european aluminium association

SUSTAINABLE DEVELOPMENT INDICATORS FOR THE ALUMINIUM INDUSTRY IN EUROPE

2012 KEY FACTS AND FIGURES

Engaging for sustainable growth

Note to the reader

The European Aluminium Association (EAA) represents the whole aluminium value chain in Europe from alumina and primary production to semi-fabrication, end-use products and recycling.

Since 1997, EAA has been monitoring the industry's performance and in 2002 started regularly reporting an extensive list of Sustainable Development Indicators related to the production of aluminium, placing the European aluminium industry among the first sectors to undertake such an ambitious task. A set of over 30 indicators was developed in collaboration with United Nations Environment Programme (UNEP) / Wuppertal Institute Collaborating Centre on Sustainable Consumption and Production and was then expanded in 2010 to cover also the use phase and recycling.

The present report contains a selection of key indicators, chosen on the basis of their meaningfulness and simple understanding, in order to reflect the main achievements in a variety of domains and setting the ground for future ambitions.

- The geographical coverage of the indicators for the production phase is EU+EFTA, unless otherwise stated.
- All the indicators are based on a thorough data collection performed among the EAA member companies. Wherever relevant, the data collected has been scaled up to represent the whole industry in EU+EFTA countries, based on the information on the total aluminium production figures which EAA collects annually.
- The response rate corresponds to the percentage of production of respondent vs. total production (EU+EFTA).
- For the section on the use of aluminium, the main market applications i.e. Automotive & Transport, Building & Construction and Packaging, and the related recycling performance, both qualitative and quantitative information are included.
- Overall data refer to the previous Sustainable Development Indicators and EAA's other publications (Environmental Profile report 2013, EAA 2050 low-carbon Roadmap "Lighten the load", EAA Activity report 2012).

The full list of indicators collected is available on the EAA website
www.alueurope.eu

Brussels, November 2013

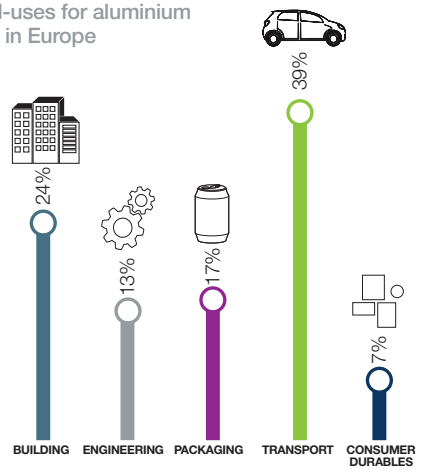
Economic indicators

The global and European aluminium demand has been growing for many years. Europe's production base has suffered from a significant drop due to various factors - including uncompetitive energy prices and pressure from regulatory costs – and has triggered a significant increase in imports to cover Europe's demand.

16%
of the world's total production, half of which from recycled sources

€36.8 billion
annual turnover

Main end-uses for aluminium products in Europe



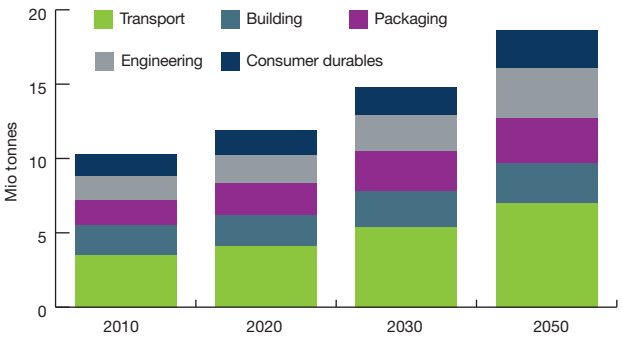
Demand is driven by the specific properties of the material and the delivery of forward-looking and sustainable solutions for a resource-efficient and low-carbon society.

Demand in Europe for aluminium solutions is constantly increasing as aluminium is increasingly substituting other materials.

The consumption of aluminium products is directly linked to wealth and increased economic activity.

In 2012 on average each European citizen used
22 kg of aluminium

European Consumption of Aluminium by Market Sectors (forecast)



EU production

11 Smelters closed or curtailed since 2007 out of 24 facilities

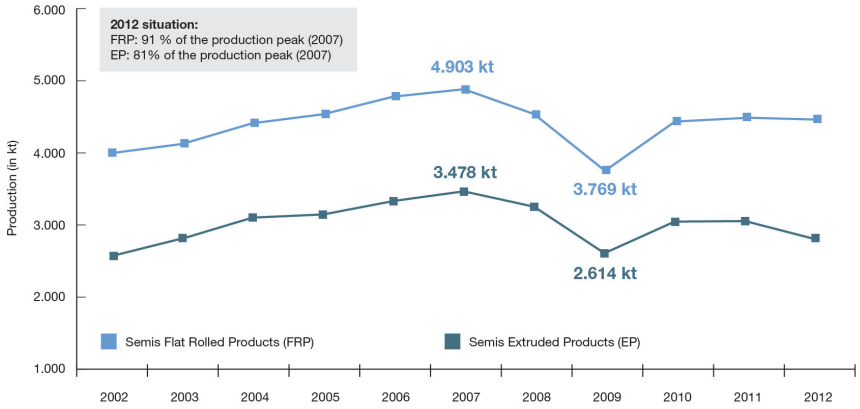
=

-36% **EU primary production** since 2007, i.e. – 1 Mt
EU primary production amounts to 2.1 Mt

>

51% **EU import dependency** for the first time in 2013

EU semi-fabricated production has not yet regained pre-crisis levels



RECYCLING

EU total recycling amounts to **4.1** Mt

In 2012
> **750,000** tonnes of scrap were exported

+ 22% **scrap leakage each year**
Since 2002 the EU is a net exporter of scrap, compromising the growth of the recycling industry in Europe.

Social indicators

The aluminium industry, composed of both small and medium-sized enterprises as well as integrated large companies, is important both for jobs and local development. Providing safe working conditions for all employees in all operations has always been a key priority for our sector.

The European aluminium industry directly employs

80,000 people

for the metal supply (i.e. alumina refining, production of primary and recycled aluminium) and the semi-fabrication. When including companies involved in related processes throughout the entire value chain (i.e. casting, foil, system houses, powders, pastes and other downstream activities) the estimation of direct job reaches

255,000 people

On top, it is estimated that about 1 million indirect jobs are dependent on aluminium.

Since the 2008 crisis, the **total number of employees has decreased by**

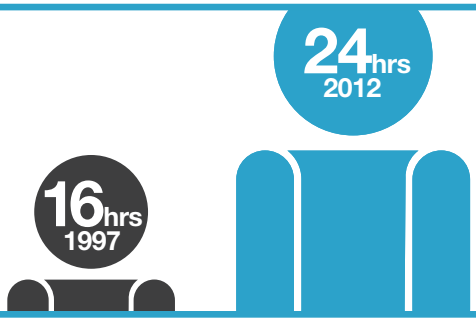
-16%

-29% for the metal supply jobs

-11% for the semi-fabrication jobs

-14% for R&D jobs

The aluminium industry has always been committed to improve the development of people, in particular by increasing training hours.

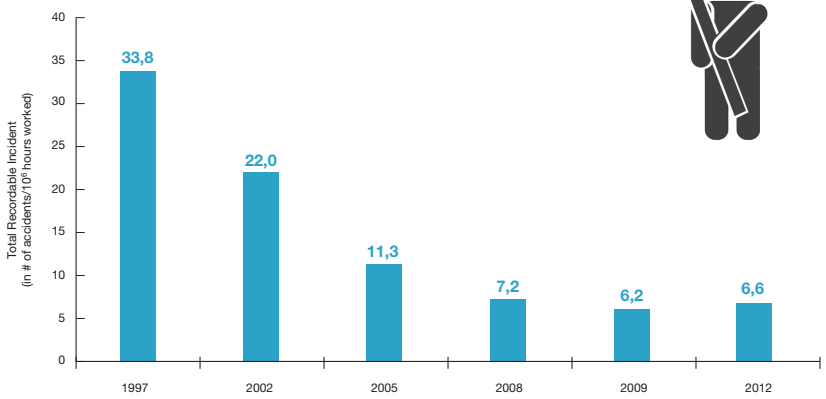


+50%

Continued strong investments in safety, prevention and training programmes has led to impressive progress with a **79% reduction in Total Recordable Incident rate.**

The Total Recordable Incident Rate (TRI) is the total number of fatalities, lost time accidents, restricted work cases and medical treatment cases per million hours worked.

Total Recordable Incident (TRI)



The objective of **"zero fatalities"** is a must. Hence, all possible efforts are being put into fatality prevention programmes, in order to achieve this important goal. **In 2012 no fatality was recorded** within the EAA membership, although a dramatic accident caused two fatalities outside the reporting perimeter of the EAA membership.

Environmental indicators

The aluminium industry in Europe is putting great emphasis on the need to reduce its environmental footprint continuously and is contributing further to the transition to a low-carbon and resource efficient society.

With a share of

8%,

aluminium is the third most abundant element in the earth's crust after oxygen and silicon. In its metallic form, aluminium is the most widely used non-ferrous metal.

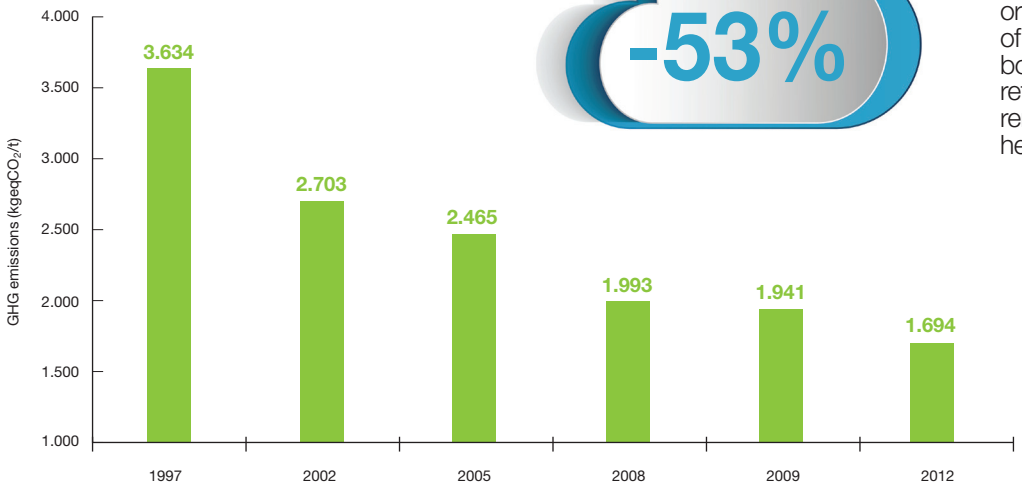
The area of mined land rehabilitated every year globally is equivalent in size to the area newly mined.

Successful rehabilitation and environmental management ensures that bauxite mining is a temporary land use that does not compromise other long term land uses.

Since the 1990s, the industry has reduced its CO_2 equivalent emissions by 53% for its primary production, and by over 90% for the PerFluorocarbon (PFCs) emissions from the electrolytic process.

Greenhouse gases (GHG) are produced either by process-specific chemical reactions, e.g. from anode consumption during electrolysis in primary production, or the combustion of fuels, e.g. in the boilers for alumina refining, in the remelting and heating furnaces.

GHG emissions



GHG emissions from semi-fabrication have been reduced by

-7%

since 2002 and on average, the aluminium industry as a whole has reduced its GHG emissions by

-4%

annually since 1997.

All the current smelters are equipped with state-of-the-art abatement systems of **fluoride emissions** – generated in the electrolytic cells from the fluorine present in the cryolite bath where electrolysis of the alumina takes place – which has made a reduction of more than

-50%

possible over the period 2002-2012.

Primary production of unwrought aluminium is electro-intensive, with 30% to up to 40% of total production costs related to energy. Hence, the industry has a direct incentive to become more energy-efficient and in fact it has reduced its **electricity consumption** per tonne by about

-6%

since 1997, approaching the best performance achievable with current technology.

Semi-fabrication, using mainly other sources of energy (gas, fuel), has reduced its consumption by 5% since 2002.

Use-phase and recycling

Aluminium's unique combination of properties - lightweight, flexibility, excellent electrical conductivity, strength, extreme resistance to corrosion and endless recyclability – makes it a material of choice for various applications. Aluminium is endlessly recyclable and 75% of all aluminium ever produced is still in use.

Recycling saves

95%

of the energy required to produce primary aluminium

Aluminium enjoys high end-of-life recycling rates

>90%

in the automotive (cars and trucks) sector

>90%

in the building sector

60%

of all aluminium in packaging

Aluminium in transport can save on average up to

50% weight

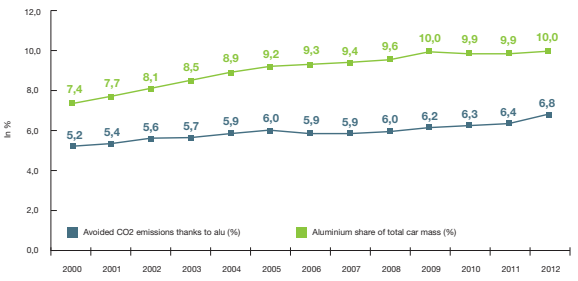
over competing materials and helps **reduce CO_2 emissions.**

Actual weight savings lead to an average annual fuel saving of

65 litres per car.

The amount of aluminium used per car produced in Europe almost tripled since 1990 reaching 140kg.

Aluminium makes cars more efficient



Aluminium improves buildings energy-efficiency and it allows for lightweight and innovative construction. Intelligent façades incorporating aluminium systems can **decrease energy consumption by up to 50%.** It can also upgrade the energy performance of existing buildings with **CO_2 payback periods between one to five years**[2].

Due to its unique properties as an efficient barrier to air and light, a minimal amount of aluminium is sufficient to package valuable foodstuff and drinks and helps avoiding food spoilage. Aluminium beverage cans, foil containers, closures and blister packs offer many benefits, e.g. preserving taste and quality, sustainability and recycling, consumer convenience, cost efficiency and attractive design.

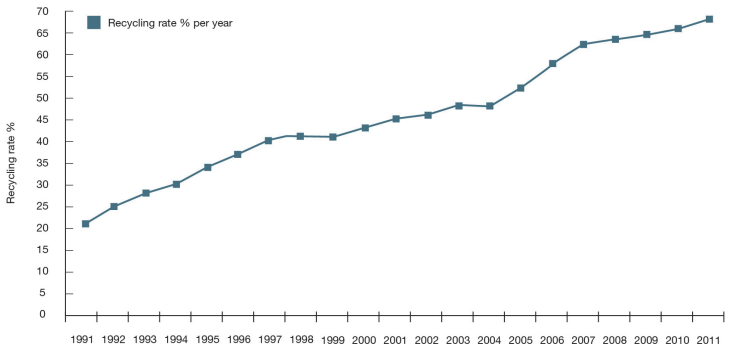
As an example, in Europe, **68% of aluminium beverage cans were recycled in 2011**, representing at least

25 billion cans,

three times more than 20 years ago.

The aluminium beverage can is the world's most recycled beverage container because it is easily collected, sorted, and recycled back into the same can or into other valuable end-use products such as bicycles or engine blocks.

Recycling rate for cans



The aluminium industry is firmly committed to improve recycling rates, to support better collection and sorting schemes through the development of EU-wide network of national recycling and promotional initiatives, close partnerships with local authorities, customers, the waste management sector and NGOs, all willing to improve recycling and resource efficiency.

[2] To illustrate how energy performance of existing buildings can be upgraded, EAA compiled three renovation case studies and performed simplified life-cycle-assessments focusing on greenhouse gas emissions.

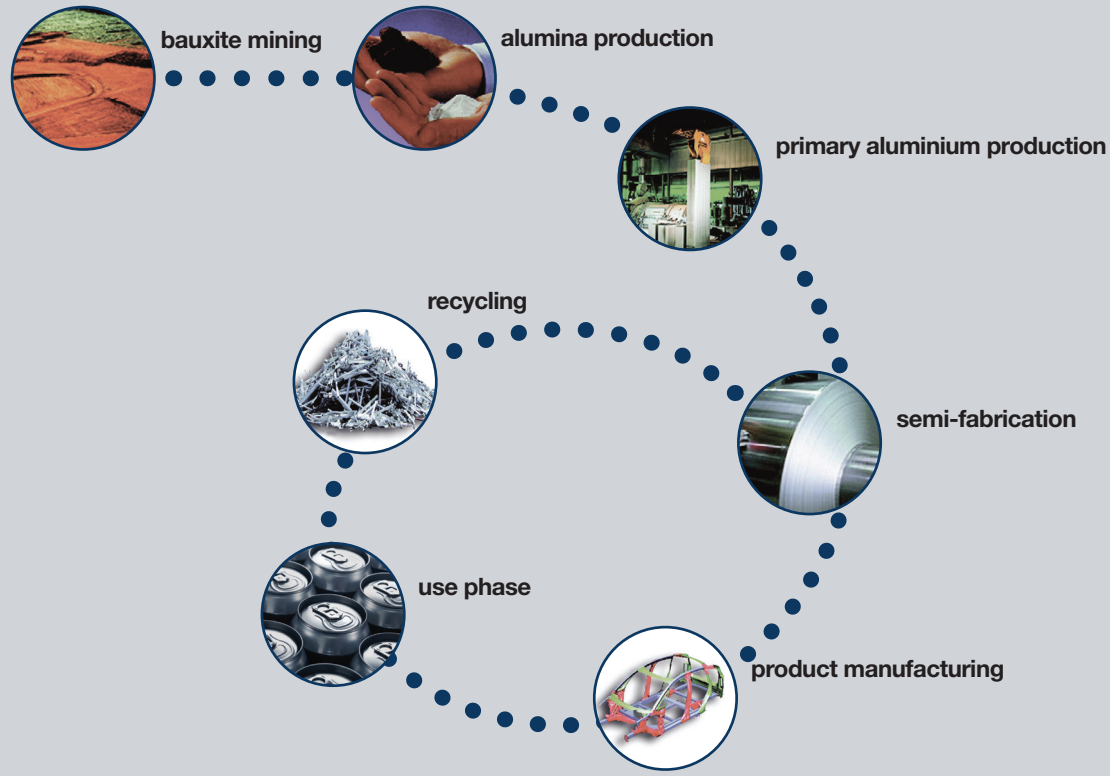
Our vision

The European aluminium industry has been a pioneer in developing Sustainable Development Indicators, with the clear objective of sharing transparently with all the stakeholders qualitative and quantitative information based on the three pillars of sustainability, i.e. economic, social and environmental, as well as the use and end-of-life recycling phases.

Sustainability should always be assessed throughout the product's complete life cycle and the aluminium industry's goal is to maximise its sustainability performance through all stages of the product's life cycle, from production to the use phase and subsequent recycling, closing the material's loop.

EAA and its member companies are committed to pursuing the principles of Sustainable Development, i.e. "meeting the needs of the present without compromising the ability of future generations to meet their needs[1]". To achieve this goal, the aluminium industry is constantly working towards more ambitious, resource-efficient, innovative and forward-looking aluminium solutions.

The aluminium value chain



[1] World Commission on Environment and Development, 1987

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About the EAA

The European Aluminium Association, founded in 1981, represents the whole value chain of the aluminium industry in Europe, from alumina and primary production to semi-finished, end-use products and recycling. We actively engage with decision-makers and the wider stakeholder community to promote the outstanding properties of aluminium, secure growth and optimise the contribution our metal can make to meeting Europe's sustainability challenges.

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