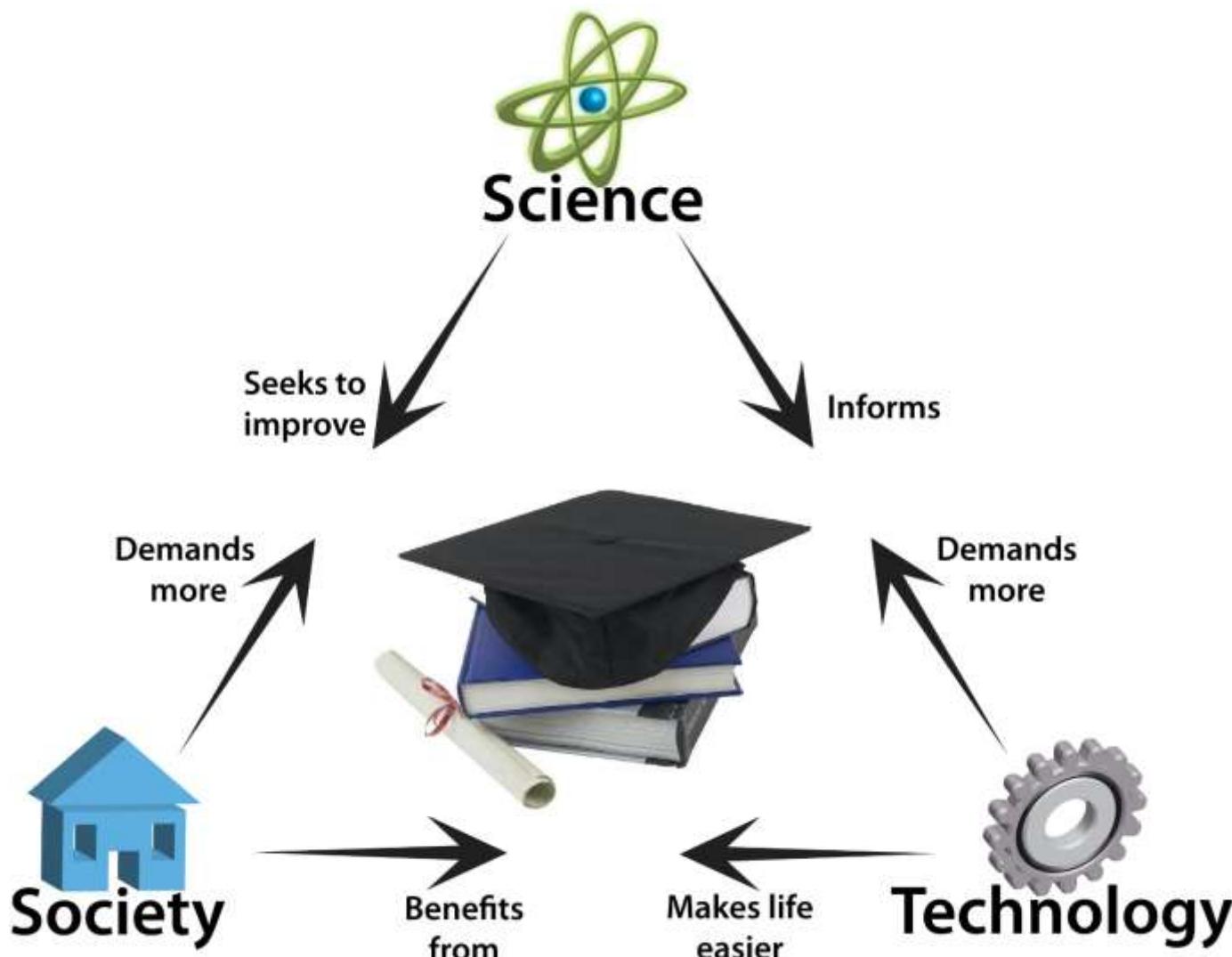
Discipline e sfide verso il 2020



Scienza, tecnologia e società



Scienza, tecnologia e società





... e comunque!!

“If you think education is expensive,
try ignorance”

Derek Bok - Presidente dell'Università di
Harvard 1971-1990

