

COMPETITIVENESS PROFILE

Aluminum Smelting

1. Structure and Performance

Structure

This sector deals with the production of aluminum metal, usually in ingot form, by the electrolysis of alumina (aluminum oxide). The traditional ore is bauxite, normally found in tropical or warm, temperate areas of the earth's surface. In the early years of the industry, smelting and even the refining of bauxite into alumina were sited at the marketplace. As might be expected, economics eventually led to the refining operations being built near the bauxite source to reduce raw material transportation costs. More recently with the formation of OPEC and the considerable impact it had on energy cost, two further changes developed. Traditional producers are siting smelters where ample supplies of relatively cheap power can be obtained and new stand-alone smelters have been constructed, largely by governments, in order to utilize cheap or waste power (flare gas) and provide a source of hard currency or a flagship industry.

During the development of the industry, much effort was expended by the producers to develop uses for aluminum and to initiate the necessary fabricating operations to develop the markets identified. In many cases, however, only a small proportion of a company's production would be fabricated in-house. During the course of the Second World War, many more fabricators were established and several new major ingot producers entered the market.

More recently, private producers of aluminum have become more aware of the importance of forward integration from two standpoints. Mainly the advantage, particularly for exporters such as Alcan, is the assurance of an in-house market for ingot. A second major advantage is the considerably increased margin which applies to fabricated aluminum products. The former of these two features was most evident during the recent recession when demand fell but supplies were plentiful, largely because of the growing number of government owned or subsidized smelters in the Western World (now approaching 50 percent of western world capacity). As a result of experiences during that recession, many private industry producers have adopted a policy of building additional capacity only when a market for the incremental metal is assured.

In 1984, world primary aluminum capacity amounted to 13,376,000 metric tonnes distributed between 169 smelters:

<u>Area</u>	<u>Number of Smelters</u>	<u>Capacity mt. x 1000</u>	<u>% of World Capacity</u>
Canada	7	1,234	6.7
U.S.A.	30	4,988	27.1
W. Europe	49	3,641	19.8
Asia	22	1,799	9.8
S. America	10	1,124	6.1
Oceania	6	1,097	6.0
Commonwealth	45	4,493	24.5

Of the 1984 world capacity, over 54 percent is controlled by seven companies:

<u>Company</u>	<u>Type</u>	<u>Capacity mt. x 1000</u>	<u>% of World Capacity</u>
Alcan	private - Canada	2,100	11.4
Alcoa	private - U.S.A.	2,074	13.3
Kaiser	private - U.S.A.	1,540	8.4
Reynolds	private - U.S.A.	1,446	7.9
Pechiney	nationalized France	1,351	6.8
Alusuisse	private Switzerland	953	5.2
Alumax	private - U.S.A./Japan	615	3.3
	TOTAL		54.3