

CHAPTER IV

ORGANISATION PROFILE

For the present study, two organizations – one public and one private sector organizations in the Aluminium industry were selected. It will be worthwhile to examine the challenges being faced by Aluminium industry in India.

The Indian Aluminium Industry

The aluminium industry in India can be classified as:

(a) The primary producers who produce ingots and billets (primary form of aluminium) using bauxite.

(b) The secondary producers who add value to the ingots and billets to produce semi-fabricated products. At present there are only five companies in the primary aluminium market viz. Hindalco, Indian Aluminum (Indal), Madras Aluminum (Malco), National Aluminum (Nalco) and Bharat Aluminum (Balco). The former three are private sector companies while the latter two are government owned.

tpa

Table 4.1

Primary Metal Capacity ('000 tpa)

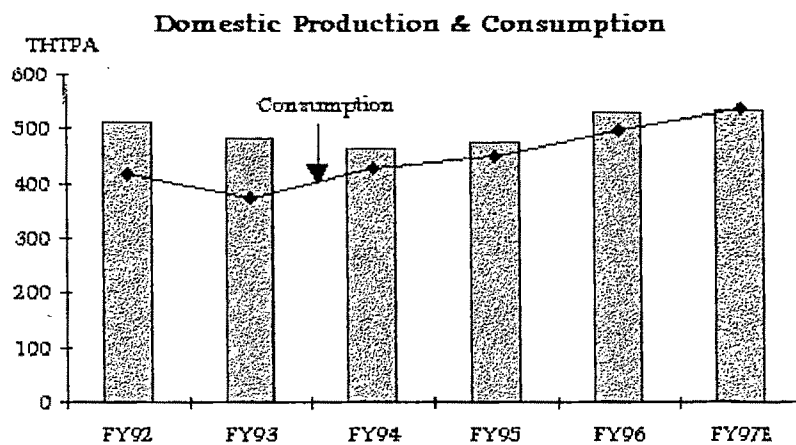
Company	FY96	FY97E	FY98E
② Nalco	218	230	230
① Hindalco	210	210	242
④ Indal	45	51	51
③ Balco	100	100	100
⑤ Malco	25	25	25
Total	598	616	648

(Source: Web-site Indian Aluminium Industry)

All the primary producers have integrated forward into the manufacture of high value semi-fabricated products like rods, rolled products, extrusions and foils.

In FY97, total aluminium production was 530 thtpa on an installed capacity of 616 thtpa. It is estimated that demand will grow at 7-8% over the next four years.

Figure 4.1



(Source: Web-site Indian Aluminium Industry)

Regulated till 1989

Until 1989, the Aluminum Control Order (ACO) required all domestic manufacturers to ensure that atleast 50% of their ingot production was electrical grade, for use by the transmission power industry. The government fixed ingot prices on the basis of a Retention Pricing Mechanism, taking into consideration the average retention prices of all producers and a minimum return on equity.

The above control resulted in a skewed product mix and shortages of aluminum for other sectors. The problem was further compounded by the vulnerable financial position of State Electricity Boards (the main users of electrical grade aluminum) and high import and excise duties. The producers resorted to inflated prices for other types of aluminium to

compensate for the disadvantages they suffered because of this regulation.

The ACO was scrapped in 1989 and in 1991 the government lifted restrictions on capacity additions resulting in a free market environment.

Key Inputs

Captive power, ample bauxite reserves, coupled with cheap labour costs make Indian companies amongst the most competitive aluminium producers globally.

Table 4.2
Comparable costs for world majors

Company	Cost Of Production US\$
Kaiser (US)	1,315
Hydro Aluminium (Norway)	1,305
VAW (Germany)	1,298
Alcoa (US)	1,251
Pechiney (France)	1,200
Comalco (Australia)	1,200
Reynolds (US)	1,188
Alumax (US)	1,176
Alcan (Canada)	1,113
② <u>Alusaf (South Africa)</u>	1,026 ✓
World Average	1,249
① Nalco	<u>900</u>
② Hindalco	<u>1,060</u>

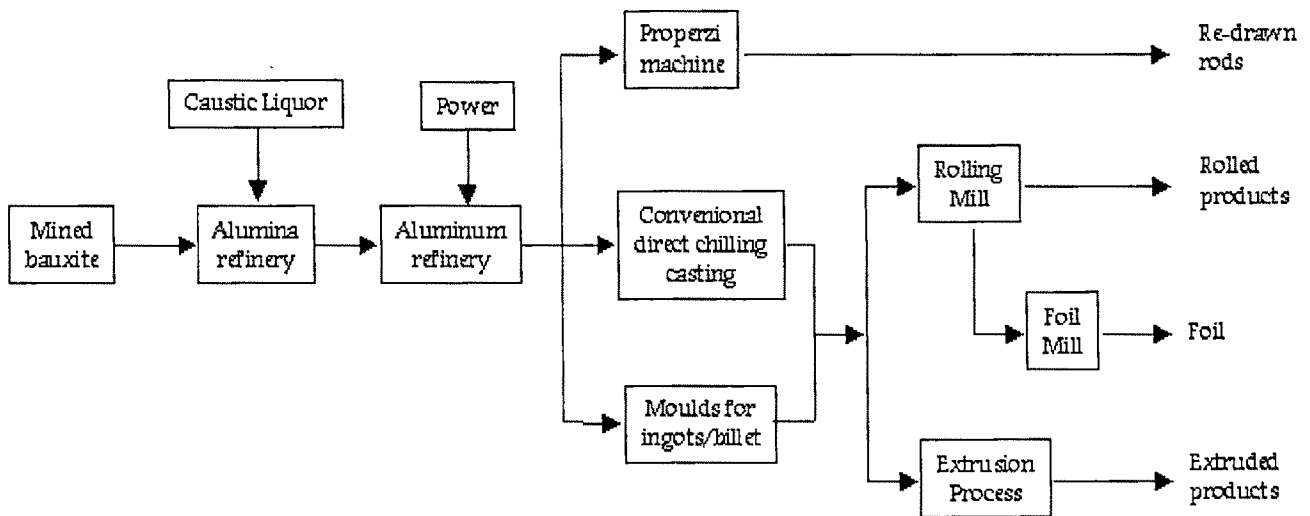
(Source: Web-site Indian Aluminium Industry)

The main raw material for the manufacture of aluminium include bauxite, caustic soda, calcined petroleum coke, coal tar pitch, and LS/FS furnace oil. The production process for manufacture of aluminium is briefly outlined below (Figure 4.2):

The mined bauxite ore is mixed with caustic liquor and is refined to produce alumina. This is then smelted (through electrolysis in a smelter) to obtain aluminium. Depending on the quality of bauxite, 2.5 – 3 tonnes are required for manufacture of 1 tonne of alumina. In turn, 2 tonnes of alumina are required for manufacture of 1 tonne of aluminium.

Figure 4.2

Production Process for Manufacture of Aluminium



(Source: Web-site Indian Aluminium Industry)

Indian bauxite reserves at 3 bn tonnes, are the 5th largest in the world, and account for 6% of total world reserves. Most alumina refineries are designed around the bauxite reserves to reduce transportation costs. Cost per tonne of bauxite varies for players depending on the location of the refinery and bauxite mines.

For example, Nalco has an estimated 1,600 m tonnes of bauxite reserves only 20 kms from its alumina refinery, enabling it to become one of the most economical bauxite producers in the world. The cost per tonne of bauxite produced by Nalco is \$2.4.

Table 4.3

	% of Global Bauxite Reserves	Cost per tonne (\$)
Australia	20	
Guinea	23	27.5
Brazil	10	30
India	6	
Jamaica	5	25
Nalco		2.4
Hindalco		16

(Source: Web-site Indian Aluminium Industry)

Although domestic producers are self sufficient in alumina, the setting up of independent aluminium smelters all over the world and cut backs in European and American alumina production have resulted in alumina gaining importance as an internationally traded commodity. This has also been helped by the relocation of smelters based on the availability of cheap power. About 40% of alumina production is traded between unrelated parties. Alumina prices generally depend on the demand/supply and on the prices of aluminium. Bauxite is the single largest cost item for the manufacture of alumina giving India a competitive advantage. With this in mind, MOUs are being signed by companies to set up alumina plants in bauxite-rich states like Orissa.

Power

Power constitutes the single largest cost component for aluminium manufacturers (35–40% of operating costs). Almost all the major Indian companies have captive power plants thus giving them access to cheap power. This makes India one of the most competitive low cost aluminium producers in the world.

Hindalco and Nalco's production costs are amongst the lowest in the world. Both companies have the advantage of 100% captive power, vital in a power intensive industry and in a power deficit country like India.

Table 4.4

Power Costs: Lowest in the world

	Kwh per tonne
North America	16,016
Asia	15,645
Latin America	15,623
Europe	15,538
Africa	15,295
Oceania	14,779
Western World Average	15,651
World Average	16,107
Hindalco	15.228
Nalco	15.639
	Per kwh in cents
Hindalco	1.9
Nalco	1.3
Germany	9.3
UK	7.6
USA	5.2
Canada	3.8
India	8.5

(Source: Web-site Indian Aluminium Industry)

Demand

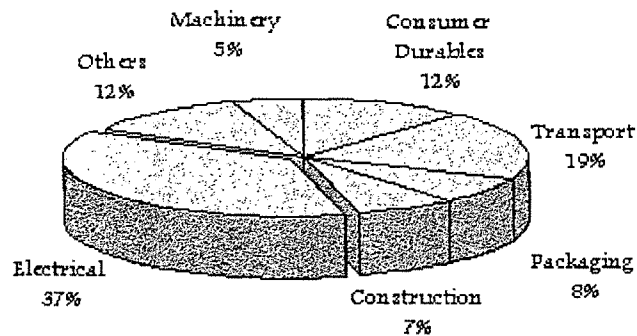
The demand for aluminium is a derived demand. It is therefore necessary to understand and estimate growth of end-user industries to arrive at aluminium demand. The ability to pass on price hikes and volume growth would then be dependant on the nature of downstream products and their end uses.

The major end users of aluminum include engineering sector (electrical appliances, power), packaging (aluminium foils, beverage cans), transport

(automobile engines, fabrications), construction (windows, door frames) and consumer durables (refrigerators, washing machines).

Figure 4.3

Aluminium Consumption (FY97)



(Source: Web-site Indian Aluminium Industry)

Aluminium products can be segregated into rolled products, extrusions, and foils.

Rolled products find applications in automobiles (paneling, floors and windows, but are yet to find use in structural parts and bodies), construction (roofing and walls), consumer durables, engineering applications, web stock for laminated packaging (for toothpastes). A major portion of rolled products capacity is accounted for by the five integrated producers (around 82%).

Extrusions include products as bars, pipes and tubes. Major users of extruded aluminium products are buildings, transportation and electrical sector. Production in this segment is widely spread and the top three players control around 31% of the market (the largest company - Hindalco commands around 14% market share in this segment).

Foils are sheets having thickness of less than 0.2 mm up to 0.006 mm finding application mainly in the packaging sector. Major users of aluminium foils include the pharmaceutical, consumer products, cigarette and cable manufacturing industries.

Supply

Aluminium is a capital-intensive industry. It is estimated that a greenfield minimum economic size plant of around 150,000 tonnes will cost around Rs 15-17 bn, excluding captive power. This serves as an effective entry barrier for any new entrant to this sector.

However, existing companies are aggressively expanding capacity. Hindalco is setting up a 250,000 tpa greenfield project in the Eastern part of India (expanded capacity of 242,000 tpa in FY98); Nalco is awaiting governmental clearances for the expansion of its smelter capacity to 345,000 tpa from 230,000 tpa, and Indal is considering expansion of its smelting capacity at Hirakud (Eastern India) along with re-energising of 40,000 tonnes of its capacity by 2HFY99 at Belgaum, Karnataka.

Prices

Globally aluminum prices are determined on the basis of LME (London Metal Exchange) prices, import duties relevant to the importing country (currently import duty stands at 10%) and landing costs. Indian companies are globally competitive with low bauxite and labour costs, and captive power. With import tariff on ingots at a low 10%, protection is low and local prices tend to track landed costs. Indian producers have been partially protected from imports by a depreciating rupee.

Outlook

It is estimated that demand will grow at 7-8% over the next four years. Transportation, packaging and construction sector's share in the overall consumption pattern is expected to increase over the next 5 years.

Due to high capital costs of setting up a greenfield aluminium plant, expansion of existing facilities becomes a viable option.

Indian companies are likely to explore foreign markets as a market diversification strategy. Further, in case of rupee depreciation, local companies will benefit from higher export realisations and as also imports of aluminium would become expensive.

Secondary aluminium producers are facing overcapacity. Although this can put pressure on margins in a falling LME price scenario, primary metal producers who have integrated forward into manufacture of semi-fabricated products will be able to sustain volume growth due to their competitive advantages.

In the light of the challenges being faced by the Aluminium industry in India, it is imperative that they develop responsive work culture and maintain healthy industrial relations environment for meeting the emergent demands.

INDIAN ALUMINIUM COMPANY LIMITED

HIRAKUD SMELTER

Location: Hirakud (Orissa)
Capacity: 30,000 t/y (60,000 t/y planned startup July 2002)
Startup Year: 1959 *65,000 t/y at present*

Company Profile

Indian Aluminium Company Limited (INDAL) is one of the largest Public Limited companies in India. It is pioneer in the production of aluminium in the country. With a nation-wide network of production facilities, INDAL is engaged in all phases of the aluminium industry from bauxite mining through smelting to manufacture of a wide range of finished aluminium products.

Hirakud plant of INDAL is an aluminium smelter where primary aluminium is produced by electrolysis of alumina dissolved in molten cryolite. The technology adopted is Horizontal Stud Soderberg (HSS) type. The process is energy intensive and about 50% of the metal production cost goes for electrical energy and 12% for thermal energy. The smelter was started in January 1959 with 10 KT of aluminium production per annum. This was expanded to 20 KT in 1962. The installed capacity was further raised to 24 KT in 1978. *(Kilo Tonnes)*

The primary aluminium produced is taken to casting plant and cast coil plant for casting into rolling ingots, 1-20K (one ingot weighs approximately 20 kg) ingots and cast coil to meet the needs of fabrication units at Belur of Calcutta and Taloja of Maharashtra. In the carbon plant, carbon electrode paste is produced out of petroleum coke and pitch. The paste thus produced is used as anode paste in electrolytic cells (captive use) and as carbon electrode paste sale to Ferro Alloy Industries.

*manpower productivity - 49 metric ton per man year
to
83 " "*

In the year 1996-97, Hirakud Smelter capacity was expanded from 24,000t to 30,000t and in the year 1997-98, the company achieved the highest ever production of 28,897 tonnes of primary aluminium. 2003-04 - 65,000

Company as a whole had a total turn over of Rs. 1162.5 crores during 1997-98 with realisation of Rs. 71.4 crores as net profit. (127 cr) 1400 crore (4500 cr - 1400 cr) 128 crore

Vision

The vision statement of the organization reads as follows:

“To be a premier aluminium company with a clear focus to become globally competitive, through growth and technology up gradation; committed to excellence in quality, service and environment management.”

Mission

“To pursue the creation of value for all its customer, shareholders, employees and society at large.”

Core Values

The following are the stated core values of the organization:

Integrity

Speed

Simplicity

Seamlessness

Self Confidence

Accountability

100% Commitment

Concern for the Community

Environmental Responsibility

Table 4.5
Employee Strength at Hirakud

Sl. No.	Department	Existing Strength			
		Officers	Staff	Worker	Total
1	Production & R&D	1			1
1.1	Potroom & Carbon	1			1
1.11	Potroom	2	15	232	249
1.12	Carbon	1	4	17	22
1.2	Continuous Caster	1	4	14	19
1.3	Casting & R & D	1			1
1.31	R & D	1	7	12	20
1.32	Casting	2	5	31	38
1.33	Warehouse		2		2
2	Engineering	1			1
2.1	Electrical & Instr.	7	8	36	51
2.2	Mechanical & W/S	3	5	76	84
2.3	Civil		3	22	25
2.4	D & P & Projects	3	3		6
2.5	Engg. Services	1			1
2.6	Systems	1			
3	Materials	1		23	24
3.1	Purchase & Stores	2			2
3.11	Purchase	3			3
3.12	Stores	3			3
3.2	Traffic	1	2		3
4	Personnel	4	3		7
4.1	Watch & Ward		5		5
4.2	Medical	1	2		3
4.3	Security			24	24
4.4	Canteen			17	17
5	Accounts	2	19	5	26
6	Works Management	2			
		45	87	509	638

200

Ex. part 20

157.

NATIONAL ALUMINIUM COMPANY

Angul Plant

Location: Angul (Orissa)

Capacity: 2,30,000 tpa

Startup Year: 1987

Company Profile

National Aluminium Company Ltd. (Nalco) is considered to be a turning point in the history of Indian Aluminium Industry. In a major leap forward, Nalco has not only addressed the need for self-sufficiency in aluminium, but also given the country a technological edge in producing this strategic metal on the best of world standards. Nalco was incorporated in the year 1981 in the public sector to exploit a part of the large deposits of Bauxite, discovered in the East Coast, in technological collaboration of Aluminium Pechiney of France.

The company has 05 multi-locational, well-integrated, segments viz. Bauxite Mine at Panchapatmali, District; Koraput, has installed capacity of 2400000 TPY. Alumina Refinery at Damanjodi, Koraput, has installed capacity of 800000 TPY. Aluminium Smelter and Captive power plant at Angul, has installed capacities of 230000 TPY and 720 MW respectively. NALCO has developed port facilities at Vishakhapatnam with Aluminium export capacity of 375000 TPY and Caustic Soda Lye input of 146000 TPY. The Corporate Office of the company is at Bhubaneswar and the company has Zonal/ Regional Offices at Kolkatta, New Delhi, Chennai, and Mumbai.

While the production of Alumina and Aluminium has been 8 945000 MT and 1 462060 MT respectively during 1998-99, the company mined Bauxite to the tune of 28 06000 MT during 1998-99. The sales turnover of

this profit making organization was Rs. 1506.65 crore and the project after tax was 248 crores during 1998-99. The Company also exports Alumina/hydrate as also Aluminium: The Alumina /Hydrate export was about 6 1100000 metric ton whereas the Aluminum export was 40,000MT. However the domestic sales scenario is the reverse with Alumina sales at only 282 MT as compared to Aluminium sales of about 99,000MT. The domestic sales of alumina has fallen substantially over the last ten years from about 25,000 MT in 1989-90 to the present level of 280 MT (1998-99).

Vision

The vision statement of the organization reads as follows:

"To be a company of global repute in the field of Aluminium. "

Mission

"To achieve growth in business with global competitive edge providing satisfaction to the customers, employees, shareholders and community at large."

****Environment Policy***

In recognition of the interests of the society in securing sustainable industrial growth, compatible with a wholesome environment, Nalco affirms that it assigns high importance to promotion and maintenance of a pollution-free environment in all its activities.

Objectives:

- To use non-polluting and environment-friendly technology
- To monitor regularly air, water, land, noise and other environmental parameters

- To constantly improve upon the standards of pollution control and provide a leadership in environment management
- To develops employees awareness on environmental responsibilities and encourage adherence to sound environmental practices
- To work closely with government and local authorities to prevent or minimize adverse consequences of the industrial activities on the environment
- To comply with all applicable laws governing environment protection through appropriate mechanisms
- To actively participate in social, welfare and environmental development activities of the locality around its units

Commitment:

Nalco dedicates itself to ensure a green and wholesome environment in all areas of its operations for sustainable industrial growth and to set standards in environment management.

***Community Development**

Nalco had adopted a policy of playing a catalytic role in general improvement of quality of the life of the people living in the peripheral villages. In this regard, various steps have been taken in collaboration with local government and authorities.

The plants of the company though located in sparsely populated areas; there was a direct displacement of about 600 families at the time of starting of the project. The company not only took advance measures to rehabilitate all the displaced families in a well planned colony with basic amenities at Damonjodi, but also provided training to groups of affected persons to improve the scope of their employment. The conscious efforts have resulted in direct employment of more than 1800 persons from effected families in the company. Besides, the company's operations have generated a large variety of employment and income opportunities for the people of adjacent areas.

Nalco has also made significant contributions to upgrade agricultural techniques, encourage vegetable farming on a large-scale and strengthening the afforestation program in the peripheral areas. The villagers are provided fertilizers, pesticides and training, free of cost. The Company has given great importance to medical and health programs. Full fledged hospitals with outdoor and specialized indoor treatment facilities at Damonjodi and Angul have been established.

The facilities are extended to near by villages also. Regular health consultation sessions, family welfare camps, eye camps, animal health camps, rehabilitation of handicapped persons are the major thrust areas at Nalco. The Company has adopted a progressive policy of encouraging sports among local youth. The scheme envisages recruitment of young, outstanding sportsmen, training and coaching for talented employees, sponsoring local, state and national events.

Sports infrastructures have been built in Damanjodi and Angul for holding regular sports meets. Given the natural athletic abilities of the tribals, the response to sports program of Nalco has been quite encouraging.

+Welfare Activities

The year wise amount spent on various welfare activities are outlined in the following table:

Table 4.6⁺
Year-wise Amount Spent on Welfare Activities

Welfare Activity	Year- Wise amount spent (Rs. In Lakhs)			
	1995-96	1996-97	1997-98	1998-99 (till Dec.'98)
Education	12.40	16.00	39.10	21.00
Health	13.50	14.00	15.50	33.50
Housing	6.00	13.50	20.00	31.00
Water Supply	9.85	22.60	17.40	6.00*
Others#	33.25	55.90	82.00	91.00
Total	75.00	122.00	174.00**	182.50

Others include Construction & Maintenance of Roads, Development of Horticulture & Afforestation, Social & Cultural Activities, Sports & Games and miscellaneous departmental works for the benefit of people at large.

* A sum of Rs.308.29 lakh has been released during May'98 for Integrated Water Supply to 11 villages in and around Angul Sector, having excess fluoride content in the ground water.

** A sum of Rs.89.00 lakh has also been released for Water Supply. Electrification and improvement of Analabadi Rehabilitation Colony at Damonjodi.

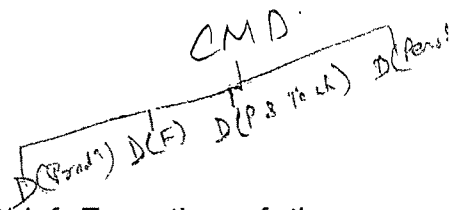
(⁺ Source: Web-site of Nalco)

Employee Strength at Nalco

The manpower position of the company at different Units of the Company as on 30/ 04/ 2002 are as under (Table 4.7):

Table 4.7
Employee Strength at NALCO

Unit/Office	Manpower	
	Executive	Non-executive
Bauxite Mines	38	362
Alumina Refinery	372	1414
Smelter Plant	460	2031
Captive Power Plant	391	1006
Port Facilities	24	35
Corporate Office/ Other Zonal Offices	246	266
Total	1531	5114



The Chairman-Cum-Managing Director is the Chief Executive of the Company who is assisted by the functional Directors such as Director (Production), Director (Finance), Director (Projects and Technology), Director (Personnel and Administration). The producing Units are headed by respective General Managers and the Zonal Offices are headed by the Resident Managers.

Demographic Characteristics of Respondents

The work culture of an organization is greatly influenced by the biographical characteristics of its employees. The educational qualifications, age profile, professional work experience, have an important bearing on how members of the organization interact amongst themselves and respond to the demands of the external environment.

Educational /Professional Qualification

Education plays an important role in shaping the value framework, the thoughts and beliefs, attitude towards work of the employees especially the lower level employees. Education raises their awareness level making it easier for them to comprehend company policies and procedures, enabling them to interact with management and other external agencies with ease.

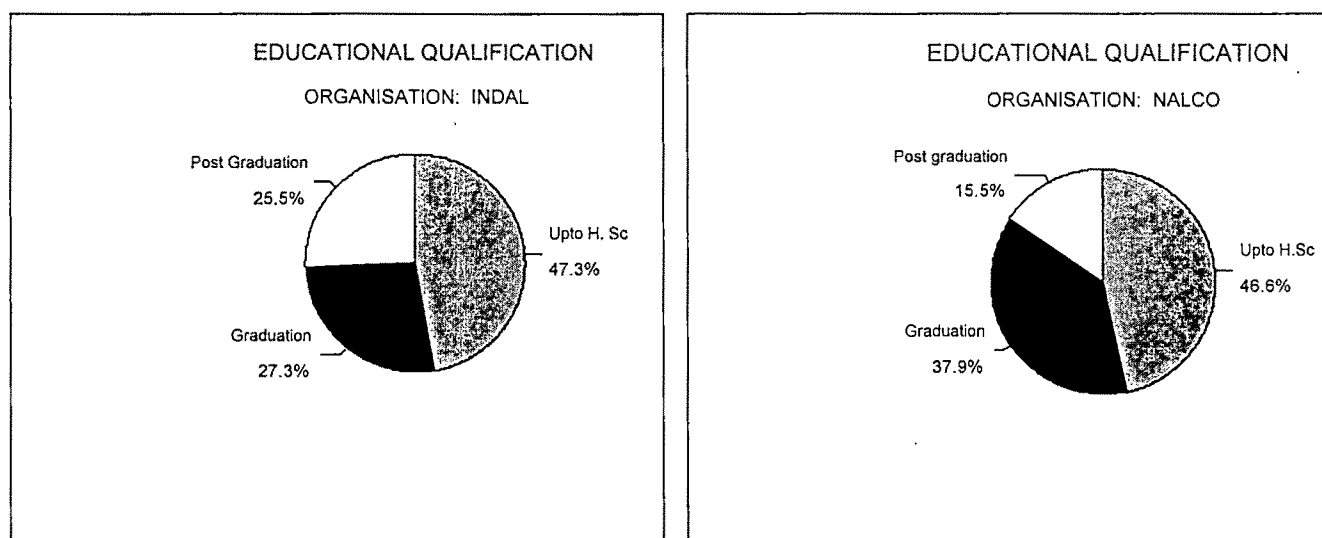
Data indicates (Table 4.8 and Figure 4.4) that in INDAL as well as in NALCO, nearly 47% of the respondents are qualified upto Higher Secondary, 27% in INDAL and 37.9% in NALCO are Graduates. While 25% of respondents in INDAL are Post-graduate, only 15.5% in NALCO are Post-graduates.

Table 4.8

EDUCATIONAL QUALIFICATION

EDUCATIONAL QUALIFICATION	ORGANISATION			
	INDAL		NALCO	
	Frequency	Percent	Frequency	Percent
Upto Higher Secondary	52	47.3	75	46.6
Graduation	30	27.3	61	37.9
Post graduation	28	25.5	25	15.5
Total	N = 110	100.0	N = 161	100.0

Figure 4.4

**Level**

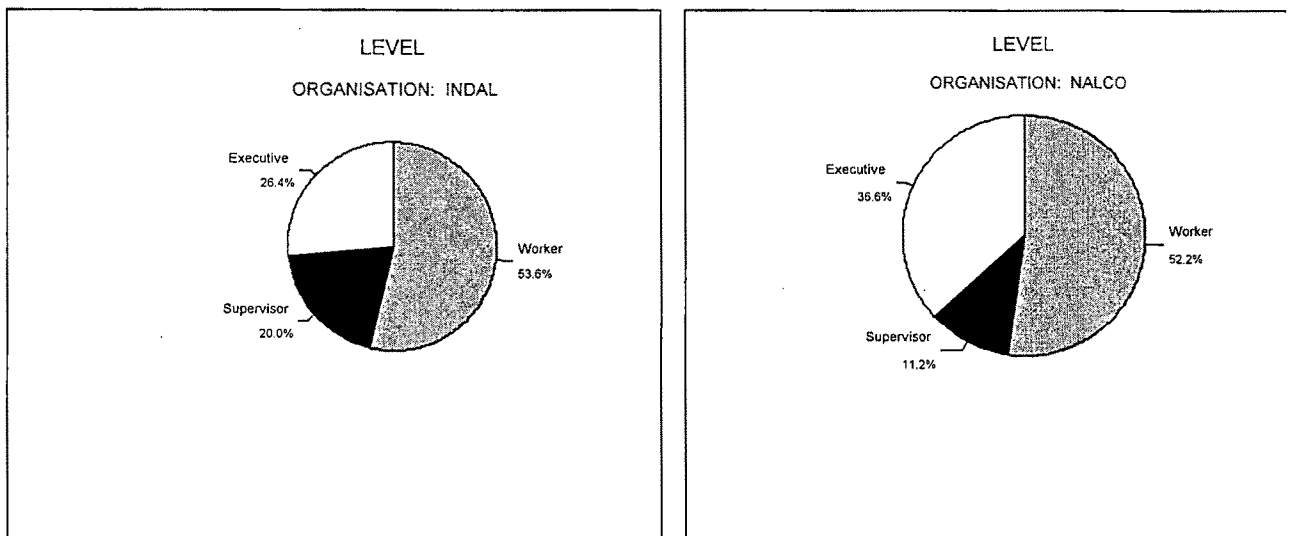
As depicted in table 4.9 and figure 4.5, 53.6% of the respondents belong to the worker category in INDAL and 52.2% in NALCO, while 20% and 11.2% of them belong to the supervisory level in INDAL and NALCO respectively. In INDAL 26.4% and in NALCO 36.6% belong to the executive level.

Table 4.9

LEVEL

LEVEL	ORGANISATION			
	INDAL		NALCO	
	No.of Responses	Percent	No.of Responses	Percent
Worker	59	53.6	84	52.2
Supervisor	22	20.0	18	11.2
Executive	29	26.4	59	36.6
Total	N = 110	100.0	N = 161	100.0

Figure 4.5

**Work Experience**

As part of the demographic data, in the questionnaires the respondents were asked to indicate the number of years of work experience they had in the present organization where they were working. The data has been categorized into 5 categories according to the number of years of work experience (Table 4.10 and Figure 4.6). While in INDAL, there are no respondents in the category of 0 to 1 year of experience, in NALCO only a

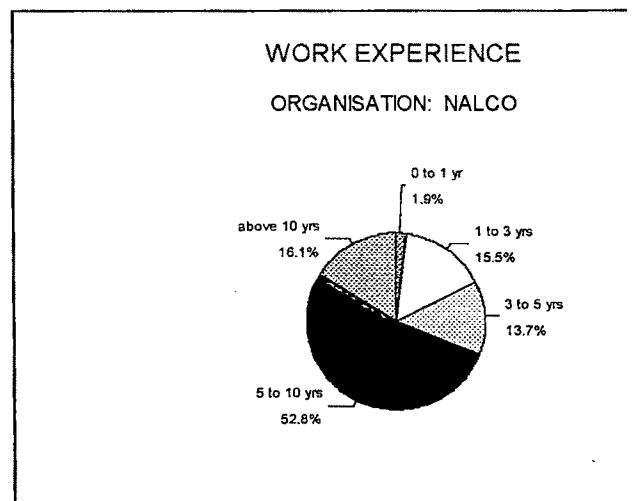
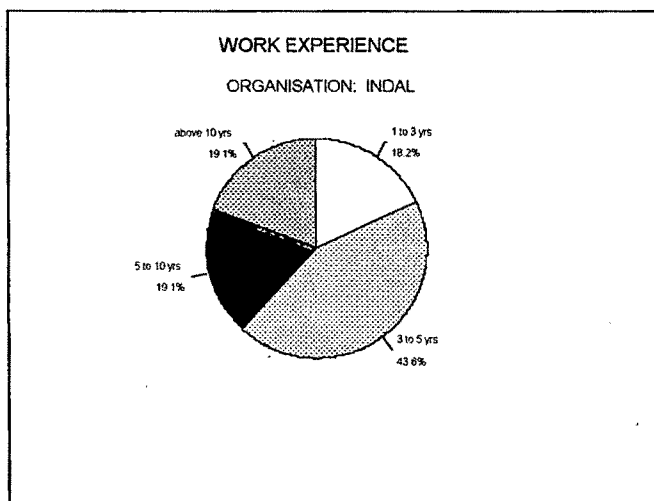
marginal – 1.9% of the respondents belong to this category. 18.2% in INDAL and 15.5% in NALCO have 1 to 3 years of work experiences. maximum number of respondents in INDAL i.e. 43.6% have 3 to 5 years of work experience while in NALCO it is 13.7%. 19.1% in INDAL and 52.8% in NALCO have experience of 5 to 10 years. While those having above 10 years of experience are 19.1% in INDAL and 16.1% in NALCO respectively.

Table 4.10

WORK EXPERIENCE

WORK EXPERIENCE	ORGANISATION			
	INDAL		NALCO	
	Frequency	Percent	Frequency	Percent
0 to 1 yr	NIL	NIL	3	1.9
1 to 3 yrs	20	18.2	25	15.5
3 to 5 yrs	48	43.6	22	13.7
5 to 10 yrs	21	19.1	85	52.8
above 10 yrs	21	19.1	26	16.1
Total	N = 110	100.0	N = 161	100.0

Figure 4.6



Age Profile

The comparative, analysis of the age profile of the respondents in both the organizations, reveals interesting statistics. (Table 4.11 and Figure 4.7) while 1.8% of respondents in INDAL belong to the age group of 20-25 years there are no respondents in this category in NALCO. In contrast while none of the respondents are 45 and above in INDAL, a substantial 11.2% of the respondents of NALCO belong to this category. In INDAL and 17.4% in NALCO belong to age-group of 26-30 years. Maximum number of respondents in INDAL 31.8% are between 31-35 years in NALCO 28.6% belong to this category 25.5% and 32.9% in INDAL & NALCO respectively belong to the age group of 36-40 years. 12.7% in INDAL and 9.9% in NALCO belong to the category 41-45 years.

Table 4.11

AGE PROFILE

AGE PROFILE IN YEARS	ORGANISATION			
	INDAL		NALCO	
	No. of Respondents	Percent	No. of Respondents	Percent
20 - 25	2	1.8	NIL	NIL
26 - 30	31	28.2	28	17.4
31 - 35	35	31.8	46	28.6
36 - 40	28	25.5	53	32.9
41 - 45	14	12.7	16	9.9
45 & above	NIL	NIL	18	11.2
Total N =	110	100.0	161	100.0

Figure 4.7

