european aluminium association

SUSTAINABILITY OF THE EUROPEAN ALUMINIUM INDUSTRY 2006

INTRODUCTION

European Aluminium – A sustainable industry for future generations

In 2002 the European Aluminium Association (EAA) and its member companies embarked on a pioneering journey towards measuring sustainability. Through the Aluminium for Future Generations programme the European Aluminium Industry, its partners the Wuppertal Institute for Climate, Environment & Energy; Versailles University and an additional peer group of internal and external stakeholders developed 34 measurable Sustainable Development Indicators (SDI) to be systematically tracked and transparently reported by the European aluminium industry.

Decoupling growth from environmental and social impact is the driving principle behind a successful sustainable development strategy. Progress needs to be benchmarked against a clear and realistic perception of the internal and external business reality. Reliable measurement is essential to guarantee continued monitoring, careful evaluation, committed implementation and tangible results. These are the cornerstone principles behind the European aluminium industry's SDI reporting.

The first report was issued in 2004 and showed an industry which had significantly improved since 1997. The data clearly showed a committed industry making good progress towards our target of becoming a more sustainable industry.

This 2006 report, is the European aluminium industry's second benchmarking exercise and the data show further improvements, such as emissions down, natural resource use down, worker safety up, recycling rates up, worker training up.

This pragmatic and transparent approach has been key in encouraging all levels of the European Aluminium industry, from large integrated companies to small and medium sized companies, to become involved in the survey.

The industry will be asking its stakeholders for honest feedback on the progress, the process and the future pathway towards sustainability for the European aluminium industry. As the industry's Mission Statement outlines, continuous improvement is the aim. Input from stakeholders will be actively encouraged to ensure we continue to implement best practices and report the results accurately and transparently.

Sustainability is more than just an initiative it is a philosophy that runs right through the industry influencing every activity and decision. The European Aluminium industry is committed to this philosophy and committed to continuous improvement on the pathway to sustainability.

SDI REPORT 2006

NOTE TO READER

a) Geographical coverage of the questionnaires

The data collection in this report covers the EU-25 and EFTA* countries. Indicators 8.1 and 8.2 refer to a wider geographical area since the bauxite used in Europe is mainly imported.

b) Response rate definition

Response rate is the % of production generated by companies who answered the questionnaire in comparison to the total production in the defined geographical area. The total production is given under indicator 1.

c) Scaling up

For the economic data given, the figures have been scaled up to represent the sector or industry total, using the response rate given as the scaling up factor.

d) Precautions

The data in the tables should be read keeping in mind the % response rate to each question. At times, the response rate for 1997 is very low which makes the interpretation of the data and a comparison to 2002 and 2005 data questionable. In these cases we have replaced the data by l.d. (limited data).

e) Vocabulary

It is understood throughout this report that:
Upstream production = alumina, primary and recycling
Downstream production = semi-fabrication (rolling and extrusion) + foil
Aluminium industry = the situation of the aluminium industry accross the board
Western Europe = EU-25 and EFTA

For the environmental data, figures are given per tonne of metal production or semis production. This means sum of alumina, primary and recycling data divided by primary and recycling production and sum of extrusion, rolling and foil data divided by extrusion and rolling production.

* European Free Trade Agreement: Iceland, Norway and Switzerland

TABLE OF CONTENT

1. PRODUCTION

1.1 TOTAL PRODUCTION

Total production in thousand tonnes per year for each step in the production processes: alumina, primary, rolling, extrusion, foil and recycling.

From 2002 to 2005 we can see that the average annual progression in the different market segments range from 0.7% per year for foil, 1.8% for alumina, 2.4% for rolling, 3.2% for primary, 4.7% for extrusions. Between 1997 and 2002 the average annual increase in the different market segments ranged from 1.6% per year for alumina and 4.4% for recycling.

		Thousand tonnes	%RESP.
ALUMINA	1997	5 940	89.1
	2002	6 433	93.0
	2005	6 786	97.0
PRIMARY	1997	3 631	91.7
	2002	4 302	93.7
	2005	4 733	94.0
ROLLING	1997	3 610	65.9
	2002	4 023	83.7
	2005	4 325	93.0
EXTRUSION	1997	2 182	44.0
	2002	2 584	47.8
	2005	2 965	39.2
FOIL	1997	687	23.0
	2002	754	51.8
	2005	771	68.1
RECYCLING*	1997	4 101	41.3
	2002	5 084	68.2
	2005	7 647	70.6

* The difference between these figures and our official recycling figures, as stated in our annual reports, are due to some internal recycling included here.

2 POLICY AND MANAGEMENT EFFORTS

2.1 EAA SUSTAINABILITY MISSION STATEMENT

The European Aluminium Association 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 own needs".

This means remaining a competitive and growing industry, while:

- Meeting the needs of modern society and creating value by offering aluminium products with unique properties, including recyclability;
- Reducing the environmental impact of our production processes and that of our products through their life cycle;
- Demonstrating our social responsibility towards employees, customers, suppliers, local communities and society as a whole;
- Achieving continuous progress through the sharing of best practices and regular indicator-based reporting;
- Encouraging member companies to work along the lines of international environmental and social conventions, such as the UN Global Compact.

2.2 PLANT CERTIFICATION

Plant certifications based on production grew further between 2002 and 2005; ISO 14000 certification now covers 79.8% of the European aluminium industry companies, an 18.5% increase compared to 2002.

We have now included a section entitled 'other', which includes SAI (social responsibility) certification and ISO9000, among others.

PERCENTAGE		ISO 14000*	OSHAS**	OTHER	%RESP.
UPSTREAM PRODUCTION	1997	14.5	3.6	0.0	75.4
	2002	60.0	5.0	0.0	85.2
	2005	79.9	43.6	81.3	85.7
DOWNSTREAM PRODUCTION	1997	14.3	0.0	0.0	54.0
	2002	62.1	6.3	0.0	67.9
	2005	79.5	30.2	93.0	69.5
ALUMINIUM INDUSTRY	1997	14.4	1.6	0.0	68.5
	2002	61.3	5.8	0.0	79.7
	2005	79.8	39.5	84.8	81.3

* ISO: International Organisation for Standardisation

** OSHAS: Occupational Health & Safety Assessment System

3 COMPETITIVENESS

3.1 ALUMINIUM USE PER CAPITA

Total use of aluminium in kilo per year and per person in EU-25* and EFTA countries.

Aluminium use per capita has grown on average 8.6% per year between 2002 and 2005.

		KG/PERSON
ALUMINIUM INDUSTRY	1997	16.9
	2002	18.9
	2005	24.2

3.2 R&D EXPENDITURE

Total annual revenue invested both for in-house and externally funded R&D. These figures are expressed in millions of Euro per year.

Although it was difficult to have a reliable benchmark between 1997 and 2002 in the previous exercise due to the difference in response rate, the 2005 responses enable us to have a clearer insight into this indicator.

Due to the global nature of some member companies, R&D is also carried out outside Europe and the European subsidiaries benefit from the R&D carried out abroad.

		IN M €	%RESP.
UPSTREAM PRODUCTION	1997	L.D	23.9
	2002	101.5	82.3
	2005	142.3	73.2
DOWNSTREAM PRODUCTION	1997	L.D	22.5
	2002	170.1	60.6
	2005	115.0	69.0
ALUMINIUM INDUSTRY	1997	L.D	22.8
	2002	271.5	68.7
	2005	257.3	71.9

3.3 R&D PERSONS EMPLOYED

Total number of persons directly employed in R&D by aluminium industry in Europe.

It is important to keep in mind that it is somewhat difficult to account for the number of people employed in the different production processes, or indeed geographically, due to the global nature of many of the companies who have centralised R&D facilities.

		PERSONS	%RESP.
UPSTREAM PRODUCTION	1997	148	29.7
	2002	595	79.4
	2005	925	59.3
DOWNSTREAM PRODUCTION	1997	559	24.0
	2002	1 073	54.8
	2005	831	67.3
ALUMINIUM INDUSTRY	1997	708	25.2
	2002	1 668	63.6
	2005	1 747	62.7

* Previous 2002 report covered EU-15 rather than EU-25 explaining slight difference in figures

3.4 VALUE ADDED

The difference between the total revenue of a company or plant and the cost of energy and raw materials – expressed in million Euro per year.

The difference in response rate between 1997 and 2002 had made this indicator difficult to benchmark in the last exercise, the 2005 results make it more reliable.

We registered an average annual increase of 7.6% between 2002 and 2005, which accounts for the 6.9% increase in upstream production and the 8% increase in downstream. These figures highlight the balance in growth between the upstream and downstream production.

		IN M €	%RESP.
UPSTREAM PRODUCTION	1997	L.D	26.2
	2002	3 510	73.7
	2005	4 294	76.8
DOWNSTREAM PRODUCTION	1997	L.D	27.5
	2002	5 895	56.8
	2005	7 433	69.0
ALUMINIUM INDUSTRY	1997	L.D	27.1
	2002	9 405	63.1
	2005	11 727	74.5

4 REVENUES AND INVESTMENTS

4.1 TOTAL REVENUE

Total revenue for companies in year selected, expressed in million Euro per year. The revenue is calculated here as the total revenue for all plants in all sectors considered in the survey, without any subtractions of deliveries between sectors.

		IN M €	%RESP.
UPSTREAM PRODUCTION	1997	12 095	39.3
	2002	15 097	74.0
	2005	15 384	80.8
DOWNSTREAM PRODUCTION	1997	18 485	34.6
	2002	22 051	64.7
	2005	23 044	68.5
ALUMINIUM INDUSTRY	1997	30 580	36.4
	2002	37 148	68.4
	2005	38 428	77.1

4.2 CAPITAL INVESTMENTS

This indicator had previously been taxes, however we found that this was not terribly representative as the tax situations are so different from country to country. We have therefore decided to include instead an indicator on capital investments which should be more representative. Naturally as 2005 is the first year we included this indicator, we have no benchmarking figures at present.

		IN M €	%RESP.
UPSTREAM PRODUCTION	1997		
	2002		
	2005	565	79.2
DOWNSTREAM PRODUCTION	1997		
	2002		
	2005	825	68.9
ALUMINIUM INDUSTRY	1997		
	2002		
	2005	1 390	76.1

5 EMPLOYEE DEVELOPMENT AND RELATIONS

5.1 TRAINING PERFORMANCE

Calculated as the average number of hours for job related training per person and per year – expressed in hours per year.

The training performance in hours per person and year shows an average annual increase of 9.1% between 2002 and 2005. This highlights the importance the European aluminium industry places on qualifications and job related skills.

		HOURS	%RESP.
UPSTREAM PRODUCTION	1997	19.7	34.2
	2002	36.4	75.8
	2005	36.1	77.1
DOWNSTREAM PRODUCTION	1997	14.6	41.5
	2002	20.2	59.2
	2005	28.3	68.3
ALUMINIUM INDUSTRY	1997	16.4	38.9
	2002	26.0	65.1
	2005	33.8	74.5

5.2 WAGE LEVEL

Average aluminium industry wages compared to national average for workers (excluding managerial and technical/commercial staff). Value expressed in % of average.

The wage level is calculated as a percentage of national average wages in the manufacturing industries, meaning that the comparison is done at national level and aggregated to European level according to the number of employees at each plant. The data shows a workforce paid above average national wages.

The comparison between 1997 and 2002 was difficult due to the low response rate, which was again true for the upstream results in 2002. However, the downstream response between 2002 and 2005 give us some relevant figures to benchmark, as is the case for the aluminium industry figures.

		%	%RESP.
UPSTREAM PRODUCTION	1997	L.D	22.9
	2002	112.7	28.7
	2005	113.8	56.4
DOWNSTREAM PRODUCTION	1997	L.D	21.5
	2002	109.3	47.0
	2005	109.5	53.0
ALUMINIUM INDUSTRY	1997	L.D	22.0
	2002	110.1	42.2
	2005	112.5	55.3

5.3 TOTAL NUMBER OF EMPLOYEES

Total number of people working in the industry expressed in full time workers. These figures do not include contract workers.

The figure for total employment reflects only the sectors involved in this study, thus not including the casting and fabrication sectors which would lead to a number more than doubled.

These figures reflect the industry's efforts for improved efficiency in order to withstand global competition, while dealing with the reality of delocalisation.

		NUMBER	%RESP.
UPSTREAM PRODUCTION	1997	31 754	71.6
	2002	32 975	83.5
	2005	28 372	85.7
DOWNSTREAM PRODUCTION	1997	64 901	45.3
	2002	72 889	57.3
	2005	70 513	68.5
ALUMINIUM INDUSTRY	1997	96 655	53.9
	2002	105 863	65.5
	2005	98 885	80.6

6 COMMUNITY RELATIONS

6.1 COMMUNITY EXPENDITURE

Total expenditure for social, cultural, sports and other community activities at local level, this includes company organised voluntary work and converting man-hours according to relevant wage levels. Expressed in million Euro per year.

Figures vary considerabley from year to year depending on whether some plants have majors projects running the survey year.

		IN M €	%RESP.
UPSTREAM PRODUCTION	1997	L.D.	34.6
	2002	34.6	56.6
	2005	8.0	70.0
DOWNSTREAM PRODUCTION	1997	L.D.	20.8
	2002	14.5	46.0
	2005	17.0	55.8
ALUMINIUM INDUSTRY	1997	L.D.	28.1
	2002	49.1	53.5
	2005	25.0	65.8

6.2 COMMUNITY DIALOGUE

This is defined as a formal structure and process for communication with local communities and authorities. Expressed here in percentage of plants that have a structure for community dialogue in place.

The data show that the percentage of plants with a formal structure and process in place has grown from 47 to 77% between 2002 and 2005.

		%PENETR.	%RESP.
UPSTREAM PRODUCTION	1997	25.5	75.4
	2002	51.7	85.2
	2005	77.8	85.7
DOWNSTREAM PRODUCTION	1997	27.1	54.0
	2002	44.2	67.9
	2005	75.9	70.8
ALUMINIUM INDUSTRY	1997	26.4	68.5
	2002	47.1	79.7
	2005	77.2	81.3

6.3 COMMUNITY HEALTH INITIATIVES

Plants that have either a community health programme, if relevant, or a health/fitness programme for the employees and their families. The figures are expressed as a percentage of respondents with programmes in place.

The figures here clearly show an increase for this indicator with over 74% of plants offering such initiatives. These can range from direct health programmes in areas where official health care is lacking, to programmes such as training, rehabilitation, smoking cessation and others, both for the employees and their families.

		%PENETR.	%RESP.
UPSTREAM PRODUCTION	1997	20.0	75.4
	2002	30.0	85.2
	2005	78.4	85.7
DOWNSTREAM PRODUCTION	1997	27.1	54.0
	2002	38.9	67.9
	2005	65.7	70.7
ALUMINIUM INDUSTRY	1997	24.0	68.5
	2002	35.5	79.7
	2005	74.6	81.3

7 HEALTH AND SAFETY

The aluminium industry in Europe has clearly put a great deal of emphasis on the prevention of accidents in the workplace. The figures, for which we have had a good response rate for each of the exercises, show clearly improved results endorsing the industry's commitment to provide a safe workplace for employees.

7.1 LOST TIME INCIDENT RATE

Lost Time Incident (LTI) is the number of lost time accidents*, including fatalities, in the industry per million hours worked. A strong focus on accident prevention from the companies has reduced this number significantly even when accounting for the larger response rate.

		RATE (*)	%RESP.
METAL PRODUCTION	1997	11.7	60.0
	2002	12.4	93.1
	2005	3.6	85.6
SEMI-FABRICATION	1997	18.3	55.9
	2002	10.7	63.0
	2005	6.1	72.1
ALUMINIUM INDUSTRY	1997	15.4	57.7
	2002	11.3	73.3
	2005	5.6	74.9

7.2 TOTAL RECORDABLE INCIDENT RATE

Total recordable incidents are the number of fatalities, lost time accidents, restricted work cases and medical treatment accidents° per million hours worked.

		RATE (*)	%RESP.
METAL PRODUCTION	1997	33.4	60.0
	2002	27.4	93.1
	2005	9.7	85.6
SEMI-FABRICATION	1997	34.1	55.9
	2002	20.3	63.0
	2005	12.8	72.1
ALUMINIUM INDUSTRY	1997	33.8	57.7
	2002	22.7	73.3
	2005	12.1	74.9

7.3 FATALITIES

The fatalities were not reported in the previous sustainability report; we are now able to report these figures.

		NUMBERS	%RESP.
METAL PRODUCTION	1997	L.D.	L.D.
	2002	0	93.1
	2005	1	85.6
SEMI-FABRICATION	1997	L.D.	L.D.
	2002	1	63.0
	2005	2	72.1
ALUMINIUM INDUSTRY	1997	L.D.	L.D.
	2002	1	73.3
	2005	3	74.9

* Lost time accident is an accident where the employee is away from his/her normal workstation for one working day or more following the accident.

° Medical treatment case is an incident following which the employee can go back to the regular workplace after treatment.

7.4 SEVERITY RATE

This indicator gives the number of days lost due to accidents in the industry per million hours worked. The good response rates over the three timeframes have enabled us to use these values as clear benchmarks.

Although the dataquality is not equally good for all sectors, the combined results as given shows a clear improvement for the industry as a whole.

		SEVERITY RATE (**)	%RESP.
METAL PRODUCTION	1997	290.0	60.0
	2002	259.3	93.1
	2005	68.3	85.6
SEMI-FABRICATION	1997	319.0	55.9
	2002	281.6	63.0
	2005	170.2	72.1
ALUMINIUM INDUSTRY	1997	306.5	57.7
	2002	273.9	73.3
	2005	149	74.9

7.5 EMPLOYEE EXPOSURE AND HEALTH ASSESSMENT

Since the 2002 SDI results, we have decided to combine the employee exposure assessment indicator and the employee health assessment indicator into this employee exposure and health assessment as they are so interlinked.

The figures give the number of plants with formalised systems to assess risk and/or impact of exposure to chemical, physical, biological and radiation hazards.

The figures are expressed in percentage of plants with either formal system in place or occupation health service.

		%PENETR.	%RESP.
UPSTREAM PRODUCTION	1997	52.7	75.4
	2002	90.0	85.2
	2005	96.7	85.7
DOWNSTREAM PRODUCTION	1997	74.3	54.0
	2002	89.5	89.5
	2005	93.8	70.7
ALUMINIUM INDUSTRY	1997	64.8	68.5
	2002	89.7	79.7
	2005	95.9	81.3

(**) Number of workdays lost per million hours worked

8 RESOURCE USE AT GLOBAL LEVEL

8.1 BAUXITE AREA MINED

This indicator has been adapted to replace the previous bauxite availability in order to be more relevant as an environmental indicator.

These figures give us the area, in squared kilometres, of mined land that year in the world.

		KM^2	%RESP.
BAUXITE/ ALUMINA IND	1997	16	73
	2002	20	71
	2005	25	70

8.2 MINE REHABILITATION RATE

This indicator provides the global aluminium industry with a rate that is calculated as a percentage of mined out area that is rehabilitated in relation to the total area mined that year. As we operate in an expanding industry, the area rehabilitated will always be smaller than the area mined in a specific year.

		%	%RESP.
BAUXITE/ ALUMINA IND	1997	79	73
	2002	83	71
	2005	80	70

9 RESOURCE USE AT EUROPEAN LEVEL

9.1 ENERGY CONSUMPTION

a) Electric energy consumption per tonne

This indicator gives the energy used per tonne of product expressed in kWh.

We notice a decrease in the metal production section of the industry. Primary aluminium electric energy consumption, the most significant within the industry, has decreased 2.8% between 2002 and 2005. This is partly due to the closure of some older smelters or potlines.

		KWH	%RESP.
METAL PRODUCTION	1997	7 658.7	75.5
	2002	7 361.4	85.1
	2005	5 935.7	82.8
SEMI-FABRICATION	1997	974.6	54.9
	2002	773.3	66.5
	2005	804.7	62.6

b) Other energy consumption per tonne

This indicator provides us with the amount of energy used, other than electric, per tonne of product expressed in MJoule.

The decreasing trend we registered between 1997 and 2002 continued ever more strongly between 2002 and 2005.

		MJOULE	%RESP.
METAL PRODUCTION	1997	19 250.2	75.5
	2002	16 927.9	85.5
	2005	13 446.2	84.3
SEMI-FABRICATION	1997	3 104.3	54.9
	2002	2 718.2	66.5
	2005	2 374.9	62.6

9.2 RENEWABLE ELECTRIC ENERGY

Renewable electric energy is defined here as hydro-electric, wind, wave and biomass energy. The figures are represented as the percentage of energy coming from these sources.

As highlighted in the previous indicators, most of the electric energy used in the aluminium sector relates to primary production.

		%	%RESP.
METAL PRODUCTION	1997	40.3	75.5
	2002	44.6	85.1
	2005	45.7	84.7
SEMI-FABRICATION	1997	17.5	54.9
	2002	17.5	66.5
	2005	17.5	61.7

9.3 FRESH WATER USE

The use of fresh water for each sector is expressed in m^3 per tonne produced.

Water is commonly used throughout the aluminium industry for cooling purposes, typically cooling of metal (liquid or hot) after remelting, or cooling of tools during hot metal fabrication (rolling, extrusion). The cooling water is discharged after use, with constant monitoring of the quality of water effluents.

The water use for a given plant can be very different according to whether it is a single or multiple cooling use through water recycling systems – the latter resulting in a very low net water input. The system used depends on local water availability.

		M^3/TONNE	%RESP.
METAL PRODUCTION	1997	27.8	75.5
	2002	12.5	82.6
	2005	12.7	73.4
SEMI-FABRICATION	1997	10.1	54.9
	2002	6.7	62.4
	2005	5.4	57.9

10 EMISSIONS

10.1 CLIMATE GASES EMISSIONS

The climate Gases Emissions indicator provides data on the anthropogenic emission of greenhouse gases as defined in the Kyoto Protocol, expressed here as kilogram of CO_2 equivalent per tonne produced.

The annual emission of CO_2 and PFC are converted to CO_2 equivalents using 100 year Global Warming Potentials (GWPs).

The Primary aluminium sector has reduced its CO_2 emissions, 7.7% between 2002 and 2005. This reduction is partly achieved through PFC emissions reduction and partly through energy consumption reduction. During this time the semi-fabrication sector reduced its emissions by an average of 5.5% per year.

Previously intended to be the water effluent indicator, we have decided to remove it due to incomplete data collection and the fact that these figures practically duplicate the Fresh Water Use indicator, as the water comes from the cooling process.

		$KGCO_2EQ/T.$	%RESP.
METAL PRODUCTION	1997	2,481.8	75.5
	2002	1,898.6	87.2
	2005	1,440.2	84.3
SEMI-FABRICATION	1997	147.7	54.9
	2002	158.9	67.2
	2005	134.0	62.6

10.2 FLUORIDE EMISSIONS

This indicator provides us with the total (gaseous and particulate) emissions of fluoride from primary aluminium electrolysis plants. The figures are expressed as an annual average of total fluoride emissions in kilogram per tonne of primary aluminium produced.

The primary aluminium sector has reduced fluoride emissions by a further 2% in the three-year timeframe.

		KG/TONNE	%RESP.
PRIMARY PRODUCTION	1997	1.24	89.0
	2002	0.98	96.1
	2005	0.96	93.6

10.3 BaP EMISSIONS

Benz (a) Pyrene emissions are emitted by paste plants, anode plants and Søderberg primary smelters. This indicator provides us with an average emission expressed in grams per tonne of primary aluminium.

Primary aluminium production reduced its BaP emissions by 22.9% between 2002 and 2005, an average of 8.3% per year.

		KG/TONNE	%RESP.
PRIMARY PRODUCTION	1997	3.20	89.0
	2002	1.44	94.2
	2005	1.11	68.6

10.4 BAUXITE RESIDUE DEPOSITED

The Bauxite residue deposited indicator refers to the quantity of residue deposited on designated landfill sites after separation and sand removal at alumina plant. The data is provided as kilograms of bauxite residue, in dry weight, per tonne of alumina produced.

Although we noted an increase in the 1997 to 2002 exercise in the deposit of bauxite residue due to a lower aluminium concentration in the bauxite used, between 2002 and 2005 the deposits decreased 1.04%. This indicator, as suggested above, depends greatly on the bauxite used and is reliant on availability and the economic situation.

		KG/TONNE	%RESP.
ALUMINA PRODUCTION	1997	673	91.1
	2002	713	93.5
	2005	706	97.0

10.5 SPENT POT LINING AND HAZARDOUS WASTE DEPOSITED

We provide here the quantity of spent pot linings from electrolysis pot rooms deposited after removal of materials for reuse and recycling. In addition to this, we have added to this edition the amount of hazardous wastes deposited from downstream operations, after reuse and recycling. This indicator is expressed in kilograms per tonne of aluminium produced.

This indicator has been slightly modified to include the hazardous waste deposits since the 2002 exercise.

Primary aluminium production had reduced its spent pot lining deposits 13.7% between 1997 and 2002. The industry has reduced this further still by reducing deposits by an average of 13.5% per year between 2002 and 2005, or 35.2% for the period.

		KG/TONNE	%RESP.
PRIMARY PRODUCTION	1997	22.90	89.0
	2002	19.77	96.1
	2005	12.8	93.6
SEMI PRODUCTION	1997	N.A.	N.A.
	2002	N.A.	N.A.
	2005	3.30	62.6

11 PRODUCT LIFE CYCLE

11.1 USE PHASE

Aluminium use covers a variety of products. In the following indicators only a few, although very relevant, examples are provided.

11.1.1 Cars

This indicator shows the use of aluminium in cars produced in Europe, expressed as kilogram per vehicle.

The use of aluminium in cars has been steadily increasing. Between 1997 and 2002, aluminium use per car increased, on average, 6.6% per year, now between 2002 and 2005 the average increase per year is 4.1%.

		KG/VEHICLE
ALUMINIUM INDUSTRY	1997	85
	2002	117
	2005	132

11.1.2 Building

The building indicator provides the total quantity of aluminium used for building purposes in Europe.

The increase registered in the last indicator exercise has continued, the average increase per annum between 2002 and 2005 was 6.2% as opposed to the average 5.3% per year between 1997 and 2002.

		MILLION TONNES
ALUMINIUM INDUSTRY	1997	1.63
	2002	2.11
	2005	2.50

11.1.3 Cans

The average market share of aluminium cans in Europe, expressed as a percentage.

On average, an aluminium can only needs 60 days to be recycled into a new can and be back on the retailer's shelf.

		MARKET SHARE%
ALUMINIUM INDUSTRY	1997	45
	2002	50
	2005	56

11.2 ALUMINIUM RECYCLING

Aluminium use covers a variety of products. In the following indicators only a few, although very relevant, examples are provided.

11.2.1 Cars

This indicator provides us with the percentage of aluminium that is recovered for recycling from the automotive sector as compared to the total available quantity.

Our data show that the recycling rate for aluminium in the automotive sector is 95%.

11.2.2 Building

The amount of aluminium collected for recycling in buildings is 95%. This figure expressed as a percentage of the total available quantity.

11.2.3 Cans

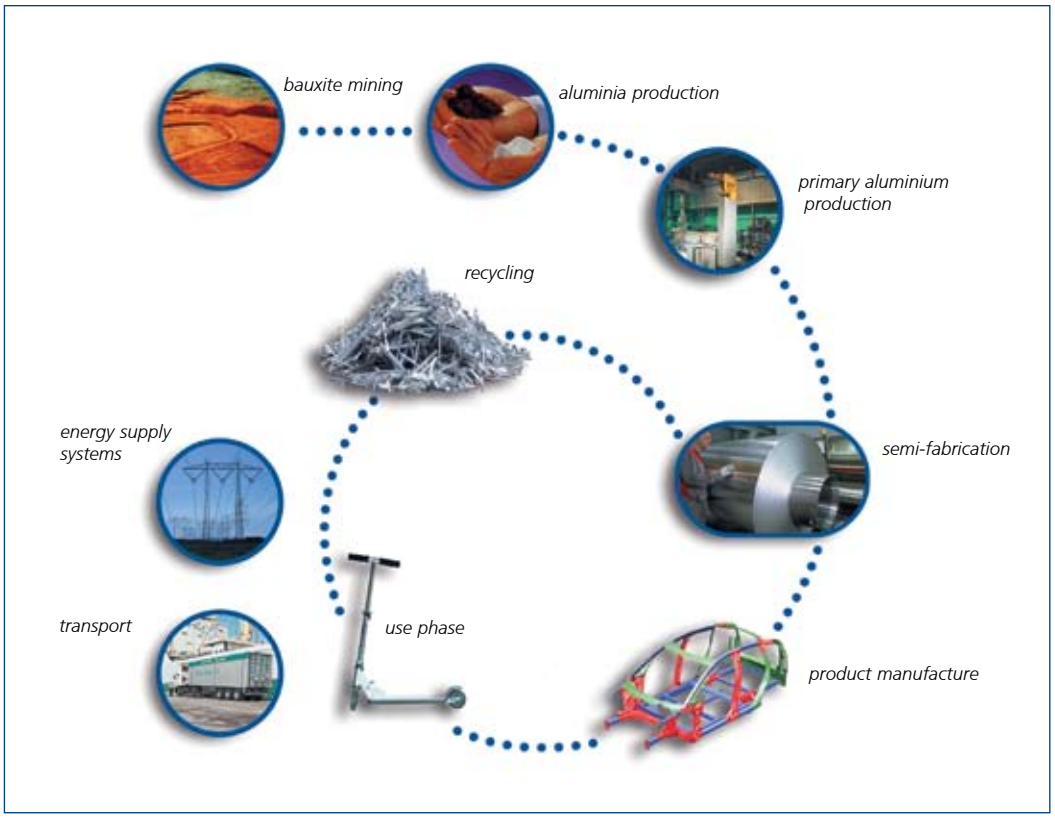
This indicator shows the percentage of cans recycled compared to the total that are available.

The recycling rate for cans is now 52% according to industry statistics collected on a regular basis from European countries.

		%
ALUMINIUM INDUSTRY	1997	40
	2002	46
	2005	52

11.3 LIFE CYCLE

For 14-years now, the European aluminium industry has collected environmental data related to its various production process, in 1992, 1995, 1998, 2002 and now 2005. The present environmental profile report covers 1992-2002 and we are currently finalising the 2005 up-date. In this version we will have a new modular approach, which will facilitate the integration of this environmental dataset into a full LCA study.



11.4 RECYCLING MATERIAL FLOW

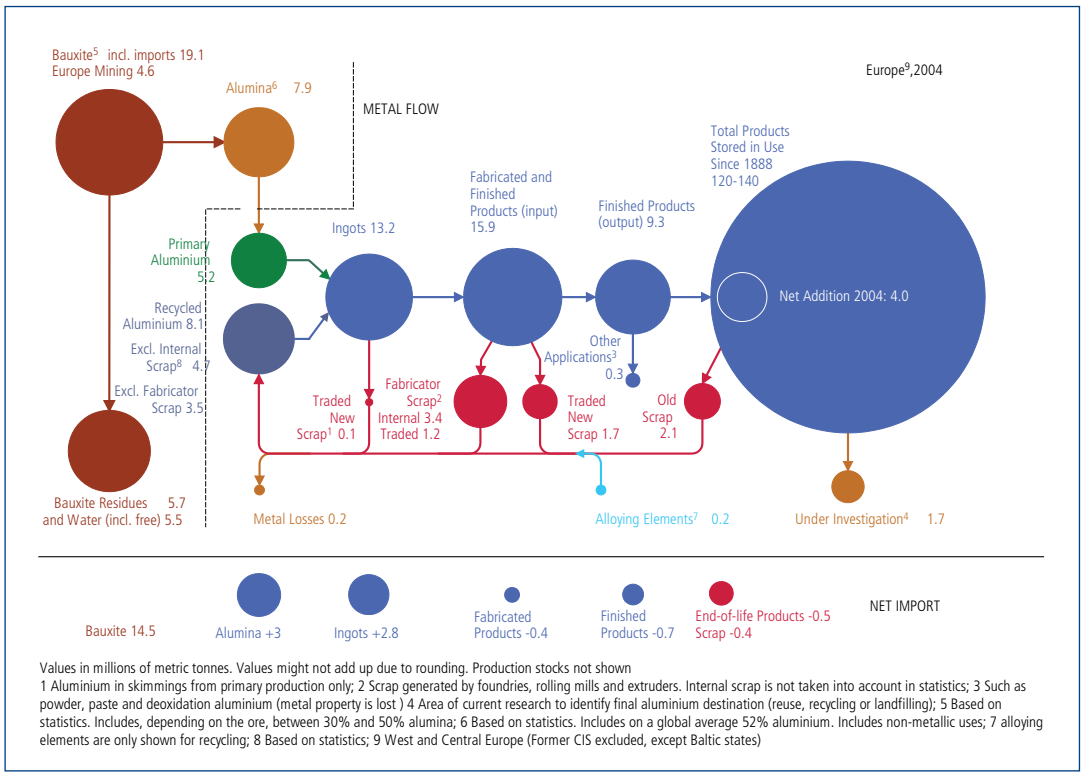
The Industry has designed an Aluminium Flow Model to track aluminium throughout its whole lifecycle in Europe from mining to product use to recycling. The main objective is to visualize the present flows, identify future recycling flows and the scope for further recycling.

Results for 2004 show that:

- Aluminium metal is accumulating in the European society. The stock in use has grown to approximately 140 million tonnes.
- The use of aluminium exceeds the amount of discarded aluminium in products by approximately 4 million tonnes.
- Europe is a net-importer of bauxite, alumina and aluminium, a total of 20.3 million tonnes of material.
- Further downstream Europe is a net exporter of aluminium metal in fabricated, finished and end-of-life products and scrap, a total of 2 million tonnes of metal.

Excluding fabricator scrap -scrap that is generated by rolling mills, extruders and foundries- the industry produces 3.5 million tonnes of recycled metal, of which close to 50% are produced from old scrap.

European Aluminium Flow (2004)



Values in millions of metric tonnes. Values might not add up due to rounding. Production stocks not shown
1 Aluminium in skimmings from primary production only; 2 Scrap generated by foundries, rolling mills and extruders. Internal scrap is not taken into account in statistics; 3 Such as powder, paste and deoxidation aluminium (metal property is lost) 4 Area of current research to identify final aluminium destination (reuse, recycling or landfilling); 5 Based on statistics. Includes, depending on the ore, between 30% and 50% alumina; 6 Based on statistics. Includes on a global average 52% aluminium. Includes non-metallic uses; 7 alloying elements are only shown for recycling; 8 Based on statistics; 9 West and Central Europe (Former CIS excluded, except Baltic states)

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