

Aluminum

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Aluminum markets continued to rally through the first three quarters of 1995 following a dramatic recovery in 1994. Increased economic growth in the major economies, led by the United States and Europe, resulted in continued strong demand for aluminum products throughout most of the year. A number of aluminum producers increased their production rates over the previous year in response to the increased demand, particularly in Europe and the United States. Shipments slowed, however, in the fourth quarter and London Metal Exchange (LME) stock levels started to rise in November after having fallen to levels not seen since 1991.

Aluminum settlement prices increased 22% to average US\$1806/t (US82¢/lb) on the LME compared to an average US\$1477/t (67¢/lb) in 1994. The International Primary Aluminium Institute (IPAI) reported that Western World primary unwrought aluminum inventories decreased to 1.991 Mt in December 1995 compared to 2.058 Mt in December 1994. Primary stocks on the LME finished the year at 576 000 t, down from a high of 1 703 000 t in January.

CANADIAN DEVELOPMENTS

The production of primary aluminum decreased in 1995 by 3.7% to 2.172 Mt, compared to 2.255 Mt in 1994, ranking Canada third after the United States and Russia in terms of world production. Canadian exports of primary smelter products in 1995 fell to 1.72 Mt valued at \$4.5 billion, compared with 1.88 Mt valued at \$3.8 billion in 1994. Of this amount, exports to the United States totalled 1.28 Mt valued at \$3.5 billion, compared to 1.39 Mt worth \$2.8 billion in 1994. Canada is the second largest aluminum exporting country in the world after Russia.

Alcan Aluminium Limited (Alcan) reported increased profits in 1995 despite a US\$420 million write-down of its British Columbia hydro-electric power project and a strike at several of its Quebec facilities in October. Earnings totalled US\$263 million, compared with \$96 million in 1994. Revenue was US\$9.2 billion, up from \$8.2 billion. The company attributed the increase to higher prices for fabricated products.

The British Columbia Utilities Commission completed its review of Alcan's Kemano Completion Project in early 1995. Following the release of the report by the Commission, the B.C. government announced its decision to cancel the project. In July, the B.C. government and Alcan announced a framework agreement for negotiations to resolve outstanding issues arising from the project's cancellation.

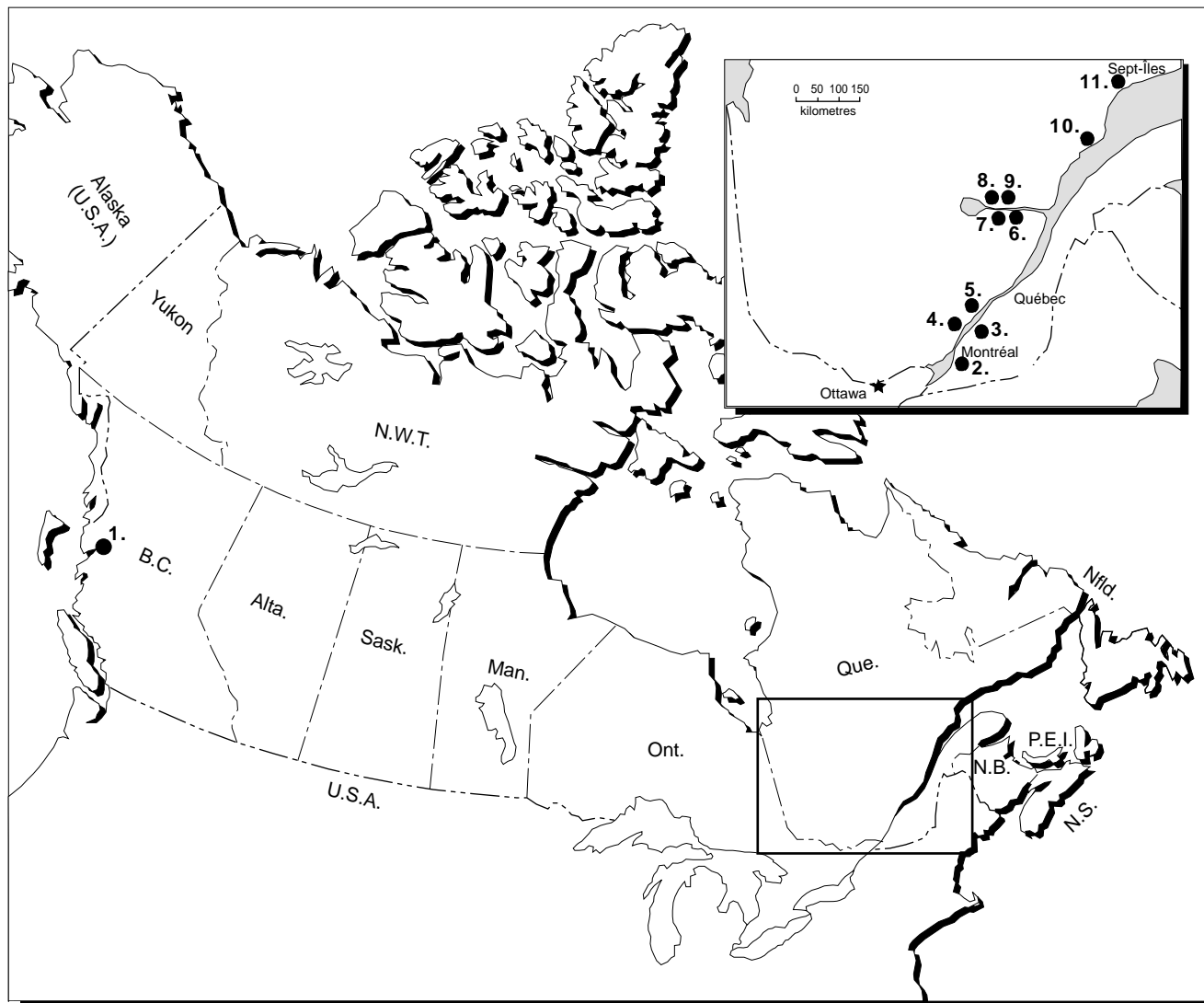
A 10-day strike in October at Alcan's Quebec facilities cost the company US\$90 million in after-tax earnings in the fourth quarter. Production in the fourth quarter was expected to be 75 000 t lower than in the third quarter. Three smelters, Laterrière, Beauharnois and Arvida, as well as the Vaudreuil alumina refinery, were temporarily closed as a result of the strike. Alcan expected to have most of the idled pots back in service by year-end; however, the full effects of the start-up phase will not be realized before the second quarter of 1996.

In response to the strike, Alcan restarted some 58 000 t of capacity that had been idled since 1994. The company restarted 6000 t/y of capacity at its 272 000-t/y Kitimat smelter and another 42 000 t/y of capacity at various smelters in Quebec. The company also announced restarts of 10 000 t at its smelters at Lochaber and Lynemouth in the United Kingdom. Alcan will continue to have about 158 000 t of idle capacity once the announced restarts are back on line, representing an effective operating rate of 90%.

Alcan's Dubuc plant at Jonquière received certification under ISO 9002 in March. The plant produces Alcan's metal-matrix composite DURALCAN, which continues to gain wider acceptance in transportation applications worldwide.

Canadian Reynolds Metals Company, Limited will invest \$8.5 million at its Cap-de-la-Madeleine foil plant as part of the first stage of a \$60 million

Figure 1
Aluminum Smelters, 1995



SMELTER	COMPANY	CAPACITY (t/y)
1. Kitimat, B.C.	Alcan	272 000
2. Beauharnois, Que.	Alcan	48 000
3. Bécancour, Que.	A.B.I.	360 000
4. Shawinigan, Que.	Alcan	84 000
5. Deschambault, Que.	Lauralco	215 000
6. Grande-Baie, Que.	Alcan	180 000
7. Laterrière, Que.	Alcan	204 000
8. Isle-Maligne, Que.	Alcan	73 000
9. Arvida, Que.	Alcan	232 000
10. Baie-Comeau, Que.	Reynolds	400 000
11. Sept-Îles, Que.	Alouette	215 000

modernization project to improve the plant's competitive position in the growing North American market for foil products. The current phase of the project includes purchasing and installing two remelt furnaces and a high-technology thin-foil separator. The new equipment will increase the plant's foil production capacity for the growing markets for heat exchangers for the automotive industry and for the food packaging industry. The facility was the first Canadian Reynolds plant to receive ISO 9002 certification in December.

Canadian Reynolds realized significant cost savings of about \$1.8 million in the second half of 1995 at its 400 000-t/y Baie Comeau smelter. The savings were achieved through a new continuous improvement program introduced at the smelter in July that includes a benefit-sharing program with smelter employees.

In September, Aluminerie de Bécancour Inc. (ABI) announced changes to its ownership structure at its 360 000-t/y smelter at Bécancour, Quebec. Reynolds Metals Company purchased the 24.95% interest held by the Société générale de financement du Québec for US\$390 million. The purchase increased Reynolds' equity share in the smelter to 50%. The two other partners in the consortium, Alumax Inc. (24.95%) and Pechiney Corporation (25.05%), did not change their original level of participation in the smelter. ABI will continue to manage the smelter's operations.

Aluminerie Alouette Inc. announced plans to invest \$36.9 million in a three-year project beginning next year to change from carbon to graphitized cathodes. The change will allow the company to increase the smelter's capacity to 229 000 t/y from the current 218 000 t/y by increasing the amperage to 315 000 amps from the current 300 000 amps. In March, the smelter partners decided to postpone plans for a C\$1 billion investment that would have doubled the smelter's capacity to 430 000 t/y.

Aluminerie Loralco Inc. announced a \$16 million project for the construction of a potline refurbishing centre at its 215 000-t/y smelter at Deschambault, Quebec. Loralco is 100% owned by Alumax of the United States.

Solv-Ex Corp. of Albuquerque, New Mexico, concluded a feasibility study on its plan to co-produce oil and mineral products from the company's oil sands lease in Alberta. The plan includes a proposal to build a plant near Fort McMurray, Alberta, designed to produce 10 000 barrels of crude oil per day, along with 64 000 t/y of smelter-grade alumina recovered from the oil sands clays and tailings. The company estimates that about \$100 million will be required to build the oil extraction and upgrading facilities that are to come into production by the end of 1996. An additional \$25 million will be required to bring the minerals extraction plant on line by 1997. Solv-Ex entered into an agreement with Glencore International AG to market the alumina. The agreement also provided for a

\$10 million advance from Glencore to help finance the project.

WORLD DEVELOPMENTS

World production of primary and secondary aluminum reached an estimated 26 Mt in 1995, of which 19.5 Mt was primary material. Western World smelter production was reportedly higher in Europe, Africa and South America, while declining slightly in North America and Asia. Total Western World smelter production reached an estimated 15.3 Mt in 1995, up from 14.4 Mt in 1994.

United States

According to the Aluminum Association, primary aluminum production in the United States increased to 3 375 241 t in 1995 from 3 298 507 t in 1994.

Alcoa Alumina and Chemicals LLC acquired most of the assets of the Virgin Islands Alumina Corp. (Vialco), a subsidiary of Glencore International AG, including a 600 000-t/y alumina refinery on the island of St. Croix in the U.S. Virgin Islands. The plant closed in 1994 due to weak economic conditions. Alcoa Alumina and Chemicals is a joint venture between the Aluminum Company of America (Alcoa) (60%) and Western Mining Corporation of Australia (40%). Alcoa expects to restart the plant some time in the next two years.

Alumax Inc. sold another portion of its share in the 160 000-t/y Eastalco Aluminum Company's primary aluminum smelter at Frederick, Maryland, and the 266 000-t/y Intalco Aluminum Company's primary aluminum smelter at Ferndale, Washington, to a consortium led by a subsidiary of Mitsui & Co. Ltd. of Japan. The sale comprised an additional 14% interest in each of the two smelters. The consortium members previously held an 18% interest in each smelter. Alumax will continue to act as the smelters' operator and will continue to hold a 61% interest in both facilities. In a separate announcement in December, Alumax announced that it had signed a letter of intent to sell 23% of its ownership in the 182 000-t/y Mount Holly smelter to Glencore. The sale will leave Alumax with a 50.3% interest in the smelter and will increase Glencore's participation to 49.7% from the current 26.7%.

In November, Alumax announced that it would restart some 90 000 t of its total 710 500 t/y of worldwide primary aluminum capacity. The idled capacity is expected to be back on line during the first quarter of 1996. Alumax has been operating at about 86% of capacity as a result of power shortages in the Pacific Northwest and the poor market conditions that have persisted over the past several years. Two thirds of the capacity restarts will take place at the Intalco plant in Ferndale, Washington, with the balance occurring at the company's Mount Holly plant in Goose Creek, South Carolina.

Kaiser Aluminum & Chemical Corporation restarted 50 000 t of aluminum production capacity that had been idle for the past three years at its 200 000-t/y Mead smelter in Washington. The capacity was idled in January 1993 as the result of a power shortage in the region. Kaiser also announced that its Tacoma smelter is operating at its full capacity of 73 000 t/y after reactivating 9000 t of capacity that had been temporarily closed as a result of poor market conditions.

Ormet Corp. began construction of the first phase of a \$15 million Thixocast aluminum manufacturing facility. The new plant will manufacture a new type of aluminum billet for consumption by the automotive industry. The facility is due to come into production by mid-1996. Ormet also owns and operates the 168 000-t/y Ravenswood smelter in West Virginia.

National Southwire Aluminum Co. (NSA) plans to decide by the end of the first quarter of 1996 whether or not to go ahead with a US\$150 million expansion that will add a fifth potline to its 188 000-t/y Hawesville smelter in Kentucky. The fifth line would add 50 000 t of capacity to the plant and employ an additional 90 people. NSA's Hawesville smelter gradually returned to full production capacity in 1995 after cutting production by 10% in January 1994 in response to poor market conditions.

Alcan sold its U.S. metals distribution business, Metal Goods, to the American subsidiary of Rio Algom Ltd. of Toronto. Metal Goods operates a network of 39 facilities throughout the United States to distribute stainless steel, aluminum, brass and copper.

Jamaica

Expansion work at three of Jamaica's alumina refineries totalling US\$300 million is expected to take place over the next five years, according to Jamaican officials. Jamalco, co-owned by the Jamaican government and Alcoa, will increase production from the current 800 000 t/y to 1 Mt/y. Alcan is also reportedly considering increasing its production from 1 Mt/y to 1.2 Mt/y by 1998 and to further increase production to 1.6 Mt/y by 2001. In addition, the Jamaican government is holding discussions with Alumina Partners of Jamaica (Alpart) to increase the refinery's 1-Mt/y capacity. Alpart is jointly owned by the Jamaican government, Norsk Hydro AS of Norway, and Kaiser Aluminum of the United States.

South America

Noranda Inc. cancelled plans for the development of a US\$1.5 billion hydro-electric plant and aluminum smelter in Chile. Noranda cited the high cost of a new plant and an expected low rate of return as making the project unjustifiable.

Alcan Alumínio do Brasil S.A., a subsidiary of Alcan, re-opened a 28 000-t/y potline that was temporarily closed at its Aratu smelter in November 1992 due to

weak market conditions. Strong demand in Brazil and contractual power arrangements led to the decision to re-open the line. The re-opening increased Alcan's total primary production rate to 93% of its 109 000-t/y capacity in Brazil.

CVRD's Alunorte alumina project in the Brazilian state of Para began operating in July and was expected to produce between 250 000 and 300 000 t in 1995. Production will be increased to just under 1 Mt in 1996, and then to its capacity of 1.1 Mt by 1997. The alumina will mainly be used by aluminum companies within CVRD, but some exports of 200 000-250 000 t/y are expected by 1997.

Venezuela's second largest aluminum producer, Aluminio del Caroní SA (Alcasa), re-opened a 22 000-t/y production line and increased output to between 1800 and 2000 t/m. Line 1 in Puerto Ordaz, which was shut down three years ago, re-opened in April. A decision to re-open the line was made on the basis of rising world prices and because the company could finance the project by internal cash flow. Alcasa expected Line 1 to produce 10 000 t in 1995 and to produce at full capacity in 1996. The company expected to increase output to 198 000 t in 1995 and to 210 000 t in 1996, compared to 174 700 t in 1994.

U.S. aluminum producer Columbia Aluminum Corporation announced plans to build a 60 000-t/y primary aluminum smelter in Venezuela by 1997. The project includes plans to use Vereinigte Aluminium-Werke AG's (VAW) 180-amp technology in a smelter to be built in Puerto Ordaz, close to where state-owned Alcasa and Venalum operate Venezuela's existing aluminum smelters. It is estimated that the smelter will cost over US\$100 million to build. Financing for the project has not yet been arranged.

Europe

Alcan is raising its 65% interest in Aughinish Alumina Limited's 1.1-Mt/y alumina refinery in Ireland to 100% by buying Royal Dutch Shell Group's 35% share for an undisclosed sum. The 11-year-old refinery, on Ireland's west coast near Limerick, has almost doubled its productivity in five years. Under the same deal, Alcan also acquired Shell's 6% stake in Halco (Mining) Inc., which controls one of the world's biggest bauxite producers in Guinea, West Africa. Alcan's total interest rises to 33%. Aughinish imports raw bauxite from Guinea and makes alumina for Alcan's British smelters and for third parties. Guinea bauxite also feeds Alcan's Quebec alumina plant.

Alcan is selling its portfolio of downstream businesses held by its subsidiary, British Alcan Aluminium Limited plc, in the United Kingdom. The package comprises 12 businesses that produce a variety of products (including household foil, aluminum high-pressure gas cylinders and aluminum extrusions)

trading from 35 locations in the United Kingdom, 7 in the United States and 1 in Ireland, with combined sales of more than US\$635 million. Also included for sale is a nationwide metals distribution chain. Alcan Smelting and Power U.K., Alcan Rolled Products U.K., and Alcan Chemicals Europe were not affected. The announcement had no direct impact on Alcan International Ltd.'s research and development centre in Branbury, England, or on Alcan's other operations elsewhere in Europe.

Germany's VAW announced in November that it would be restarting production capacity by year-end that had been temporarily idled in response to weak market conditions. Production restarts were primarily at the company's 210 000-t/y Norf smelter and its 70 000-t/y Elbwerk smelter. Capacity would also be increased at the 125 000-t/y Hamburger Aluminium Werk smelter in which VAW has an equity interest along with Austria Metall A.G. and Reynolds Aluminium Deutschland, a subsidiary of Reynolds Metals. The company also confirmed that its plans, announced in 1994, to close the 90 000-t/y Töging smelter by the end of 1995 were proceeding as scheduled.

Spanish aluminum producer Industria Espanola del Aluminio S.A. (Inespal) re-opened the potlines it had closed in April 1994 in response to poor market conditions. The company restarted the 37 000 t of capacity it had closed at its 80 000-t/y Aviles smelter and the 78 000-t/y La Coruna smelter.

Slovak aluminum producer, Slovalco a.s., began production at its new 105 000-t/y smelter in June and was expected to reach full production with all 172 pots operating by December. The new smelter at Ziar nad Hronom replaces an older 69 000-t/y Söderburg smelter, and it will export 75-80% of its production to the Czech Republic, Germany, Austria and Italy. Slovalco was formed by the Slovak company Zavod Slovensko Narodneho Povstania a.s. (ZSNP) in 1993, with later equity participation by Hydro Aluminium a.s., a subsidiary of Norway's Norsk Hydro AS, and the European Bank for Reconstruction and Development (EBRD).

The Yugoslav aluminum producer, Kombinat Aluminijuma Podgorica, in the Montenegro capital of Podgorica, expects to increase production at its 110 000-t/y Titograd smelter to 60 000 t in 1996, twice the amount produced in 1995. Output collapsed to less than 10% of capacity under the 3 1/2-year-old United Nations sanctions imposed because of the conflict in Bosnia-Herzegovina. Production increased after the embargo was lifted in November. The smelter is expected to operate at close to full capacity in 1997.

The Government of Iceland announced that it had signed an agreement with Swiss aluminum producer Alusuisse - Lonza Holding Limited (Alusuisse) to expand its 100 000-t/y primary aluminum smelter in Iceland by 62 000 t. Work on the expansion is

expected to start in early 1996 and the expanded smelter will be operational by November 1997.

Russian Federation

According to statistics produced by Russia's aluminum producers association, Aluminii, Russian primary aluminum exports remained strong at about 2.2 Mt of primary aluminum in 1995, the same as in 1994. The association also indicated that Russia's primary aluminum output was 2.75 Mt in 1995, just above the 2.65 Mt produced in 1994. Russia is the second largest aluminum smelting country in the world after the United States, and is also the world's largest exporter of primary aluminum.

Russia and Australia signed a framework agreement in November to improve transport facilities and make it easier to supply Russia with Australian alumina. The agreement included plans to modernize Russia's Far Eastern ports of Vanino and Vostochny to facilitate Australia's alumina deliveries to Russia.

Russia's Severouralsk Bauxite Mines raised output to 3 Mt in 1995 from 2.5 Mt in 1994. Severouralsk, located in the Urals region of Sverdlovsk, produces 73% of Russia's bauxite.

Reynolds International, along with partners Sweden PLM and Ball Corp. of the United States, will invest US\$200 million to build an aluminum can plant in Moscow. The plant will service domestic breweries and soft drink producers. Plans currently are for a plant to open sometime in 1997 and to produce 3 billion cans annually. Samara Metallurgical will provide the can sheet for the new plant.

Middle East

Dubai's aluminum company Dubal will increase capacity 52% to 372 600 t/y from the current 245 000 t/y in a US\$500 million expansion. The project is expected to be completed by early 1997.

Iran's new aluminum smelter, originally scheduled for completion in 1995, is not expected to be completed before next year. The Supreme Economic Council announced that the Al-Mahdi smelter near Bandar Abbas is now scheduled to start production by the winter of 1996/97 (about 18 months behind schedule) with an initial capacity of 110 000 t/y. No reason for the delay was given. Ultimately, the smelter is expected to produce 220 000 t/y when operating at full capacity. Iran has one operating smelter at Arak that produces about 90 000 t/y of primary aluminum.

Asia

India's largest private producer of aluminum, Hindalco Industries Ltd., announced plans to increase its primary aluminum smelter capacity to

242 000 t/y. The company is already implementing an expansion plan to raise capacity at its Renukoot smelter to 210 000 t/y from the current 170 000 t/y. The company also plans to match the planned increase in smelter capacity by increasing its alumina production capacity to 450 000 t/y from the current 350 000 t/y.

India's state-owned aluminum producer, National Aluminium Co. Ltd. (NALCO), also announced plans to increase its aluminum smelting and alumina refining capacity to meet growing demand and to retain its leading position as a major Asian producer. Its smelter capacity will be increased to 345 000 t/y from the current 230 000 t/y by adding a new potline of 240 pots to the existing 480 pots. Commissioning and production could begin three years after government approval. The company also intends to expand its alumina capacity to 1.35 Mt/y from the current 800 000 t/y and to expand the capacity of its captive bauxite mines from 2.4 to 4.8 Mt/y, subject to government approval.

Indian Aluminium Company, Limited (Indal) commissioned a prefeasibility study for the construction of a new 230 000-t/y aluminum project. Indal will also study power requirements for the new smelter that would be built in two stages of 115 000 t each. Alumina would be sourced from Utkal Alumina in partnership with Tatas and Hydro Aluminium. Indal is 34.6% owned by Alcan.

In China, Alcan signed a memorandum of understanding with China National Nonferrous Metals Industry Corporation (CNNC) to explore the possible construction of an aluminum smelter and a dedicated coal-fired power station in Shanxi Province. The project includes plans for a primary aluminum smelter with an annual capacity of between 200 000 and 240 000 t. Alcan and CNNC will work jointly to develop a project prospectus for use in discussion with government bodies and potential partners in the smelters. Alcan has a long history of participation in China's aluminum industry and was a major shareholder in the establishment of an aluminum rolling operation in Shanghai in the 1930s. A joint venture with CNNC resulted in the opening of a manufacturing plant for aluminum extrusions and building projects in 1990. The plant's capacity was doubled in 1993 to meet the growing domestic demand.

Elsewhere in China, Kaiser Aluminum has formed a joint-venture company with CNNC that will expand and modernize the 52 000-t/y Lanzhou aluminum plant and double capacity at the 30 000-t/y Lianhai aluminum plant, both located in Gansu Province. The Lanzhou smelter, built in 1957, began operating in 1958 and uses horizontal stud Söderberg electrodes. In 1992, the operators of the Lanzhou aluminum plant, together with local investors, built the first phase of the Lianhai smelter. The new joint-venture company, Yellow River Aluminium Industry Company, will combine the assets of both the Lanzhou and Lianhai smelters.

Kazakstan announced a US\$135 million project to develop the Eastern Ayat bauxite field in the country's Kustanai region. Partners in the project include White Swan of the United Kingdom, Ivedon International Ltd. from Iceland, the Pavlodar alumina refinery, the Sokolovsko-Sarbai mining and production association, the Krasnooktyabrskoye bauxite mine in Kustanai, and the Turgai bauxite mine in the Turgai region. Eastern Ayat reportedly contains reserves of 90 Mt of bauxite. The region is expected to become the main source of raw materials for the Pavlodar refinery at Ust-Kamenorgorsk.

Africa

South African aluminum producer Alusaf (Pty) Ltd. opened its new Hillside smelter in June. Full production of some 466 000 t/y is expected by mid-1996. Modernization of Alusaf's 170 000-t/y Bayside smelter is expected to be completed by the end of the year, increasing its capacity by 40 000 t/y.

Work resumed on Nigeria's 180 000-t/y smelter project near Ikot Abasi in the southeastern part of the country. The Nigerian government started the project five years ago with Ferrostaal AG of Germany and Reynolds International Inc. of the United States as the principal foreign shareholders. When the project is completed sometime near the end of next year, it is expected to begin output at a rate of 90 0000 t/y. Over 70% of the production will target the export market.

Ghana's Volta Aluminium Company Ltd. (Valco) continued to operate at 70% of its total 195 000-t/y capacity, operating only 3.5 potlines out of 5. The smelter had been operating 4.5 potlines in early 1994, but Ghana's Volta River Authority reduced power supplies after dry weather lowered water levels at the Akosombo reservoir. Valco is 90% owned by Kaiser Aluminum; Reynolds Metals owns the remaining 10%.

Australia

Comalco Limited began site preparation for an A\$1 billion expansion at its Boyne Island aluminum smelter in Australia. A new potline will increase production by 219 000 t/y to 480 000 t/y with production to start in October 1997. The smelter will reach its full production capacity by April 1998.

Alcan Australia Limited formally changed its name to Capral Aluminium Limited. The new name reflects the change in ownership in the company following the sale of Alcan Australia by its former Montréal-based parent, Alcan Aluminium Limited. Alcan sold its 73.3% controlling interest in Alcan Australia in July 1994. In August, Capral Aluminium announced that it was proceeding gradually to restart the smelter capacity that was shut in 1994 at its 150 000-t/y Kurri Kurri smelter in response to weak market conditions.

Hunter Douglas Holdings Limited sold its 3% equity interest in the 380 000-t/y Tomago aluminum smelter in Australia to the four other shareholders: Pechiney Pacific Pty Limited (a subsidiary of Pechiney of France), Gove Aluminium Finance Limited, TOA Pty Limited, and VAW Aluminium AG of Germany. The Rotterdam-based Hunter Douglas manufactures a wide variety of aluminum home improvement and building products. The company will retain its 15% interest in the 170 000-t/y Vlissingen aluminum smelter in the Netherlands.

Queensland Alumina Limited's refinery will increase its production to 3.65 Mt/y by the end of 1997 from the current 3.37 Mt/y. The refinery is co-owned by Comalco (30.3%), Pechiney (20%), Kaiser Aluminum (28.3%) and Alcan (21.4%). The additional production will be shared between the partners and will also help provide additional alumina to the expanding Boyne Island smelter.

RECYCLING

Secondary aluminum production continues to increase worldwide. Western World production of secondary aluminum reached 6.42 Mt in 1994 compared to 6.11 Mt in 1993. Production in the first nine months of 1995 was about 5 Mt, and was expected to reach over 6.6 Mt by year-end. The increase in secondary production can be attributed to continuing improvements in scrap collection systems and increased recycling rates.

Recycling aluminum requires less than 5% of the energy used to make the original metal. As a result, energy represents only 2% of a secondary aluminum smelter's operating cost, compared to about 26% for a primary smelter. The automotive industry is the largest consumer of secondary aluminum, consuming some 80% of secondary production either through direct sales or to casters supplying the automotive industry. As requirements for lighter vehicles increase, it is likely that the demand for secondary aluminum will increase significantly.

In 1994, the largest secondary producers were the United States at 2.96 Mt, Japan at 1.2 Mt, and Germany at 0.4 Mt. Canada produced about 86 000 t of secondary aluminum in 1994 and is expected to produce about the same amount in 1995. Consumption of secondary aluminum increased to 145 661 t in 1994 from 131 174 t in 1993 (excluding the direct use of scrap).

In Canada, about 1.5 billion scrap aluminum cans are recovered and exported annually to the United States to be recycled, for a recycling rate of about 80%. There are no facilities in Canada to recycle aluminum beverage cans.

The most important sources of aluminum scrap in the United States are from the packaging (principally

used beverage containers) and transportation sectors. U.S. recycling of aluminum cans increased in 1994 to 65.4% of can shipments, up from 63.1% in 1993.

Programs are currently in place in the United States and Canada to promote recycling of other types of household aluminum products in addition to beverage cans. Advertising campaigns to promote the recycling of aluminum foil and other aluminum products were started by Reynolds Metals, Alcoa, and Alcan. In Toronto, the curb-side blue box recycling program began accepting rigid aluminum foil containers in addition to aluminum beverage cans. Foil products, such as foil plates, take-out food containers, frozen dinner trays, and large foil roasting and baking pans, will no longer be destined for landfill. In Vancouver, an innovative idea will result in the recycling of aluminum cans from visiting cruise ships. Aluminum cans destined for recycling will be crushed on board the ships and left for pick-up by recycling companies at Vancouver Harbour.

European aluminum producers hope to raise the recycling rate in Europe to at least 50% by the year 2000 from the current overall rate of 35%. While recycling rates are high in countries like Sweden (90%), much work remains to be done in other countries where recycling rates are much lower, such as in Italy (28%) and the United Kingdom (24%).

CONSUMPTION AND USES

Total world consumption of primary aluminum is estimated at 20.6 Mt in 1995, compared to 19.7 Mt in 1994. Canada consumed an estimated 532 800 t of primary aluminum in 1994 compared to 486 600 t in 1993. Total Western World consumption of primary aluminum increased to 17.8 Mt in 1995 from 17.3 Mt in 1994. Total reported Canadian consumption of aluminum metal at the first processing stage, including secondary aluminum, was 667 379 t in 1994, up from 597 957 t in 1993.

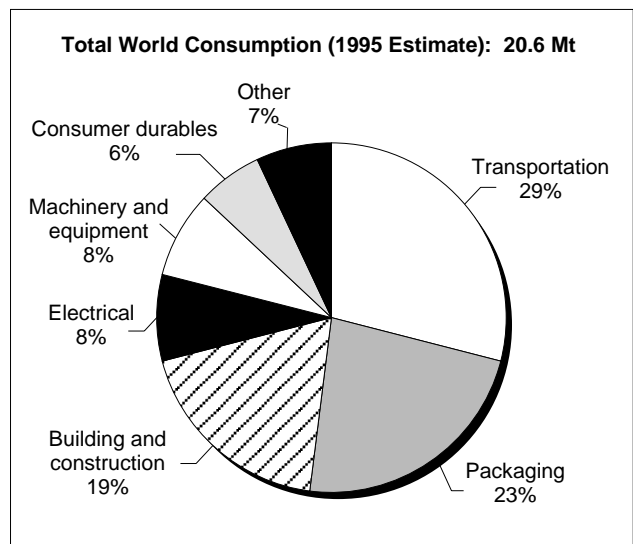
Aluminum is the most abundant metal in the earth's crust. Unlike most of the other major metals, aluminum does not occur in its native state, but mainly as an oxide. When combined with water and other impurities, it produces the main ore of aluminum known as bauxite. Pure aluminum is a silver-white, malleable, ductile metal with one third the density of steel. Aluminum's dull lustre results from a thin coating of oxygen that forms when it is exposed to air. It is this characteristic that accounts for aluminum's resistance to corrosion. Aluminum is an excellent conductor of electricity. Gram for gram, aluminum has twice the electrical conductance of copper. It is also an efficient conductor of heat and a good reflector of light and radiant heat.

Combining aluminum with other metals to produce alloys enhances its characteristics and increases its versatility. The most common metals used in combination

with aluminum are copper, magnesium, manganese, silicon and zinc. Aluminum's tensile strength, hardness, corrosion resistance, and heat-treatment properties improve when alloyed with one or more of these metals. Some copper-aluminum alloys, for example, can exceed the tensile strength of mild steel by as much as 50%.

In both its pure and alloyed forms, aluminum is used to make a variety of products for the consumer and capital goods markets. The largest markets for aluminum are transportation (29%), packaging (23%), building and construction (19%), electrical (8%), machinery and equipment (8%), and consumer goods (6%). Geographically, North America is the largest consuming region accounting for 33% of total Western World production, followed by Europe at 30% and Asia at 27%.

Figure 2
Aluminum Markets, 1995



Source: Natural Resources Canada.

HEALTH, SAFETY AND THE ENVIRONMENT

Aluminum is a naturally occurring element that occurs ubiquitously in the environment as silicates, oxides and hydroxides, in combination with other elements such as sodium and fluoride, and as complexes with organic matter. It is redistributed through the environment by both natural processes and anthropogenic (human) activities. Igneous rocks can contain anywhere between 0.1% and 21% Al_2O_3 . Aluminum silicates (clay minerals) are a major component of soils.

Natural processes far outweigh the direct anthropogenic redistribution of aluminum in the environ-

ment. The mobility and subsequent transportation of aluminum is dependent on a number of factors, including chemical speciation, hydrological pathways, soil-water interaction, and the composition of the underlying bedrock. Mobilization of aluminum in the environment by humans is usually the result of indirect activities and can occur as the result of emissions of acidifying agents. In general, a lowering of pH results in the increased mobility of some forms of aluminum.

In December, Health Canada and Environment Canada announced that aluminum chloride, aluminum nitrate and aluminum sulphate, along with 24 other substances, had been recommended for risk assessment under the Priority Substances Assessment Program of the *Canadian Environmental Protection Act* (CEPA).

PRICES AND STOCKS

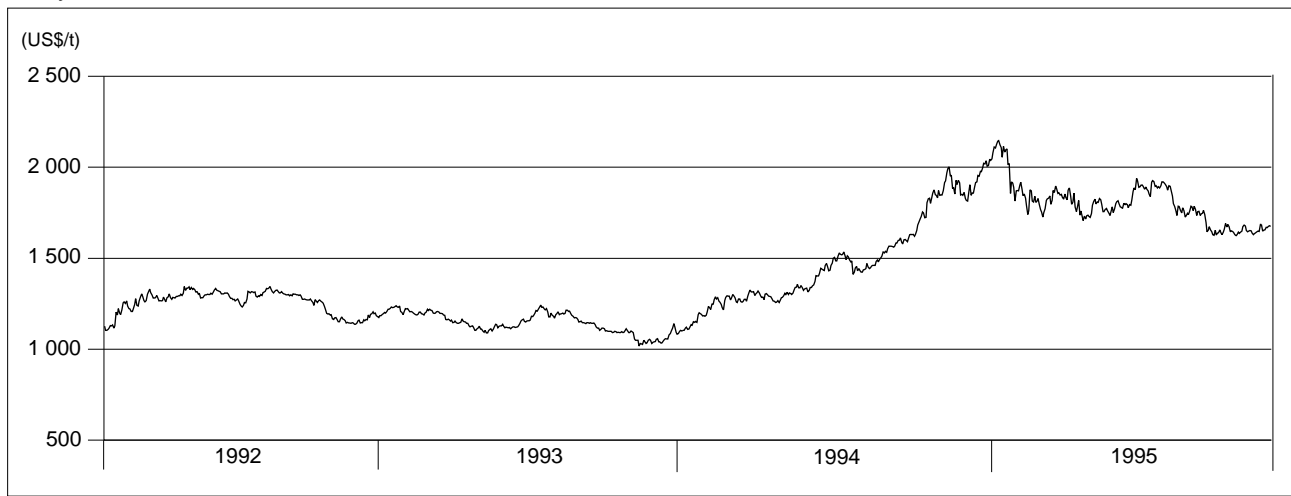
Settlement prices on the London Metal Exchange (LME) for primary aluminum averaged US\$1806.1/t (US82¢/lb) in 1995, an increase of 22% compared to \$1477.1/t (67¢/lb) in 1994. The LME settlement price for aluminum began the year at just over US\$2000/t and continued to trade in the \$1800-\$1900/t range for most of the year, before falling back to finish the year at \$1675/t.

The International Primary Aluminium Institute reported that Western World primary aluminum inventories increased to 2.058 Mt at the end of December 1995, compared to 1.991 Mt in December 1994. Total stocks, including all forms of aluminum scrap, primary and secondary ingot, and metal in process, totalled 3.561 Mt at the end of 1995, compared with 3.580 Mt at the end of 1994. LME stocks decreased from 1.7 Mt at the beginning of the year to end the year at 0.5 Mt.

Prices on the LME for aluminum alloy also traded stronger in 1995. Aluminum alloy started trading at just over US\$1900/t (US86¢/lb), peaking in January at \$2045/t, but then followed the primary aluminum trend to end the year weaker at \$1435/t (65¢/lb) as stocks on the LME increased. Alloy prices averaged \$1656.0/t (75.1¢/lb) in 1995, compared to an average of \$1452.9/t (65.9¢/lb) in 1994. LME aluminum alloy stocks more than doubled towards year-end, totalling 62 600 t at the end of December, up from 30 480 t at the end of 1994.

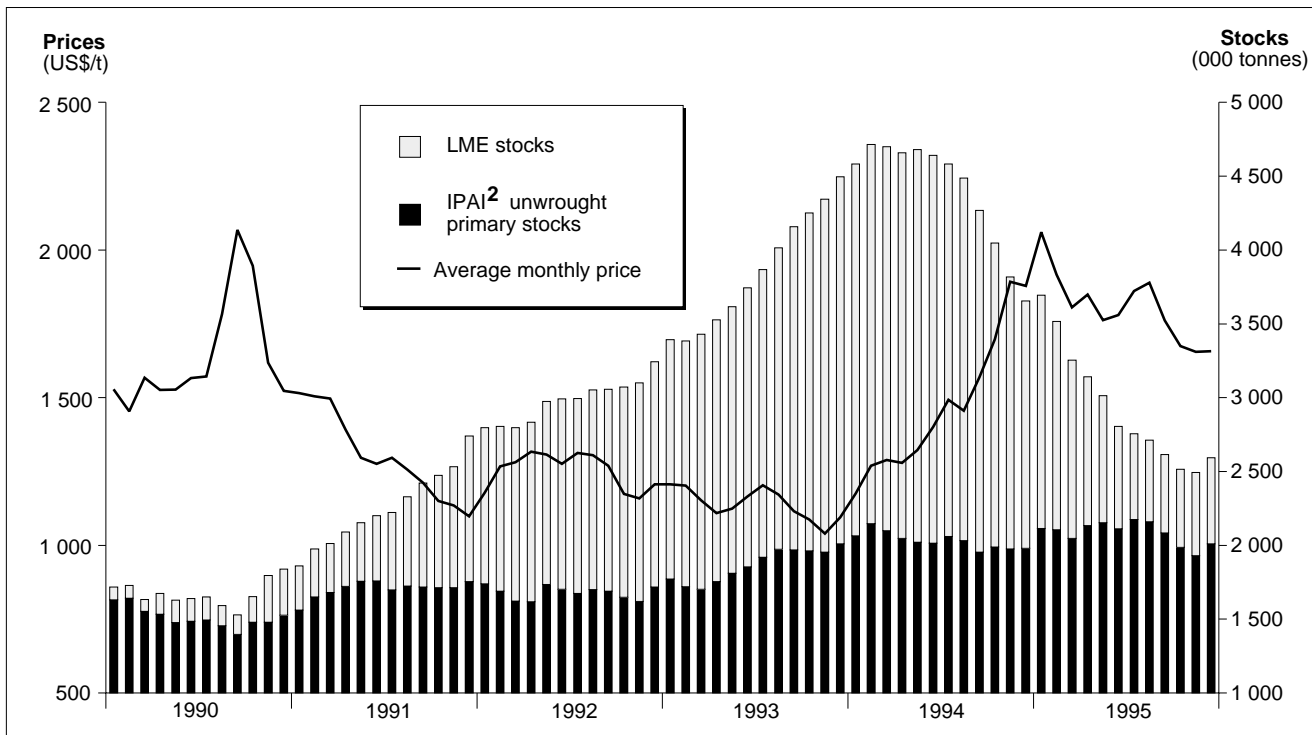
Spot prices for metallurgical-grade alumina were reportedly trading lower at the end of the year at about US\$240/t (f.o.b.), down from a peak of \$340/t in July and August, but still higher than the \$120/t average seen in 1994. Prices reacted early in the year to production problems at a number of refineries, and fears of even higher prices led many buyers to cover a larger portion of their 1995 and 1996 requirements. As demand eventually returned to

Figure 3
London Metal Exchange Aluminum Prices, 1992-95
 Daily Official Settlement Prices



Source: Natural Resources Canada.

Figure 4
Aluminum Prices and Stocks, 1990-95
 LME¹ Settlement Prices and Primary Stocks

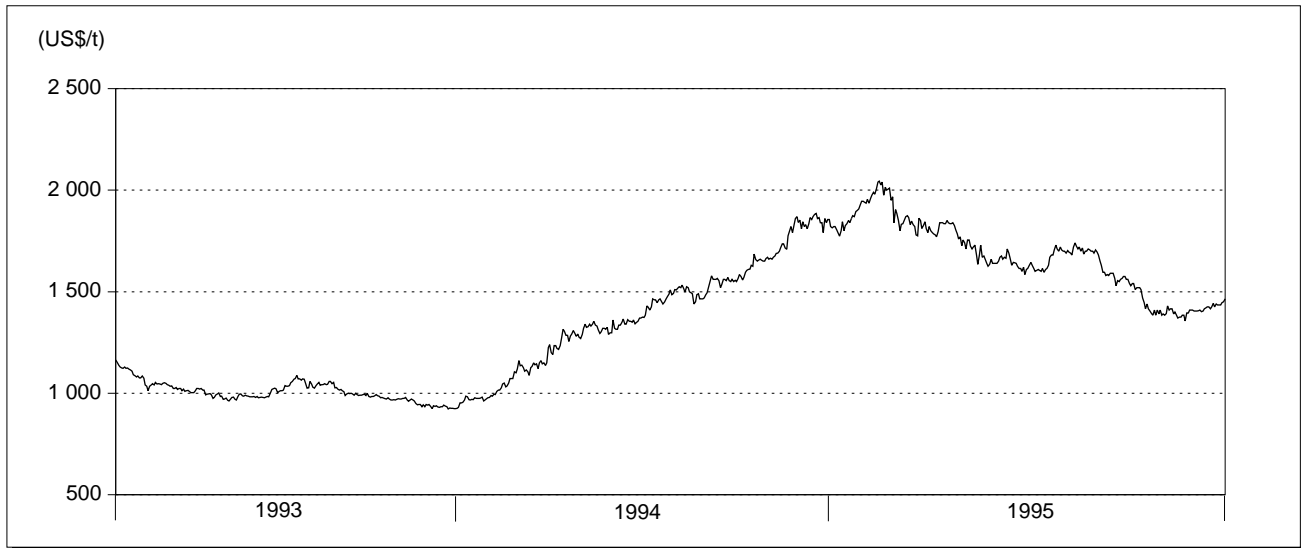


Source: Natural Resources Canada.

¹ London Metal Exchange.

² International Primary Aluminium Institute.

Figure 5
London Metal Exchange Aluminum Alloy Prices, 1993-95
 Daily Settlement Prices



Source: Natural Resources Canada.

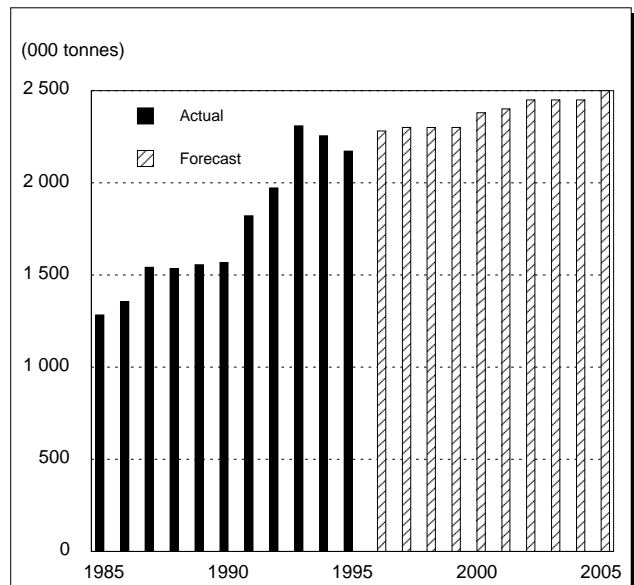
more normal levels in the fourth quarter, prices in turn fell back to average US\$256/t for the year. Prices are expected to remain in the US\$200-\$220/t range in the first quarter of 1996. Should the current surplus market return to a deficit position in the second quarter as expected, spot prices could rise again to the US\$280-\$300/t range, with some forecasts ranging as high as \$400/t.

OUTLOOK

Canada is forecast to produce about 2.265 Mt of aluminum in 1996. Canadian aluminum production capacity increased substantially during the latter half of the 1980s, but is forecast to increase at a slower rate to the year 2005 with the gains expected mainly from improved efficiencies at existing facilities. In the longer term, Alcan plans to build new smelters in Quebec to replace older Söderberg smelters, which will result in a slight increase in total capacity.

World production increased to an estimated 19.4 Mt in 1995, up from 19.1 Mt in 1994. Western World production increased to an estimated 14.7 Mt, up from 14.4 Mt in 1994. Aluminum production reached 3.3 Mt in the United States, 3.1 Mt in Western Europe, and 2.7 Mt in Russia. No major increases in capacity are expected in 1996.

Figure 6
Canadian Primary Aluminum Production, 1985-2005



Source: Natural Resources Canada.

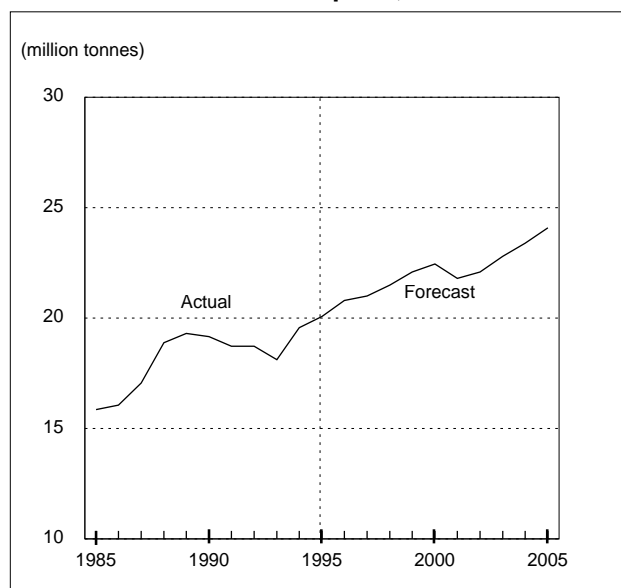
Total world consumption of primary aluminum is expected to be 20.3 Mt in 1995, or 4% higher than the 19.6 Mt recorded in 1994. In 1995, demand for primary aluminum increased an estimated 4.5% in the United States, 4% in Europe, and 3.5% in Japan. The total world demand for aluminum is expected to increase by a further 4% to 21.1 Mt in 1996. Strong annual growth of between 3% and 4% is forecast for the remainder of the decade. The transportation and packaging (in particular, beverage can) markets are expected to lead the increase in demand for aluminum to the year 2005. Canadian consumption in 1996 is expected to remain strong at about 570 000 t/y.

Cash settlement LME prices peaked in January at about US\$2100/t (95¢/lb) on speculative buying and fell back to average \$1850/t (84¢/lb) by the end of October. Shipments were strong worldwide in the first six months of the year, partially in response to stock-building after several years of low consumer

inventories. The continued recovery of aluminum markets and strong demand helped reduce stocks on the LME from 1.7 Mt in January to reach a minimum of 530 475 t at the end of October, only to rise again to finish the year at 584 425 t as demand slowed in the fourth quarter. The slower shipments and the reduction in the volume of stocks coming off the LME caused prices to remain in the US\$1750-\$1800/t price range for the last few months of 1995. Markets are expected to strengthen through 1996 and prices are forecast to average between US\$1800 and \$1900/t in 1996. In the longer term, prices are expected to average between US\$1650 and \$1850/t (75¢ and 85¢/lb) in constant 1994 dollars.

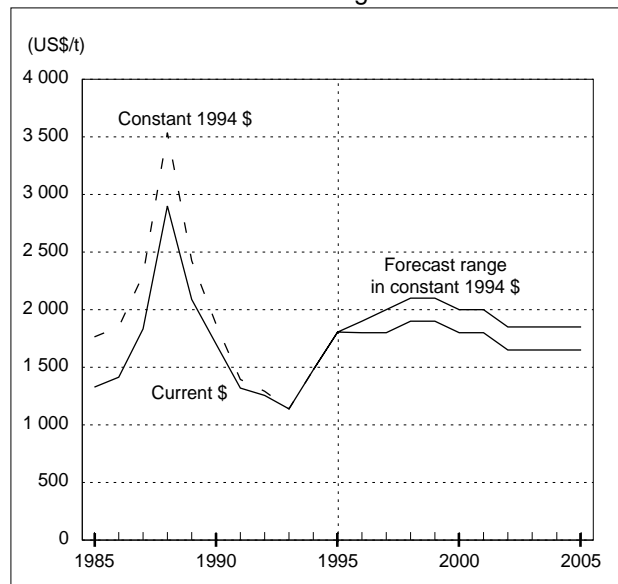
Note: Information in this review was current as of January 29, 1996.

Figure 7
World Aluminum Consumption, 1985-2005



Source: Natural Resources Canada.

Figure 8
Aluminum Prices, 1985-2005
Annual London Metal Exchange Settlement Prices



Source: Natural Resources Canada.

TARIFFS

Item No.	Description	Canada			United States
		MFN	GPT	USA	Canada
2606.00.00	Aluminum ores and concentrates	Free	Free	Free	Free
2818.20.00	Aluminum oxide, other than artificial corundum	Free	Free	Free	Free
7601.10	Unwrought aluminum, not alloyed				
7601.10.10	Billets, blocks, ingots, notched bars, pigs, slabs and wire bars	Free	Free	Free	Free
7601.10.91	Granules, cut from ingots, for use in the manufacture of cleaning compounds	1.71¢/kg	Free	Free	Free
7601.10.99	Other	Free	Free	Free	Free
7601.20	Unwrought aluminum alloys				
7601.20.10	Billets, blocks, ingots, notched bars, pigs, slabs and wire bars	Free	Free	Free	Free
7601.20.91	Granules, cut from ingots, for use in the manufacture of cleaning compounds	1.68¢/kg	Free	Free	Free
7601.20.99	Other	Free	Free	Free	Free
7602.00	Aluminum waste and scrap	Free	Free	Free	Free
76.03	Aluminum powders and flakes	3.5-5.3%	Free-2%	Free	Free
76.04	Aluminum bars, rods and profiles	1.8-8.9% BPT - Free	Free-5%	Free	Free
76.05	Aluminum wire	1.8-4%	Free-2%	Free	Free
76.06	Aluminum plates, sheets and strip, of a thickness exceeding 0.2 mm	Free-8.9%	Free-5%	Free-2%	Free-1.3%
76.07	Aluminum foil not exceeding 0.2 mm	Free-10.5%	Free-7%	Free-2.4%	0.6-1.1%
76.08	Aluminum tubes and pipes	5.5% BPT - Free	Free	Free	Free
7609.00	Aluminum tube or pipe fittings	5.5%	3%	Free	Free
76.10	Aluminum structures (excluding prefabricated buildings of heading no. 94.06) and parts of structures, aluminum plates, rods, profiles, tubes and the like, prepared for use in structures	8.9%	5%	2%	1.1%
7611.00	Aluminum reservoirs, tanks, vats and similar containers, for any material	Free-8.9%	Free-5%	Free-2%	0.5%
76.12	Aluminum casks, drums, cans, boxes and similar containers, for any material	8.9%	5%	2%	0.4-1.1%
7613.00	Aluminum containers for compressed or liquefied gas	8.9%	5%	2%	1%
76.14	Stranded wire, cables, plaited bands and the like, of aluminum, not electrically insulated	4.5%	3%	2%	0.9-1.1%
76.15	Table, kitchen or other household articles and parts thereof, of aluminum	8.8%	Free-5%	2-2.2%	0.7-1.1%
76.16	Other articles of aluminum	Free-8.9%	Free-5%	Free-2%	Free-1.2%

Sources: Customs Tariff, effective January 1996, Revenue Canada; Harmonized Tariff Schedule of the United States, 1996.
BPT British Preferential Tariff.

TABLE 1. CANADA, ALUMINUM PRODUCTION AND TRADE, 1994 AND 1995

Item No.	1994		1995 ^p	
	(tonnes)	(\$000)	(tonnes)	(\$000)
PRODUCTION	2 254 683	..	2 171 992	..
IMPORTS				
2606.00.00 Aluminum ores and concentrates				
Brazil	1 645 563	53 377	1 584 934	54 580
Guinea	527 883	19 756	370 187	13 183
United States	124 379	12 036	95 726	9 852
People's Republic of China	65 071	3 919	116 182	8 517
Australia	159 319	7 146	188 599	7 115
Ghana	82 878	2 317	140 651	4 440
Guyana	161 936	6 805	43 079	4 254
Sierra Leone	144 686	5 188	66 241	2 137
Other countries	17 695	648	18 024	1 070
Total	2 929 410	111 196	2 623 623	105 154
2620.40.00 Ash and residues containing mainly aluminum	3 065	1 540	3 183	1 743
2818.20.00 Aluminum oxide (excluding artificial corundum)				
Australia	1 744 925	384 532	1 644 720	447 877
United States	715 078	172 039	842 553	236 100
Jamaica	782 151	174 645	631 680	161 003
Ireland	—	—	33 562	10 507
Germany	780	1 909	836	3 066
Austria	524	706	864	746
France	533	760	601	728
Japan	7 950	2 470	789	679
Other countries	81 088	18 577	2 884	1 601
Total	3 333 029	755 645	3 158 488	862 316
2818.30.00 Aluminum hydroxide	14 807	8 927	13 596	7 751
7601.10 Unwrought aluminum, not alloyed				
7601.10.10 Billets, blocks, ingots, notched bars, pigs, slabs and wire bars				
United States	18 225	40 990	21 832	63 798
United Kingdom	11 868	20 962	1 578	3 932
Russia	2 863	4 404	1 359	3 623
Other countries	3 023	5 763	378	1 051
Total	35 979	72 125	25 148	72 408
7601.10.91 Aluminum granules, unwrought, not alloyed, cut from ingots, for use in the manufacture of cleaning compounds	—	—	—	—
7601.10.99 Other	1 205	3 119	732	1 985
7601.20 Unwrought aluminum, alloyed				
7601.20.10 Billets, blocks, ingots, notched bars, pigs, slabs and wire bars				
United States	92 984 ^r	183 839 ^r	90 692	187 486
Russia	1 969 ^r	4 701	3 171	6 968
United Kingdom	1 863	4 118	541	2 589
Brazil	—	—	78	229
Netherlands	62	149	36	201
Other countries	954	2 741	49	204
Total	97 833 ^r	195 552 ^r	94 567	197 682
7601.20.91 Granules, cut from ingots, for use in the manufacture of cleaning compounds	86	163	12	42
7601.20.99 Other	13 355	27 483	13 438	31 346
7602.00.00 Aluminum waste and scrap	63 309 ^r	86 150 ^r	55 885	86 689
76.03 Aluminum powders and flakes	1 744	6 686	2 152	8 403
76.04 Aluminum bars, rods and profiles				
7604.10 Of aluminum, not alloyed				
United States	3 023	14 146	5 858	25 629
Other countries	106	545	472	2 221
Total	3 129	14 691	6 331	27 850

TABLE 1 (cont'd)

Item No.	1994		1995p		
	(tonnes)	(\$000)	(tonnes)	(\$000)	
IMPORTS (cont'd)					
7604.21 to 7604.29	Of aluminum alloys				
	United States	14 590 ^r	67 863 ^r	17 396	96 053
	Other countries	701 ^r	2 758 ^r	657	3 199
	Total	15 291 ^r	70 621 ^r	18 054	99 252
76.05	Aluminum wire	6 009 ^r	22 167 ^r	6 768	28 393
76.06	Aluminum plates, sheets and strip, of a thickness exceeding 0.2 mm	368 017 ^r	1 072	375 154	1 364 115
76.07	Aluminum foil not exceeding 0.2 mm	25 943 ^r	111 602	27 405	132 631
76.08	Aluminum tubes and pipes	7 199 ^r	33 988 ^r	7 850	42 073
76.09	Aluminum tube or pipe fittings	..	13 489	..	18 199
		(number 000)		(number 000)	
76.10	Aluminum structures (excluding prefabricated buildings of heading no. 94.06) and parts of structures, aluminum plates, rods, profiles, tubes and the like, prepared for use in structures	..	50 939 ^r	..	56 689
76.11	Aluminum reservoirs, tanks, vats and similar containers	..	104	-	-
76.12	Aluminum casks, drums, cans, boxes and similar containers	400 745	58 217	680 302	98 625
76.13	Aluminum containers for compressed or liquefied gas	108	7 705	125	8 894
		(tonnes)		(tonnes)	
76.14	Stranded wire, cables, plaited bands and the like, of aluminum, not electrically insulated	112	495	1 027	3 318
76.15	Table, kitchen or other household articles and parts thereof, of aluminum	..	69 497	..	67 815
76.16	Other articles of aluminum	..	118 726 ^r	..	153 278
EXPORTS					
2606.00	Aluminum ores and concentrates				
	Switzerland	2 378	533	374	88
	United States	13 133	430	153	26
	Netherlands	371	86	-	-
	Total	15 882	1 051	527	114
2620.40	Ash and residues containing mainly aluminum	3 018	921	18 705	9 226
2818.20	Aluminum oxide (excluding artificial corundum)				
	United States	68 607 ^r	49 273 ^r	61 508	46 189
	Germany	1 428	1 662	144	504
	Norway	460	495	389	415
	Other countries	1 320	2 117	325	488
	Total	71 815 ^r	53 553 ^r	62 367	47 601
7601.10	Unwrought aluminum, not alloyed				
	United States	680 905 ^r	1 318 187 ^r	669 984	1 770 066
	Netherlands	114 316	203 929	122 451	246 597
	Japan	53 230	96 243	60 091	120 381
	South Korea	44 735	89 263	25 560	65 776
	United Kingdom	26 959	49 590	10 649	20 100
	Germany	7 167	13 352	10 654	19 286
	Switzerland	5 669	10 465	6 774	16 300
	Other countries	17 096 ^r	36 353 ^r	5 091	12 775
	Total	950 077 ^r	1 817 389 ^r	911 255	2 271 293

TABLE 1 (cont'd)

Item No.	1994		1995P		
	(tonnes)	(\$000)	(tonnes)	(\$000)	
EXPORTS (cont'd)					
7601.20	Unwrought aluminum alloys				
	United States	712 894 ^r	1 509 592 ^r	605 910	1 696 418
	Japan	115 734	224 423	124 214	310 615
	South Korea	31 649	69 145	33 414	96 574
	Israel	8 949	20 720	10 616	29 820
	Netherlands	7 956	14 256	6 735	19 410
	Lebanon	3 982	9 864	4 473	13 704
	Ireland	6 376	15 311	2 462	13 516
	United Kingdom	1 974	4 331	2 817	8 636
	Turkey	7 021	16 073	2 834	8 482
	Other countries	30 434	67 567	12 577	32 361
	Total	926 969 ^r	1 951 294 ^r	806 052	2 229 549
7602.00	Aluminum waste and scrap				
	United States	213 346 ^r	343 795 ^r	214 733	425 184
	Japan	11 788	20 531	6 889	17 505
	Hong Kong	2 428 ^r	3 096 ^r	5 113	9 827
	Taiwan	5 508	6 991	4 619	6 556
	Other countries	1 692 ^r	2 464 ^r	5 891	10 876
	Total	234 762 ^r	376 883 ^r	237 244	469 957
76.03	Aluminum powders and flakes	617	1 164	554	1 639
76.04	Aluminum bars, rods and profiles	67 283 ^r	205 144 ^r	62 009	250 555
76.05	Aluminum wire	28 727	64 745	44 627	132 091
76.06	Aluminum plates, sheets and strip, of a thickness exceeding 0.2 mm	225 127 ^r	611 560 ^r	247 355	806 950
76.07	Aluminum foil not exceeding 0.2 mm	20 091 ^r	87 998 ^r	21 583	105 961
76.08	Aluminum tubes and pipes	1 471 ^r	7 412 ^r	3 144	16 758
7609.00	Aluminum tube or pipe fittings	..	6 718 ^r	..	9 940
76.10	Aluminum structures (excluding prefabricated buildings of heading No. 94.06) and parts of structures, aluminum plates, rods, profiles, tubes and the like, prepared for use in structures	..	56 521 ^r	..	78 551
		(number 000)		(number 000)	
7611.00	Aluminum reservoirs, tanks, vats and similar containers	3	670	1	851
76.12	Aluminum casks, drums, cans, boxes and similar containers	601 381 ^r	81 531 ^r	557 042	83 027
7613.00	Aluminum containers for compressed or liquefied gas	325 ^r	1 359 ^r	1 324	2 940
		(tonnes)		(tonnes)	
76.14	Stranded wire, cables, plaited bands and the like, of aluminum, not electrically insulated	7 122	20 985	5 105	13 726
76.15	Table, kitchen or other household articles and parts thereof, of aluminum	..	24 889	..	29 473
76.16	Other articles of aluminum	..	77 365 ^r	..	104 686

Sources: Natural Resources Canada; Statistics Canada.

– Nil; .. Not available or not applicable; . . . Amount too small to be expressed; P Preliminary; ^r Revised.

Note: Numbers may not add to totals due to rounding.

TABLE 2. CANADA, ALUMINUM SMELTER CAPACITY

Company	As of December 31, 1995
	(tonnes/year)
Alcan Aluminium Limited	
Quebec	
Grande-Baie	180 000
Jonquière	232 000
Isle-Maligne	73 000
Shawinigan	84 000
Beauharnois	48 000
Laterrière	204 000
British Columbia	
Kitimat	272 000
Total Alcan capacity	1 093 000
Canadian Reynolds Metals Company, Limited	
Quebec	
Baie-Comeau	400 000
Aluminerie de Bécancour Inc.	
Quebec	
Bécancour	360 000
Aluminerie Alouette Inc.	
Quebec	
Sept-Îles	215 000
Aluminerie Luralco Inc.	
Quebec	
Deschambault	215 000
Total Canadian capacity	2 283 000

Source: Natural Resources Canada.

TABLE 3. CANADA, CONSUMPTION¹ OF ALUMINUM METAL⁴ AT FIRST PROCESSING STAGE, 1992-94

	1992 ^a	1993 ^a	1994 ^{p,a}			
	(tonnes)					
CASTINGS						
Permanent mould	81 303	89 222	103 627			
Sand	2 428	2 363	2 533			
Die and other	69 753	78 625	90 301			
Total	153 484	170 210	196 462			
WROUGHT PRODUCTS						
Sheet, plate, coil and foil	142 619	160 493	169 847			
Extrusions, including tubing	94 945	110 903 ^r	133 634			
Other wrought products (including rods, forgings and slugs)	81 461	121 456	125 484			
Total	319 025	392 852 ^r	428 965			
OTHER USES						
Destructive uses (deoxidizer), non-aluminum base alloys, powder and paste and other uses	34 236	34 895 ^r	41 953			
Total consumed	506 745	597 957 ^r	667 379			
Secondary aluminum ²	127 818	131 174	145 661			
Metal Entering Plant						
	1992	1993	1994 ^p	On Hand December 31		
				1992	1993	1994 ^p
Primary aluminum ingot and alloys	405 216	480 186 ^r	525 733	13 221	15 716 ^r	18 261
Secondary aluminum	88 638	97 404 ^r	117 685	4 803	6 182 ^r	5 930
Scrap originating outside plant	161 361	170 484	198 396	5 929	7 231	11 178
Total	655 215	748 074 ^r	841 814	23 953	29 129 ^r	35 369
Aluminum shipments ³				21 706	15 500 ^r	23 324

Source: Natural Resources Canada.

^p Preliminary; ^r Revised.

^a Increase in number of companies being surveyed. Therefore, closing inventory of previous year does not equal opening inventory of current year.

¹ Available data as reported by consumers. ² Aluminum metal used in the production of secondary aluminum is not included in consumption totals. ³ Aluminum metal shipped without change. Does not refer to shipments of goods of own manufacture. ⁴ Aluminum metal refers to primary aluminum ingot and alloys, purchased secondary aluminum ingot, and outside aluminum scrap.

Note: Numbers may not add to totals due to rounding.

TABLE 4. AVERAGE ALUMINUM PRICES

Year	Month	LME Cash ¹	<i>Metals Week</i> U.S. Markets ¹
		(US\$/t)	(US¢/lb)
ANNUAL AVERAGES²			
1985		1 073.3	48.8
1986		1 150.8	55.9
1987		1 560.9	72.3
1988		2 597.8	110.1
1989		1 951.5	87.8
1990		1 751.8	75.0
1991		1 302.7	59.5
1992		1 254.6	57.5
1993		1 139.4	53.3
1994		1 477.2	71.2
1995		1 806.1	85.9
MONTHLY AVERAGES			
1994	January	1 174.93	56.0
	February	1 270.30	60.4
	March	1 289.35	61.7
	April	1 279.08	61.4
	May	1 322.93	63.0
	June	1 400.93	67.1
	July	1 492.86	71.9
	August	1 455.77	70.3
	September	1 569.59	77.0
	October	1 698.45	82.6
	November	1 893.07	92.1
	December	1 878.80	90.5
1995	January	2 060.98	99.7
	February	1 916.63	93.7
	March	1 805.52	88.1
	April	1 849.42	89.8
	May	1 763.21	85.1
	June	1 780.43	84.5
	July	1 860.48	87.3
	August	1 888.68	87.2
	September	1 761.29	81.8
	October	1 674.75	77.9
	November	1 654.48	77.2
	December	1 657.11	78.3

Sources: Natural Resources Canada; *Metals Week*.¹ Highest grade sold. ² Primary ingots, minimum 99.7% purity; prior to October 1988, minimum 99.5% purity.

**TABLE 5. AVERAGE ALUMINUM ALLOY
(SECONDARY) PRICES**

Year	Month	LME Alloy ¹	<i>Metals Week</i>
		Cash	356 Alloy ²
		(US\$/t)	(US¢/lb)
ANNUAL AVERAGES			
1993		1 005.2	n.a.
1994		1 452.9	81.3
1995		1 656.0	88.9
MONTHLY AVERAGES			
1994	January	1 016.18	65.06
	February	1 126.75	72.19
	March	1 240.57	74.83
	April	1 314.18	76.38
	May	1 330.95	74.50
	June	1 413.30	76.81
	July	1 496.02	80.72
	August	1 526.07	81.78
	September	1 599.57	84.94
	October	1 702.98	90.44
	November	1 842.20	97.07
	December	1 826.08	101.06
1995	January	1 964.33	104.56
	February	1 879.53	101.63
	March	1 812.67	95.11
	April	1 761.28	91.00
	May	1 654.52	85.72
	June	1 625.64	84.67
	July	1 665.67	87.00
	August	1 692.55	90.67
	September	1 563.79	87.50
	October	1 434.86	82.06
	November	1 393.14	78.13
	December	1 424.39	79.43

Source: *Metals Week*.

n.a. Not applicable.

¹ Alloy ingots meeting LME specifications. ² Aluminum die-cast alloy.

TABLE 6. WORLD MINE PRODUCTION OF BAUXITE, 1991-94

	1991	1992	1993	1994 ^p
	(000 tonnes)			
Albania	8.0	—	—	—
Australia	40 510.0	39 476.0	41 320.0	42 159.0
Brazil	10 364.2	9 365.6	9 669.0	8 673.3
China	5 926.0	6 661.0	6 468.2	6 500.0 ^e
Dominican Republic	6.5	—	—	—
France	183.3	104.0	151.0	128.0
Ghana	333.8	338.2	423.7	426.1
Greece	2 133.5	2 042.1	2 205.5	2 194.1
Guinea	17 065.0	15 997.0	17 040.2	14 400.0
Guyana	2 205.6	2 264.8	2 124.6	2 093.0
Hungary	2 036.7	1 721.1	1 561.3	1 015.1
India	4 738.0	4 898.3	5 276.8	4 809.1
Indonesia	1 406.1	803.5	1 320.4	1 342.4
Iran ^e	80.0	92.0	100.0	100.0
Italy	8.7	97.5	90.1	23.4
Jamaica	11 608.6	11 368.0	11 306.6	11 571.3
Kazakstan	3 061.0	3 036.0	3 000.0	2 425.0
Malaysia	376.4	330.6	68.8	161.9
Mozambique	7.7	8.8	6.0	9.6
Pakistan	4.3	3.5	4.8	4.8
Romania	200.5	176.1	186.6	184.1
Russia	4 808.0	4 578.0	4 364.0	3 633.0
Sierra Leone	1 288.3	1 262.2	1 122.0	699.3
Surinam	3 136.3	3 159.5	3 156.1	3 765.9
Turkey	483.4	613.0	594.6	445.0
United States	50.0	45.0	40.0	35.0
Venezuela	1 992.3	1 116.9	2 530.3	4 772.9
Ex-Yugoslavia	2 422.0	907.0	252.0	1.3
Total world	116 444.2	110 735.7	114 382.4	111 572.6

Sources: Natural Resources Canada; International Consultative Group on Nonferrous Metals Statistics.
 — Nil; ^e Estimated; ^p Preliminary.

TABLE 7. WORLD PRODUCTION OF ALUMINA (HYDRATE), 1991-94

	1991	1992	1993	1994 ^p
	(000 tonnes)			
Australia	11 713.0	11 783.0	12 598.0	12 792.0
Azerbaijan ^e	300.0	300.0	200.0	30.0
Brazil	1 742.5	1 833.0	1 853.2	1 867.5
Canada	1 131.0	1 104.0	1 182.0	1 170.0
China ^e	1 522.2	1 582.9	1 894.5	1 847.0
Czechoslovakia ^e	187.0	142.7	n.a.	n.a.
France	538.0	508.0	476.0	438.2
Germany	1 148.3	1 128.0	1 110.0	950.7
Greece	641.2	632.0	648.5	607.5
Guinea	650.9	603.2	642.3	648.4
Hungary	661.0	555.9	447.3	243.4
India	1 435.0	1 338.3	1 489.5	1 455.8
Ireland	981.0	1 007.0	1 103.3	1 140.0
Italy	804.5	762.1	840.1	852.1
Jamaica	3 014.6	2 917.2	2 989.4	3 221.2
Japan	864.3	714.1	704.1	674.6
Kazakstan	1 035.0	1 053.0	1 100.0	900.0 ^e
Romania ^e	310.0	279.7	293.2	302.5
Russia ^e	2 670.0	2 718.0	2 661.2	2 168.4
Slovakia	n.a.	n.a.	90.2	90.0 ^e
Spain	1 004.0	959.1	1 060.0	1 070.6
Surinam	1 510.0	1 591.0	1 506.6	1 498.1
Turkey	159.1	156.5	169.2	178.0 ^e
Ukraine	1 272.0	1 229.0	1 250.0	1 200.0 ^e
United Kingdom	120.0	120.0 ^e	120.0 ^e	120.0 ^e
United States	5 230.0	5 185.0	5 290.0	4 860.0
Venezuela	1 481.0	1 282.8	1 562.9	1 600.0 ^e
Ex-Yugoslavia	780.0	110.0 ^e	—	—
Total world	42 905.6	41 595.5	43 281.5	41 926.0

Sources: Natural Resources Canada; International Consultative Group on Nonferrous Metals Statistics.
 — Nil; ^e Estimated; n.a. Not applicable; ^p Preliminary.

TABLE 8. WORLD PRODUCTION OF ALUMINUM, 1992-95

	1992	1993	1994 ^p	1995 ^e
	(000 tonnes)			
Argentina	155.6	172.9	175.9	180.0
Australia	1 235.5	1 375.6	1 310.8	1 300.0
Austria	32.9	—	—	—
Azerbaijan	24.0	7.0	5.0	5.0
Bahrain	292.5	449.0	451.9	460.0
Brazil	1 193.3	1 172.0	1 184.6	1 195.0
Canada	1 971.8	2 308.9	2 254.7	2 172.0
Cameroon	82.5	86.5	81.1	80.0
China	1 080.0	1 220.4	1 446.1	1 650.0
Czechoslovakia	62.0	n.a.	n.a.	n.a.
Dubai	244.6	242.3	246.9	245.0
Egypt	177.8	180.7	181.5	185.0
France	417.7	426.2	384.1	360.0
Germany	602.8	551.9	505.0	575.0
Ghana	179.0	174.1	140.7	140.0
Greece	152.8	147.7	138.0	130.0
Hungary	26.8	27.9	29.6	25.0
Iceland	89.9	94.2	98.6	98.0
India	496.3	465.4	472.0	465.0
Indonesia	188.8	204.0	221.9	225.0
Iran	79.3	90.0	116.0	100.0
Italy	160.7	155.6	175.6	175.0
Japan	18.9	18.3	17.0	18.0
Mexico	24.8	—	—	—
Netherlands	235.1	231.8	219.4	205.0
New Zealand	241.6	266.9	268.0	270.0
Norway	866.5	888.0	858.2	845.0
Poland	43.6	46.9	49.4	51.0
Romania	112.0	112.4	119.6	143.0
Russia	2 715.1	2 702.0	2 675.3	2 750.0
Slovakia	n.a.	39.7	40.0 ^e	50.0
South Africa	174.0	174.7	172.7	225.0
Spain	359.0	355.9	338.1	360.0
Surinam	32.4	30.1	26.7	28.0
Sweden	77.2	82.4	83.9	85.0
Switzerland	52.4	36.4	24.2	15.0
Tadjikistan	345.0	252.0	236.5	240.0
Turkey	58.6	58.5	59.7	60.0
Ukraine	105.0	104.0	102.0	105.0
United Kingdom	244.2	239.1	231.2	238.0
United States	4 042.1	3 694.8	3 298.5	3 375.0
Venezuela	567.4	567.6	585.4	640.0
Ex-Yugoslavia	151.8	100.7	82.3	70.0
Total world	19 413.3	19 554.5	19 108.1	19 538.0

Sources: Natural Resources Canada; International Consultative Group on Nonferrous Metals Statistics.
 — Nil; ^e Estimated; n.a. Not applicable; ^p Preliminary.

TABLE 9. WORLD CONSUMPTION OF ALUMINUM, 1992-95

	1992	1993	1994 ^p	1995 ^e
	(000 tonnes)			
Albania ^e	1.0	1.0	1.0	1.0
Algeria	8.0	8.0	5.0 ^e	5.0
Argentina	108.3	110.0	109.0	110.0
Australia	309.2	339.6	352.8	355.0
Austria	165.0	140.0	145.0	150.0
Bahrain	124.7	114.5	132.9	135.0
Bangladesh ^e	10.0	10.0	10.0	10.0
Belgium/Luxembourg	291.8	270.0	328.7	330.0
Brazil	377.1	363.8	413.7	415.0
Bulgaria	12.0	11.9	6.5	6.0
Canada	420.3	486.6	532.8	540.0
Cameroon	15.5	19.0	16.9	17.0
Chile ^e	6.0	14.2	14.3	14.0
China ^e	1 246.3	1 318.1	1 484.1	1 600.0
Colombia	31.2	30.0	35.3	35.0
Cuba	1.0	1.0	1.0	1.0
Czech Republic	n.a.	38.9	40.0	40.0
Czechoslovakia	63.8	n.a.	n.a.	n.a.
Denmark	24.5	23.0	25.0	25.0
Egypt	57.0	83.8	80.0	83.0
Finland	15.0	22.6	20.0	20.0
France	722.8	665.0	735.0	750.0
Germany	1 457.1	1 300.0	1 460.0	1 600.0
Ghana	32.4	14.7	15.8	12.0
Greece	130.1	104.6	143.0	145.0
Hong Kong	45.9	45.1	41.6	45.0
Hungary	112.3	140.1	141.1	140.0
India	407.2	415.3	415.0	420.0
Indonesia ^e	95.7	138.3	179.1	180.0
Iran ^e	116.0	110.0	105.0	110.0
Iraq ^e	1.0	1.0	1.0	1.0
Ireland	6.0	5.0	7.0	8.0
Israel	21.4	27.1	41.3	43.0
Italy	660.0	554.0	660.0	650.0
Japan	2 271.6	2 138.3	2 345.8	2 450.0
Lebanon ^e	10.0	10.0	7.0	10.0
Malaysia	74.9	81.7	66.3	70.0
Mexico	78.1	97.9	80.7	90.0
Netherlands	123.3	130.0	145.0	140.0
New Zealand	22.3	27.8	40.0	40.0
Nigeria	5.0	7.0	7.0	7.0
North Korea ^e	20.0	20.0	20.0	20.0
Norway	170.0	202.0	227.0	220.0
Pakistan	8.5	10.0	10.0	10.0
Peru ^e	1.8	3.0	3.0	3.0
Philippines	26.0	22.7	41.3	40.0
Poland	54.8	67.7	56.9	60.0
Portugal	58.1	51.7	64.2	65.0
Romania	20.6	39.4	20.1	20.0
Russia	1 242.0	657.0	475.9	700.0
Saudi Arabia	25.0	25.0	30.0	30.0
Singapore	27.5	22.4	30.1	30.0
Slovakia	n.a.	23.7	25.0	25.0
South Africa	87.9	86.1	98.4	120.0
South Korea	397.0	524.8	603.9	600.0
Spain	309.0	310.0	333.0	375.0
Sweden	89.4	93.0	130.0	130.0
Switzerland	145.2	131.1	155.1	150.0
Taiwan	265.8	299.1	355.2	380.0
Thailand	147.5	180.3	183.4	185.0
Turkey	126.9	160.1	115.2	120.0
United Arab Emirates	12.4	14.0	19.3	20.0
United Kingdom	468.0	475.0 ^e	500.0 ^e	500.0
United States	4 534.1	4 877.1	5 400.0	5 450.0
Venezuela	131.6	155.2	132.7	140.0
Vietnam ^e	7.0	10.0	10.0	10.0
Ex-Yugoslavia	75.0	80.0 ^e	80.0 ^e	80.0
Other	597.3	202.2	66.3	150.0
Total world	18 729.2	18 119.5	19 576.7	20 436.0

Sources: Natural Resources Canada; International Consultative Group on Nonferrous Metals Statistics.
^e Estimated; n.a. Not applicable; ^p Preliminary.

TABLE 10. WESTERN WORLD PRODUCTION OF SECONDARY ALUMINUM,¹ 1992-95

	1992	1993	1994 ^p	1995 ^e
	(000 tonnes)			
Argentina	19.1	19.1	19.1	19.0
Australia	40.0	40.0	40.0	40.0
Austria	45.4	43.3	52.5	50.0
Brazil	67.1	76.8	91.0	90.0
Canada	86.0	86.0	86.0	90.0
Denmark	14.1	14.0	14.0	14.0
Finland	27.3	29.9	31.0	30.0
France	235.7	222.4	253.4	230.0
Germany	535.6	408.1	438.1	430.0
Iran	39.4	15.1	26.0	25.0
Italy	353.1	346.1	375.5	370.0
Japan	1 073.7	1 005.6	1 173.0	1 170.0
Mexico	59.5	69.9	125.3	125.0
Netherlands	150.2	150.0	150.0	150.0
New Zealand	6.7	6.7	6.7	6.7
Norway	40.0	40.0	40.0	40.0
Portugal	2.0	2.0	3.0	3.0
Spain	96.5	99.7	103.5	100.0
Sweden	16.5	19.0	20.0	20.0
Switzerland	10.7	4.2	6.2	10.0
Taiwan	64.0	64.0	64.0	64.0
United Kingdom	251.8	279.0	248.9	280.0
United States	2 230.4	2 994.9	2 958.8	3 100.0
Venezuela	34.7	34.7	34.7	35.0
Ex-Yugoslavia	20.4	26.0	26.0	26.0
Other	28.0	28.0	28.0	28.0
Total world	5 547.9	6 113.6	6 415.2	6 545.7

Sources: Natural Resources Canada; World Bureau of Metal Statistics.

^e Estimated; ^p Preliminary.

¹ Excluding the direct use of aluminum in the form of scrap.