



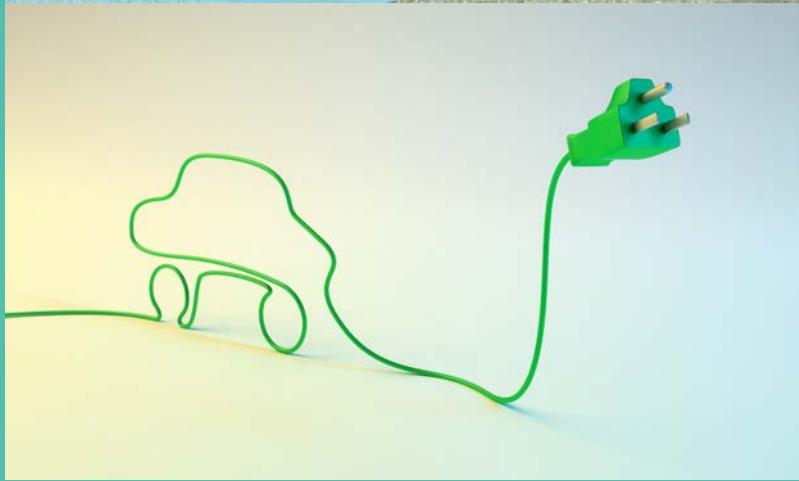
Martedì 28 Novembre 2017

SOSTENIBILITÀ, AMBIENTE E IMPRESA

Opportunità e prospettive per cogliere la sfida ambientale

Agenda

- Benvenuti nell'Antropocene
- Dalla contrapposizione all'interdipendenza
- Sostenibilità e circolarità



Benvenuti
nell'Antropocene



Benvenuti nell'Antropocene



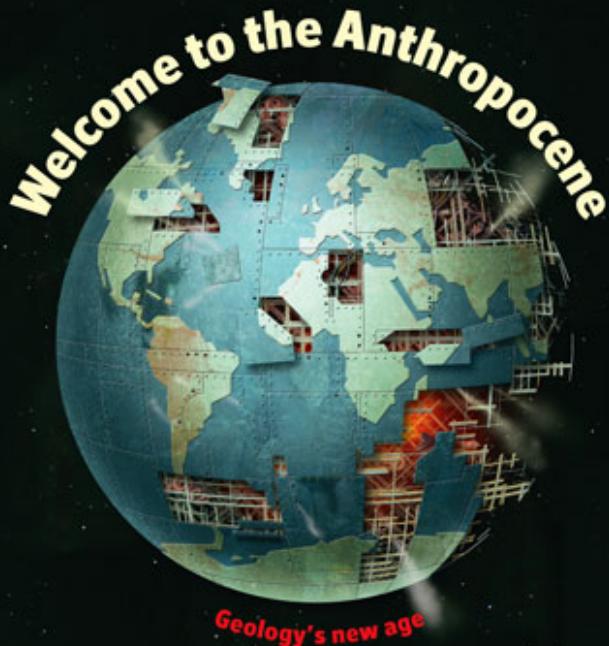
Crutzen P J.,
Nature, 2002

THE NEXT GOLDEN STATE: A 16-PAGE SPECIAL REPORT ON AUSTRALIA

The Economist

MAY 28TH-JUNE 3RD 2011 Economist.com

Obama, Bibi and peace
Huntsman blows his horn
A soft landing for China
The costly war on cancer
How the brain drain reduces poverty



Rockström J. et al.,
Nature, 2009

nature
Vol 461 | 24 September 2009

FEATURE

A safe operating space for humanity

Identifying and quantifying planetary boundaries that must not be transgressed could help prevent human activities from causing unacceptable environmental change, argue **Johan Rockström** and colleagues.

Although Earth has undergone many periods of significant environmental change, the planet's environment has been unusually stable for the past 10 000 years^{1,2}. This period of stability — known to geologists as the Holocene — has seen human civilizations arise, develop and thrive. Such stability may now be under threat. Since the Industrial Revolution, a new era has arisen, the Anthropocene³, in which human actions have become the main driver of global environmental change⁴. This could see human activities push the Earth system outside the stable environmental state of the Holocene, with consequences that are detrimental or even catastrophic for large parts of the world.

During the Holocene, environmental change occurred naturally and Earth's regulatory capacity maintained the conditions that enabled human development. Regular temperatures, freshwater availability and biogeochemical flows all stayed within a relatively narrow range. Now, largely because of a rapidly growing reliance on fossil fuels and

industrialized forms of agriculture, human activities have reached a level that could damage the systems that keep Earth in the desirable Holocene state. The result could be irreversible and, in some cases, abrupt environmental change, leading to a state less conducive to human development⁵. Without proper foresight, the Holocene is expected to continue for at least several thousands of years⁶.

Planetary boundaries
To meet the challenge of maintaining the Holocene state, we propose a framework based on 'planetary boundaries'. These



SUMMARY

- New approach proposed for defining preconditions for human development
- Crossing certain biophysical thresholds could have disastrous consequences for humanity
- Three of nine interlinked planetary boundaries have already been overstepped

boundaries define the safe operating space for humanity with respect to the Earth system and are associated with the planet's biophysical subsystems or processes. Although Earth's complex systems sometimes respond smoothly to changing pressures, it seems that this will prove to be the exception rather than the rule. Many subsystems of Earth react in a nonlinear, often abrupt way, and are particularly sensitive around threshold levels of certain variables. If these thresholds are crossed, their important subsystems — such as a monsoon system — could shift into a new state, often with deleterious or potentially even disastrous consequences for humanity^{7,8}.

Most of these thresholds can be defined by a critical value for one or more control variables, such as carbon dioxide concentration. Not all processes or subsystems on Earth have well-defined thresholds, although human actions that undermine the resilience of such processes or subsystems — for example, land and water degradation — can increase the risk that thresholds will also be crossed in other processes, such as the climate system.

We have tried to identify the Earth-system processes and associated thresholds which, if crossed, could generate unacceptable environmental change. We have found nine such processes for which we believe it is necessary to define planetary boundaries: climate change; rate of biodiversity loss (terrestrial and marine); interference with the nitrogen and phosphorus cycles; stratospheric ozone depletion; ocean acidification; global freshwater use change in land use; chemical pollution; and atmospheric aerosol loading (see Fig. 1 and Table).

In general, planetary boundaries are values for control variables that are either at a 'safe' distance from thresholds — for processes with evidence of threshold behaviour — or at dangerous levels — for processes without

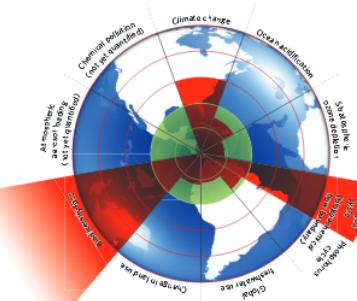
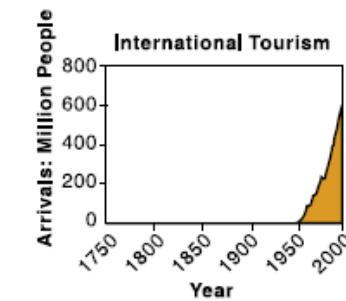
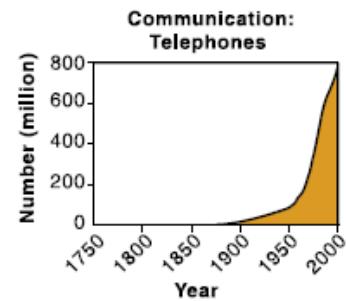
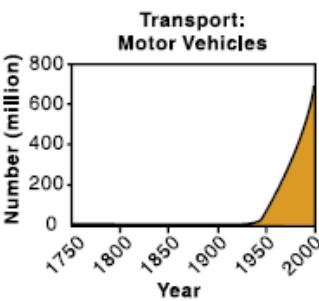
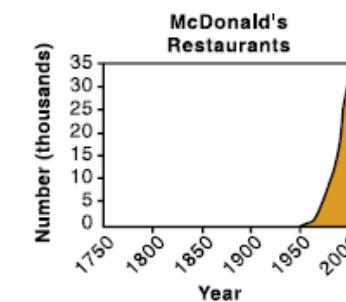
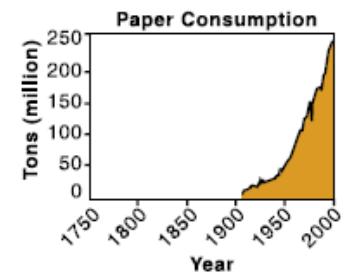
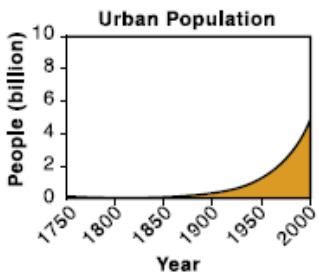
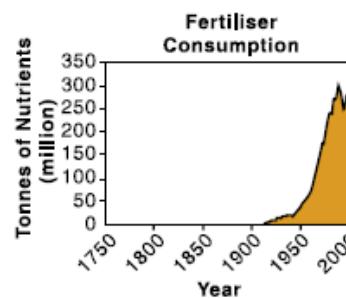
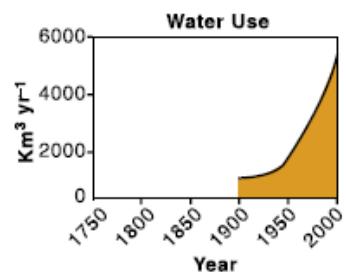
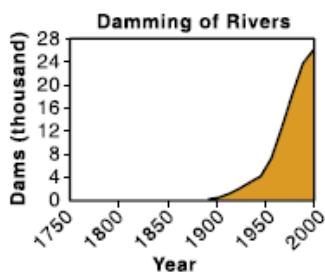
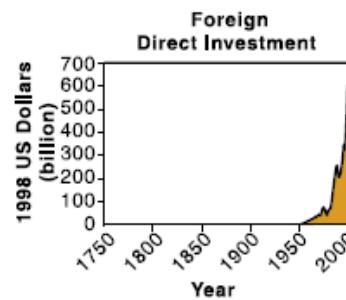
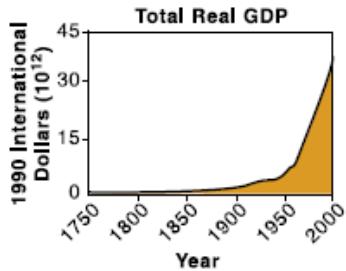
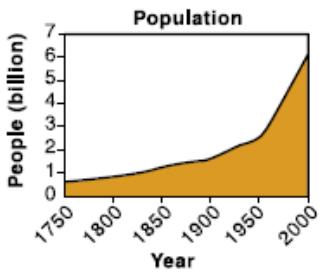


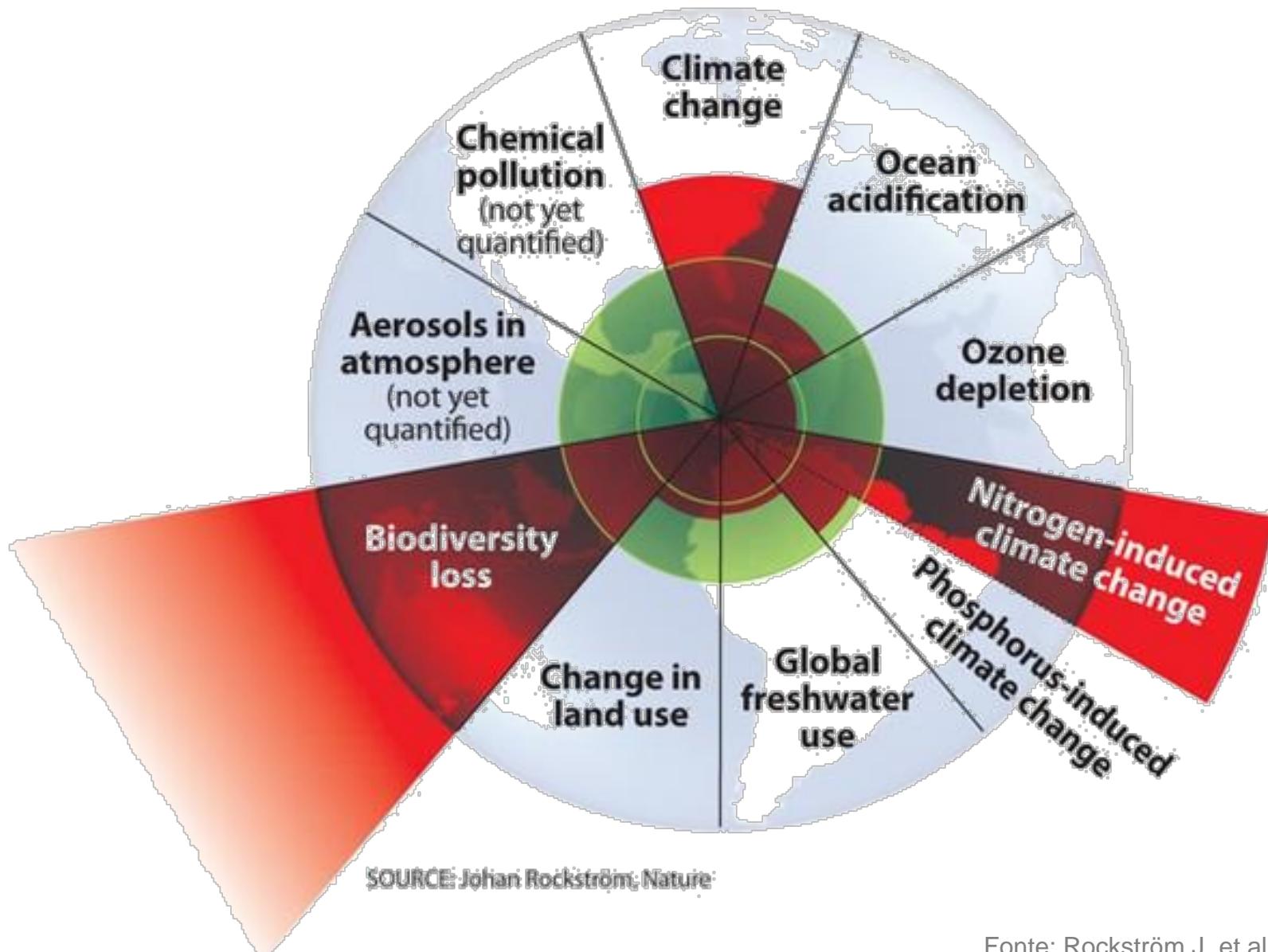
Figure 1 Beyond the boundary. The inner green shading represents the proposed safe operating space for nine planetary systems. The red wedge represents an estimate of the current position for each variable. The boundaries in three systems (rate of biodiversity loss, climate change and human interference with the nitrogen cycle), have already been exceeded.

Benvenuti nell'Antropocene





Benvenuti nell'Antropocene

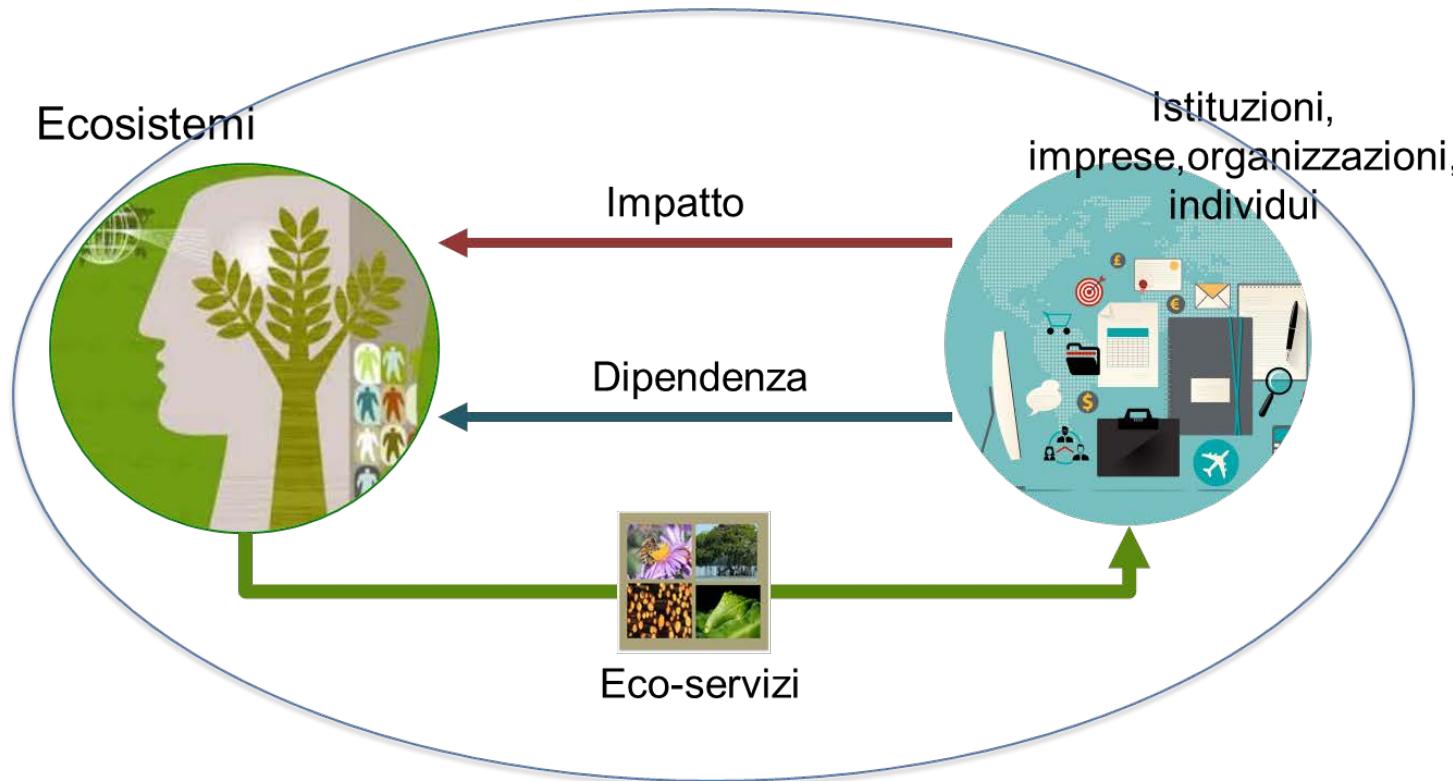


Dalla contrapposizione all'interdipendenza



Dalla contrapposizione all'interdipendenza

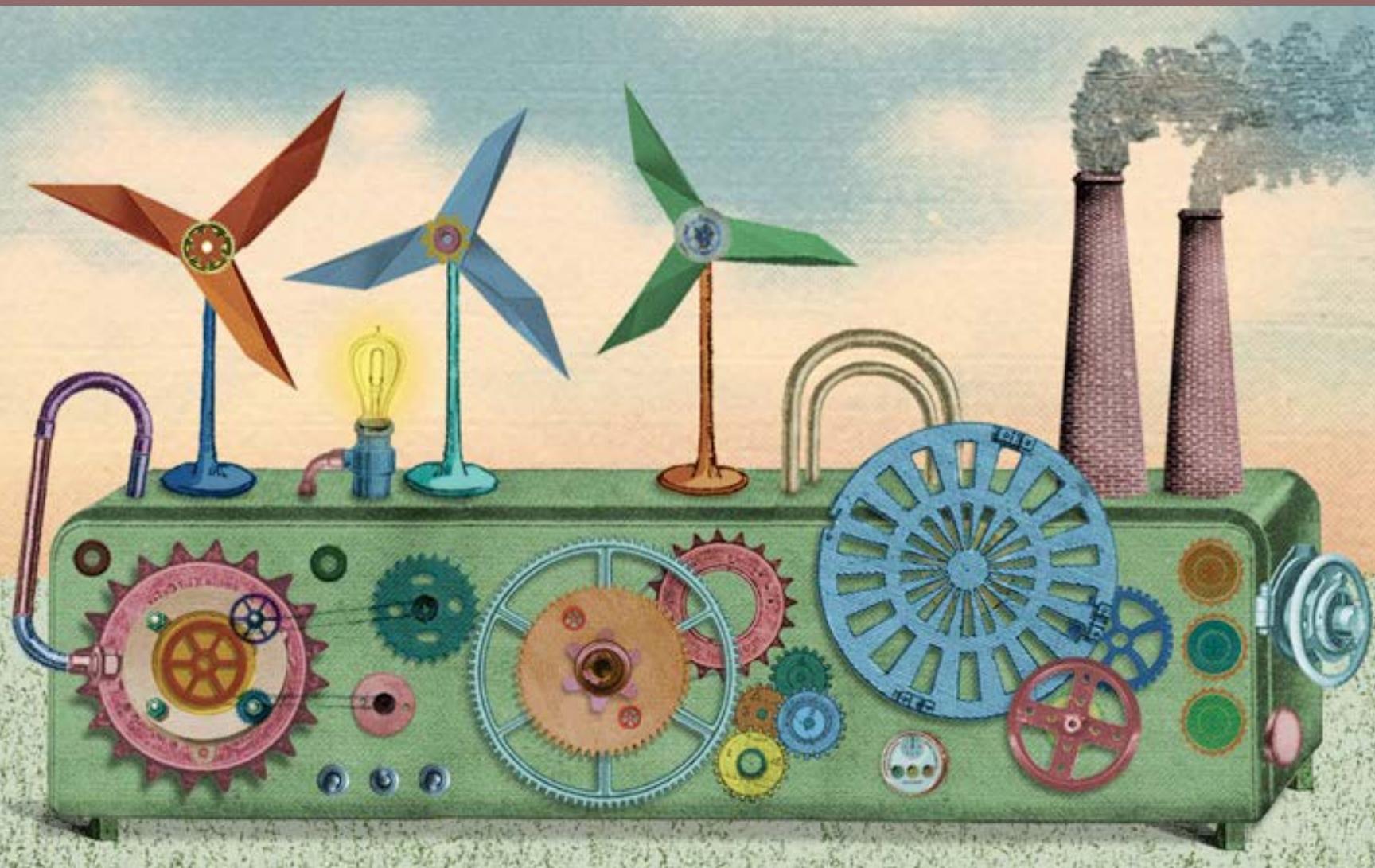
- Visione «moderna» del rapporto tra impresa e ambiente
- Sistema economico-sociale ed ecosistema non sono contrapposti, ma interconnessi - e soprattutto - interdipendenti



Fonte: Winn M. & Pogutz S., Organization & Environment, 2013

Sistemi Socio-Ecologici come sistemi Adattivi Complessi

Sostenibilità e circolarità



Sostenibilità e circolarità

Lo Sviluppo Sostenibile è uno sviluppo che garantisce i bisogni delle generazioni attuali senza compromettere la possibilità che le generazioni future riescano a soddisfare i propri, WCED 1987

**La sostenibilità è un
nuovo paradigma
manageriale**

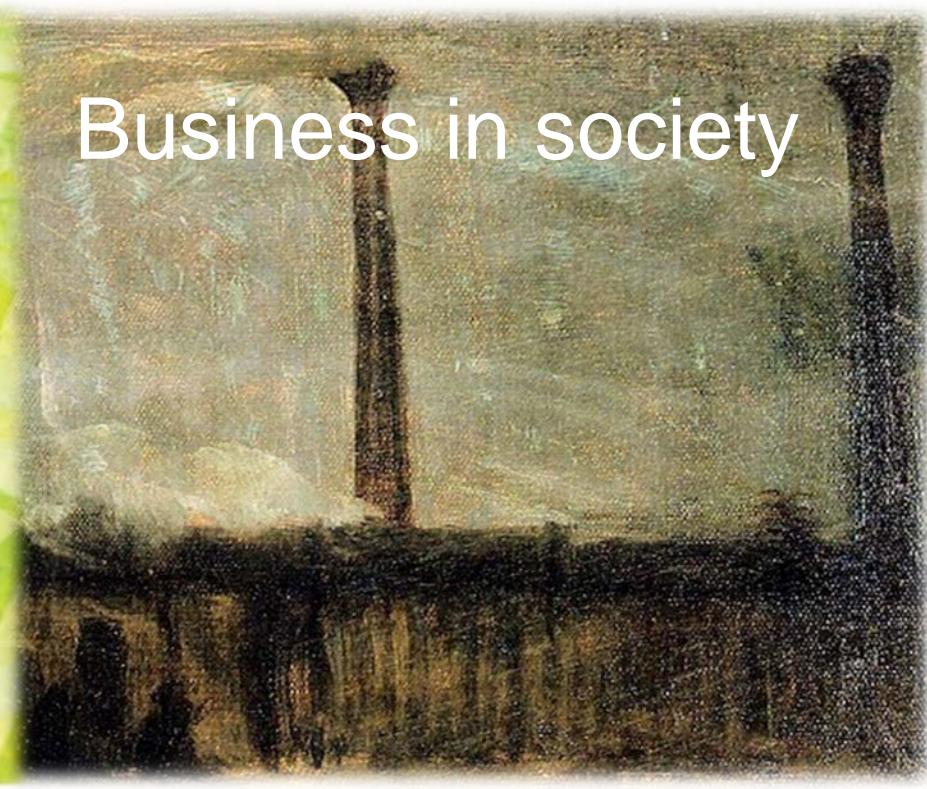
La risposta delle imprese allo sviluppo sostenibile: l'insieme di strategie e pratiche manageriali che affrontano le sfide dello sviluppo sostenibile



Business in nature



Business in society



Sviluppo
sostenibile



Corporate
sustainability



Stakeholder
theory



Corporate
citizenship



Corporate social
responsibility



Shared
value



Sostenibilità e circolarità



Sustainable Development Goals

1 NO POVERTY



2 NO HUNGER



3 GOOD HEALTH



4 QUALITY EDUCATION



5 GENDER EQUALITY



6 CLEAN WATER AND SANITATION



7 RENEWABLE ENERGY



8 GOOD JOBS AND ECONOMIC GROWTH



9 INNOVATION AND INFRASTRUCTURE



10 REDUCED INEQUALITIES



11 SUSTAINABLE CITIES AND COMMUNITIES



12 RESPONSIBLE CONSUMPTION



13 CLIMATE ACTION



14 LIFE BELOW WATER



15 LIFE ON LAND



16 PEACE AND JUSTICE



17 PARTNERSHIPS FOR THE GOALS



THE GLOBAL GOALS
For Sustainable Development

Sostenibilità e circolarità



Sustainable Development Goals

- “Il mondo delle imprese è un partner fondamentale per il raggiungimento dei Sustainable Development Goals. Le imprese possono contribuire attraverso le proprie attività e competenze specifiche, e chiediamo a tutte le imprese di misurare il proprio impatto, di fissare obiettivi ambiziosi e di comunicare i risultati in modo trasparente”.

Ban Ki-moon, United Nations Secretary-General



- Il mondo delle imprese può utilizzare gli SDG come un quadro di riferimento per progettare le proprie strategie, rendicontare e comunicare i propri risultati.
- L'integrazione degli SDG consente alle imprese di mettere meglio a fuoco le opportunità (business case) legate alla sostenibilità e di capitalizzare i benefici.

Sostenibilità e circolarità



Sustainable Development Goals

**BUSINESS CONTRIBUTION TO THE SDGs =
ACT RESPONSIBLY + FIND OPPORTUNITY**

Produzione
responsabile



Muovi modelli di
business



Innovazioni e
tecnologie



Investimenti



Collaborazione



Sostenibilità e circolarità



Un sistema inefficiente

RIFIUTI

60% dei materiali che entrano nei cicli mandati in discarica o inceneriti (EMF, 2015)



5 tonnellate di rifiuti prodotti per persona in Europa (Eurostat, 2015)



In valore, il 95% dell'energia e dei materiali viene perso (EMF, 2015)



Più del 30% del cibo non viene consumato e diventa rifiuti (EMF, 2015)

AUTO

Un auto rimane per il 92% del tempo parcheggiata

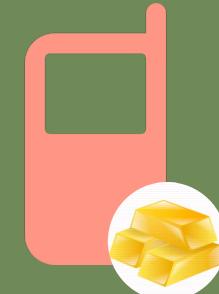


1,5 dei 5 posti utilizzati in media

1/13 dell'energia utilizzata per un auto serve per trasportare persone

Telefoni

160 milioni di cellulari avviati a smaltimento ogni anno (\$500 milioni)



Raccolta 15%, 6% mercato secondario

25-30 mg di oro (1 g ogni 35-40 cellulari; in una miniera d'oro 1-2 grammi a tonnellata)

Sostenibilità e circolarità



Negli ultimi 150 anni ha prevalso un sistema economico lineare



LIMITI

- 65 miliardi di tonnellate di materie prime estratte nel 2010
- 3 miliardi di consumatori appartenenti alla classe media attesi per il 2030
- Incrementi di efficienza nei nostri sistemi industriali solo marginali
- Incrementi nella produttività agricola fortemente decrescenti
- Effetti inattesi degli aumenti di efficienza > aumenti nei consumi (rebound effect)
- Rischi di business interruption e volatilità prezzi materie prime

Sostenibilità e circolarità



Economia Circolare

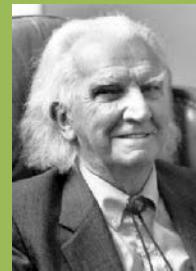
- Approccio sistematico e olistico
- Interdipendenza tra fasi
- Utilizzo a cascata delle MP
- Nutrienti per nuove attività
- Percorsi il più possibile chiusi



APPROCCI

- Simbiosi industriale
- Metabolismo industriale

- Ecologia industriale
- Zero waste
- Cradle to cradle
- ...



Sostenibilità e circolarità



Perché?



Riduce la dipendenza
nel caso di materie
prime scarse



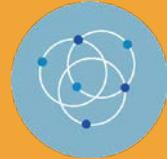
Permette di
generare/estrarre
valore dai rifiuti



Permette di creare
prodotti/servizi più
innovativi e centrati sui
bisogni di consumo

Quali opzioni

Filiere circolari



Prodotto come servizio



Estensione del ciclo di vita



Recupero e riciclo



Condivisione



Digitalizzazione



Sostenibilità e circolarità



La prospettiva Europea



- **CE Strategy: Closing the loop. An EU Action Plan for the Circular Economy**
- Spinta dell'UE per diffondere la prospettiva circolare mediante strumenti di policy (efficienza risorse, produttività risorse, rifiuti, ...)
- COM(2014) 398 final/2. **Verso un'economia circolare: programma per un'Europa a zero rifiuti**
- **Ritirato**
- COM(2015) 614 final. **L'anello mancante - Piano d'azione dell'Unione europea per l'economia circolare**
- Parlamento Europeo (2016). **New circular economy package.**
- Integrazione con gli SDG



- **Progettazione** dei prodotti e dei processi di produzione
- **Consumo**
- Gestione dei **rifiuti** (revisione legislazione ...)
- Da rifiuti a risorse: **mercato** MP e acqua
- Settori prioritari
- **Innovazione** e investimenti (barriere)
- **Monitoraggio**

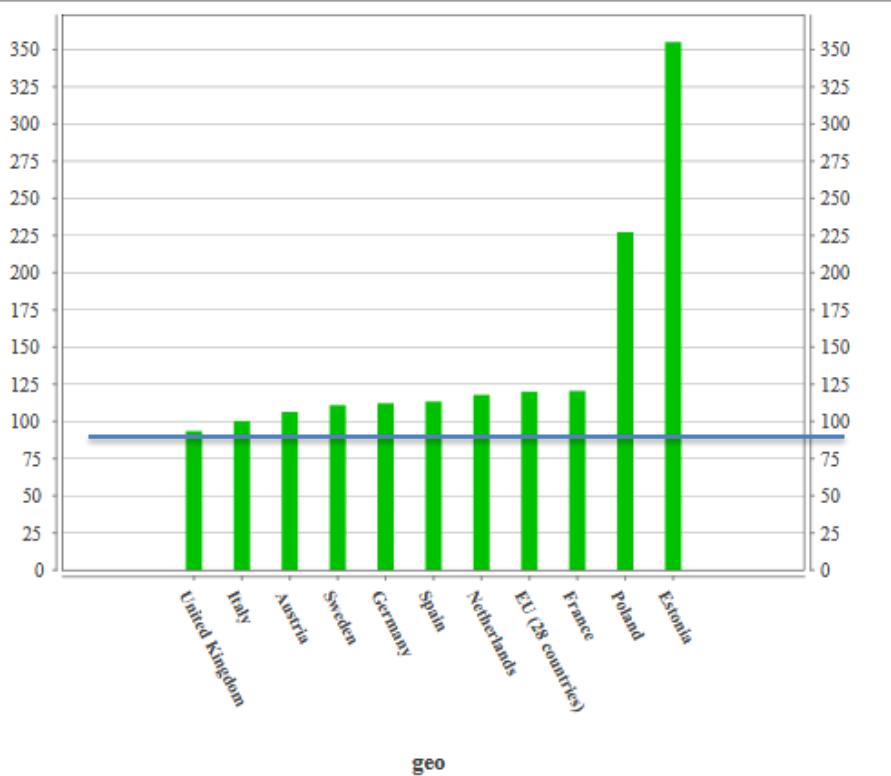
Sostenibilità e circolarità



Il caso italiano



- Intensità energetica dell'economia (Fonte: OECD, Eurostat, 2015)



- Riciclaggio rifiuti (Fonte: Eurostat, 2015)

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Italy top in EU for waste recycling

76.9%, compared to average of 34%

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ENLARGE

(ANSA) - Rome, October 9. Italy is top in the European Union for waste recycling at 76.9% of urban, industrial and other waste recycled, Eurostat said Monday. This compared with an EU average of 37%, it said.

France is on 54%, the UK at 44% and Germany on 43%, it said.



Grazie