



Saint-Gobain

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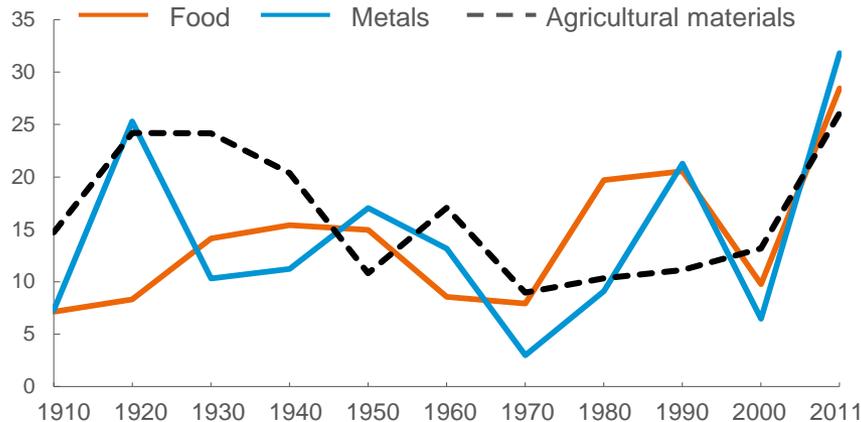
World Materials Forum
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Recycling & Recovery enable industrial groups to secure their supply of raw materials

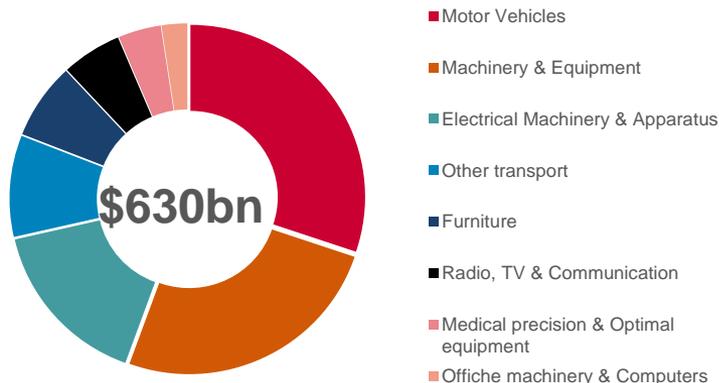
Price volatility (in %, yoy), 1910-2011

10-year average ending at start of year cited



Source: Grilli and Yang; Pfaffenzeller; World Bank; IMF; OECD ; UN FAO; UN Comtrade; Ellen MacArthur Foundation

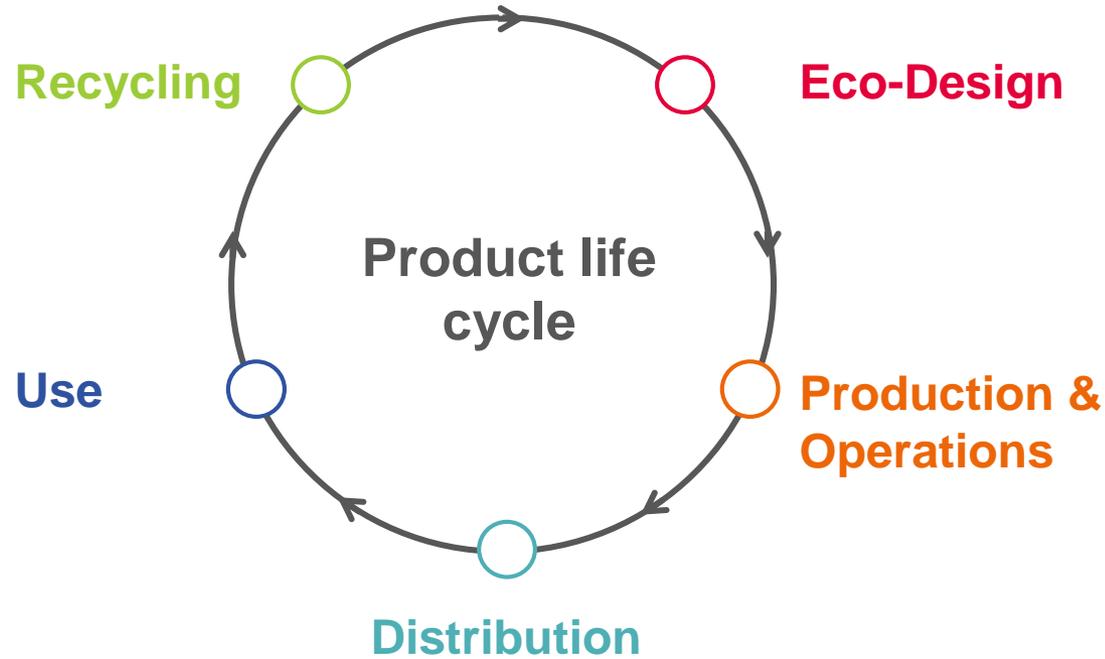
Net material cost savings in manufacturing in the EU with a circular economy



Source: Eurostat 2007 & Calculations by Ellen MacArthur Foundation

- Raw materials are finite and prices are highly volatile
- Creating a recycling loop around those materials helps to reduce purchases of raw materials and makes industrial companies less vulnerable to external shocks
- Cost savings can be realized through reduced waste processing cost and landfill cost, in particular for costly hazardous waste
- Recycling may provide a competitive advantage as waste can now be reintroduced in the production process as a resource

Reduce the environmental impact of industries along the value chain

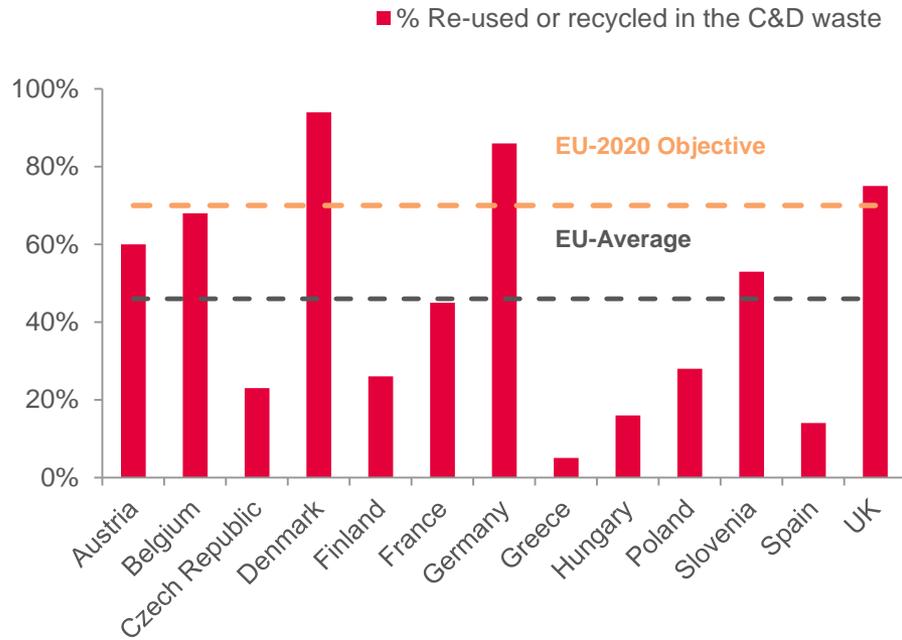


Saint-Gobain: Reduce by **-50%** non-recovered waste in **2025** (2010 basis) and achieve **0** non-recovered waste in the long term



The construction industry: necessity to invent “sustainable buildings”

Average recycling rate of Construction & Demolition waste in European countries



Source: Bio Intelligence Service and the European Commission

Share of buildings



30-40% OF GREENHOUSE GAS EMISSIONS



25-40% OF SOLID WASTE GENERATION



30-60%* OF C&D WASTE IS RECYCLED IN EUROPE

* Different estimations according to various sources (UBA or European Concrete Platform)

The example of Glass

Isover new binder made from renewable materials



Eco-designed glass bottles ECOVA



Recycling windows in France



- ▶ Glass can be indefinitely recycled
- ▶ Saint-Gobain uses recycled glass – cullet – to produce glass bottles, glass wool and flat glass for buildings and cars
- ▶ Different applications are complementary since they require different levels of quality
- ▶ Cullet usage ratio varies from **30%** to **100%** in the Group's plants
 - No internal cullet in landfills anymore
 - Collect more external glass from construction and demolition sites ~ **1Mt** available in Europe
 - Lapeyre, Saint-Gobain Glass and Paprec collaboration since **2013**
 - Chart signed with AGC on recycling in **2014**
- ▶ Challenges
 - Difficulty to collect cullet
 - Risk of major pollution incidents in our furnaces
 - Cost of recycling (transport) compared to landfill



The example of Gypsum



- ▶ Specific status of gypsum since **2008**
- ▶ Placo Recycling Program
 - **80%** of total gypsum which is recycled from construction sites in France
 - **100** professional partners
 - **140** collection points and **3** recycling centers
 - Gypsum waste now traceable from the construction site to the final disposal
- ▶ Challenges
 - Necessity to bring together the different actors and create the overall ecosystem
 - Difficulties to split the value created between the different actors involved along the closed loop



Critical issues to generalize these initiatives

- ▶ Recycling and recovery will only be long-lasting if they are economically viable/provide a competitive advantage
- ▶ Create new supply chains and closed loops to ensure the constant quantity and quality of the waste stream in the different economic sectors
- ▶ Communicate to end-consumers on the green content of materials to establish a market for recycled products; in particular, assess the technical and sanitary quality of the products which incorporate secondary primary materials
- ▶ Green policies and legislation have a major role to play in all these critical issues



