Circular economy and industry in France: Framework and case studies

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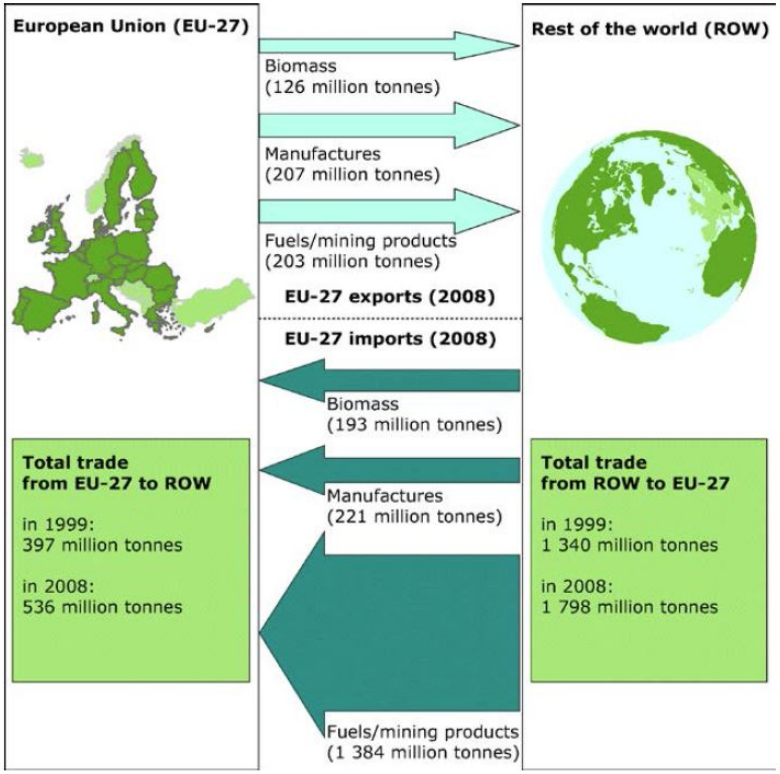
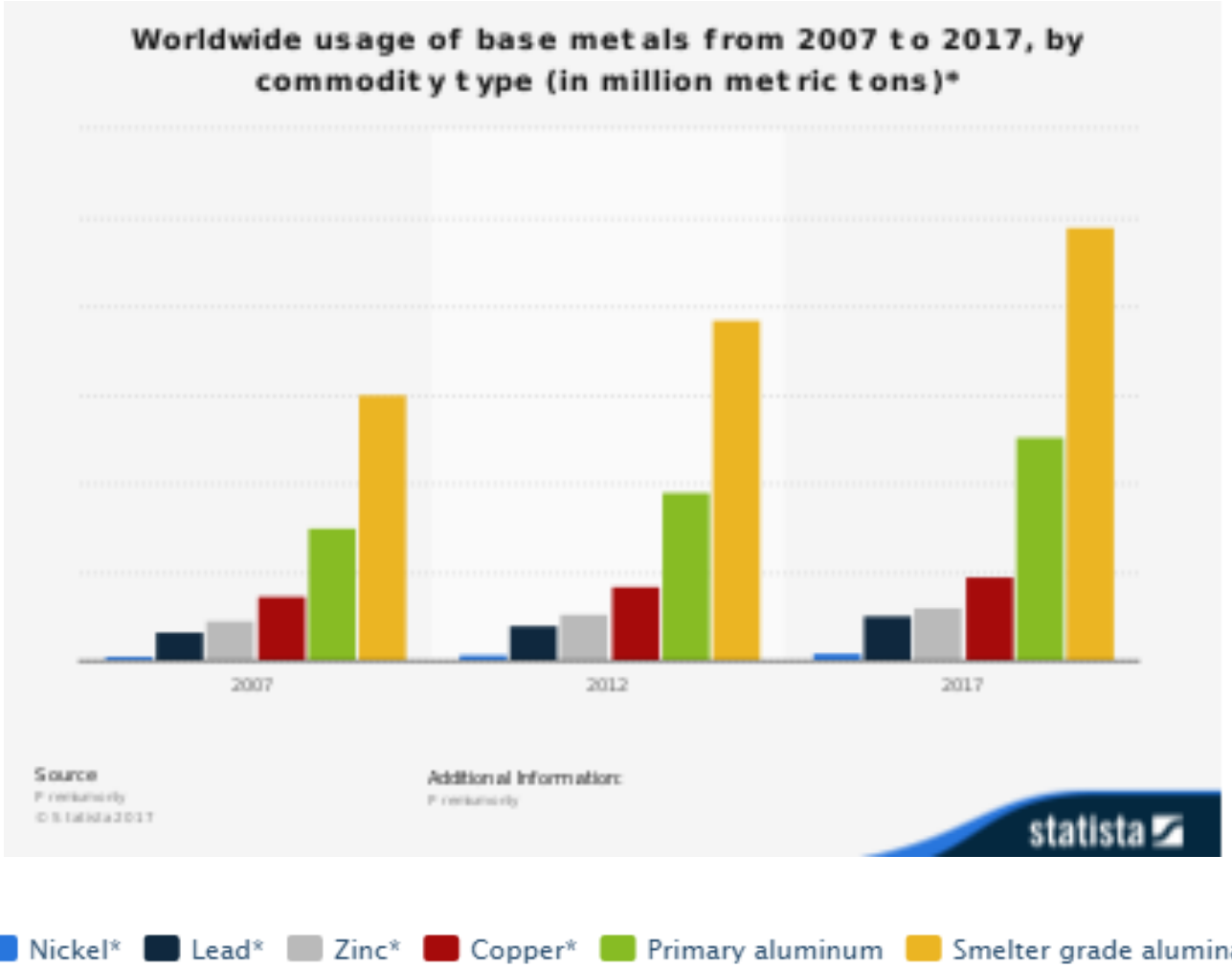
What is circular economy about? From linear to circular economy

- Rising prices for raw materials and energy;
- Lower supply of raw materials
- Environmental damage from mining, landfill and waste disposal;
- Improving efficiency of existing process offer only short term gains.

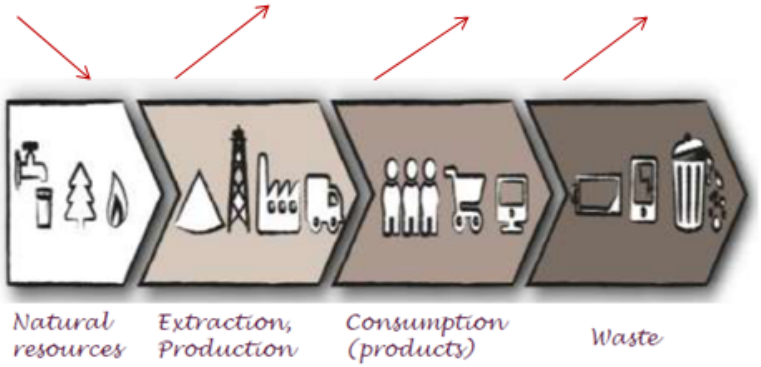


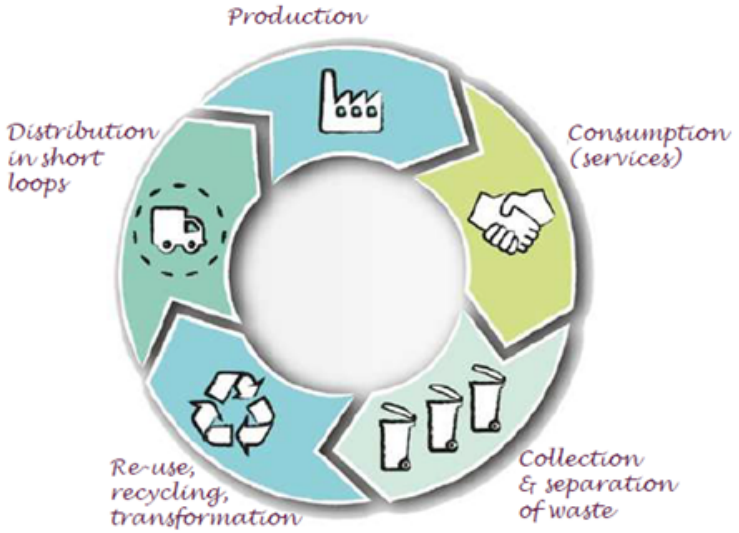
Some striking figures: Demand on metal



What is Circular Economy

- Move away from a linear to a circular approach in order to decouple economic growth from resource use and its environmental impacts.

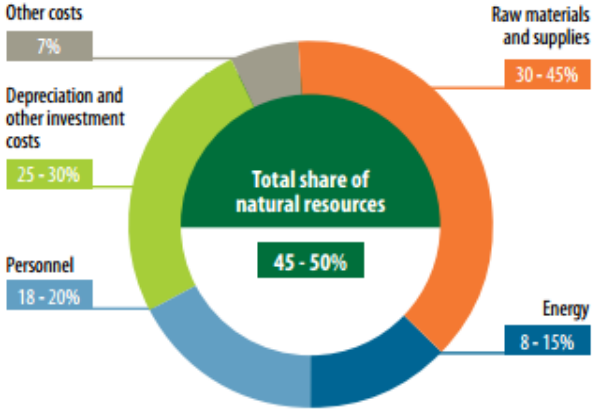


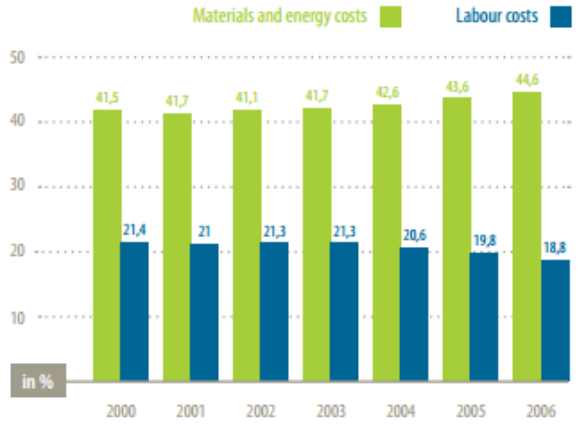


Linear → **Circular**

Impact on Companies

- Natural resources account for up to 45-50% of manufacturing costs for the average company;
- Labour costs, as a percentage of total costs, are falling compared to the rise in materials and energy costs;
- Small Business Act (11th_United_States_Congress2010) estimates that better use of natural resource could save European industry €630billion;





The 7 pillars of circular economy
(ADEME)

Estimated Gains from a CE policy

- 18% recycling
- 15% multi-player action
- 14% sustainable supply
- 14% eco-design
- 14% responsible consumption
- 11% industrial and territorial ecology
- 7% product-service economy
- 7% longer life span cycle

2017 Circular Economy Initiative: French Association of Private Enterprises

- On February 1, 2017, the AFEP in cooperation with the Ministry for Environments published a report entitled
  " ***Circular Economy Trajectories": 33 companies boost their contribution through 100 commitments***" in favor of concrete actions:
- Recycling, sustainable supply, eco-design, responsible consumption, industrial and territorial ecology, service economy, extension of the life cycle".
- These commitments include:
  - **Air France**, which promotes the development conditions for fueling aircraft with aeronautical biofuels.
  - **Total,** which aims to improve the energy efficiency of industrial plants by an average of 1% per year Between 2010 and 2020 ".
  - **Veolia** Energido project: use of recycled waters to heat swimming pools.

AFEP Recommendations to develop a circular economy:
5 national and European priority actions

- Adopt a European strategy on CE ensuring a level playing field between players, and coordination (product optimization and recycling).
- Harmonize Measurement methods at the European level (use of resources, waste flows, life cycle analysis .
- Promote the extension of the product lifespan and replace waste by reprocessing the resources (eco-design, reuse, recycling)
- Involve EU Members States as CE project facilitators, in order to reach common objectives, concerted deals set up.
- Increase the efficiency of the fight against illegal waste disposal and implement more deterrent sanctions (regulatory, fiscal, certifications, agreements).

The AFEP 100 commitments In favor of circular economy by 33 companies

- All are MNEs, with a capacity to mobilize all stakeholders i.e. suppliers, support companies, customers.
- 6 years time frame commitments.
- 18 sectors involved.
- A "Multi-Actors" aiming at intra-industry cooperation at the EU level is being added to the 7 ADEME pilars.
- Activities covered:
  - Raw materials and mining products - Energy - Chemical industry - Metallurgy - Machinery and Equipment - Cement - Automotive industry- Paper - Retail -Food industry - Cosmetics - Water treatment- Telecommunications –Housing- Public works- Financial Services – Rental -Transport.

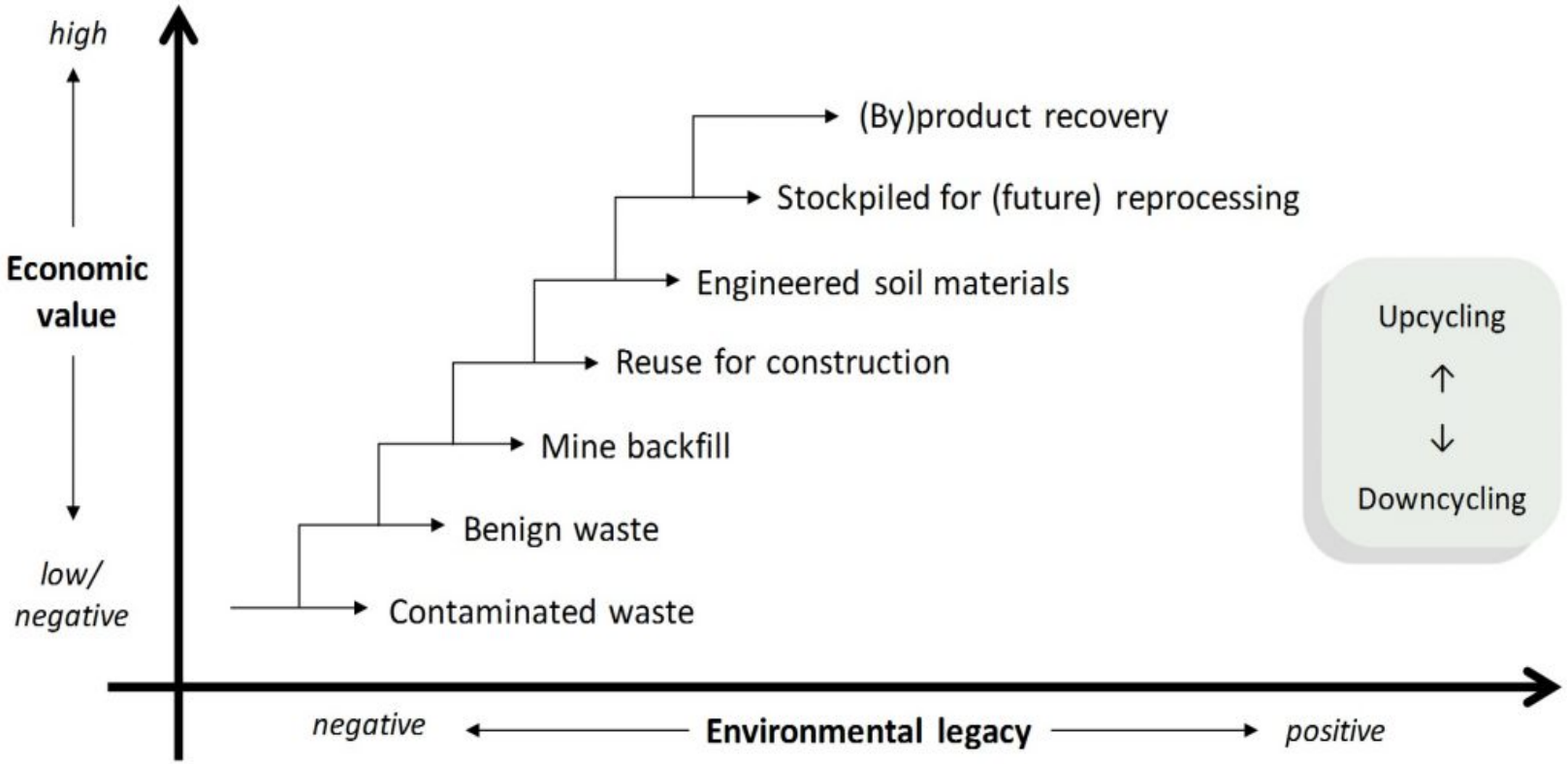
Mining Business models for the Circular Economy

Source: Golev, Lebre, and Corder, (2016) Sustainable Minerals Institute, The University of Queensland, Australia.

Model	Description	Upstream mining-related examples	Downstream examples
Closed-loop recycling	Retain material and its quality for multiple cycles of use-recycling	Waste lubricants recycling; mining equipment refurbishment and recycling	HP's cartridge recycling program
Downcycling	Alternative area and/or form of use, lower value, loss for future recovery, savings on landfill	The use of mine waste for backfilling	Nike's 'Reuse a shoe' (recycling into rubber for playgrounds)
Upcycling	Turning material into new product of higher value and/or quality	Metal (and by-product) recovery from waste rock and tailings; reuse as a soil additive and for road construction	Worn Again (textile recycling); REDcycle (plastic bags and packaging recycling)
Industrial symbiosis	Waste and by-product exchanges, sharing of services and utilities	Alternative raw materials for cement production	Timberland Tire (old tires for shoes)
Collection services	Collection of old or used products (for further recycling elsewhere)	Old tyres collection	Teracycle (multiple collection programs); Nespresso's coffee capsules collection

Value chain options for mine waste

Source: Golev, Lebre, and Corder, (2016), Sustainable Minerals Institute, The University of Queensland, Australia.



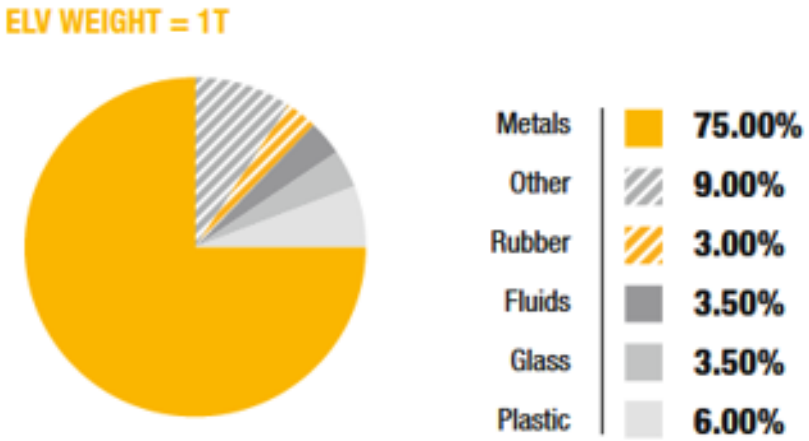
Case study 1: Lafarge Holcim

- For the Lafarge Holcim group, cities of tomorrow will be urban mines: Recycling and deconstruction improve the life cycle of buildings and infrastructure while at the same time increasing resource efficiency.
- To this end, the group has launched a recycling and recovery entity of waste from the construction industry; it also promotes the use of recycled building materials (from 12 million tons produced in 2020 to 26 in 2030).
- Excavated material from the *Greater Paris Express project* and recycled concrete were reused for the manufacturing of new materials with positive externalities: environmental footprint reduced, optimized and reduced costs

Case study 2: Renault's commitment

Increase the benefit issued from circular economy from 200 to 250 m€ by:

1. Improving lifetime of batteries for electrical vehicles
2. Better use of recycled plastics
3. Increasing the use of second-hand parts for repair
4. Build shorter loops for integrating into the production process materials from used cars.



Conclusions and recommandations

- An increase in mining production is necessary to meet an increasing demand for raw materials in the years to come.
- Recycling, even if optimized, is not likely to satisfy the increasing demand for a given metal, at least globally.
- Circular economy will, among other, allow for a better use of materials and lower prices to meet this increase in demand
- Sustainable mining activities and best practices worldwide are required to meet 21st century challenges…
  as expressed by the COP21!

Future pathways to the circular economy

- Potential reduction in environmental risks in mining operations
- Gains from the reuse of mining waste with a new business model
- Feasible community benefits due to lower environmental risks
- Opportunities for the development of local enterprises from a wider use of mining waste

References

- AFEP: French Association of Private Enterprises represents over 100 of the largest companies operating in France. AFEP takes part in public discussions, aiming to find pragmatic solutions which will encourage the development of a competitive French and European economy.

- ADEME: The French environment and energy management agency (ADEME) is active in the implementation of public policy in the areas of the environment, energy and sustainable development.