ALUMINIUM

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The year 2000 began with great promise. On the supply side, there had been fears that Y2K-related computer glitches would cause production problems, particularly in the former East Bloc, but virtually none was experienced. Of the capacity idled in the early 1990s to deal with oversupply or in 1998 due to El Niño-related water shortages, most had been restarted. Demand was tremendously strong in the US and improving elsewhere. In January, prices reached heights seen only once in the previous four years and this prompted announcements concerning the restart of much of the little remaining voluntarily idled capacity.

For both supply and demand, however, the situation deteriorated as the year progressed, with the main focus being on the US. The Federal Reserve Board reacted to the strong economy with repeated monetary tightening at the same time as steeply escalating oil prices were having their impact. The US economy slowed markedly in the second half and, by the end of the year, was teetering on the brink of recession. The Asian and European economies were also impacted by the high oil prices and the US slowdown. For aluminium, the running down of excess inventories (built-up early in the year) amplified the effect of the economic downturn on demand.

Probably the most unexpected occurrence last year was the power crisis in the US. By early 2001, over 75% of the primary capacity in the Pacific Northwest had been idled, some perhaps permanently.

Based on production in the Established Market Economy Countries (EMECs), estimated net flows from the former East Bloc and *reported* producer and commodity exchange inventory changes (incorporating Nymex/Comex warranted stocks and the IPAI/IAI revised guidelines), primary shipments were up 3.5% in 2000 to almost 20.2 Mt.

Unlike the two previous years, there was a substantial net change in inventories reported by the IAI, LME and Nymex/Comex in 2000. Total EMEC reported inventories declined by about 513,000 t with unwrought inventories down by about 435,000 t. During the price backwardation early in 2000, LME stocks rose from 775,000 t to peak at almost 870,000 t in late February. From there they declined quite steadily to just under 300,000 t in mid-December. Another cash to three months backwardation that began in late December and lasted for two months (peaking at close to US$100 on January 31) drew 184,000 t onto LME warrant.

Elsewhere, Nymex/Comex unwarranted metal (including secondary) increased by about 48,000 t while Japanese port stocks ended the year little changed. We believe that relatively small quantities of aluminium also ended up on internet-based exchanges. For most of the year, the price contango was insufficient to finance off-warrant cash-and-carry deals and few were being offered, so

Emec Primary Metal Balance (Mt)

	1997	1998	1999	2000
Primary Capacity	16.92	17.51	17.94	18.21
Operating Rate (%)	94.9	93.9	94.5	94.8
Primary Production	16.07	16.43	16.95	17.35
Net East Bloc flow	2.65	2.70	2.65	2.40
Primary Supply	18.72	19.13	19.60	19.75
Primary Shipments	19.10	19.07	19.51	20.18
Reported Unwrought Inventory Change	-0.38	+0.07	+0.09	-0.44

Sources: IAI, LME, Nymex/Comex, Alcan estimates.

Consumption					
	1999/98 (% change)	1999 (t)	2000/99 (% change)	2000[e] (t)	Total (%)
North America	6.8	10,521	1.1	10,642	37
Latin America	-1.2	1,479	5.1	1,555	5
Western Europe	3.2	8,244	3.7	8,548	30
Asia	4.8	6,581	6.8	7,029	25
Africa and Oceania	-2.4	679	2.2	694	2
Total EMECs	**+4.6**	**27,503**	**+3.5**	**28,467**	**100**

Source: Alcan estimates, may not add due to rounding.
[e] estimate

we believe that unreported stocks declined.

The LME three-months price rose from US$1,650/t at the end of 1999 to a high of US$1,755/t on January 19, the day Alcoa announced it was restarting almost half of its idled capacity. The price then slid to the year's low of US$1,427/t on April 17. After rising back above US$1,500/t in the second half of May, the price fell back below US$1,440/t in early June. As the power problems developed in the US, the price climbed steadily to reach the US$1,660s by mid-September. After trading between US$1,450 and US$1,550 through most of October and November, aluminium's price again surged above US$1,600/t in December. The average price for 2000 was identical to that at year-end: US$1,567/t. This compares with average prices of US$1,388/t in 1999 and US$1,380/t in 1998.

Consumption by Region and End Use

Consumption of primary and secondary/recycled aluminium in the EMECs is estimated to have risen by the same 3.5% as primary shipments in 2000. This represents the eighteenth consecutive year of positive growth. Consumption was up in all regions, with the strongest growth in Asia and Latin America (which had been most severely hurt by the regional crises from the second half of 1997 through early 1999). For 2001, growth is expected to be lower everywhere (except possibly Latin America), with a decline of close to 5% forecast for North America as the US economy flirts with a recession.

All of the end-use markets except cans and other packaging grew last year. Though transportation continues to be by far the largest market, and again showed the largest tonnage gain, its growth slowed noticeably from the 8-10% rates of the previous three years. Transportation shipments actually declined in the US due to sharply lower production of trucks and truck trailers and a fall-off in automobile production in the second half. On a percentage basis, machinery and equipment supplanted transportation as the fastest growing end-use market. The electrical sector also had well above-average growth. The second-largest sector, building and construction, is a mature market that again experienced below-average growth. Lower beverage can shipments in the US combined with down-gauging contributed to the stagnation in the beverage and food can sector.

EMECs	1999/98 (% change)	1999 (t)	2000/99 (% change)	2000[e] (t)
Building & Construction	3.8	5,116	2.5	5,242
Transportation	8.1	8,194	2.7	8,415
Consumer Durables	4.5	1,723	3.3	1,780
Machinery & Equipment	6.5	2,487	7.6	2,677
Electrical	2.6	2,491	6.0	2,640
Cans	-0.4	3,495	0.0	3,495
Other Packaging	3.4	1,460	-0.3	1,455
Other	3.3	2,538	8.9	2,764

[e] estimate

Aluminium Capacity and Technology

Based on IAI figures and estimates, primary capacity in the EMECs continues to grow more slowly than demand, up 2.6% to 18.66 Mt at the end of 2000, from 18.18 Mt at the end of 1999.

Given the relatively low prices over the previous couple of years, there were few new smelters or smelter expansions completed or started last year. The only major expansion completed was a brownfield project in the Persian Gulf. Dubal completed the sixth potline at the Jebel Ali smelter within its US$736 million budget and ahead of schedule. Capacity was boosted from 395,000 t to 536,000 t/y, making it the third largest smelter in the world and the largest outside of Russia.

Production was started at two major greenfield projects last year. Mozal's 250,000 t/y capacity Maputo smelter produced its first metal in June, six months ahead of schedule, and under budget. This was in spite of the worst flooding to hit Mozambique in a hundred years. To put this impressive project into perspective further: when completed, the smelter will consume more electricity (450 MW) than the entire country did previously. Power is currently supplied under a favourable LME-linked contract with South Africa's Eskom utility, but eventually it should come from the Cahora Bassa hydro project in north-west Mozambique. The smelter is owned 47% by Billiton, 25% by Mitsubishi, 24% by South Africa's Industrial Development Corp. and 4% by the Government of Mozambique. Full production was to have been reached early this year and the government has approved an expansion to double Maputo's capacity.

The other greenfield project is Alcan's Alma smelter in Quebec, Canada. The US$1.94 billion, 400,000 t/y capacity smelter began pouring metal in October with full production slated for the September quarter of this year. A 133,000 t/y brownfield expansion is also being considered.

As usual, there are many greenfield and brownfield projects being discussed, actively planned or under construction including those listed in the table below.

The number of smelter projects being undertaken may also have been limited by the possibility of radical, new technologies. Responding to a report in June by Credit Suisse First Boston, Alcoa confirmed that it had been working on and received US patents for new inert anode technologies which it was testing at one of its smelters. This could be the greatest technological breakthrough in aluminium production since the development of the Hall-Héroux process more than a century ago. It would obviate the need to regularly replace pre-baked carbon anodes (or continually add to Søderberg anodes) and thereby:

- eliminate carbon costs and the capital investments in new carbon plants

- reduce labour costs
- be much better environmentally by drastically reducing CO_2 and other emissions.
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If commercially feasible, particularly for retrofitting existing potlines, inert anodes could radically transform the aluminium industry. Other technologies, such as wettable cathodes, could also make older technologies obsolete.

Aluminium Production and Power

Production in the EMECs increased steadily during the first few months of the year, mainly due to idled capacity being restarted. One case was Indonesia's 225,000 t/y Asahan smelter. Its operating rate had fallen to only 40% in June 1999 because of low water levels in Lake Toba related to El Niño, but has steadily ramped up production since. As prices peaked in January 2000, Alcoa announced plans to restart 200,000 t of the 450,000 t that it had idled in the early 1990s, beginning in Australia with the 40,000 t at Portland and the 20,000 t at Point Henry. In May, Alcan announced that it was restarting all of its temporarily idled capacity: 60,000 t at Sebree, Kentucky, and 50,000 t at Lynemouth, England, though it also closed the 75,000 t/y Isle Maligne smelter and the 93-year-old, 8,000 t/y Kinlochleven smelter last year.

New Projects			
Country	**Company**	**Date**	**Emec Smelter Expansion Project**
GREENFIELD			
Argentina	Aluar	Unknown	250,000 t in Patagonia
Australia	Aust-Pac	2005?	US$3 billion, 450-500,000 t Aldoga
Chile	Noranda	Unknown	230,000 t at Aisen
Iceland	Hydro Aluminium	Unknown	480,000 t at Reydayfjordur
Mozambique	Billiton	Unknown	240,000 t at Beira
Oman	State	2004?	480,000 t at Sohar
Trinidad and Tobago	Hydro	Unknown	237,000 t at Point Lisas
BROWNFIELD			
Argentina	Aluar	2003?	145,000 t expansion at 260,000 t Puerto Madryn
Australia	Pechiney	2003?	220,000 t expansion at 445,000 t Tomago
Bahrain	Alba	2004?	250,000 t expansion at 500,000 t Alba
Brazil	Albras	2001	43,000 t expansion at 360,000 t Belem
Brazil	CBA	2002-03	70,000 t expansion at 237,000 t Sorocaba
Canada	Alcan	Unknown	225,000 t at 272,000 t Kitimat
Egypt	Egyptalum	2003	64,000 t modernisation at Nag Hammadi
Iceland	Columbia Ventures	2001	30,000 t expansion at 60,000 t Nordural Grundartangi
India	Hindalco	2003-04	100,000 t expansion at 245,000 t Renukoot
India	Nalco	2002	115,000 t expansion at 230,000 t Angul
Mozambique	Billiton	2004?	250,000 t at Mozal Maputo
Norway	Alcoa/Elkem	2003	160,000 t expansion at 120,000 t Mosjoen
Norway	Hydro	2004	234,000 t expansion, 66,000 t closure at Sunndal

Production

But the major story concerned power prices in the US. For the past few summers, loads have peaked and spot prices for electricity have soared during the hottest days - when air conditioners are at their maximum. In previous years, aluminium smelters occasionally took advantage of the situation by slightly reducing output and selling the unused power. So it was not too surprising when Ormet announced that it would be idling two potlines (85,000 t) at its Hannibal, Ohio, smelter for the summer months. Alumina prices were also high and aluminium prices relatively low, so it was more profitable to sell the power and alumina. Then, in early June, the 155,000 t/y capacity Vanalco smelter announced that it was idling four of five potlines due to soaring spot electricity prices in the western US. They planned to restart once they could find a source for cheaper power.

Up until the mid-1990s, most of the smelters in the US Pacific Northwest had relied on the government-owned Bonneville Power Authority (BPA). But when the five-year contracts came up for renewal in 1996, spot power was selling for around US$16/MWh versus the fixed-price, take-or-pay rate of US$22.50/MWh from the BPA. A few smelters reduced their contractual power from BPA: Vanalco opted to take 95% of its requirements from the open market. At the time it seemed an astute decision. But power demand has been increasing rapidly with the growing population in the western US, and a major problem has been the botched, partial deregulation in California. Wholesale power prices were deregulated and the utilities allowed to sell-off their generating capacity (without obtaining long-term contracts), but prices to residential consumers were capped. With the low spot prices of the mid-1990s (and onerous environmental regulations), almost no new generating capacity was built. As the amount of reserve margin declined each summer, there were warnings from the BPA and others but few took them seriously. Finally, rainfall and snowfall in the Pacific Northwest dropped much below average.

In the summer of 2000, high temperatures, soaring natural gas prices and maintenance at some generating facilities combined to push the market over the edge. This led to spot power prices reaching US$2,000/MWh. In the autumn and winter, the power tightness did not go away as in previous years. Instead there have been rotating blackouts in California and its two major utilities (Pacific Gas & Electric and Southern California Edison) have been bankrupted. For the aluminium smelters it became clear that, in the near term, spot prices were not going to fall back to previous levels. And with its new Cost Recovery Adjustment Clause, the price under the next five-year BPA contracts would be far higher than the initial quote of US$26.50.

Power represents the largest single cost at a typical smelter, and few are profitable with prices much over US$30/MWh. Also, the smelters in the Pacific Northwest are old (with an average age of 50 years) and relatively high cost, especially with the high US dollar. It became far more profitable for them to

World Aluminium Production

	1998 (t)	1999/1998 (% change)	1999 (t)	2000/1999 (% change)	2000 (t)
North America	6,086	+1.2	6,161	-1.9	6,041
Latin America	2,075	+0.9	2,093	+3.5	2,167
Western Europe	3,549	+4.8	3,719	+2.2	3,801
Asia	1,746	+6.3	1,856	+11.3	2,065
Africa	1,043	+5.0	1,095	+7.6	1,178
Oceania	1,934	+4.9	2,028	+3.3	2,094
Total EMECs	**16,433**	**+3.2**	**16,952**	**+2.3**	**17,346**

Source: IAI, Alcan estimates.

close capacity and sell the power-though in the case of Kaiser it brought them into conflict with the Energy Secretary. Kaiser was also thought to be the target of a "good corporate citizen" clause inserted into the upcoming BPA contracts by the Clinton administration at the request of the Steelworkers union.

There has been a steady stream of closure announcements:

June:

- Vanalco – 124,000 t (4 of 5 potlines) at 155,000 t Vancouver smelter
- Kaiser – 63,000 t (2½ potlines) at 200,000 t Mead, remaining 65,000 t (three potlines) at 81,000 t Tacoma
- Glencore – 33,000 t (1 potline) at 168,000 t Columbia Falls
- Alcoa – remaining 80,000 t at 121,000 t Troutdale

September:

- Golden Northwest – 41,000 t (1 of 2 potlines) at 82,000 t The Dalles, 56,000 t (1 of 3 potlines) at 168,000 t Goldendale

November:

- Kaiser – additional 48,000 t at Mead

December:

- Glencore – 51,000 t (1½ potlines) at Columbia Falls
- Alcan – 50,000 t (later 40,000 t) at 272,000 t Kitmat, BC, Canada
- Vanalco – completely closed
- Kaiser – remaining 90,000 t at Mead
- Golden Northwest – 78,000 t at Goldendale, remaining 41,000 t at The Dalles

January:

- Alcoa – 25~75,000 t at 61% owned 280,000 t Intalco/Ferndale
- Alcoa – combined 150,000 t at Ferndale, 220,000 t Wenatchee
- Glencore – remaining 85,000 t at Columbia Falls

February:

- Alcoa – 70,000 t at 204,000 t Longview

March:

- Michigan Avenue Partners – remaining 134,000 t at Longview

By March 2001, only 15% of the 1.64 Mt of annual capacity in the US Pacific Northwest was still operating with seven smelters completely closed and the other three partially idled. Recently the BPA has begun to negotiate with all the smelters in the Pacific Northwest to close for two years or face power price increases of 250%!

There were also temporary power shortages in Turkey and Australia that threatened the Seydisehir, Point Henry and Portland smelters.

Labour, Environmental and Government

The year 2000 was generally a good one for labour relations in the aluminium industry. After countless negotiating sessions between Kaiser and the Steelworkers union (USW), the strike that began on September 30, 1998 was finally settled last summer. However, the National Labour Relations Board pushed ahead with charges on 2 of 24 allegations brought by the USW that Kaiser had illegally locked out its 2,900 workers. In further legal problems, the US Mine Safety and Health Administration (MSHA) issued 21 citations against Kaiser over the July 1999 explosion at its Gramercy refinery in Louisiana. Kaiser settled for a US$513,000 fine. Three replacement workers were also injured in a gas fire at Kaiser's Newark, Ohio extrusion plant.

In March, Scottsboro Aluminum and the USW ratified a new five-year contract after a five-month lockout. At Becancour Quebec, a new contract covering 800 smelter workers was approved just prior to the June 30 expiration of the old contract.

In May 2000, a tentative agreement was reached between Ormet and the USW,

almost a year after the previous contract had expired. Workers at the Hannibal smelter approved the deal, but it was rejected by those at the rolling mill. In August, workers at Ormet's Iuka, Mississippi lamination division agreed to a one-year extension of their contract.

Negotiations over the implementation of a 35-hour workweek in France brought problems for Pechiney. In February, about 450 of 570 workers began a month-long strike and illegal blockade at its 230,000 t Dunkirk smelter. It cost the company close to FF100 million as it was forced to declare *force majeure*, sustained damage at the smelter and was unable to produce at full capacity for several months.

There were also a few brief work stoppages during the year. At Alcoa's Point Henry smelter, where the previous contract had expired 18 months previously, about 150 workers staged a one-day strike in April. In May, a country-wide strike in Norway closed two plants of Hydro Automotive Structures, causing a shortage of aluminium bumpers that threatened BMW's operations. There was a lunchtime picket at Billiton's Bayside smelter in March over the loss of 300 jobs.

Quite a few job cuts were announced last year. In March, Venezuela said it would cut 1,700 of 8,800 jobs and improve productivity at CVG. Alumina Partners of Jamaica, a joint venture between Kaiser and Norsk Hydro, cut its bauxite mining workforce by 50 in March and a further 25 in June due to the Gramercy shutdown. Alcoa announced that it would save US$25 million annually by cutting 404 jobs at Reynolds' Baie-Comeau smelter. Later in the year, weakening business conditions were blamed for the loss of 300 out of 2,000 jobs at Commonwealth Industries. Alcan closed its foil plant at Rogerstone, Wales with the loss of 220 jobs.

On the environmental front, there was great concern over the effects of policies linked to the Kyoto Protocol on reducing greenhouse gases. The Australian Aluminium Council argued that a suggested carbon tax of US$15/t of CO_2 would add about US$270/t to the cost of aluminium. They also said that an expected 30% increase in domestic aluminium production would be impossible if developing countries gained a competitive advantage by not having to meet any standards. In New Zealand, Comalco fought against an energy tax as the new government moved ahead with plans to ratify the Kyoto Protocol. Norsk Hydro said that new emission control regulations coming into force in Norway in 2007 would require huge investments at its Aardal, Sunndal and Hoeyanger smelters.

In a proactive step, seven major industrial companies, including Alcan and Pechiney, along with US environmental advocacy group Environmental Defence, formed the Partnership for Climate Action in October. Its purpose is to "champion market-based mechanisms such as trading pollution credits and for taking early and credible action on reducing emissions blamed by many scientists for global warming".

Several aluminium companies faced government action on pollution. Australia's EPA prosecuted Queensland Alumina Ltd over a February incident when clouds of fly-ash, alumina and caustic spread over Gladstone. Alcoa agreed to pay a US$2.4 million penalty, spend at least US$5.4 million on hazardous waste reduction and US$1.0 million on a study of new air pollution technology for polluting the Ohio and Mississippi Rivers from its Warrick, Indiana, rolling mill. Alcoa also came under fire over its Rockdale Texas smelter and lignite power plant, reportedly the heaviest polluter in the state. The 120,000 t Arak smelter continued to operate although Iran's Environmental Department had ordered it to close.

The battle over the European Union's 6% tariff on aluminium continued. The Federation of Aluminium Consumers in Europe (FACE), through the UK Government, asked for a

suspension of the duty on 1.3 Mt in the second half of 2000 and 2001. Apparently a majority of members of the EU's Customs Tariffs committee favoured the suspension but France again vetoed it. The Gulf Arab states said they were still optimistic on the tariff's removal.

In January 2001, then- President-elect George W. Bush appointed Alcoa chairman Paul O'Neill as his Secretary of the Treasury.

Mergers, Acquisitions, Privatisations and Restructuring

After the mega-merger announcements of 1999, last year was a relatively quiet one for corporate restructurings. As usual, there were successes and failures.

The merger of Canada's Alcan, France's Pechiney and Switzerland's algroup, tentatively called APA, had been announced with much expectation in August 1999. But changed competition policies led the European Union to thwart their plans. In a previous steel merger, the EU Commission had considered aluminium and steel beverage can sheet as a single market - which seemed logical given that at least four European can lines had switched from aluminium to steel in the mid-1990s in the face of high aluminium prices.

For the APA merger, however, they were treated as two distinct markets. The EU insisted that major rolling assets, such as Alcan's 50% stake in the world's largest rolling mill at Norf, Germany or Pechiney's Neuf Brisach mill be divested. The loss of one of these mills would have seriously hurt the company's integrated operations so the APA merger was abandoned. Instead, the EU allowed Alcan and algroup to merge, with certain divestments (including algroup's aluminium tri-hydrate plant at Martinswerke Germany and Star rolling at Bridgenorth, England).

The merger between Alcoa and Reynolds, the first and third largest aluminium companies, drew more public criticism, especially from Michigan Avenue Partners. In 1997, MAP had purchased the McCook, Illinois sheet and plate mill and certain proprietary technologies from Reynolds, and continued to be supplied with high-purity aluminium for the aerospace market from Reynolds' Longview smelter. McCook's major competitor was Alcoa. So if the merger went through unaltered, MAP's largest competitor would have access to its technology and be its sole source for high-purity metal. In allowing the merger, the EU Commission forced major divestitures, including at least 25% of the 204,000 t Longview smelter and all of Reynolds' alumina assets:

- its 56% stake in the Worsley refinery in Australia
- its 50% in the Stade refinery in Germany
- its Sherwin, Texas refinery.

Worsley, recently expanded from 1.88 to 3.1 Mt, is probably the lowest cost alumina refinery in the world. Since Billiton owned 30% of the refinery and had a right of first refusal, it was not surprising then that Alcoa agreed to sell to Billiton its 56% stake for US$1.49 billion in August. The Japanese minority shareholders Kobe Steel, Nissho Iwai and Itochu Corp. declined to increase their holdings. The Sherwin refinery was sold off to BPU Reynolds Inc. After reaching an agreement late in the year, Michigan Avenue Partners acquired all of the Longview smelter at the end of February. Alcoa has also sold its half of the Stade refinery.

The take-over of Reynolds did not deter Alcoa from making further acquisitions:

- aerospace industry supplier Cordant Technologies for US$2.9 billion
- plate, sheet and soft-alloy extrusion and distribution businesses of British Aluminium Ltd from Luxfer Holdings plc
- automotive fasteners assets of privately-held Midwest Fastener Corp.

- medium-sized Brazilian foil producer Itaipava Industrial de Papeis Ltd
- Eastern Aluminium and its 10% stake in Australia's 345,000 t Portland smelter for A$1.75 million
- Kaiser's Micromill assets and technology.

Alcoa also substantially increased its stake in Sweden's Elkem.

Last March, Australia's CSR tentatively accepted a bid by Billiton for its interest in the Gove refinery and bauxite mine. CSR held 70% and AMP the other 30% of Gove Aluminium, which in turn held 30% of the Gove refinery. Alusuisse held the other 70%. But late in the year, Alcan decided to exercise Alusuisse's pre-emptive rights, acquiring the rest of Gove for US$393 million.

After Alcan had acquired a 56% stake in the 100,000 t/y capacity Youngju rolling mill in 1999 through a joint venture with Taihan Electric, Alcan Taihan acquired the majority of the Ulsan rolling mill from Koralu for US$200 million last year. In March, Alcan sold its 54.62% stake in Indian Aluminium Co. to Hindalco for RS7.38 billion. Alcan also expressed an interest in the other 50% of the huge Norf rolling mill held by E.ON's VAW. E.ON said it planned to sell VAW in 2002 when Germany's capital gains tax on corporate shareholdings is abolished. Early in 2001, Alcan was in talks to sell its 93% ownership in two refineries (1.2 Mt) and bauxite assets in Jamaica.

Early last year, Pechiney completed the sale of LME broker Brandeis to South Africa's Standard Bank and sold off its remaining 45% stake in American National Can to Rexam plc, which was required by the EU to sell off three European plants. Later, it agreed to buy AMP Life's 15.5% holding in the 440,000 t/y capacity Tomago smelter for US$220 million, thereby taking a 51.55% majority stake. Also in Australia, VAW acquired Capral's 150,000 t/y Kurri Kurri smelter. Rio Tinto acquired the remaining 27.57% of Comalco in a bid deemed "not fair but reasonable" by independent directors.

In January 2000, Norsk Hydro purchased Wells Aluminum and its 75,000 t of extrusion presses for US$58 million plus US$1,05 million of assumed debt. This moved Norsk up to fifth place amongst US extruders:

Company	Capacity	Presses
Alcoa	600,000 t	65
Indalex/Easco	230,000 t	34
Tredegar/Bonnell	160,000 t	27
Kaiser	150,000 t	
Norsk Hydro	110,000 t	20

Norsk also took a one-third stake in Venezuelan casthouse Pianmeca for US$5 million and was in talks to buy British casthouse and billet producer Deeside Aluminium.

Glencore and its 39.6% affiliate, Century Aluminum, continued to increase their presence in the aluminium industry. In February, Century acquired Xstrata's 23% holding in the 215,000 t/y Mount Holly South Carolina smelter, boosting its stake to 49.67%. Then in April, Century signed a letter of intent to buy the 237,000 t/y Hawesville smelter from Southwire for US$468 million, subject to regulatory, financing and labour issues. A labour pact was reached with the USW in September but financing difficulties delayed the sale until Glencore agreed to take a 20% stake and lend US$25 million to Century in February 2001. Glencore also bought Sweden's Kubikenborg Aluminium and the 100,000 t/y capacity Sunndsvall smelter.

Also in the US:

- Quanex bought Minnesota-based aluminium extrusion and fabrication company Temroc Metals Inc. and its anodising unit AaCron Inc.
- Kaiser bought the Chandler Arizona drawn aluminium tube plant from Plymouth Tube Co.

- Reliance Steel & Aluminum Co. bought privately-held Louisiana metals service centre Aluminum & Stainless Inc.
- Building products manufacturer International Aluminum Corp. rejected a take-over bid by Kenneth D. Peterson's Columbia Ventures.

A difficult economic environment in Japan led to mergers and retrenchment. In March, Nippon Light Metals closed 11 of its 33 extrusion presses and got out of the business of producing aluminium substrates for computer disks. Showa Denko announced that it would merge with subsidiary Showa Aluminium to streamline operations. Late in the year, Kobe Steel and Sumitomo Light Metal agreed to form a comprehensive alliance in extruded products.

In India, Nalco bought out its partners in International Aluminium Products Ltd, a producer of rolled coils, cast strips and sheets. In March 2001, Sterlite Industries beat off Alcoa/Hindalco with a US$118 million bid for a 51% stake in Bharat Aluminium Co. (BALCO), including its 100,000 t/y Korba smelter, 200,000 t/y refinery and fabrication operations. However, there was much controversy over the privatisation and workers at the smelter immediately went on strike and closed the plant.

Amongst other state-owned enterprises, Venezuela finally had some success in its attempts to attract foreign investment to its ailing aluminium sector. Early in the year, CVG president Clemente Scotto (later replaced by General Antonio Lopez, who in turn was replaced by General Francisco Rangel) was quoted as saying that it needed at least a billion dollars. Later a figure of US$444 million was quoted to get the industry back on its feet:

- Venalum US$116 million + US$45 million for environmental
- Alcasa US$37 million + US$13 million for environmental
- Bauxilum US$123 million + US$86 million for environmental
- Carbonorca US$24 million.

After numerous failed attempts to sell-off state-owned CVG, recently-elected Venezuelan president Chavez announced that they were now looking for "strategic alliances" rather than privatisation. In August, Pechiney signed a preliminary agreement to invest US$260 million in Bauxilum, the bauxite mining and alumina refining arm of CVG. Alumina production would be increased from 1.7 to 2.2 Mt/y with Pechiney repaid out of the increase. In April 2001, a definitive agreement was finally signed involving a smaller investment. Thus far, no alliances or investments have been found for the other parts of CVG.

Governments in Eastern Europe also announced plans to sell off aluminium assets including:

- Montenegro – rolling, wire & cable and casting & forging operations of Kombinat Aluminijuma Podgorica (KAP)
- Romania – 55% stake in the 174,000 t/y Alro smelter; 70% in aluminium products manufacturer Alprom
- Slovenia – 80% stake in the 100,000 t/y Talum smelter
- Slovakia – 75% stake in the 110,000 t/y Ziar nad Hronom smelter held by Zavod SNP (74% owned by state privatisation agency).

Secondary, Fabricating and Downstream Investments

Transportation is the largest end-use market for aluminium; and there was considerable activity in the automotive field last year. In January, Alcan signed a multi-year agreement with Ford to supply at least 50% of its body sheet and 25% of its wheel alloy requirements along with technical assistance. Later in the year, a ten-year strategic partnership was signed between PSA Peugeot Citroën and Pechiney to promote

aluminium use in vehicle chassis, supply parts and promote aluminium recycling.

Early in the year, General Motors announced that it was halting production of its EV1 aluminium and polymer electric car due to poor sales but it did bring out a new Oldsmobile Aurora with over 220 kg of aluminium (the most in a North American high-volume production car). Ford introduced its Prodigy and GM its Precept -high-mileage, hybrid-electric, concept cars under the US Partnership for a New Generation of Vehicles programme with very high aluminium content. The Precept contains over 500 kg of aluminium versus less than 200 kg of steel. Ford opened an aluminium casting plant near Cleveland for its new 2.3- litre 'inline 4' and decided to convert its 4.6- litre V8s to aluminium, though its next generation aluminium V6 engines are to be delayed a year until 2004. Ford made a commitment to reduce the weight of its sport utility vehicles (SUVs) in the US and improve fuel efficiency 25% by 2005, partly through the use of lightweight materials like aluminium. To help offset the upsizing of its 2001 Explorer and Mountaineer models, it converted the steering knuckles to primary aluminium.

Early in 2001, IMCO Recycling began operations at its new plant in Saginaw County, Michigan, that will supply GM with specification alloys under a 13-year contract signed in 1999. IMCO, however, also shut down its Siketon Missouri and Bedford Indiana plants, mainly due to high natural gas prices. In November, Hydro Aluminium completed its US$33 million Henderson Kentucky secondary plant to produce primary-quality billet.

In Europe, Audi started up production of its A2 with anticipated volume of 60,000 cars per year and announced plans to launch more aluminium-bodied cars over the next five years.

Automobiles, of course, are not the only mode of transportation. Early last year, Taiwan's J. King Aluminium increased its billet production by 50% to 108,000 t to handle strong demand for the scooter craze (2.5 kg per scooter) and by mainland bicycle makers. However, by December orders were falling as the fad faded. At the opposite extreme, construction is to begin this year on a new Japanese high-speed ferry called the Techno Superliner. The 135 m long ship will use 1,500 t of aluminium and carry 400 passengers plus 70 trucks at a maximum speed of 50 knots.

Another large market for aluminium is beverage and food cans. Crown, Cork & Seal unveiled its new SuperEnd can which is easier to open, better pouring, and uses less metal. Overcapacity in North America led Ball Corp. to close a can plant in Salisbury, South Carolina, and lines in Hamilton, Ontario, and Richmond, British Columbia. It also closed a line in China and wrote off a 10% stake in a Russian joint venture. Alcan deferred plans for a third melting furnace at its 75,000 t/y UBC recycling plant at Latchford, England. While the recycling rate in Japan rose over 4% to 78.5% in 1999-2000 and may soon be overtaken by Brazil, concern has been expressed that the rate in the US has been slipping.

Aluminium has suffered some setbacks in the low-tonnage but high-margin computer market. After designing a faster computer chip using copper instead of aluminium in 1998, IBM introduced two new disk drives last year that use glass platters in place of aluminium.

There were announcements on production changes at numerous mills. Over the next 3-5 years, Alcan Taihan plans to invest US$100-200 million to double output to 600,000 t/y at its two Korean rolling mills. Alcan is also investing US$15 million to increase capacity for foil and finstock by 23,000 t/y at its Terre Haute Indiana mill. But Capral closed its rolling division in Sydney, Australia; Alcoa closed its Hawesville foil plant and Switzerland's Aluminium Martigny closed its

aluminium foundry business after Norsk Hydro backed out of a take-over on environmental and safety concerns.

Alumina and Bauxite

The decline in demand and prices in 2000 was much more pronounced for alumina than for aluminium. After the July 5, 1999 explosion at Kaiser's 1.13 Mt Gramercy Louisiana refinery, a shortage developed and prices soared to over US$400/t in January 2000. But Alcoa had expanded Wagerup by 440,000 t/y in October 1999, and the high prices induced refineries to slightly boost output (albeit at increased cost). Then in June, aluminium production started to fall due to the soaring power costs in the US just as the huge Worsley expansion was coming on stream. Alumina prices tumbled, reaching just over US$200/t by the end of August. In December, Gramercy began the restart of its now 1.25 Mt/y refinery. Alumina prices ended the year around US$170. To cope with the increasing surplus, Alcoa announced that it would shut down the high-cost 600,000 t St. Croix refinery in the US Virgin Islands at the end of January.

The IAI reported total alumina production of 48.12 Mt last year up 5.1% from the 45.78 Mt in 1999. About 4.3 Mt was for non-metallurgical uses such as refractory materials, abrasives and water purification. Capacity rose from 48.45 Mt at the end of 1999 to 51.48 Mt at the end of 2000, and is expected to increase by a further 1.5 Mt this year. As mentioned, the major expansion last year was at Worsley, Australia, where capacity was increased from 1.88 to 3.1 Mt/y, with the ramp-up starting in June. With the current alumina surplus, the idled St Croix capacity and relatively few planned smelter expansions, there are not a large number of greenfield or brownfield refinery projects being actively planned. They include:

Plant	Owner(s)	Details	Timing
Jajarm, Iran	State	280,000 t greenfield	2001?
Damanjodi, India	Nalco	Expansion from 1.0 to 1.6 Mt	2001-02
Gladstone, Australia	Comalco (Rio Tinto)	1.4 Mt greenfield	2003?
Barcarena, Brazil	Alunorte	Expansion from 1.5 to 2.33 Mt	2003-04?
Wagerup, Australia	Alcoa WMC	Expansion from 2.2 to 3.3 Mt	2003-04?
Belgaum, India	Indal/Hindalco	Expansion from 300 to 500,000 t	2003?
Renukoot, India	Hindalco	Expansion from 450 to 650,000 t	2004?
Nain, Jamaica	Alumina Partners (Kaiser 65%, Norsk 35%)	Expansion from 1.45 to 2.0 Mt	Feasibility study undertaken
Utkal Orissa, India	Norsk (45%), Alcan (35%), Indal/Hindalco (20%)	US$1 billion, 1 Mt greenfield	Delayed due to local opposition, deaths of three protestors

Similar to the situation with aluminium, the new high-efficiency causticisation process announced by Alcoa in 1999 may be holding back some new alumina expansions. Alcoa expects the new technology to boost their world-wide production by about 500,000 t/y.

After years of wavering between Sarawak, Malaysia, and Gladstone Queensland,

Comalco finally announced last April (as expected) that it had chosen the Australian site. Pechiney signed a preliminary agreement concerning a US$700 million refinery project in Suriname as well as a feasibility study for a US$900 million bauxite alumina project at the Tan Rai deposit in Vietnam.

Iran has been importing all of the alumina required by the 120,000 t/y capacity state-owned Arak smelter in central Iran and the semi-private Al Mahdi smelter (110,000 t/y but only operating at about 15,000 t) in the south. With large, though relatively low-grade, bauxite deposits in the northeast, Iran contracted in the early 1990s for a refinery to be built. Though Iran has spent a reported US$400 million, the 280,000 t/y Jajarm refinery has seen numerous delays and was still not functional in mid-2000.

Bauxite production in the EMECs is estimated to have risen about 3% in 2000 to around 115 Mt. An additional 17 to 18 Mt was mined in former East Bloc countries, down slightly from the previous year. Almost half of EMEC production is now in Australia, where output increased from 48.4 Mt to about 51 Mt. Brazil's Mineracao Rio do Norte (MRN), which mined close to 11 Mt of bauxite last year, will decide on a US$160 million expansion once expansion plans at the Alunorte and Alumar refineries are announced. These, in turn, are linked to expansions at the Albras and CBA smelters. Few other expansions are expected, given the surplus in the alumina market.

The Former Soviet Union

Last year was one of major restructuring for the aluminium industry of the former Soviet Union. It saw a substantial withdrawal by the Trans-World Group and the creation of two of the largest aluminium companies in the world: Russian Aluminium (Russky Alyuminy) and Siberian-Urals Aluminium Holdings (SUAL). It also saw the privatisation of most of the Ukraine's aluminium industry.

David and Simon Reuben set up Trans-World Group in the UK in 1977. By the 1980s, Trans-World had become a major trader and began buying aluminium from what was then the Soviet Union. As the USSR broke up, consumption of aluminium by its military-industrial complex plummeted and annual exports soared by over 2 Mt. Trans-World was handling close to half of all its exports. To secure its business in the new CIS, Trans-World established a relationship with Russian metal traders Lev and Mikhail Chernoi and acquired interests in Kazakhstan's Pavlodar refinery, the Krasnoyarsk smelter (KrAZ) and other metals plants. The KrAZ stake was deleted by the smelter director in 1994 at the beginning of what has been sarcastically dubbed the 'Great Patriotic Aluminium War'. There were dozens of murders, other violence and changes in control as different parties fought over the lucrative aluminium industry, particularly in the Krasnoyarsk region of Siberia. In 1998, Trans-World was ousted from Kazakhstan and had a war of words with the Russian Government, though it did regain control of KrAZ following the election of Alexander Lebed as governor.

In February 2000, investors from the Russian oil company Sibneft, led by Roman Abramovich and Boris Berezovsky, acquired majority stakes (including those of Trans-World) in the world's two largest smelters, Bratsk and Krasnoyarsk. This brought complaints from Oleg Deripaska of Siberian (Sibirsky) Aluminium and an investigation by Russia's anti-monopoly minister. Initial plans were limited to sharing raw materials and co-ordinating marketing and output. By April, things had progressed considerably. Agreement was reached to merge the aluminium holdings of the Sibneft shareholders, the Alfa banking group and Sibirsky into a newly-registered joint stock company, OAO Russian Aluminium (Russky Alyuminy) which would control some upstream assets, about 75% of Russian primary production and the majority of downstream assets. Oleg Deripaska was named chief executive of Russky. To help

with its alumina deficit of more than 1.0 Mt, Russky (Sibirsky) bought most of Ukraine's Nikolayev refinery and later purchased and re-opened the idled 240,000 t/y Oradea refinery in Romania.

This did not spell the end of difficulties either for the new aluminium colossus or Trans-World. Early last year, Hungary rejected a request for political asylum from Krasnoyarsk chairman Anatoly Bykov, who was extradited to Russia on contract-murder and money-laundering charges. He was later charged with hiring assassins for two contract murders in an apparent police 'sting' operation. KrAZ was also threatened with a power cut from Krasnoyarskenergo, a subsidiary of Russia's giant UES power company, over a 49% increase in their tariff to 0.285 Rb/kWh (still only about US$1,0/MWh).

There were also numerous legal battles over the financially troubled Novokuznetsk smelter. During insolvency hearings in January over debts to Kuzbassenergo, accounts and export shipments were seized. Then Mikom was stripped of the right to manage the smelter and Boris Berezovsky's LogoVaz car dealership bought a 70% controlling interest. In September, Olympic champion Alexander Tikhonov and his brother Viktor were charged with conspiring to assassinate the governor of the Kemerovo region over the affair. Berezovsky said he was staying out of Russia to avoid questions about alleged graft, asserting that the Russian justice system would not treat him fairly. Finally in December, Base Metal Trading launched a US$2.7 billion lawsuit in New York against Russky, Sibirsky, Oleg Deripaska and Mikhail Chernoi alleging illegal payoffs, threats and acts of violence (including using the Russian-American Mafia) to help them gain control of the Russian aluminium industry and the Novokuznetsk smelter.

Early this year, German state prosecutors announced an investigation of Trans-World on suspicion of money laundering.

In the latter part of the year, Russky announced plans re distribution channels and investments. It sharply reduced the amount of metal going through global traders, relying more on local traders and direct sales. In November, preliminary talks were held with Pechiney on a partnership, though nothing

Russky-Controlled Plant	Capacity ('000 t)	2000 Production ('000 t)	2000/1999 (% Change)
Bratsk smelter	885	895.27	+3.7
Krasnoyarsk smelter	835	838.38	+0.2
Sayansk smelter	385	402.80	+4.2
Novokuznetsk smelter (control disputed)	272		
Achinsk refinery	1,175	1,115.0	+13.0
Nikolayev refinery (Ukraine)	850	862.5	+12.4
Oradea refinery (Romania)	240	Minimal	
Samara rolling mill		191.18	+26.9
Rostar can plant	1 bn cans		
Balaya Kalitva mill		26.76	+14.9
Sayanskaya foil mill	375	30.0	+21.1
Kanaker foil mill (Armenia)			

concrete was reported. Later Russky deferred plans for new smelters instead focusing on US$500 million to expand, modernise and clean up existing plants.

The other major Russian group is SUAL-Holding. At the same time as Russky was being set up, Siberian-Urals Aluminium Co. (SUAL) announced plans to link with Trustkonsult which controlled the Bogoslovsky and Kandalshka smelters. Unlike Russky, SUAL-Holding will be slightly long in alumina, controlling about 40% of Russia's alumina production versus only one-sixth of its aluminium production. However, due to the abolition of internal tolling, the South Urals bauxite mine, which supplied the Bogoslovsky and Urals refineries, closed early last year after producing 500,000 t of bauxite in 1999.

There was also talk (though apparently little of substance) concerning a third grouping of aluminium-related companies in the Leningrad region to be called North West Aluminium, including the Volgograd (140,000 t/y) and Volkhov (25,000 t/y) smelters, Leningrad power station, Pikalyovsky refinery, Boksitogorsk bauxite mine and Apatat naphthalene plant. Unfortunately, there are problems with some of these plants and, being close to other European countries, it might be more profitable to export the electricity rather than use it for aluminium. In the Spring, when the Apatat plant sharply increased the price of naphthalene concentrate, the Pikalyovsky refinery temporarily shut down, threatening the Volkhov smelter. There has been talk of different greenfield smelter projects in the region, including a study by US-based Alutech.

Another major change has been in the fiscal regime. For the first six months of 2000, Russia suspended the 5% export tariff on aluminium but started charging a 20% VAT tax and 5% duty on all imported alumina. For

Sual-Holding Controlled Plant	Capacity ('000 t)	2000 Production ('000 t)	2000/1999 (%)
Irkutsk smelter	260		
Uralsky smelter	75	***Total***	
Bogoslovsky smelter	158	594.4	+4.9
Kandalashka smelter	63		
Uralsk refinery	575	***Total***	
Bogoslovsk refinery	980	1,650	+5.8
North & South Urals bauxite mines			
Sredni Timan bauxite mine (largest)			
Boksity Timan bauxite deposit			
Polevskoi cryolite plant			
Kamensk-Uralsky metallurgical plant			
Mikhalyum foil plant			
Irkutsk and Kirsinskiy cable plant			

tolling, this greatly increased the financing costs since the duty is only refunded when the aluminium is exported a few months later. Internal tolling was effectively abolished. Because an estimated 700 to 800,000 t of the metal scrap exported from Russia is obtained illegally (such as aluminium stolen from overhead transmission lines), the export tariff was raised from 30% to 50% and then the Russian parliament passed a bill banning most scrap metal exports.

There was also considerable restructuring of Ukraine's aluminium industry as the government privatised both the 850,000 t/y Nikolayev refinery and the 110,000 t/y Zaporizhsky smelter. Following the acquisition of a 36% stake by Russia's Sibirsky late in 1999, Nikolayev's director was dismissed and its supply contract to Krasnoyarsk (via Trans-World) cancelled. After legal wrangling (with KrAZ barred and the IMF calling for wider participation), a tender for a further 30% was held in March. Ukrainian Aluminium, a subsidiary of Sibirsky, won with a US$100 million bid and a promise to build a US$190 million, 130,000 t/y capacity greenfield smelter in the Ukraine. They also won later tenders for 5% and 10% but a final 10% tender failed. Russky now holds 81% of the refinery, the Ukrainian Government 10% and employees 9%. A bauxite supply contract was signed with Guinea's state bauxite company and there are plans to eventually increase capacity to 1.5 Mt/y.

For the Zaporizhsky smelter (ZALK), Kaiser conducted a feasibility study for a US$200 million conversion from Søderberg to pre-baked anodes which would boost annual capacity from 110,000 t to 160,000 t. A tender for 68.01% was announced for November, with the Ukrainian Government retaining 25% and employees having 6.99%. Late in the month, Russky withdrew citing higher debt than originally announced. Ukrainian car company Kremechuhsky Avtozavod was only allowed to participate through the intervention of the regional governor. It won the tender with a bid of US$101.5 million plus US$75-80 million in assumed debts but was unable to meet financial conditions. The tender was then awarded to Russian car maker AvtoVAZ (which buys about 35,000 t/y from ZALK) for US$70 million and the promise to invest US$200 million in upgrades over the next five years. Due to problems with power availability, ZALK only produced 103.6,000 t in 2000, down from 112.4,000 t in 1999.

In Azerbaijan, the Sumgait smelter (55,000 t/y capacity), Gyandzha refinery (450,000 t/y) and Zeylinsky bauxite mine were merged into a joint-stock company called Azeralyuminii. Foreign investors are being sought to invest and bring the plants back to full operation.

China

There was continued strong growth in demand for aluminium in China but production was hampered by high alumina prices. And as in the former Soviet Union, there was further restructuring of its aluminium industry.

China is the third largest consumer of aluminium in the world, behind only the US and Japan. With its rapid growth and infrastructure development, Chinese demand

China Aluminium Import/Export ('000t)		
	1999	**2000**
Unwrought Imports	534	914
Unwrought Exports	207	209
Unwrought Net	**327**	**705**
Semis Imports	427	457
Semis Exports	95	130
Semis – Net	**332**	**327**
Scrap Imports	399	805
Scrap exports	7	8
Scrap – Net	**392**	**797**
Alumina Imports	1,620	1,880
Alumina exports	15	10
Alumina – Net	**1,605**	**1,870**

for both aluminium and alumina have outstripped supply. Aluminium consumption is estimated to have risen 10% in 2000. Net imports reached roughly 1.9 Mt for alumina, 700,000 t for unwrought aluminium, 800,000 t for scrap and 330,000 t for semis. Imports of unwrought aluminium and of scrap were much higher than in previous years, while the alumina shortfall is forecast to reach 4.5 to 5 Mt by 2005. With China's expected entry into the World Trade Organisation, tariffs should fall from 18% to 8% on alumina, and from 9-12% to 5-8% on aluminium by 2005.

Chinese aluminium production rose 8% last year to 2.79 Mt. Because of the global alumina shortage following the explosion at the Gramercy refinery in 1999, Chinese domestic alumina prices peaked at US$580/t early in 2000, and domestic stocks fell to roughly half their normal 200,000 t levels. This was great for China's alumina industry, which is quite high cost because it uses mainly diasporic bauxite. But many of China's smelters became unprofitable, and curtailed some production.

Over the past few years, China has made repeated attempts to re-organise its aluminium and non-ferrous metals industries. It can be difficult keeping track of the changes, since the names are often similar and are translated different ways into English. In 1998, China National Non-ferrous Metals (CNNC) was dissolved after suffering heavy losses and replaced by the State Bureau of Non-ferrous Metals Industry Association (SNMIA). In August 1999, China Aluminium Corp. (Chalco) was spun off to hold the aluminium and magnesium assets.

But early in 2000, there were complaints from smelters that Chalco was exercising too much control in the industry. This led to the creation in June of China Non-ferrous Metals Industry Association (CNMIA), a voluntary group formed to promote the interests of its members, introduce self-policing, and liasing with government in parallel to SNMIA. Then in July, China Aluminium Corp. (Chalco) was officially dissolved. A new Chinese Aluminium Corp. (Chinalco) was set up and began operations this past February. It is composed of Pingguo Aluminium, Guizhou Aluminium, Qinghai Aluminium and aluminium enterprises in Henan, Shandong and Shanxi. Chinalco lists capacities of over 4 Mt/y for alumina, 675,000 t/y for aluminium, and 519,000 t/y for carbon products. It has engaged Morgan Stanley Dean Witter and China International Capital Corp. to handle a planned initial public offering and overseas listings.

Another aspect of restructuring in China's aluminium industry has been asset or debt-equity swaps for financially troubled enterprises. China Cinda Asset Management Corp. was involved in such arrangements with the country's largest fabricator, Southwest Aluminium Fabrication Plant and one of its largest refineries, Shanxi Aluminium. Pechiney also signed a MoU to create a joint venture with Chalco and Southwest Aluminium.

China Production ('000t)		
Major Plants	**2000**	**2001[e]**
SMELTERS		
Qinghai	206	206
Guizhou	238	240
Baotou	115	115
Pingguo	128	120
Qingtongxia	104	150-160
Yunnan	110	125
Fushun	100	100
Liancheng	93	100
Baiyin	56	55
More than 90 small smelters	1,640	
Total	**2,790**	
REFINERIES		
Great Wall	1,400	1,560
Shanxi	1,200	1,250
Shandong	733	800
Guizhou	480	500
Pingguo	400	400
Total	**4,213**	

Various expansion projects have been announced including:

- US$209 million, 130,000 t expansion at 100,000 t Qingtongxia smelter by 2001H2
- 55,000 t expansion at 25,000 t Longxiang smelter by 2002
- 100,000 t expansion at 85,000 t Lanzhou smelter by 2003H1
- 50,000 t expansion at 200,000 t Qinghai smelter by early 2003
- 60,000 t expansion at 7,000 t Lintao by 2003
- 70,000 t expansion at 30,000 t Tongshun smelter
- 30,000 t expansion at 22,000 t Huaxing smelter
- 200,000 t Yinhai greenfield smelter by 2006
- 60,000 t Jiaozuo Wanfang state-owned smelter
- US$277 million, 150-300,000 t refinery in Nanchuan municipality
- 400,000 t expansion at Pingguo refinery.

Markets, Trading and Websites

For aluminium marketing and trading, 2000 was the year of the Internet exchange. They include those listed below

However, as commented on by Anderson Consulting and others, the market has become flooded with around 70 Metals internet exchanges, with many not viable in the long term.

Over the years, various brokerages and trading companies have exited the aluminium and base metals markets and last year was no exception. Long time player Barclays got out of physical metals trading, including cash-and-carry where it had been very active. Pechiney sold its brokerage division Brandeis, and Noranda sold its Rudolf Wolff unit to MG plc which in turn agreed to be taken over by Enron. Sumitomo closed its aluminium trading business in the US due to severe competition and risk. The number of LME ring dealing members declined to 12 from 30 a decade ago.

Based on LME reports, there were two periods of the year when a single entity held large percentages of warrants or cash to three-months positions. In February (at the end of a backwardation and market squeeze) and in November (a month before one) the single holding briefly exceeded 50%.

One of the reasons why aluminium prices fell sharply from February to April was the closure of the Tiger Fund and exit of the Quantum Fund from metals trading. These funds had taken heavy losses in 1999 and early 2000, after having had large positions in aluminium and base metals over the previous few years.

At Nymex, the aluminium contract was moved to the copper ring due to low trading volumes. But these volumes increased substantially following GM's decision to adopt the Nymex spot settlement price as its benchmark for North American purchases, effective last July.

Outlook

Since peaking in early 2000, aluminium prices (LME three-months) have moved within a relatively muted range of US$1,427 to US$1,669/t. Aluminium demand has dropped steadily as the global economies, led by the US, have slowed. But this has been offset to a large degree by output cuts, mostly in the US Pacific Northwest. After 18 consecutive years of growth in consumption of aluminium (combined primary and secondary/recycled), we could finally see a decline in 2001. However, the ongoing production cuts should still lead to another supply deficit. With inventories near record lows, both in absolute terms and weeks of shipments, aluminium's price should strengthen appreciably once the economic outlook begins to improve. Indeed, serious shortages could develop later this year or early next.

Website	Backers	Other
Aluminium.com	CSC, metals-Russia.com	Marketplace for aluminium, base metals; 1,200 registered users
AluminiumFirst.com	Société Générale de France	Europe and Mid-east - LME derivatives, financial products for primary, secondary, rolled, extruded or castings
CPGMarket.com	Danone, Nestle, Henkel, SAP, Pechiney	Buy, sell, access, manage supply chains for consumer packaged goods industry
Emetra		reportedly 1.25 Mt worth US$2.3 billion of the 6 LME metals available for trading and close to 100 people registered
I-Metal.com	Asia Aluminium Holdings, LG Int'l, Trans-World, Gerald Metals, Refco	May 2000 launch; US$1,2.8 million investment; spot and futures market around Nanhai, China
MetalSpectrum	Several metals firms including Alcoa, Commonwealth Aluminum, Kaiser, Pechiney, Reynolds, Vincent Metal Goods/Atlas Ideal Metals	B2B
MetalSite	(linking to MetalSpectrum)	Metals marketplace, especially steel
MetalSite Japan	Marubeni, Itochu Corp., Sumitomo and MetalSite LP	Steel, fabricated aluminium
Quadrem.com	Many of world's largest mining and metals firms including Alcan, Alcoa, CVRD, Glencore, Noranda, Pechiney, WMC	Metals and mining B2B procurement marketplace