Circular Future: the spaceship economy

Massimiano Tellini, Global Head - Circular Economy

The Economic Model as of today TAKE → MAKE → DISPOSE

Materials are **extracted**, **manufactured** into products and **sold** to customers, who **use** them until no longer work or no longer wanted, at which point they are **disposed off.**

WHAT ARE THE LIMITS?

- Volume optimization with **no account of impact** of production
- **What happens at the end** of the product's use?
- Products **are not designed** to be reused, repaired and recycled
- **Waste** generation
- …

'Many features of our current economies are predicated on an era of low-cost, readily available resources and a system of national accounts that **fail to take into account much of the degradation and degeneration of natural capital** on which our entire economies and societies depend' [...] A circular setup is not a static system [...]'

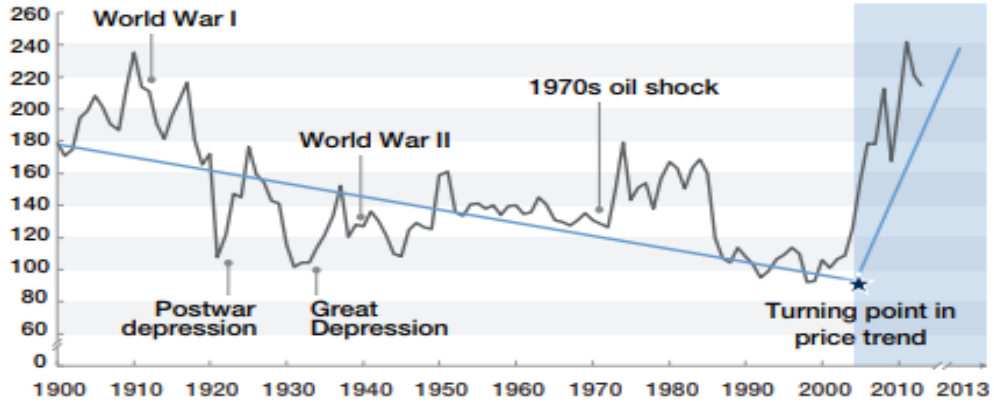
*From the Haas School of Business of **University of California, Berkeley** - April 2018*

The Linear Economy: price volatilities for commodities

Figure 1: Sharp price increases in commodities since 2000 have erased all the real price declines of the 20th century

McKinsey Commodity Price Index[1]
Index: 100 = years 1999–2001[2]

1 Based on the arithmetic average of four commodity sub-indexes: food, non-food agricultural



items, metals, and energy.

2 Data for 2013 are calculated based on the average of the first three months of 2013.

Source: Grilli and Yang; Pfaffenzeller; World Bank; International Monetary Fund; Organisation for Economic Cooperation and Development (OECD) statistics; Food and Agriculture Organization of the United Nations (FAO); UN Comtrade; McKinsey Global Institute analysis

The turn of the millennium marked the point when **real prices of natural resources began to climb upwards**, essentially **erasing a century's worth of real price declines**.

Source: Towards the circular economy 2014 - World Economic Forum, McKinsey

The linear risks: regulatory and market context

Regulation and shale gas are making life though for carbon and fossil fuels producers

Arch Coal, USA second largest **coal producer**, filed for bankruptcy in the hopes of **eliminating more than $4.5 billion in long-term debt**

- **Low natural gas prices** made 2015 a tough year for coal industry with production slumping to a 30 year low
- Recent **environmental regulation**, such as the Clean Power Plan, have made **coal more expensive** for utilities than natural gas
- Other US coal companies (Patriot Coal, Walter Energy, Alpha Natural) also filed for bankruptcy

Bankruptcy is a victory for lenders who rejected the debt swap offer because they believed it would be dilutive to their collateral. Now they own the collateral, but given bad news from coal industry, it's **not clear what that collateral is worth**

WSJ, 11/01/2016

Oil-related credit and activities from mayor US banks are worsening significantly

In January 2016, 3 of the biggest US banks announced **sharp rises in costs for bad energy loans** due to low oil prices, leading to fears of contagion in other portfolios:

citi Recorded **a 32% rise in corporate NPLs** in Q4 of 2015, mainly related to its energy book;

WELLS FARGO **Oil-related net charges** came to **$831 mln** in Q4, up from $731mln in Q3 mainly due to oil and gas

To add up to **$750 mln** to reserves in 2016, if oil prices stay around $30 per barrel

The disclosures are a symptom of the crash in crude, which has caused **big producers to slash spending** and tipped **smaller companies into bankruptcy**

FT, 15/01/2016

U.S. shale breakeven price revealed around $50

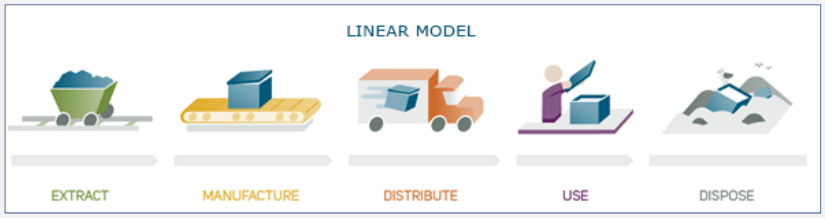
LONDON (Reuters) Aug 2017 - U.S. shale producers need a WTI oil price around **$50 per barrel to break even**, according to an analysis of financial statements for the second quarter.

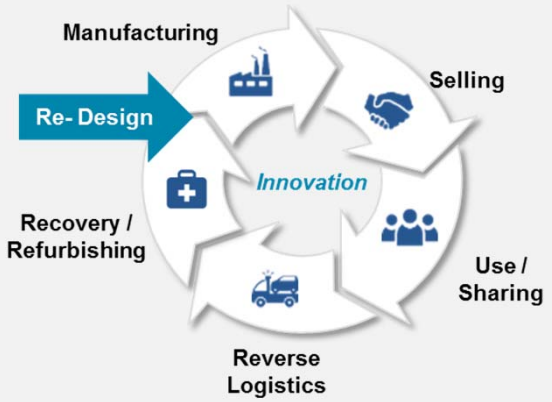
- Fifteen of the largest shale oil and gas producers reported **total net losses of $470 million** for the three months between April and June when benchmark WTI prices averaged $48.
- Total **losses were down from $3.7 billion** in the first three months of the year and $7.4 billion in the same period in 2016, according to earnings statements published in the last week (tmsnrt.rs/2ftmgnd).
- Nine of the companies in the sample reported positive net income in the second quarter, down from 10 in the first quarter, but well up from none in the same period last year.

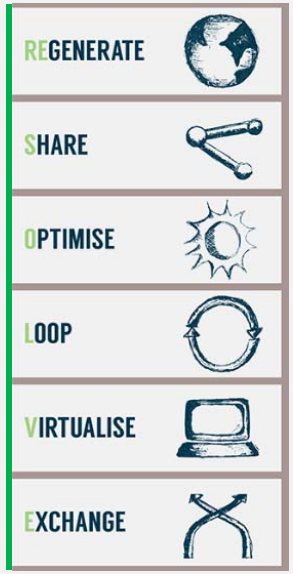
The Circular Economy: a new future-proof value creation model

Linear Economy → **RE-THINK & RE-DESIGN** → Circular Economy

How long can our Linear Waste Economy continue?



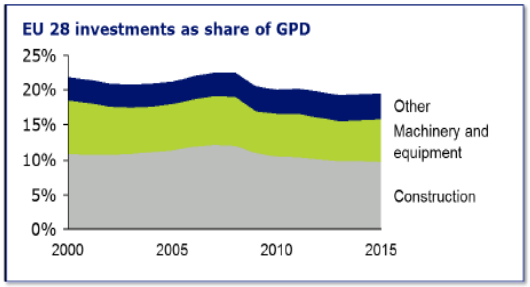


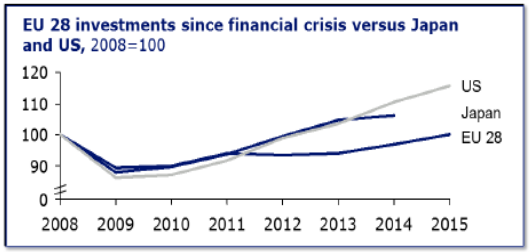


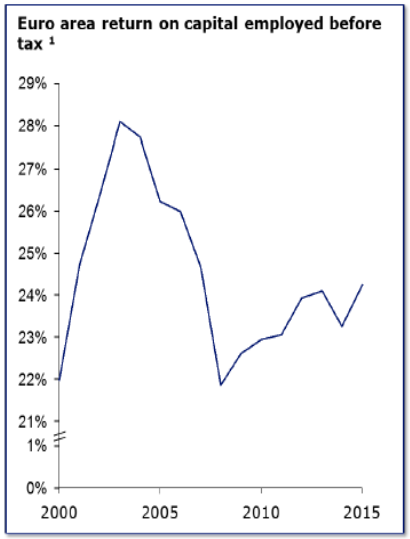
Underpinned by a transition to **renewable energy sources**, the circular model builds economic, natural, and social capital.
It is based on three principles:

- **Design out waste and pollution**
- **Keep products and material in use**
- **Regenerate natural system**

Industrial investment in Europe: in search of attractive opportunities







→ EU needs of industrial renewal and investment opportunities

The **Circular Economy** offers a ground-breaking, sizeable and attractive investment theme

Rethinking the Global Economy

Frans Timmermans
First Vice-President
European Commission

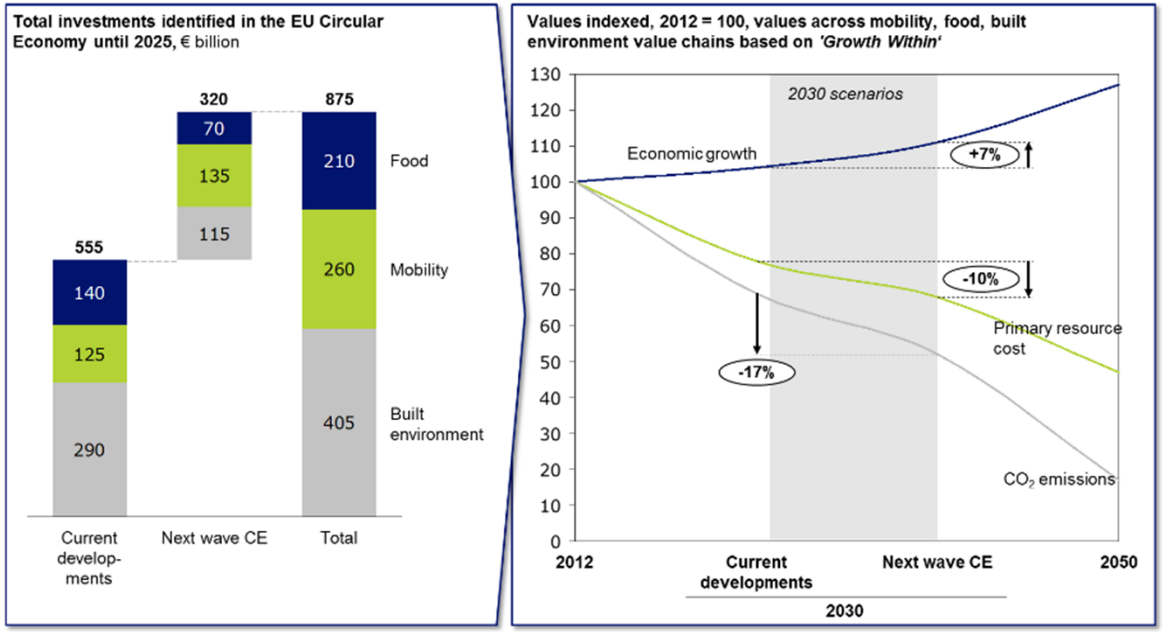
Belgian Circular Economy Day
21 November 2017

"The business community is able to not only think in terms of short-term shareholder profits, thanks to the **rethinking of neo-liberal capitalism** which was long overdue […].

A long-term view in light of the fourth industrial revolution, and the **Circular Economy** can be done"

Source: Achieving Growth Within, 2017, SystemiQ

€875 bln of circular investments expected by 2025 in Europe



MOBILITY | 135 €bln

- modally integrated shared mobility systems
- transitioning to circular car designs
- ramping up the reverse value chain for vehicles through focusing on remanufacturing

FOOD SYSTEM | 70 €bln

- **fully regenerative agricultural practices**
- **closing organic nutrient loops**
- **scaling high-productivity indoor urban farming opportunities**
- **developing next-wave protein sources**

BUILT ENVIRONMENT | 115 €bln

- designing and constructing buildings based on CE principles
- closing loops on building constr. and demolition materials
- building circular cities

*"… **Powerful technology** and **market trends** are underway with the potential to create unprecedented **stranded assets** across Europe. The shift from a linear to a circular industrial model presents a way to **mitigate** that **risk*** […] Executives **should shift business strategy and investments away** from the resource-intensive business models most at risk of getting stranded."

Fonte: Achieving 'Growth Within' - SistemiQ, SUN, Ellen MacArthur Foundation 2017

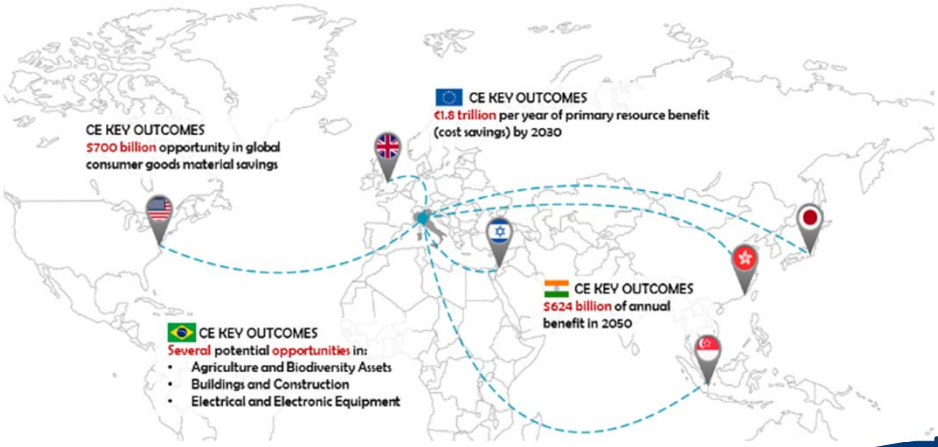
Intesa Sanpaolo and the Ellen MacArthur Foundation

- Dame Ellen MacArthur is a successful solo long-distance yachtswoman. In 2005 she broke the world record for the fastest solo circumnavigation of the globe, a feat which gained her international renown
- Her Foundation is the world most influential think-tank on Circular Economy
- They work with Entrepreneurs, Government and Universities to foster world transition towards CE

Since December 2015, Intesa Sanpaolo Group has become **Financial Services Global Partner** of EMF Foundation

The **CE100** is a global platform bringing together leading companies, emerging innovators and regions to accelerate the transition to a CE

Circular Economy: an international **mega trend**



INTESA SANPAOLO INNOVATION CENTER

CIRCULAR ECONOMY

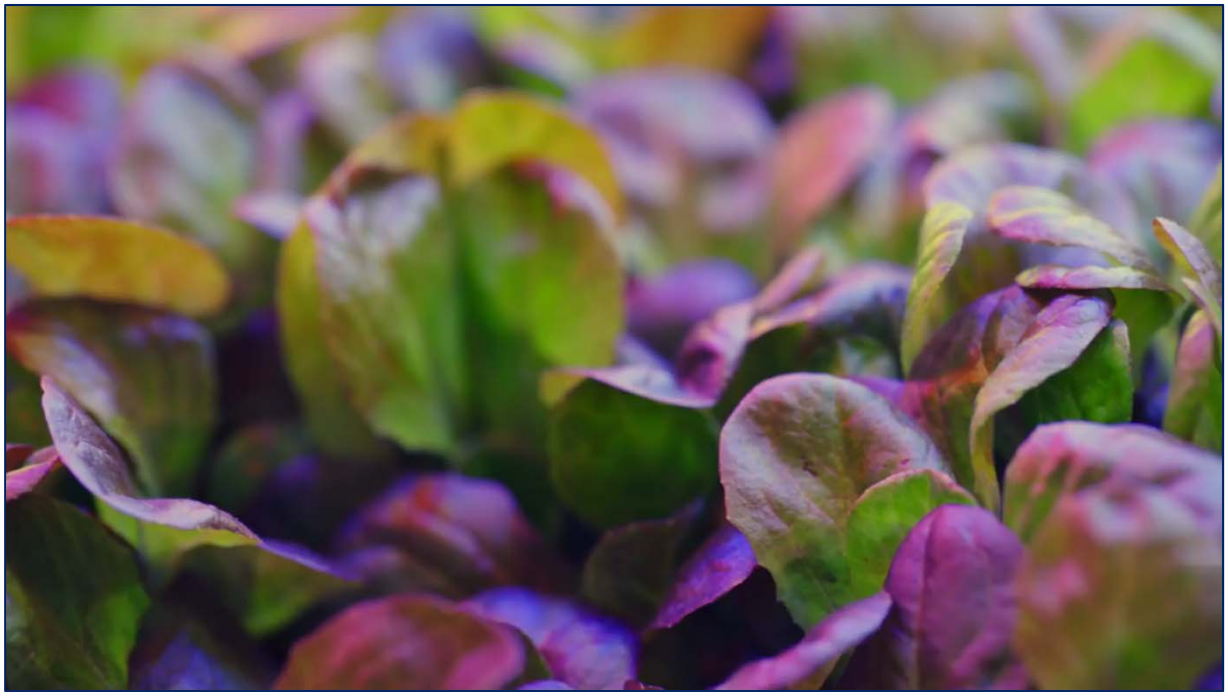
RESTORATIVE BY DESIGN

case studies

Mangrove - Emulates mangroves ecosystem to create condition conducive to life

Mangrove Still is a **passive, low cost, modular bio-inspired solar distiller** able to produce **fresh water from seawater or highly concentrated salt water**, to be used for **land regeneration** or for drinking

AeroFarms - indoor and precision farming with aeroponic tech

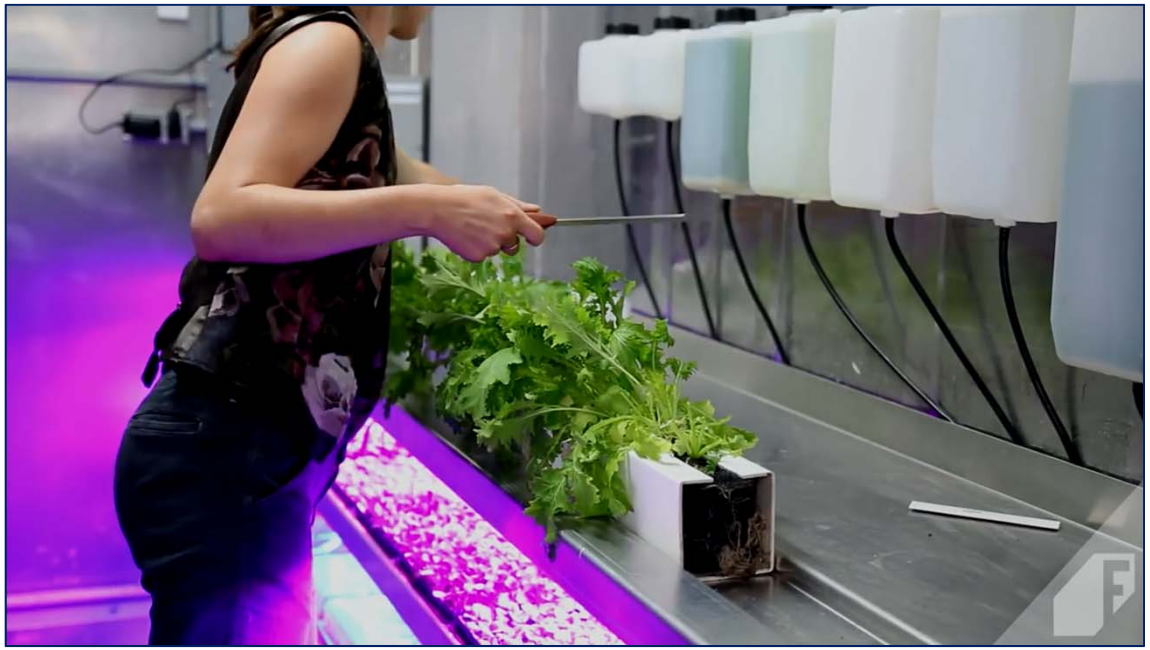


AeroFarms grows greens and herbs in **50% less time without sunlight, soil** and **pesticides**, with **95% less water**

Crops get the perfect amount of moisture and nutrients misted directly onto their roots in a completely controlled environment.

Leafy Green Machine by Freight Farm

The Leafy Green Machine, is a complete **hydroponic growing system** capable of producing a variety of lettuces, herbs and hearty greens that can be monitored in real-time from any location



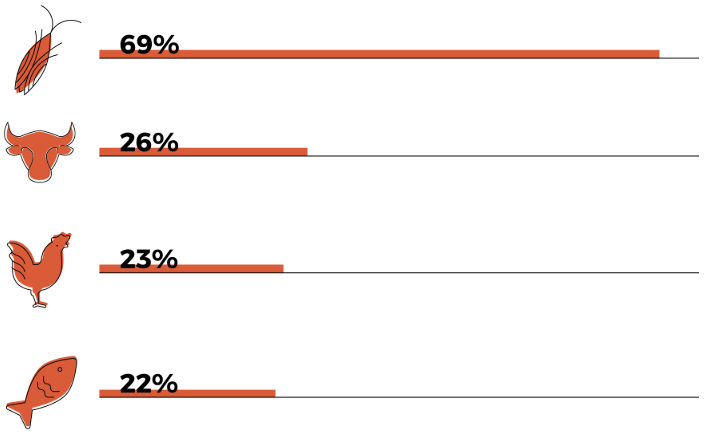
4,500 growing sites throughout 256 lightweight crop columns
The LGM™ uses 98% less water than traditional farming methods

Assembled inside an **upcycled shipping container**, the pre-built system includes all necessary components for **commercial food production (no matter their background or climate)**

Crickè - The taste of tradition, the power of crickets

Crickets are a great protein source for our body and for the planet

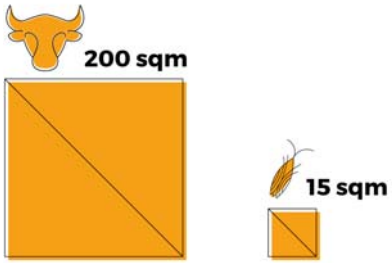
They have a **protein value of 69%** (amount on the dry weight) which is the double of beef.



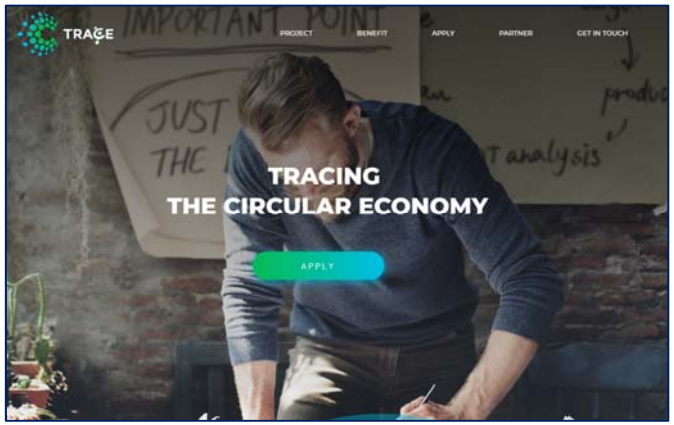
Protein value on the dry weight of cricket, cow, chicken and salmon

Crickets require **the 0,05% of the water** that cows do to produce the same amount of proteins.

On average, 200sqm of land are used to produce 1kg of beef. For insects **15sqm are enough**.



Trace - Tracing the Circular Economy



http://trace.cariplofactory.it/en

PARTNERS

CARIPLO FACTORY

INTESA SANPAOLO INNOVATION CENTER

Circular Economy Team

Massimiano Tellini
Head – Circular Economy
+39 3669609548
massimiano.tellini@intesasanpaolo.com

Anna Monticelli
Circular Economy
+39 3388918542
anna.monticelli@intesasanpaolo.com

Luigi Riccardo
Circular Economy
+39 3668210820
luigi.riccardo@intesasanpaolo.com

Angela Chita
Circular Economy
+39 3346281938
angela.chita@intesasanpaolo.com

INTESA SANPAOLO INNOVATION CENTER