Diagnostic Study Report
on
Metal casting (Foundry) Cluster
of Howrah, West Bengal
Under
Small Industries Cluster Development Programme
(SICDP)

- Submitted by -

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1. HISTORICAL BACKGROUND AND TURNING POINT -

EVOLUTION

The emergence of foundry industries in and around Howrah was initiated since the second half of 19th century **based on the necessity of spares for Jute and cotton industries.** Subsequently, the need based activities flourished into the means of livelihood and gradually matured into an art in the way of satisfying **the emergence of similar necessities** with the **development of railway transport, public health, municipalities, house construction,** major private & public sector enterprises.

ADVANTAGES

The **local availability** of **raw materials** and fuel, **advantage of the nearness of kolkata port** and **availability of other transport route, availability of man power gifted with 'learn-by-sight' sense of engineering workmanship allowed the foundry industry of Howrah to reach its zenith of expansion and growth during first world war and continued till the middle of the present century.** The entrepreneurs hip concerned with the business generally developed in a family-centric way and the work place started becoming familiarized as the "Bangali Bari" selling the "gala mal" and lending shop floor for casting to others. Such practices could prevail traditionally for long time due to absence of any major threat from any other corners.

CHALLENGES

After Independence, series of developments like **gradual decline of Jute industries in West Bengal** after partition of Bengal and subsequently **replacement of jute products by plastic items,** introduction of Freight Equalization Policy on Iron & Steel in 1955-56 **withdrawing locational advantage on raw materials** like Pig Iron from states like West Bengal brought the foundry Cluster of Howrah before great challenge.

Later on, **decline of some large industries** like Jessops, Burn Standard, Braithewaite, Britannia Engg.co.in the Eastern Region of our country and **growth of large Industries in other parts made shrinkage of local market** of Howrah foundry cluster. At the same time **growth of foundry cluster in other states** like U.P. Maharashtra, Gujarat, and Tamil Nadu & Punjab and also in some neighbouring and foreign countries **with the updated versions of technology and improved grades of castings at a much lower cost witnessed intense competition in the market of casting products.**

ENVIRONMENT ISSUE

Howrah foundry cluster faced another major challenge when environmental laws with emission standards for foundries were introduced in 1990. In 1995 in compliance of Supreme Court's order on a Public Interest Litigation (PIL) on pollution issue most of the foundries of Howrah were compelled to install pollution control equipment in their furnaces; some of them have to even closed down their units.

Of late, with further pressure from West Bengal Pollution Control Board to lower down pollution level of Howrah Municipal area within the admissible s.m.p (suspended particulated matter) limit of 150 mg / Nm^2 (Howrah being a densely populated city and within the agglomeration of kolkata Municipal Corporation area), the foundry owners were compelled to install Divided Blast Cupola furnace with Pollution control Device at their units. Moreover, Howrah foundry cluster has a plan to shift to a nearer place outside the Howrah Municipal Corporation within a time frame of 2010 in compliance with WBPCB ruliy.

The emergence of foundry industries in and around Howrah initiated since the second half of 19^{th} century based on the necessity of spares for Jute and cotton industries. Subsequently, the need based activities flourished into the means of living hood and gradually matured into an art in the way of satisfying the emergence of similar necessities with the development of railway transport, public health, municipalities, house construction, major private public sector enterprises. The advantage of the nearness of Calcutta port and availability of other transport route, availability of man power equipped with learn-by-sight sense of engineering allowed the foundry industry to reach its zenith of expansion and growth during first world war and continued till the middle of the present century. The entrepreneurs hip concerned with the business generally development in a family-centric way and the work place started becoming familiarized as the “Bangali Bari” selling the “gala mal” and lending shop floor for casting to others. Such practice could prevail traditionally for long time due to absence of any major threat from any other corners. However, in the subsequent days other states in our country and as well as various foreign countries started manufacturing castings with the updated versions of the technology and were able to produce improved grades of castings at a much lower cost.

2. NATIONAL (INCLUDING BENCHMARK CLUSTERS) AND INTERNATIONAL SCENARIO

2.1 An overview of the foundry clusters in India

There are more than 5,000 foundry units in India, having an installed capacity of approximately 7.5 million tonnes per annum. The majority (nearly 95%) of the foundry units in India falls under the category of small-scale industry.

The foundry industry is an important employment provider and provides direct employment to about half a million people.

EXPORT:

The export of Castings from India (both sanitary and industrial combined) has witnessed a stead growth consistently year after year from rs.1,404 crores in 2001-02 to Rs.2,997 crores in 2005-06, almost doubled in five years. Year-wise break –up of exports is tabulated below: India today ranks tenth among casting exporting countries.

Year	Sanitary Castings	Industrial Casting	Total
2001-02	524.00	880.00	1,404.00
2002-03	609.00	1,038.00	1,647.00
2003-04	867.00	1,058.00	1,925.00
2004-05	1,242.00	1,383.00	2,652.00
2005-06	1,530.00	1,467.00	2,997.00

A peculiarity of the foundry industry in India is its geographical clustering. Some of the major foundry clusters in the country are shown in the map.

Typically, each foundry cluster is known for catering to some specific end-use markets. For example, the Coimbatore cluster is famous for pump-sets castings, the Kolhapur and the Belagum clusters for automotive castings and the Rajkot cluster for diesel engine castings.

A summary of the five major foundry clusters in India - Belgaum, Batala/Jalandhar, Coimbatore, Kolhapur and Rajkot - is provided below.

Foundry Cluster: Belgaum

Belgaum, located in the state of Karnataka, is an important foundry cluster. There are about 100 foundry units at Belgaum. The geographical spread of the cluster includes Udyambag and Macche industrial areas. The foundry industry at Belgaum came up primarily to cater to the needs of the automobile industry at Pune.

Belgaum is recognised to be a reliable source of high precision, high volume and economical castings. A significant percentage (almost 20%) of the foundry units at Belgaum has ISO 9000 certification and export casting.

The foundry industry at Belgaum caters to a wide variety of end-use applications as can be seen from the table below.

Distribution of foundry units at Belgaum by end-use markets	
Automotive/oil engines	31 %
Pumps/valves	21 %
Electric motors	10 %
Tractors/agricultural implements	7 %
Food processing industry	5 %
Others	26 %

Cupola is the most common melting furnace at Belgaum. Three out of every four foundry use cupola as their main melting furnace. Most of the cupolas are of conventional designs. Divided blast cupola is not very common yet in the cluster. Low ash coke is commonly used in the cupolas.

About 40% of the foundry units have electric induction furnace, which are used either as the main melting furnace or for duplexing with cupola. A relatively small percentage (about 5%) of the foundry units use rotary furnaces.

Foundry Cluster: Coimbatore

Coimbatore, located in the state of Tamil Nadu, is an important foundry cluster in Southern India. The foundry industry at Coimbatore came up mainly to cater to the needs of the local textile and pump-set industries. There are about 600 foundry units in Coimbatore. The geographical spread of the cluster includes Thanneer Pandal/Peelamedu, Ganapathy, SIDCO, Singanallur, Mettupalayam Road and Arasur Village.

Most of the foundry units cater to the needs of the domestic market. A small percentage (about 10%) of the foundry units are also exporting castings. Nearly half the number of foundry units are manufacturing castings for the pump-set industry. The distribution of the foundry units by end-use markets is given below.

Distribution of foundry units at Coimbatore by end-use segments	
Pumps/valves	46 %
Food processing industry	7 %
Textile machinery	6 %
Electric motors	6 %
Automotive	4 %
Others	31 %

Cupola is the predominant melting furnace employed by the foundry units. Majority (about 70%) of the cupolas in the cluster are of conventional designs. Electric induction furnaces are used by just 10% of the foundry units, mainly to manufacture graded castings and for duplexing operation.

Foundry Cluster: Batala and Jalandhar

Batala and Jalandhar, located in the state of Punjab, are important foundry clusters in Northern India. The majority of the foundry units is in the small-scale and produces grey iron castings. About 15% of the foundry units are also exporting their products.

The foundry units at Batala and Jalandhar are predominantly making machinery parts and agricultural implements. Castings for a number of other end-use applications are also produced as can be seen from the table below.

Distribution of foundry units by end-use segments	
Automotive/oil engines	8 %
Tractor parts	6 %
Pumps/fans	10 %
Machine parts	33 %
Agricultural implements	35 %
Others	8 %

Cupola is the predominant melting furnace employed by about 95% of the foundry units at Batala and Jalandhar. The majority of the cupolas are of conventional designs. The foundry units at Batala and Jalandhar usually use high-ash coke in the cupolas.

Foundry Cluster: Kolhapur

Kolhapur, located in the state of Maharashtra, is an important foundry cluster for automotive castings. Historically, the foundry cluster came up to cater to the casting requirements of the local industries like oil engine manufacturing, sugar mills and machine tool industry. There are about 250 foundry units at Kolhapur. The geographical spread of the cluster includes Kolhapur, Sangli,

Ichalkaranji and Hatkanangale areas.

A significant percentage of foundry units (about 25%) at Kolhapur are exporting castings. The foundry units cater to a wide range of end-use sectors, as can be seen from the following table.

Distribution of foundry units at Kolhapur by end-use markets	
Automotive/oil engines	42 %
Pumps/valves	17 %

Sugar industry	6 %
Tractor parts/agricultural implements	4 %
Others	31 %

Cupola is the predominant melting furnace employed by about 75% of the foundry units. The majority of cupolas in the cluster are of conventional type. Divided blast cupola (DBC) can be found in some of the foundry units. Most of the foundries use low ash coke. A number of foundry units (about 40%) have electric induction furnace, which is used to manufacture graded castings and for duplexing with cupola.

Foundry Cluster: Rajkot

Rajkot, located in the state of Gujarat, is an important foundry cluster in Western India. There are about 500 foundry units at Rajkot. The cluster came-up mainly to cater to the casting requirements of the local diesel engine industry. The geographical spread of the cluster includes Aji Vasahat, Gondal Road and Bhavanagar Road areas.

Majority of the foundry units at Rajkot produces grey iron castings for the domestic market. A relatively small percentage (about 10%) of the foundry units export castings such as electric motor castings, etc.

Apart from oil engines, the foundry units at Rajkot cluster caters to a number of other end-use applications, as can be seen from the table below.

Distribution of foundry units at Rajkot by end-use markets	
Oil engines	42 %
Automotive/textile	15 %
Machine tools	11 %
Pumps/valves	7 %
Others	25 %

Cupola is by far, the predominant melting furnace used by nearly 90% of the foundry units. Most of the cupolas are of conventional type. A local cupola design, called 'Rajkot cupola', is quite popular in the cluster. Use of low ash coke is common among the foundry units. A smaller number of foundry units (about 10%) producing castings for the automotive industry use electric induction furnace for melting.

2.2 International Scenario –

Metal castings are used in all possible engineering applications from sanitation to aerospace. In spite of occasional replacement of metal castings by light weight alternative materials like plastics, the existing trend in the international market points towards a prospective growth in the demand of metal casting in the international market. In this regard, the following characteristics of the international trend of casting production appear significant.

i) Total number of operating foundries in the world is around 35,000 in number with a production capacity of 90 MMTs and direct employment potential of 20,00,000 employees.

ii) Top ten casting producing nations are USA, CIS, PR, China, Germany, Japan, India, France, Italy, Korea, and UK.

iii) The total number of Iron foundries in percentage is 52.6%, steel foundries 14.3%, non-ferrous 29.5%. Tonnage wise the percentage of iron casting production is 76%, steel 9.36%, non-ferrous 14.72%.

iv) The number of foundries has been decreased from 6,150 to 2,950 in USA and from 20,000 to 9,374 in PR China and from 6000 to 5000 in India.

v) Global production of aluminum castings has been increased from 3.4 to 7.2 MMTs during 1990-99. During the same period gray and malleable casting production have been decreased while increasing trend is observed in the cases of ductile iron (9.15 to 13.9 MMTs) and steel castings.

A detailed description of the figures concerned with the above characteristics is presented in the Table below. It may be mentioned here that a major fraction of casting production is used as intermediate product and highly sensitive to the changes in economic condition in the consuming sectors Therefore, the periodic emergence of uncertainties in the market appears to be an important consideration. It this context it may be recorded that the engineering and automotive industries observed a decline in demand during 1996. In spite of cyclic variation in the market trend, the observed consistency in the performance of casting industries in the advanced countries reflects the obvious role played by the uncertainty mitigation policy in such countries. It may also be noted that castings are generally heavy items and adds considerable amount of transport cost. Therefore, generation of reasonable profit necessitates export of value added items like nodular iron and non-ferrous castings particularly Al-based components. It is evident from the Table below that for most of the leading manufacturing countries there is a prominent trend in gradual reduction of grey iron production and simultaneous increase in ductile and Al-based casting production.

Table showing Trend of casting production in top six countries

Nation	Cast Metal / Alloy	1990 MTs	1992 MTs	1994 MTs	1996 MTs	1998 MTs	1999 MTs
U.S.A	G. Iron	4,608,000	4,575.600	5,831.000	6,048.000	6,153.000	5,542.000
	SG.Iron	2871,000	3,056.400	3,691.000	4,034.000	4,128.000	3,999.323
	Steel	1,022,400	963.900	1,290.000	1,369.000	1,315.000	1,358.000
	Al	997940	1,148.400	1,486.000	1,638.000	1,619.000	1,896.000
	All alloys	**10210512**	**10,537.200**	**13,267.000**	**14,428.000**	**13,223.700**	**13,710.000**
CIS	G. Iron	18,000,000	13,460.000	8,240.000	8,000.000	3,300.000	4,500.000
	SG.Iron	-	392.000	305.000	350.000		
	Steel	-		960.000		900.000	
	Al.		478.000	540.000	600.000	300.000	300.000
	All alloys	**18,000.000**	**14,330.000**	**11,645.000**	**10,867.014**	**4,500.000**	**4,500.000**
China	G. Iron	5,433.300	7,858.000	7,607,330	6,945,188	6,875,736	7,912,026
	SG.Iron	922.400	1,132.000	1,321,230	1,434,923	1,564,066	2,063,192
	Steel	1,546.160	1,538.000	1,610,590	1,404,756	1,453,922	1,353,078
	Al.	254.940	445.000	495.290	594,665	660,078	735,900
	All alloys	**8,859,400**	**11,615.000**	**11,626,170**	**10,903,185**	**10,194,006**	**12,647,478**
Japan	G. Iron	4,080,610	3,382,576	3,035,179	3,035,667	3,094,535	2,489,929
	S G.Iron	1,415,301	2,023,598	2,016,488	2,140,540	2,159,115	1,897,055
	Steel	484,874	184,707	356,144	375,099	357,194	257,232
	Al.	395,385	1,072,334	1,030,928	1,104,409	1,104,409	1,101,820
	All alloys	**6,804,601**	**7,197,231**	**6,740,689**	**6,957,162**	**6,240,257**	**5,972,122**
Germany	G. Iron	2,295,000	2,160,000	1,992,329	2,013,000	2,054,000	2,123,520
	SG.Iron	955,000	996,000	979,231	1,056,000	1,136,000	1,216,470
	Steel	221,000	210,000	168,130	173,000	177,000	171,259
	Al.	476,741	460,246	434,158	486,420	537,327	597,801
	All alloys	**4,249,617**	**4,098,668**	**3,815,174**	**4,140,276**	**4,448,692**	**4,332,639**
India	G. Iron			2,250,000	2,475,000	2,595,500	2,400,000
	SG.Iron			120,000	189,000	198,400	260,000
	Steel			375,000	445,500	475,000	310,000
	Al.			20,000	21,000	21,500	220,000
	All alloys			**2,875,000**	**3,285,000**	**2,915,000**	**3,240,000**

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	All alloys			**2,875,000**	**3,285,000**	**2,915,000**	**3,240,000**

3. THE CLUSTER SPREAD

1

Spread over Howrah Sadar Sub-Division with very high concentration in H. M. C, which is separated from Kolkata by river Hooghly only. Units-320 Nos.

2

Both Rural and Urban in nature with locational distribution within an area of 5-6 sq. Kms.

3

Locational Spread

Liluah, Ghusuri, Salkia, Belgachia, Benaras Road, Santragachi, Belilious Rd, Dasnagar, Balitikuri.

4

Natural cluster mainly with self-generating traditional skill, though modernization started in some units very recently.

Metal Casting (Foundry) cluster employing about 12,000 direct and 18,000 indirect labourers.

4. MACRO DATA OF PRINCIPAL FIRMS

Type of firm (at Cluster Level)	Number	Percentage
Large (Turnover above Rs. 500 Lakhs)	48	15%
Medium (Turnover above Rs.75 Lakhs and upto Rs. 500 Lakhs)	192	60%
Small (Turnover upto Rs.75 Lakhs)	80	25%
Total	320	

Type of firm (as per MSMED Act-2006)	Number	Percentage
Micro	288	90%
Small	32	10%
Medium	NIL	0%
Total	320	

Other Stakeholders

Sl No.	Type	Number
01	Raw Material Supplier (Mfg. / Trader)	20
02	Machinery Supplier	03
03	Support firm (Local buyer) Like Engg. units	80
04	Support firm (National buyer) Like large machine	15

	manufacturing units	
05	Support firm (International buyer)	05
06	Technical BDS Provider	03
07	Technical BDS Provider	03

Sl. No	**Type**	**Name**
01	Technical Institution	i) Bengal Engineering & Science University, Shibpur, Howrah, W.B. ii) Jadavpur University, Kolkata, W.B. iii) TERI (he Energy and Resources Institute)
02	Financial Institution	i) Federal Bank, Howrah Branch ii) Indian Overseas Bank, Kadamtala Branch iii) Hong Kong Bank, Kolkata
03	Association	i) Howrah Foundry Association (HFA) ii) Indian Foundry Association (IFA)

4.1 Typologies and number of each stakeholder and growth rate -

1. At present there are about 432 foundry units identified in West Bengal out of which about 320 units are in Howrah employing about 12,000 workers. The foundry units may be categorised into the following groups :-

Group A : Foundry units selling only the molten metal to the contractors. The contractors get orders from outside parties and do the moulding work by engaging laboures of their own or contract basis.

Group B : Foundry units engaged in the production of 3-4 types of finished products with the help of outside contractor's labour.

Group C : Captive foundries, i.e., those who are producing for their own

Stakeholders –

Type of Firms	Numbers
Numbers of firms, structure of firms (large/medium/small/micro across the value chain)	320 (approx.) Small and Medium.
Presence of support firms and service providers	100 Nos. of supporting Firms (Like pig iron & scrap iron manufacturers/ traders , coke traders /mfgr., pattern-maker, local equipment manufacturers, fabrication and infrastructure develop -ment units, big engineering unts) Industry Asscns. Like HFA, IFA, IIF, Tech. Instns. Like

	IIPC, J.U., Private & Govt. Testing Lab.

Growth Rate –

Growth trends in turnover, employment, investment, exports etc. are diminishing in recent years. It may be noted that out of 7.8 lac M.T. installed capacity in the State, 6.8 lac M.T. is situated in Howrah. Whereas the total production in the country has increased from 8.00 lacs M.T. in 1970 to 30.00 lac M.T. in recent years, the production by the foundries in Howrah remain stagnant at the 1970's level of production of 6 lac M.T.

4.2 . Cluster – turnover, major products, winner/looser products, major markets, exports, market trend –

<u>Turnover</u>

The foundries in Howrah produces about 6.00 lacs M.T. annually. The estimated turnover of the broad groups in the cluster is Rs. 1200 to Rs. 1500 crores. Contribution of the cluster to exports is Rs. 800 crores per annum. The table below shows export of castings from the units in and around Howrah –

Year	Sanitary castings (Rupees in crore)	Industrial castings (Rupees in crore)
1999-2000	310.00	140.00
2000-2001	385.00	210.00
2001-2002	410.00	200.00

Major Products

Casting bodies used for industrial purposes, railway components and spares, other transports components & spares, manhole cover, mechanical & electrical components & spares, domestic and household appliances including sanitary items.

Winner / Looser Products

Winner products : C.I.Casting items such as Railway Components & Spares, Engineering and Mechanical Components & spares (e.g. Sluice Valve components).

Looser Products : C.I. Casting Household items such as Sanitary Fittings, Hand Pump Body & Parts.

Major Markets, Export & Market Trend

The entrepreneurship concerned with the business is generally developed in a family-centric way and the work place started becoming familiarized as the ‘Bangali Bari’ selling the ‘Gala Mal’ and lending shop floor for casting to others. Such practice could prevail traditionally for long time due to absence of any major threat from any other corners. However in the subsequent days, in our country and as well as various foreign countries started manufacturing castings with the updated versions of the technology and were able to produce improve grade of castings at a much lower cost.

Metal castings are used in all possible engineering applications from sanitation to aerospace. The domestic market lies in basic material for sanitary, hardware, jute mill, railways and machineries compound to core sector. Recent upsurge in the automobile market foresees a remarkable increase in casting consumption during the years to come. Apart from the domestic market, there is an increase in scope in countries as USA, Germany, UK, Middle East etc.

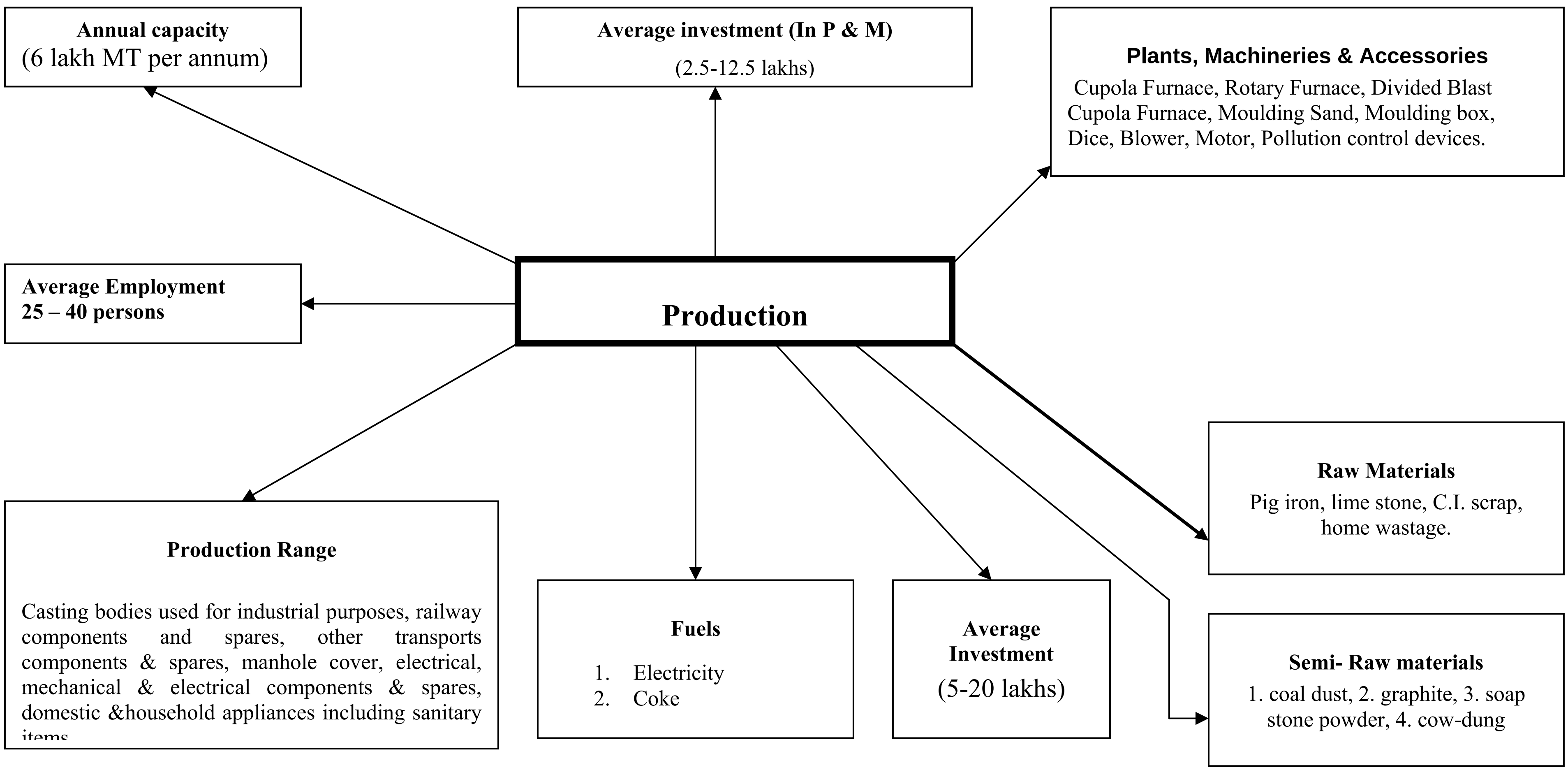
4.3 Existing Production Process

Step -1	Preparation of Mould and core sand with optimum properties
Step -2	Preparation and assembling of moulds

Step -3	Dressing the mould surface with Graphite, minerals etc for easy detrainment
Step -4	Repair and maintenance of the inner walls of the furnace with fire bricks
Step -5	Charging of coke to the lower portion of the furnace up to a certain height depending on the size and nature of furnace (This base coke helps rise a certain temperature within the furnace)
Step -6	Firing at the lower base of the furnace with the help of steam coke, wood, kerosene ect.
Step -7	Charging pig iron (a mixture of fresh pig iron, scrap of cast iron and home wastage), lime stone and coke above the base coke layer by layer up to the charging zone.
Step -8	Blowing of pressurized air within the furnace for burning and to wind away the ashes.
Step -9	Melting of the charge
Step -10	Tapping the liquid metal with appropriate temperature
Step -11	Pouring of liquid metal in ladle and subsequently within the mould avity.
Step -12	Nature cooling (1 hour to 1 week) of the mould.
Step -13	Collection and fettling of casting.
Step -14	Segregation of products, inspection and to arrange for dispatch.
Step -15	Machining (at in house machine shop)
Step -16	Packed and transported to the buyer

4.4

ECONOMICS OF CLUSTER



5. ANALYSIS OF BUSINESS OPERATIONS (AOBO) OF PRINCIPAL STAKEHOLDERS

Metal Casting cluster of Howrah is the oldest foundry cluster in the country. The cluster accounts for over six percent of the foundries in India, However, over the years Howrah's share in terms of total castings produced in the country has fallen. The problem and prospects of Howrah Metal casting (Foundry) cluster are discussed in the following manner under some broad heads.

INPUTS AVAILABILITY

Pig Iron is the major raw material for foundry cluster of Howrah. There are a number of suppliers of pig iron supplied through either their local sales depot or local traders. Availability of other raw materials like scrap iron, minerals, sand and molasses is also there with easy access to the units. Supply system of major fuel (hard coke) has no problem. Local pattern makers are also there to make wooden pattern for moulding.

But the major concern is that the small and some medium firms are not conscious about the quality of major raw materials used. They are dependent on large amount of scrap / skull / PCM (Low – graded iron) in the furnace mix and do not bother on producing low-end products losing the domestic market of high value castings which has comparatively higher return on sale.

Irregular fluctuation and upward trend in the cost of major raw material hit directly to the foundry units, especially, small and medium firms, as they have not enough capital to neutralize the effect of variant price hike of raw material. Prices of pig iron during 2005-06 can be cited for better understanding of above problem.

Pig Iron Prices During 2005-06

Rs. Per Tonne

Month	IISCO		TATA	NINL	VISA	KALINGA
	Gr III	MOG				
April' 05	15,900/-	14,800/-	16,400/-	14,750/-	16,500/-	18,300/-
May' 05	16,600/-	16,100/-	17,400/-	15,000/-	16,500/-	19,100/-
June 05	15,300/-	14,800/-	16,800/-	13,100/-	15,300/-	18,800/-

July' 05	**13,600/-**	**13,100/-**	**14,300/-**	**12,000/-**	**15,300/-**	**16,300/-**
Aug' 05	**13,000/-**	**12,500/-**	**13,800/-**	**12,000/-**	**13,100/-**	**15,600/-**
Sep' 05	**13,500/-**	**13,000/-**	**14,400/-**	**13,000/-**	**13,400/-**	**15,600/-**
Oct' 05	**13,500/-**	**13,000/-**	**14,400/-**	**13,000/-**	**13,600/-**	**15,600/-**
Nov' 05	**12,800/-**	**12,300/-**	**13,900/-**	**12,000/-**	**13,200/**	**15,550/-**
Dec' 05	**12,400/-**	**11,900/-**	**13,050/-**	**11,500/-**	**12,000/-**	**-------**
Jan' 05	**12,050/-**	**11,550/-**	**12,800/-**	**11,500/-**	**12,000/-**	**14,050/-**
Feb' 05	**12,050/-**	**11,550/-**	**12,800/-**	**11,000/-**	**-------**	**14,650/-**
Mar' 05	**12,950/-**	**12,450/-**	**14,100/-**	**12,250/-**	**12,700/-**	**14,900/-**

SKILL

Howrah foundry has a vast pool of **skilled labourers** residing in the district for generations. They are **famous for their amazing precision** and **excellent works- manship with traditional technology,** Most of the job is learnt while doing it. **But their skill was not up-graded through any workshop / training course** in modern foundry **operation** which is **necessary for increasing productivity** and **cost savings.** This is true for all type of principal firms.

There is also **lack of managerial skill** for most of the foundry owners, resulting in failure **to optimize tapping of available resources.**

MARKET

Howrah foundry has past reputation for craftsmanship in metal casting. Through it has lost its major share of market in the country, it has still a strong presence with 20% share in domestic market with ties up with local engineering units and some private big houses and Govt. sectors like railways, power plant apart from supply to local traders of sanitary items.

But due to lack of good / innovative marketing strategy and reluctance to participate in competitive market, it is losing ground at the domestic as well as international level in the face of growing challenges from emerging foundry clusters in India and some neighbouring Asian countries.

Yet, there is a ray of hope for the cluster with the recent upsurge of new industries in West Bengal, especially in the automobile market.

Apart from this, growing trend by the foreign consumers to import good quality casting products due to closure of foundry units in those countries on environmental reason has also brightened the prospect of export market before the cluster.

TECHNOLOGY

Following the **age-old technology** in foundry cluster of Howrah has resulted in no improvement in quality of castings. Moreover, lack of developments like energy audit, **periodical technology up-gradation** have caused **diminishing trend of productivity** and **cost effectiveness.**

However, recent trend in interdisciplinary research in the Engg. Institutes and an urge for better **interactive programmes between Industry and technical Institutes** initiated by the Govt. of W.B have given enough opportunities before the cluster **to flourish with indigenous technology.** Moreover, **recent development of I.T sector** in our state has also given better scope for dissemination of information on modern technology on foundry, development in marketing infrastructure through e-commerce and e-business facilities.

ENVIRONMENT ISSUE

In recent years environment pollution has been a major issue of concern for foundry cluster in Howrah. The central Pollution Control Board (CPCB) has fixed the admissible pollution level of Howrah foundry to 150 s.p.m level (much below the national standard of 450 s.p.m) for which the capacity of production of Howrah foundries has been restricted in terms of furnace diameter (upto 32”-34” internal). Mean while some attempts have been noticed among some large firms to reduce pollution at source by energy efficient melting furnace and installing air pollution control equipments to treat the flue gases as an end – of - pipe method. In major cases small and medium firms have installed D.B.C furnace equipped with pollution control device to comply the WBPCB ruling.

INFRASTRUCTURE

An ever increasing population and natural industrialization and inadequate town planning is the major problem for growth of Howrah foundry.

Power Load fluctuation in WBSEB area and high cost of power has adverse effect on the cluster. This has encouraged moves for growth of two foundry parks at Howrah district – one at Amta Ranihati Road of Panchla Block to accommodate large firms in general and another at Domjur Block to shelter mostly small and medium firms. Development of foundry parks would definitely give the scope for modernization and expansion of present cluster.

Apart from this, **growing trend by the foreign consumers to import good quality casting products** due to closure of foundry units in those countries on environmental reason has also brightened the prospect of export market before the cluster.

GOVERNMENT POLICY ON EXCISE DUTES

Central Government policy on Excise Duty is affecting small firms adversely and has compelled them to lose market which is enjoyed by large Industries: and the small units have to compromise on price or quality for survival.

KNOWLEDGE BASE

Though a strong knowledge base has been formed for Howrah foundry cluster through research and academic activates and survey carried out by various institutes to support the future challenges, poor knowledge base on occupational health hazards is a grey area which the cluster will have to care for to maintain better health conditions for the workers to enhance its productively.

Suggestive Joint Actions **–**

1. Irregular fluctuation and increase of the cost of raw materials to be regularized.

2. To ensure supply of raw materials directly to the units or a group of units or their association from big houses.

3. Introduction of divided blast cupola furnace and other pollution control devices.

4. Quality power supply.

5. Modernisation and upgradation of technology with matching introduction of Induction Furnace.

6. Energy audit.

7. ISO-Certification, ISI Marks, TQM

8. Quality Finance

9. Awareness programme and follow up action on technology upgradation, pollution control, ISO Certification, energy audit, product standardization.

10. Information technology with latest e-commerce, e-business facilities for global marketing.

11. Setting up of testing centres

12. Development of social and industrial infrastructure.

6. CURRENT INSTITUTIONAL MATRIX: HOWRAH METAL CASTING CLUSTER

	HFA	**IFA**	**HCCI**	**FOSMI**	**IIF**	**DIC**	**WEBCON**	**SISI**	**NSIC**	**SIDBI**	**NML**	**TERI**	**BESUS**	**JU**	**WBSIDC**
HFA	-	2	2	2	1	4	3	2	2	2	0	0	2	3	3
IFA	2	-	2	3	2	1	1	2	2	2	2	3	1	1	1
HCCI	2	2	-	2	1	3	3	2	2	2	0	1	2	3	3
FOSMI	2	3	2	-	3	2	2	2	2	2	2	1	1	1	1
IIF	1	2	1	3	-	1	1	1	1	2	1	0	1	1	1
DIC	4	1	3	2	1	-	3	3	3	2	1	2	4	3	3
WEBCON	3	1	3	2	1	3	-	2	2	2	0	0	1	1	1
SISI	2	2	2	2	1	3	2	-	3	3	1	1	1	1	1
NSCI	2	2	2	2	1	3	2	3	-	3	1	0	1	1	1
SIDBI	2	2	2	2	2	2	2	3	3	-	1	2	1	1	1
NML	0	2	0	2	1	1	0	1	1	1	-	1	1	1	0
TERI	0	3	1	1	0	2	0	1	0	2	1	-	1	1	0
BESUS	2	1	2	1	1	4	1	1	1	1	1	1	-	1	0
JU	3	1	3	1	1	3	1	1	1	1	1	1	1	-	0
WBSIDC	3	1	3	1	1	3	1	1	1	1	0	0	0	0	-

Score value: - 0 → No linkage and / or open conflict.
1 → Stakeholders barely know each other, any impact on the cluster as a whole.
2 → positive linkages and some history of mutual help, some impact on the cluster.
3 → strong propensities to co-operate based on a supportive history
4 → excellent existing linkages with significant impact on the cluster.

6.1

Value Chain

Group: A

(Here the foundry owners sell “galamal” i.e. Molten Metal to local buyers) (Engg. Works)

Raw Material: Rs.21/- Kg. per Kg.

Charging to firnance

Melting charge incl. burning loss5% &
Power cost → Rs. 4/-per kg

C.I.molten metal: Rs. 25/- Per Kg.

Total Cost for
Pig Iron + scrap Iron
Coke, additives/ minerals

Profit margin Rs.1/-per kg.

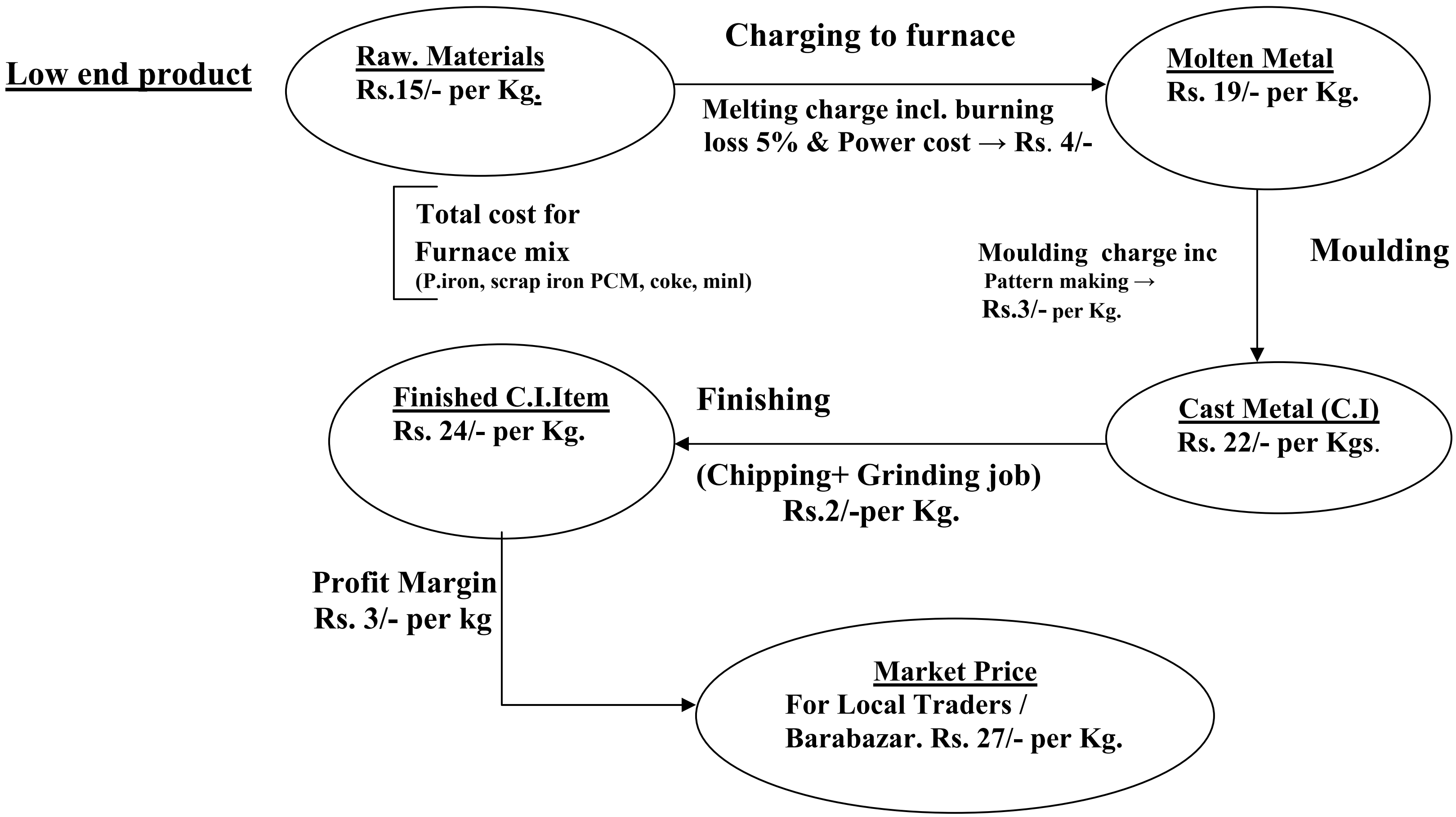
Selling price: Rs 26/- Per Kg. to Local Engg. Units.

6.2

Value Chain

Group: B

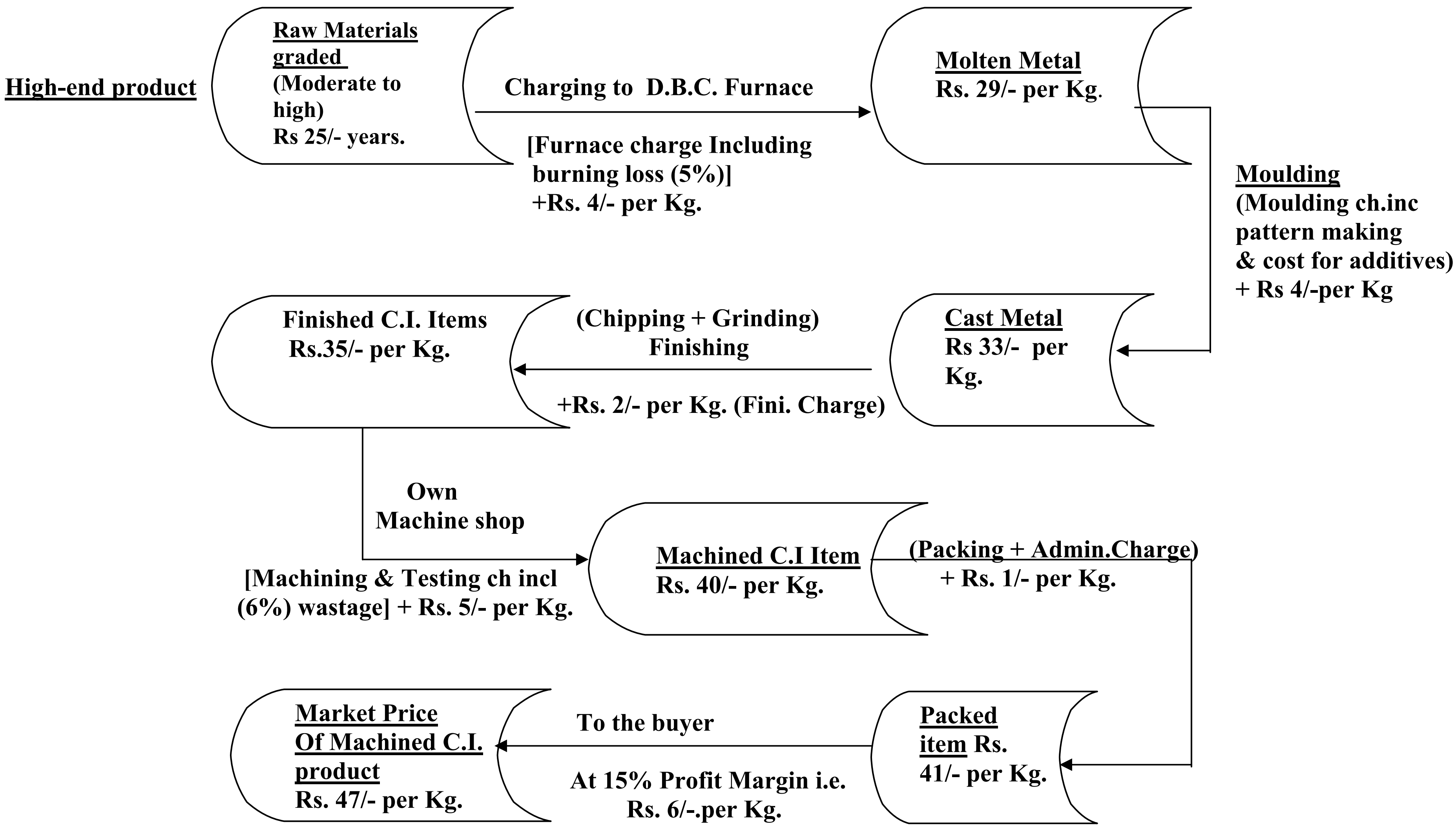
[Here the foundry owners undertake the whole process from raw material to end product stage.]



Value Chain

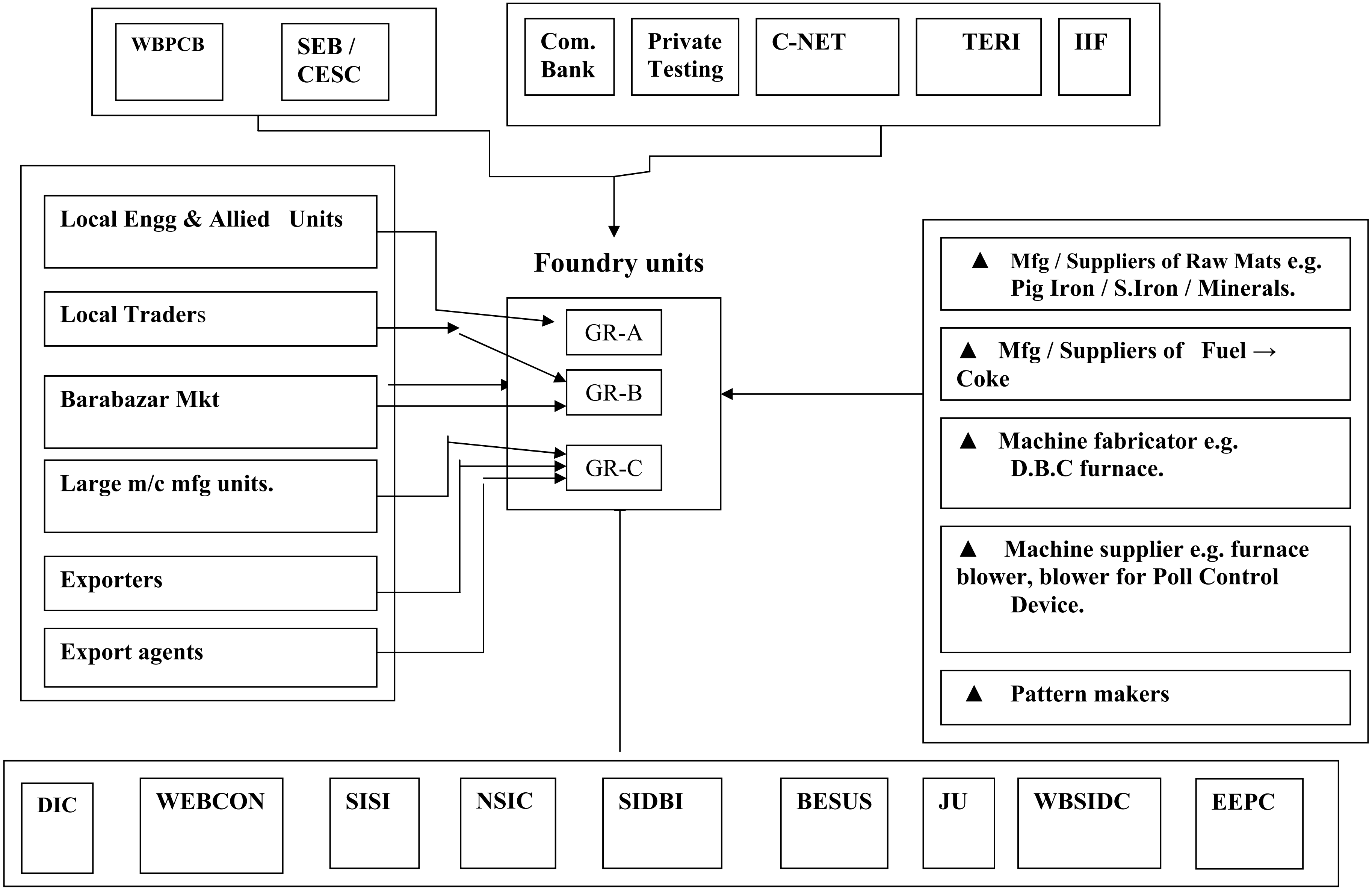
Group: C

[Here the foundry owners undertake the whole process from raw material to end product stage.]



7.

Present Cluster Map



8. SWOT ANALYSIS

A careful scrutiny of the various features of Metal casting (Foundry) cluster of Howrah has reveled the following :-

STRENGTH

Inputs availability

- **Raw materials are easily available** in **sufficient Quantity.**
- Availability of other inputs like minerals, sand, molasses, and mould is also there.

Skill

- **Workers are capable of offering amazing precision and quality of work** with traditional technology.
- Most of job is learnt while doing it.
- Vast pool of skilled laborers in Howrah District.

Market

- **Strong presence in the domestic market** with 20% share of the total casting produced in India.
- Ancillary arrangement with large industries both Privately and Public.
- Past Reputation of Howrah for the craft man ship in metal casting.

Knowledge base

- **Research and academic activities carried out by various institutes have generated.**
- **A good amount of knowledge base to support the future challenges.**

WEAKNESS

Inputs availability

- **Irregular fluctuation** and **increase in the cost of raw materials.**
- **Inadequate Quality consciousness on raw materials** among small firms.
- Shortage of capital for small firms.

Skill

- **No skill up gradation training for the workers.**
- Non-existence of any certificate / diploma Course in modern foundry operations
- **Lack of managerial skill**.

Market

- **Loosing ground in the national as well as international market**.
- **Bad marketing strategy.**
- **Reluctance in competitive participation** in global market.

Technology

- **Traditional method of production.**
- Low level of technological development.
- Lack of consciousness on Quality and productivity enhancing.

Infrastructure

- **High power cost.**
- **Lack of adequate infrastructural development.**

Mind set

- **Absence of mindset to adapt the charging circumstances.**

Knowledge base

- **Poor knowledge base on occupational health hazards.**

OPPORTUNITIES

Market

- **Recent upsurge in the automobile market** foresees a remarkable increase in casting consumption in this sector during the years to come.
- **Globalization came usher tremendous market potential** for the competitive firms (entire globe is the market – global village).

Technology

- As a result of recent **recent trend in interdisciplinary research in the Engg**. Institutes and an urge for **industry - institute interaction programme** accompanied by recent development in I.T. sector in the state, enough opportunities have emerged before the **metal casting cluster to flourish with** the **state – of - the art technology.**

Export

- **There is an increasing trend by the foreign consumers** to import quality casting products due to closure of foundry unites in those countries.

Foreign investment

- Renewal in investment possibility by the NRIs in various sectors in recent times has enhanced the prospect of steady growth of the metal casting cluster.

THREATS

Market

- **Competition in going to increase** in the changed scenario of global market.
- Other Asian competitors in particular china are emerging as potential supplier in global market due to better infrastructural facilities, legitimate control of the state and existence of well conceived action plan in the concurrence of any condition of uncertainties.

Pollution Control

- **Re-location of the cluster** to the proposed new "Foundry Park with Allied and Engg: industry" at Domjur to be completed writhin a time frame to avoid notice of closure from WBPCB.

Government Policy
Or
Excise Duty

- The **majority of benefits derived from the Excise duty Policy of the Central government is enjoyed by Big Industries** posing an uneven competition before small and medium foundry units who are compelled to either loose market or compromise on price or quality.

9 VISION

Develop capability of the cluster to perform as leader – actor in the domestic as well as global market adopting a realistic and flexible action plan with rpeial thrust on technology up gradation marketing, net-working, improvement in infrastructural including C.F.C and modernization – thus making a socially sustainable / environment sustainable development model of metal casting cluster at Howrah.

10. STRATEGY

The cluster holds excellent potential for further growth with the improvement in infrastructure , technological up gradation, modernization, establishment of common facilities centre.

Important areas for the strategic interventions are given below :

- **Networking among cluster actors**.
- **Technology upgdradation.**
- **Developing BDS.**
- **Market growth through value addition, diversification and export inkages.**

In short the strategy will be to develop and standardize the appropriate technology for manufacturing the value added critical components, sought in the national and international market, from scratch to the state of shipment and subsequent implantation of the same in the local units with the framework of their usual practice.

11. OBJECTIVE

The broad objective of the programme is to arrest the impeding factors responsible for sluggish growth of industries in the cluster, assess the need of infrastructural improvement, support service, technological up-gradation and to suggest measures for improvement of the industrial cluster for acceleration of growth of such industries. Some of the specific objectives are as follows:

(I.)To implement the cluster concepts. For example:

- Developing a common vision for the cluster.
- Promoting mutual trust among the cluster partners.
- Fostering linkages between various agencies relevant for the cluster development.
- Formulating a detailed action plan indicating activities and interventions required along with timeframe.
- Facilitating implementation of the interventions actively involving the cluster players.
- Assuming the role of Cluster Development Executive for a period of 3 years.
- Sensitizing cluster partners on issues concerning best management practices, technology and skill up gdradion, quality assurance, market development etc. through awareness and demonstration programmers, exposure visits.
- Assist in networking between the raw material suppliers, manufacturers and technology providers.
- Coordinating with monitoring and evaluating agency designated on a continuous basis.

(II) Trust Building

Interactive meets / workshops will be organized to understand the felt needs of the cluster and trust building is expected among the implementing agency, stakeholders and supporting institutions. Trust building envisages the improvement of relationship and it is a key measure to reinvigorate the cluster economy.

(III) Capacity Building:

To help the key cluster players to carry out the activities on continuous basis even after project duration, thereby making the key cluster actors continue the vision of the cluster. Capacity building will be through sensitization of participants, frequent interactions with the cluster actors, exposure visit in trade fairs, workshops ect.

(IV)Technology Up- gradation

Better and cost effective technologies will be identified and demonstrated to ensure product quality and enhance the image of the end- products.

(V) Market Development

Entrepreneurs will be assisted in developing market linkages with Large Mechanical & Engg. Enterprises explore new channels through participation in fairs, vendor development programme ect.

(VI) Financial Assistance:

Assistance will be offered to the intending producers in the cluster in accessing financial assistance from commercial banks. Small Industries Development Bank of India (SIDBI) and National Small Industries Corporation.

(VII) Establishment of Common Facility Centre:

CFC as per need will be established to render the services needed for business development, skill & managerial power development, R&D and testing facilities, vendor development, etc.