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GOVERNMENT OF INDIA
MINISTRY OF SMALL SCALE INDUSTRY

CLUSTER DEVELOPMENT PROGRAMME

DIAGNOSTIC STUDY REPORT

OF

RICE MILLING INDUSTRY

AT

KARNAL (HARYANA)



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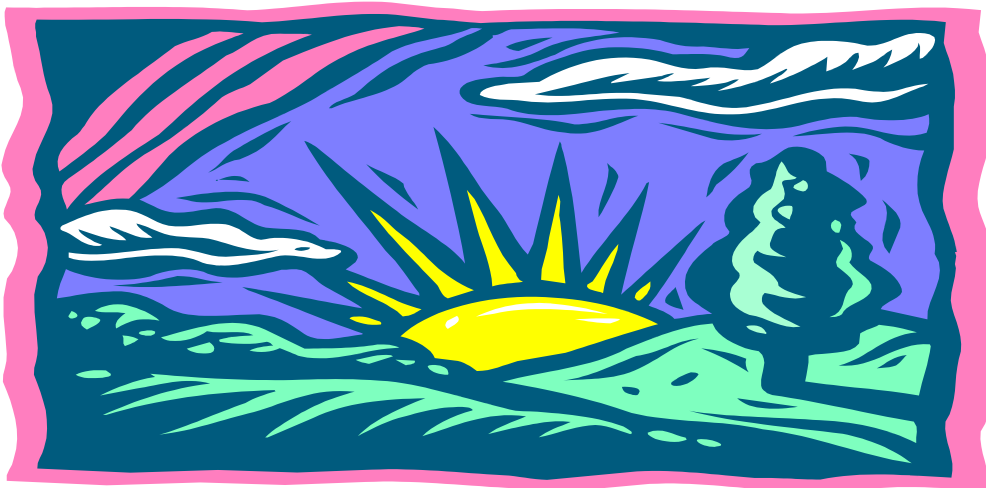
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**DIAGNOSTIC
STUDY REPORT ON
RICE MILLING
INDUSTRY AT**



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Cluster Development Executive**

INDEX

S.NO.	CHAPTER NO.	SUB NO.	CONTENTS	PAGE NO.
			Executive Summary	
1.	1.0		Introduction	
2.	2.0		Methodology	
3.	3.0		Cluster Scenario	
4.		3.1.	Product Range	
5.		3.2	Geographical location-vs- status and trends <ul style="list-style-type: none"> □ Rice, Production, Yield and area. □ Rice Milling Industry □ Comprehensive Status in Karnal district 	
6.		3.3	Trade & Investment, Export and Issues of significance <ul style="list-style-type: none"> -Production & Investment -Regulatory Implications -Kharif Procurement Policy -Custom Milling Policy -Marketing & Exports 	
7.		3.4	Technology	
8		3.5	Bench marking clusters	
9.	4.0		Cluster Actors & their Role	
10.		4.1	Core Cluster actors, roles & effectiveness	
11.		4.2	Significant Policies & Issues	
12.		4.3	Present Cluster Map	
13.	5.0		Analysis of Business Operations (AOBO)	
14.		5.1	Kinds of firms & pattern	
15.		5.2	Backward & Forward Linkages & BDS Providers	
16.		5.3	Value chain Analysis	
17.		5.4	Problems Identified	
18.	6.0		SWOT ANALYSIS	
19.	7.0		Strategic Interventions	
20.	8.0		Vision & Objectives	
21.	9.0		Action Plan & Schedule	
22.	10.0		Future Cluster Map	

EXECUTIVE SUMMARY

Out of 21 clusters identified in Haryana, the cluster development has been initiated with RICE MILLING INDUSTRIES AT DISTRICT KARNAL (HARYANA).

The report is based on the data/informations obtained from Industries, Associations, Exporters, DIC, DFSC, FCI, D.O.Stat, D.O. Agr., APEDA, Min. of Food Processing, NPC & SIDBI etc. The food grain production of Haryana has stood second in country after Punjab in year 2000-01 with 6.76% and yield of 3088 kg/hectare over an area of 4.29 million hectares. The estimated paddy production in Haryana in year 2003-04 has been 43 lac MT including 28% Basmati variety. In Karnal district 5.69 lac MT paddy arrived in Mandis and estimated as 6.27 Lac MT in 2003-04 with increase of 10.1%. In District Karnal, the production of Basmati Rice has been 17000 MT with average yield of 1000 Kg/hectare in the year 2002 with decline in area under Basmati cultivation over a period of last 4 years. At world level total rice production is 381.05 Million Ton in 2002-03 with India's contribution of 20.2% & China leading the world by producing 31.96%. There are 950 Rice Milling units in Haryana & 855 are operational in 2003-04. District Karnal owns 221 Rice Mills including 8 large/medium units & 19 exporting units. 68 units are in Karnal and 63 units in Taraori with others in Assand, Biana, Gharanda, Gheer, Indri, Jundla, Kunjpura, Nilokheri, Nissing & Nigdu. 151 units have installed capacity of 1.0 MT/Hr & 35 have 2 MT/Hr. The capacity ranges from 0.5 MT/Hr to 32 MT/Hr. Karnal Tehsil has milling capacity of 101 MT/hr followed by Taraori with 86 MT/Hr & then Nissing & Nilokheri. During 2002-03, the rice production in district Karnal has been 6 Lac MT worth Rs. 1200 Cr. and Exports of 700 cr. The investment in Plant & Machinery has been Rs. 40 crore & employment to 10000 persons and 77% utilisation of installed capacity. The growth trend of Rice Milling industry in last 3 years has been on negative side with fall from 306 units in 2000-01 to 260 Nos. in 2001-02 and to 221 Nos. in 2002-03. The down word trend is in the non exporting units. Haryana has however topped the country with 75% exports of Basmati rice to the tune of about 1200 crores with share of Karnal district to be 58% in 2002-03.

The trade is affected by regulating controls of Govt. of India & State Govt. with announcement of minimum support price (by G.O.I) for Khariff crops including paddy against Kharif procurement policy every year. Under which the minimum support price for the paddy is ensured to the farmers while auction. In case of price falling down, the 6 Govt. designated agencies come forward & take up bulk purchases and help maintaining MSP besides the rice millers in the State are bound to deliver 75% of the rice produced out of leviable Paddy to the central pool at the price & specifications determined in the policy. Under the states custom milling policy the State procuring agencies get the paddy milled from rice milling units at the determined price, specification & terms and deposit to the central pool. The exports is made to USA, UK, European Union, Saudi Arabia, Kuwait, UAE, Phillipines, Malaysia, Bangladesh & Indonesia. With non Basmati rice exported to Phillipines, Malaysia, Saudi Arab, Bangladesh & Indonesia. The

Brown Basmati rice is exported to UK & European Union who further process it as per customized needs. In world market India's stood second in year 2002 with 6.6 million tons rice exports after 7.2 million tons by Thailand out of total exports of 27.9 million tones, The trend in Non Basmati rice exports has been

encouraging in last 3 years with % increase of 6 times in year 2002-03. In Basmati rice exports the trend is lowering in last 3 years with reduction by 3.5% in year 2002-03 with respect to year 2000-01. Most of the rice milling units have installed local fabricated unstandardised milling plants leading to low productivity, high broken & unshelled paddy %age & other rejections. Very few units including large & medium have installed semi/fully automatic plants leading to good quality, productivity and low rejections. Most of the SSI rice millers are not aware of & not following standardization, quality assurance, management systems and also are not aware of right processing techniques including parboiling drying, storage techniques, polishing methods, Bran stabilisation, energy conservation & Pollution control. Effective marketing & exports procedure leading to low quality, productivity, high cost of production. Haryana & Punjab are considered to be the bench marking clusters in the country but lacking in advanced & modernized technology & effective quality assurance and management systems. In International market, Thailand, USA & UK have been termed as the best clusters with advanced technology, quality assurance system and management systems. The cluster actors include industries, associations, supporting institutions & BDS providers. The associations in District Karnal mainly exist as Rice Millers associations at Karnal, Taraori, Gharanda, Nissing, Indri, Rice Exporters Associations & local chapters of Haryana Rice Millers Associations. The supporting institutions include APEDA, Min. of Food Processing, DFSC, FCI & Procuring agencies certification agencies, SIDBI, Banks, State Inds. Deptt, SISI, Govt. of India, PPRC, ICAR, CRRI, Agricultural Universities, NPC, IIP, DGFT, ECGC, EIC etc. These institutions provide financial grant- in-aid and other developmental assistance. The developmental institutions are rarely approached by the industries.

The areas where interventions are required are listed below:

- 1) Product, raw material & Technology,
- 2) Marketing
- 3) Entrepreneurship & Management
- 4) Human Resource & Training
- 5) Finance
- 6) Infrastructural facilities
- 7) Govt. Policy

CHAPTER – 1

1.0 INTRODUCTION:

The Govt. of India has been emphasizing planned development of small scale industries in the country. Various policies, planning & programmes are made from time to time to promote this sector which contributes significantly in economic development, employment generation & up-liftment of the society. There are more than 34 lakhs SSI units in the country producing 8000 items and contributing nearly 34% to the National Exports. This sector provides employment to 35 lakh people and has been assigned the target of annual growth of 12% and creation of 4.4 million additional jobs during 10th Five Year Plan.

The Small Industries Development Organisation (SIDO) of Ministry of SSI, Govt. of India is the key agency responsible for planning, coordinating & monitoring the development of this sector in the country. Various schemes & policies are announced by Govt. of India which effectively promote this sector by providing direct & indirect assistance.

In order to further develop this sector in a planned & effective manner, the SIDO, Govt. of India has come up with an innovative project of CLUSTER DEVELOPMENT PROGRAMME. This is a time bound project and aims to systematically develop & upgrade cluster group of Industries as a whole with the involvement of Govt., supporting institutions & the industry. Out of 358 clusters identified in the country, the cluster development programme has been initially taken up for at least one cluster group from every state. In Haryana, out of 21 clusters identified for development, the start has been given with taking up of RICE MILLING INDUSTRY CLUSTER AT KARNAL.

Under the programme, the in depth study of this cluster industry has been taken up and necessary developmental interventions have been identified in consultation with the industry, associations & other cluster actors. These interventions will be implemented in a phased manner in the identified net works / groups of desiring units to achieve the improved/tangible results to upgrade the industry in the state.

CHAPTER-2

2.0 METHODOLOGY:

The report is based on the information & data gathered from various industries, associations, institutions, periodicals & literature on the subject matter. For this, various meetings, interactions & interviews were held with the concerned identified cluster actors. For gathering information from the industries & associations, a proforma was devised and necessary information was obtained through personal visits & interaction. The informations & data from Institutions & other cluster actors was based on the specific requirement of this report. Since this was a time bound assignment, the emphasis was made on personal visits & interactions.

The information/data was mainly gathered from following sources/agencies.

- i) Rice Milling Industries of District Karnal.
- ii) Various Rice Milling Industries associations & Exporters Association.
- iii) Department Of Industries, Govt. of Haryana.
- iv) District Food & Supplies Controller, Govt. of Haryana.
- v) Food Corporation of India
- vi) Department Of Statistics, govt. of Haryana.
- vii) Department Of Agriculture, Govt. of Haryana.
- viii) APEDA (Agriculture & Processed Food Products Export Development Agency), Govt. of India, New Delhi.
- ix) Ministry of Food Processing, Govt. of India, New Delhi.
- x) National Productivity Council
- xi) Small Industries Development Bank of India

Further the information / data from other R&D Institutions, BDS providers, developmental agencies/ institutions and linked Organisations has also been planned.

The effective sampling was made in view of the kind of similar industry groups and accordingly the visits & interviews were held & information / data gathered to have the views of each level of industry.

On receipt of information / data , the same was segregated, grouped & analysed and diagnostic study report has been prepared.

CHAPTER-3

3.0 CLUSTER SCENERIO:

Rice milling is one of the major industries in District Karnal as well as Haryana. District Karnal & adjoining areas are called the Rice Bowl of the country especially due to production of long grain aromatic world popular Basmati Rice.

The scenario & status of the cluster industries of district has been highlighted in terms of its product range, growth / trends, trade, investment, technology and other significant issues which project the clear cut scenario of the cluster.

3.1 PRODUCT RANGE:

Rice is a Kharif crop and in District Karnal , the Paddy / Rice of following varieties is grown/ processed.

- I) In wide term the rice is categorised into two kinds
 - i) Basmati Rice
 - ii) Non-Basmati Rice.
- II) From manufacturing / pricing angle, it is categorized as below:
 - i) Raw Rice (Processed as raw i.e. without giving boiling / heating treatment to Paddy)
 - ii) Parboiled Rice (Processed after giving boiling / water heating treatment to the Paddy).
- III) The raw or parboiled technique of processing may be applied to both Basmati & Non-basmati Rice.
- IV) These are also categorized as Grade A (Basmati Rice & superfine quality) & Common rice (Non Basmati Rice Grade B) by the purchasing agencies & both of these kinds can either be Raw or Parboiled.
- V) From marketing & sowing purpose , the varieties are described as below:

Varieties Grown:

BASMATI GROUP	NON-BASMATI GROUP
HBC – 19 (Taraori basmati)	Govinda
CSR – 30	HKR – 120
Haryana Basmati 1 (HKQ-228/IET-10367)	HKR-126 Sharbati
Pusa Basmati –1 (IET 10364)	PR-116
Pusa Sugandha –2	PR – 111
Pusa Sugandha –3	PR – 114
	PR – 113
Basmati 386 & 370	PR 9 & 8
	IR-8 Java
	Pusa –44

Basmati group varieties are called superfine varieties whereas the Non basmati Group PR Varieties are medium fine & other are thick Rice Varieties.

The Basmati Varieties have been standardized & notified vide Seed Act of India 1966. The list of notified Basmati varieties that are exported from Haryana are: Basmati 370 Taraori Basmati (HBC –19), Pusa Basmati –1 Haryana Basmati –1 & Pusa Sungandha 2 & 3.

3.2 Geographic locations Vs Status & Trends:

I. Rice : Production, Yield, area:

The country's total food grain production in the year 2000-01 has been 195.92 million tones grown from the area of 119.78 Million Hectare. The average yield per hectare has been 1636 kg/hectare. Haryana's share in the total food grain production in the year 2000-01 was 6.76% with yield per hectare of 3088 kg and production of 13.25 million tones over an area of 4.29 million hectares. The food grain yield of Haryana has stood second in the country after Punjab.

The paddy production in Haryana has been estimated to be 43 lac MT in the year 2003-04 which includes 28% Basmati variety. Out of total Paddy about 82% arrives in various Mandis for procurement by various agencies / industries. In Karnal District 5.69 lac MT paddy arrived in various Mandis for purchase in 2002-03 where as in the year 2003-04, the same has been estimated to be 6.27 lac M.T. with increase of 10.1% with respect to last year. This figures in 2001-02 was 6.13 M.Tons.

The status of rice production in the State of Haryana has also been remarkable with the production of 2.68 Million Tones in the year 2000-01 over an area of 10.5 Million hectare contributing to 3.16% of total production in the country. The yield of rice has been 2559 kg/hectare in this period. The State wise Rice yield, area & production data is highlighted vide Annexure I to this report.

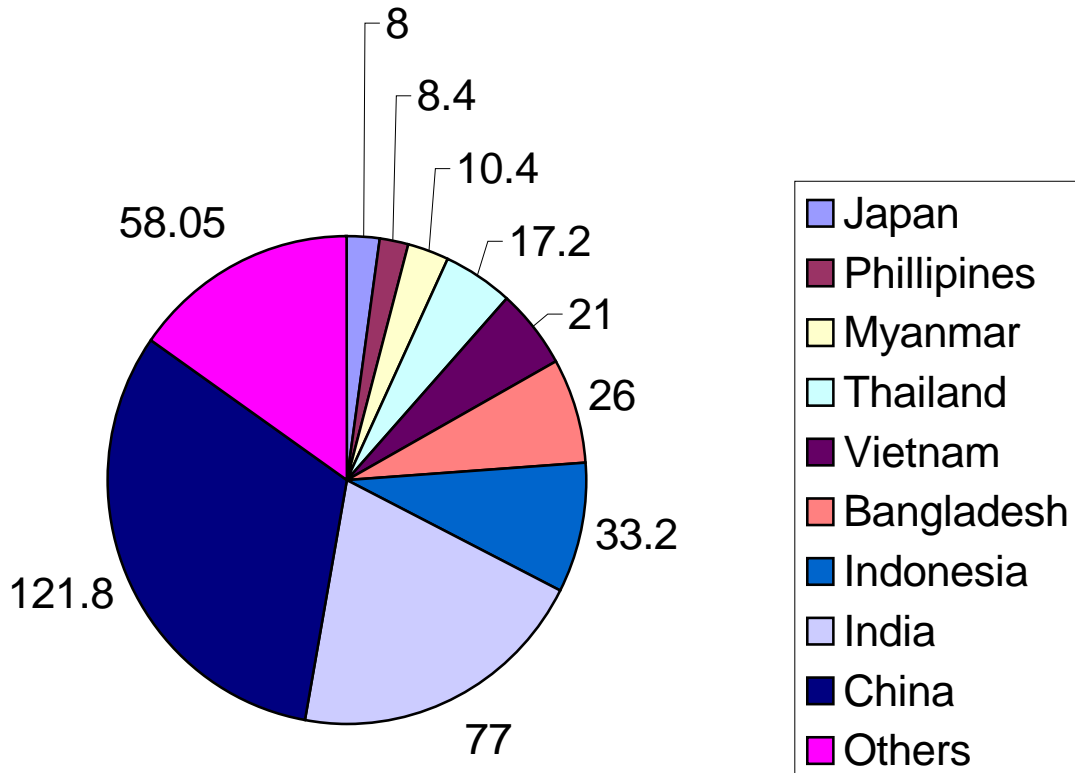
Basmati is a leading aromatic fine quality rice & is traditionally grown in the North & North Western parts of the country. It is a long grained rice with a fine texture and has been favoured by emperors & praised by poets for hundreds of years.

The production of Basmati Rice is substantial in Haryana & especially in District Karnal. It has been 17000 MT with avg yield of 1000 kg/hectare in the year 2002, with total paddy sown area of 159000 Hectare & 17000 Hectare especially for Basmati Rice. There has been a substantial decline in area under Basmati cultivation over a period of last 4 years due to the farmers diverting in other crops. The data on yield , area & production is highlighted vide Annexure II.

At world level the total Rice production is 381.05 Million tons in the year 2002-03 with India contribution by 20.2% to the tune of 77 Million Tonnes & China leading the world by producing 121.8 Million tones to the tune of 31.96%.

TOTAL RICE PRODUCTION-381.05 MILLION TONNES

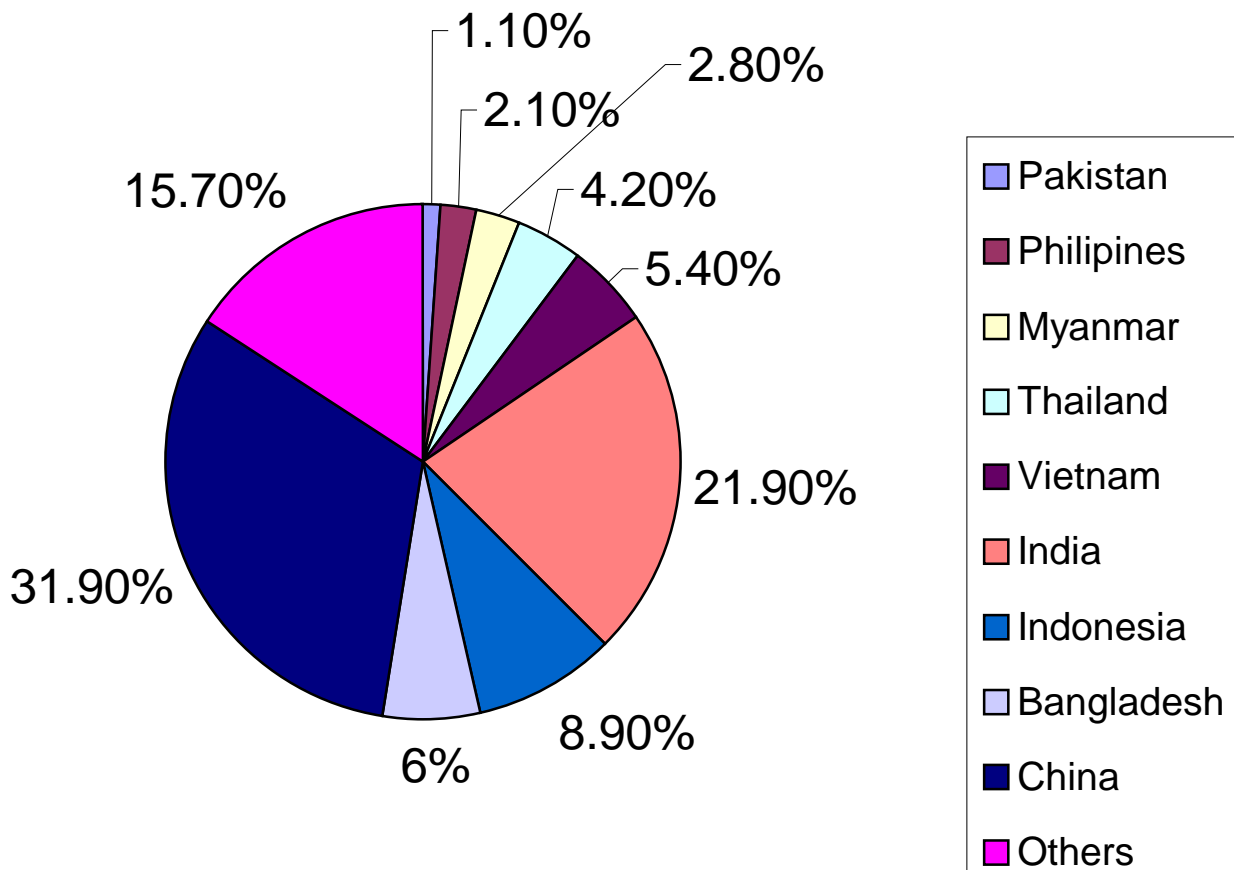
WORLD RICE PRODUCTION 2002-03



Courtesy: USDA

In paddy production, India also stands second in Asia after China with contribution of 21.9 % production as below

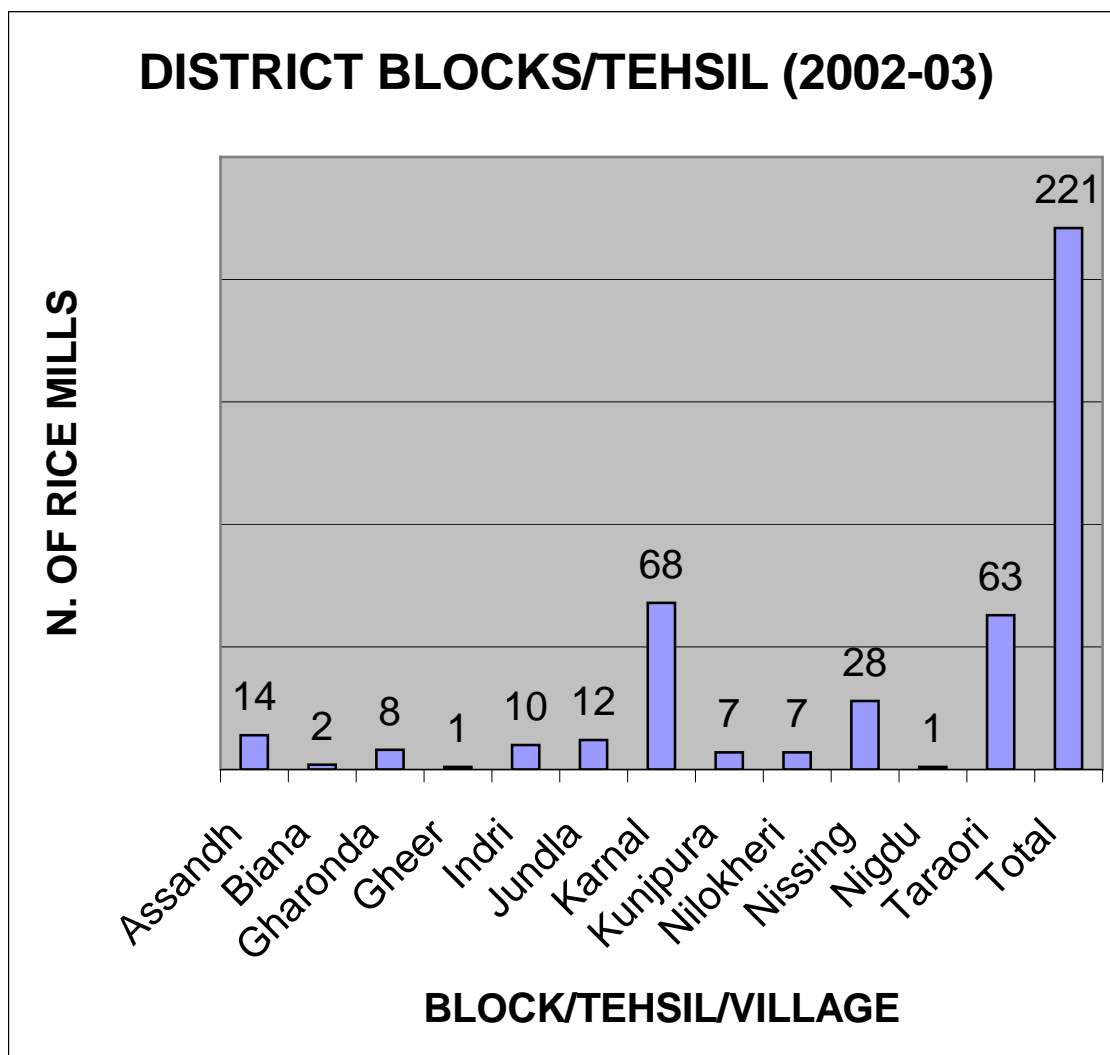
PADDY PRODUCTION IN ASIA 2001-02



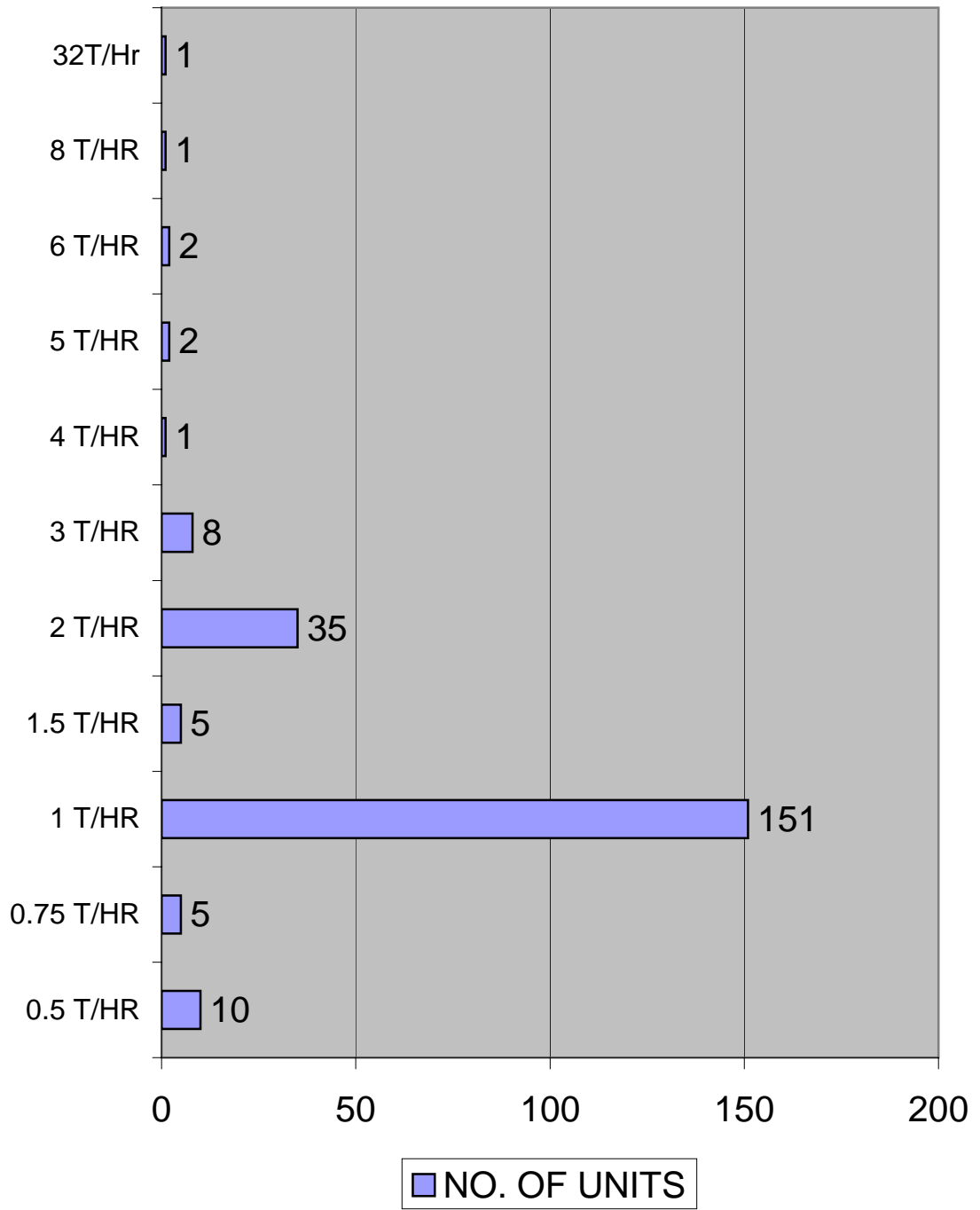
II. Rice Milling Industries:

There are 950 Rice Milling units in the state of Haryana & 855 are to be operational in the year 2003-04. Majority of these are in small scale sector and about 4% of them are in Medium scale sector and are mainly catering to the Exports Market. The units are mainly located in District Karnal, Kurukshetra, Ambala, Panipat Sonapat, Jind, Kaithal & Yamunanagar.

District Karnal presently owns 221 nos. of Rice Milling Industries. These are both in SSI & Medium sector. These include 8 units in Medium scale sector. The processing / Milling capacity of these units ranges from 0.5 Metric ton per hour to 3 Metric Ton/hour and for big units the same is 4 MT/hr, 5 MT/hr, 6MT/hr, 8MT/hr & above . These units are located in various blocks/villages of District Karnal as below:



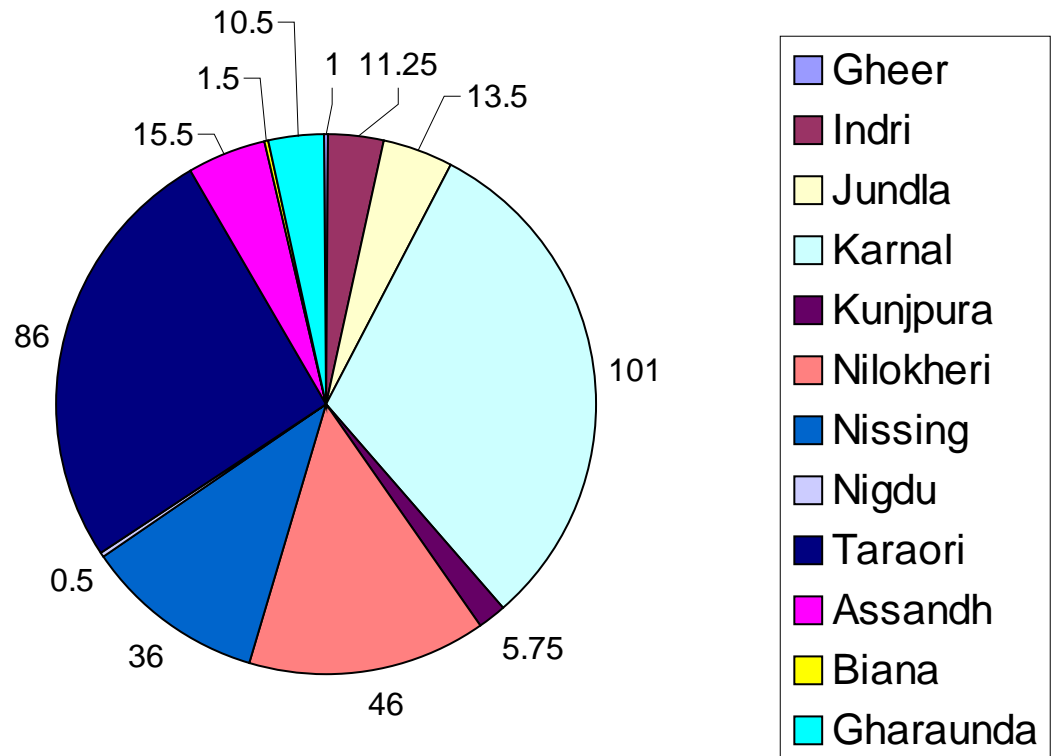
CAPACITY WISE RICE MILLING UNITS (2002-03) DISTT. KARNAL



Source: District Food & Supplies Controller.

**BLOCK/ TEHSIL WISE RICE MILLING
CAPACITY (2002 -03) DISTRICT KARNAL**

Total Cap.328 M.Tons/Hr.



Source: District Food & Supplies Controller

Comprehensive Status of the Industry in District Karnal

Table I

SL. NO	YEAR	NO. OF UNITS WORKING		PRODUCTION		INSTALLED CAP. (M.T.) ON SINGLE SHIFT BASIS	EMPLOYMENT NOS.	EXPORTS (Direct & Indirect) (RS.)	INVESTMENT IN MACHINERY
		Non-Exporting	Exporting	Metric tones	Value (Rs.)				
1	2000-01	287	19	7.3 lac M.T.	1415 cr.	9.46 Lac M.T.	14000	-	49 Cr.
2.	2001-02	241	19	6.6 Lac M.T.	1300 Cr.	8.5 Lac M. Ton	12000	-	44 Cr.
3.	2002-03	202	19	6 Lac M.T.	1200 Cr.	7.76 M.Ton	10000 Nos.	700 Cr.	40 Cr.

Source: Industries & Associations.

Most of the units in District have the production capacity of 1 Ton / Hr. followed by 2T/Hr. capacity 68.3% units in SSI sector have 1 Ton/hr rice processing Capacity, whereas those having 2 Ton/hr. capacity are 15.83% and are in SSI sector. The exporters have mainly their installed capacity in the range of 2T/hr & above up to 8 Ton / hr.

Growth trend of the Rice milling industry in the last three years has been on the negative side. With 306 units in the year 2000-01 in the district their number declined to 260 in year 2001-02 registering down fall of 15.3%. This figure further declined to 221 Nos. in the year 2002-03 with another fall of 15% with respect to the figure of year 2001-02. Accordingly the Rice production in terms of Qty. & Value have also fallen substantially as indicated in the above table.

The down ward trend has been noticed mainly in the non-exporting units where as the exporting units have almost remained same in this period. The reason of downward trend of these units is increased cost of production by about 20-25% then the exporters due to various benefits provided by Govt. agencies to the exporters. These benefits include reduced rate of interest, subsidized Rice supply by Govt. agencies to the exporters and exemption from VAT and duty draw back etc. Many of the units have either closed down or have shifted to the neighbouring states. I.e. Punjab & U.P. where VAT & local/Mandi levies / taxes are either exempted or are extremely low.

3.3 **TRADE & INVESTMENT:**

I. Production & Investment:

The Rice production & Investment data in respect of the units in district Karnal has been highlighted & analysed vide Table 1. The Rice production in the year 2002-03 in the district has been of Rs. 1200 crore with export of Rs. 700 crores. With the decrease in no. of units in the last three years, this figure has also gone down substantially. Similar is the case with the investment in plant & machinery. In the year 2000-01 the same was Rs. 49 crore which declined to Rs.40 cr. In the year 2002-03 by 18.3%.

II. Regulatory Implications:

The paddy purchase / sale & its processing is greatly affected and regulated by Govt. of India to protect the interests of farmers on one hand & maintain the food / rice stock level in the Central Pool on the other hand. To affect this regulations Govt. of India announces a minimum support price for purchase of Kharif crops i.e. Paddy, Bajra, Maize & Jawar for farmers to safeguard their interest to get them a minimum price of their crops, against exploitation by intermediaries. To control this mechanism a State Level KHARIF PROCUREMENT POLICY is made by Govt. of Haryana. The brief of this policy for year 2003-04 is highlighted as below in respect of Paddy crop.

The farmers bring their produce in various Mandis which is sold against open auction as per the procedure. In case of auction price falling down from the minimum support price the designated six Govt. procurement agencies come forward & buy the huge stock of Paddy at MSP & Maintain the Minimum Support Price in the market as announced by Govt. of India every year.

MAIN FEATURES OF KHARIF PROCESSING POLICY 2003-04

a) Formation of District Level Committee as below:

Dy. Commissioner - Chairman
District Managers of Procuring agencies – Members.
District Food & Supplies controller – Vice Chairman / Member Secretary

This Committee monitors , regulates & looks after the timely procurement of paddy at MSP by State Procuring Agencies, its Milling and feeding to the Central pool as per policy.

b) Commencement of Season:

w.e.f. 1st October, 2003

c) Minimum Support Price:

Paddy

Common - Rs. 550/- per Qntl.

Grade A - Rs. 580/- per Qntl.

Basmati variety is not covered under MSP buying.

d) Milling & Delivery of Rice & Levy Obligation:

- i) The Rice Millers buying leviable paddy from market have to deliver 75% of rice manufactured from such paddy as per specification to be disbursed to control Pool by 28th Feb., 2004.
- ii) The entire leviable paddy whether purchased by the procuring agencies or by the Millers directly have to supply to Central pool by above date as per specifications.
- iii) In case of paddy procured by Govt. purchasing agencies, they get that paddy milled from the Rice Milling units at the price & terms fixed by Govt. This rice is called Custom Milled Rice (CMR). On receipt this rice it is sent to Central Pool by agencies.

e) THE SPECIFICATGION OF PADDY & RICE ARE AS BELOW:

The specification of rice have been notified under Haryana Rice Procurement (Levy) Control Order.

SPECIFICATIONS OF PADDY

Specifications of Grade-A and Common paddy during the current season would be as under:

	Foreign matter		Damaged, discolored, Sprouted & weevil led grains	Immature, shrunken, shriveled grains	Admixture of lower classes	Moisture
	Inorganic	Organic				
Max. Limits (%)	1.0	1.0	3.0	3.0	10.0	17.0

Within the overall limit of 1.0% for organic matter, poisonous seeds shall not exceed 0.5% of which Dhatura and Akra seeds (Vicia species) not to exceed 0.025% and 0.2% respectively.

(f) **SPECIFICATIONS OF RICE (RECEIVED AFTER MILLING)**

Specifications of Grade-A and Common rice during the current season would be as under:

S. No.	Refractions	Maximum Limit (%)	
		Grade-A	Common
1.	Broken*		
	Raw	25.0	25.0
	Parboiled	16.0	16.0
2.	Foreign Matter **		
	Raw /Parboiled	0.5	0.5
3.	Damaged /slightly Damaged		
	Raw	2.0	2.0
	Parboiled	4.0	4.0
4.	Dis coloured grains		
	Raw	3.0	3.0
	Parboiled	5.0	5.0
5.	Chalky Grains		
	Raw	5.0	5.0
6.	Red Grains		
	Raw/ Parboiled	3.0	3.0
7.	Admixture of lower class		
	Raw/ Parboiled	10.0	-

8.	Dehusked grains Raw/ Parboiled	12.0	12.0
9.	Moisture content *** Raw/ Parboiled	14.0	14.0

- including 1% small brokens
- ** Not more than 0.25% by weight shall be mineral matter and not more than 0.10% by weight shall be impurities of animal origin.
- *** Rice (both raw and parboiled) can be procured with moisture content upto a maximum limit of 15% with value cut. There will be no value cut upto 14%. Between 14% to 15% moisture, value cut will be applicable at the rate of full value.

g) Levy Price / CMR Price:

The price of Levy rice & CMR fixed for KMS 2002-03 by Govt. of India are as under:

Variety	Levy Rice (Per Qntl.)	CMR (Per Qntl)
Grade A	Rs.1022.80- (with DR)	Rs. 1037.14 (with DR)
Common	Rs. 974.30 (with DR)	Rs. 986.23 (with DR)

The latest rates are as below:

	Raw Rice	Paraboild Rice
Grade A	Rs. 1053.00	Rs. 1038.00
Common	Rs. 1003.00	Rs. 988.90

h) CUSTOM MILLING POLICY:

1) FORMATION OF Custom Milling Committee:

This committee is chaired by District Dy. Commissioner & District Heads of procuring agencies as members & DFSC is Member Secretary. This committee meets atleast once in a week to regulate, monitor and control the allotment of paddy to millers for milling & reviewing the progress of custom Milling of paddy operations.

1) Paddy Allotment:

2500 MT paddy is allotted to Rice Millers having 1 MT cap. & additional 2500 MT is allocated for additional 1 MT capacity & maximum upto 5000 MT Paddy allocated on one miller.

11) Agreement:

Agreement with Rice Millers are made with various terms & conditions and Bank Guarantee/ security etc.

III) Time Schedule for Milling:

Entire paddy allocated to Rice Millers is liable to be milled well before 28-02-04 as below:

October & November, 2003	- 20%
December, 2003	- 27%
January, 2004	-27%
February, 2004	-26%

IV) The bag used for delivery of levy rice is made in 50 kg gunny bags with stitching specifications to maintain.

V) The other controlled areas include Packaging, Materials, CC Limit, Billing cum Payment agent Mandis & their allocations, procurement agencies, Labour, Transportation, Storage capacity, Control Room, Staff Deployment, Mode of procurement, Sampling & Cleaning, formation of Mandi Level Committees for determining current price of food grains, bags filling, farmers education, , Inspection of Mandis, Role of BCPA & maintenance of purchase B/C etc.

I) PROCURING AGENCIES:

The description of processing agencies for paddy is as below:

SL. NO.	NAME OF AGENCY	EXTENT OF PURCHASE %
I	Food & Supplies Department, Govt. of Haryana	20%
II	HAFED	33%
III	Food Corporation of India	20%
IV	Haryana Agro Industries Corporation	9%
V	Haryana Ware Housing Corporation	9%
VI	Confed	9%

III) Marketing & Exports:

- a) As detailed in previous sections the leviable rice is supplied by rice milling units to central pool /FCI to the tune of 75% of the rice produced by them as per Haryana Govt. act & rest 25% is supplied by them to the open market (Domestic/Export).

Against custom milled rice, the Govt. procuring agencies are purchasing paddy from open market and getting it milled from the rice shellers as per terms and conditions & agreement and the rice procured out of it is fed to the central pool mainly through FCI. In CMR milling contract the milling charges are given @ Rs. 13.20/- per Qtl. to the millers

and the following yield of rice is recovered from them as per the specification.

	Sl.No.	Kind of Rice	yield	Remarks
i)	Parboiled Rice	68%		Millers retain Rice husk, Rice bran & other impurities.
ii)	Raw Rice	67%	-do-	

b) The stocks of Rice received by FCI/Central pool are mainly further dealt/ marketed as under:

1) The FCI/ designated central pool agency store the CMR Rice & protect it from insecticides & deterioration. The minimum level of stocks are maintained by timely curative treatments and fortnightly inspections are also held.

ii) The central pool rice is further supplied as below:

- A) To difficult states i.e. Bihar, Orissa, West Bengal, Kerala, Maharashtra, Rajasthan & J&K etc.
- B) To public distribution system & supply against ration cards as per policy.
- C) To exporters at subsidized rates to further processed by them & supply in the exports market as per requirement:

- i) Raw Rice (Grade A) Rs. 660/- per Qtl
- ii) Parboiled Rice (Gd A) Rs.691.50 per qtl.

In Exports in World market, India stood second with export of 6.6 million Tones after Thailand with export of 7.2 million tones, of the total world rice exports of 27.9 million tones during year 2002.

The exports of rice especially Basmati varieties from the country is substantial. Haryana has lead all the States in the country in the current year (2002-03) with nearly 75% of exports of Basmati Rice to the tune of about 1200 crore followed by Punjab.

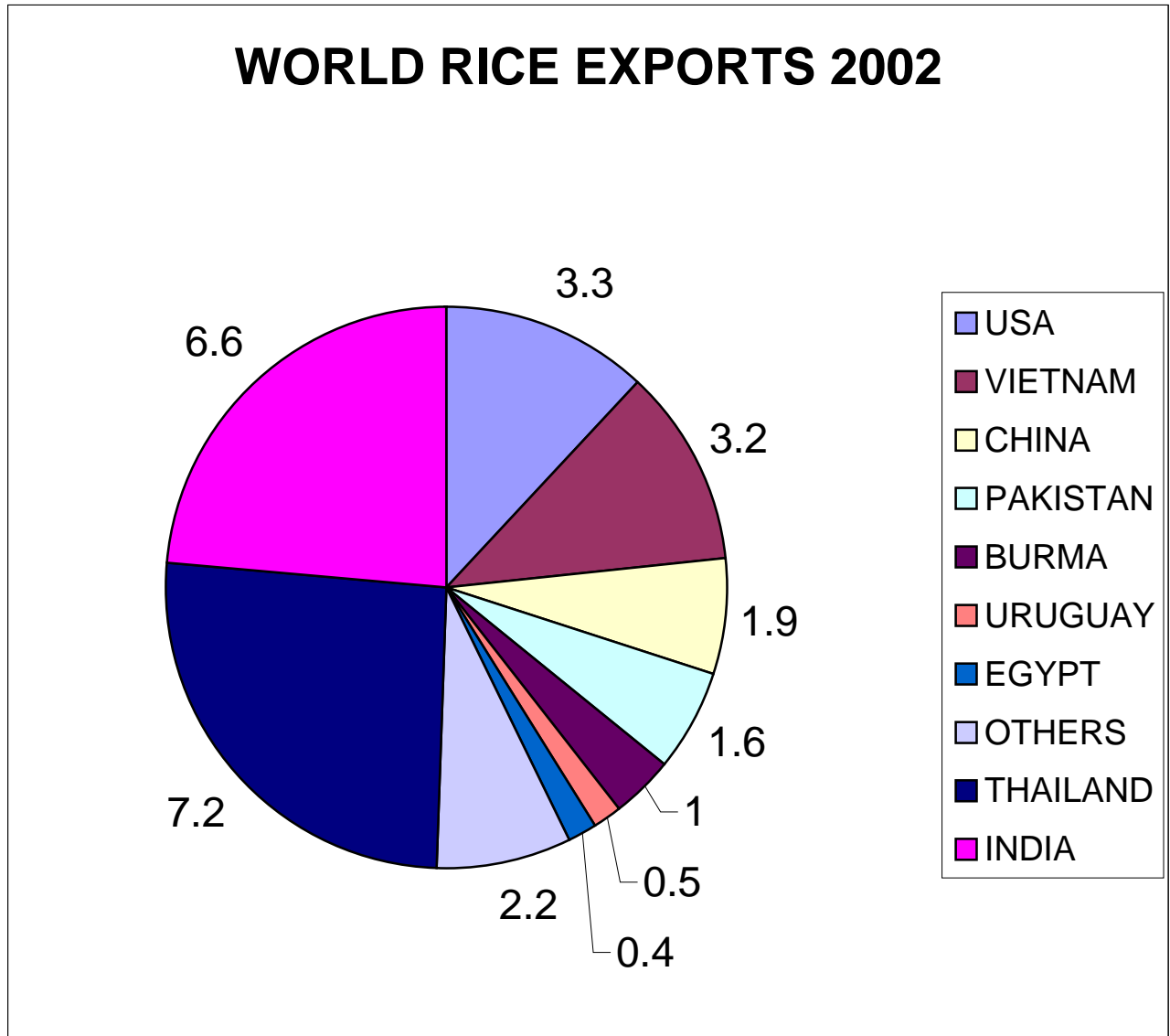
The Indian rice, including from district Karnal is exported mainly to USA, U.K. European Union, Saudi Arab, Kuwait, UAE, Philippines, Malaysia, Bangladesh & Indonesia. India Exports both Basmati & Non Basmati varieties of Rice Basmati varieties are mainly exported to USA, UK, Saudi Arabia, Kuwait & UAE. The Brown Basmati Rice (Milled Rice without polished & super finished) are however exported to UK & European Union countries which further process it as per their requirement.

The Non Basmati varieties are exported mainly to Philippines, Malaysia, Saudi Arabia, Bangladesh & Indonesia. The exports data of rice is given below:

India stands top in Basmati Rice in world market as far as price structure is concerned, USA & UK are the best clusters in the world for rice processing as far

as quality, productivity and modernisation is concerned. In Non Basmati rice the competitors are Thailand, Vietnam and Philippines.

Total: 27.9 Million Tonnes



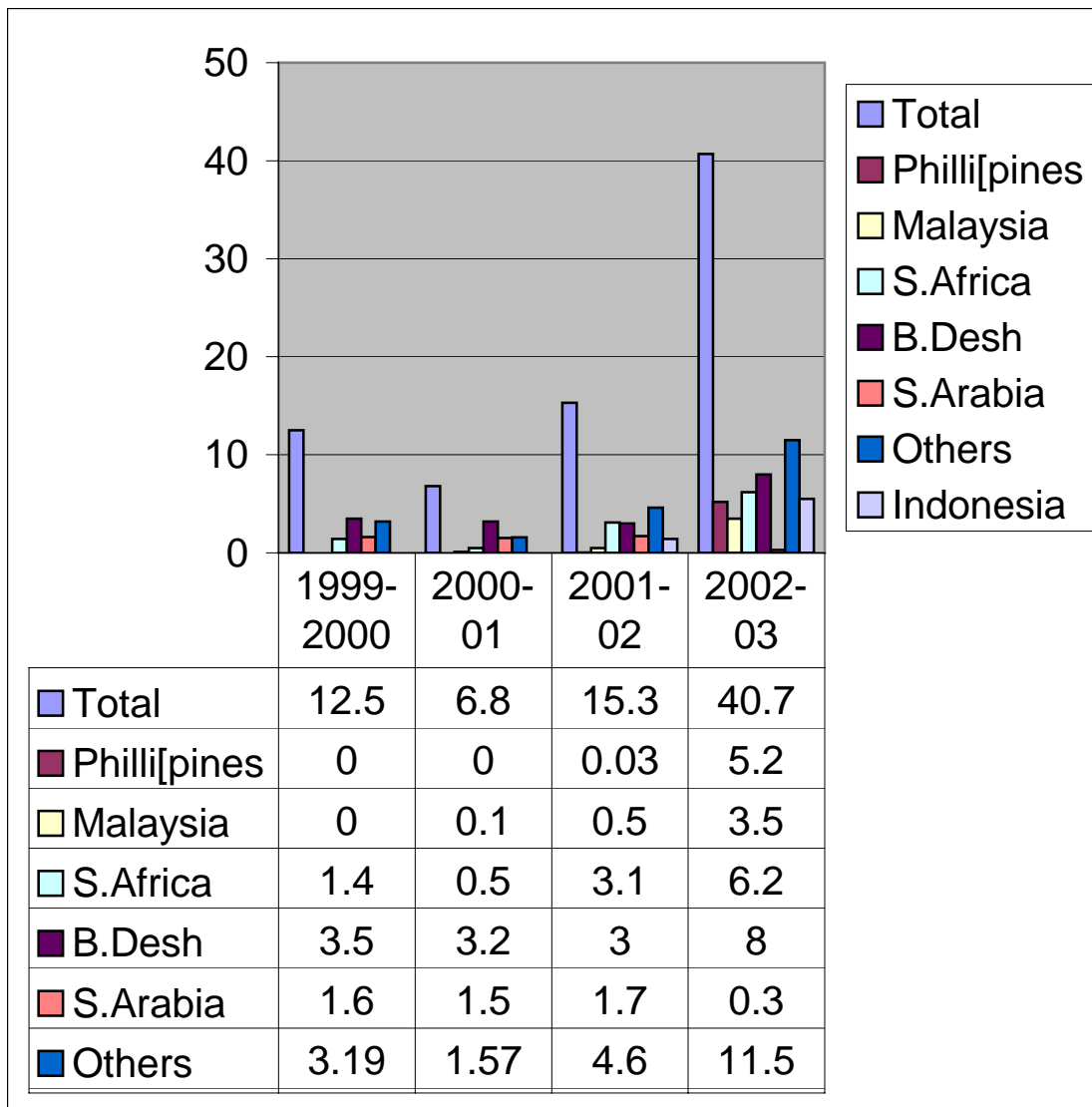
Courtesy USDA

The trend in Non Basmati Rice exports has been very encouraging in the last three years with %age increase of 6 times in year 2002-03 with respect to year 2000-01. In case of Basmati Rice Exports the trend is lowering in the last three years with reduction in Exports by 3.5% in the year 2002-03 in respect to year 2000-01.

India's Exports of Non Basmati Rice (1999-2000 to 2002-03)

(Qty. in Lakh Tonnes)

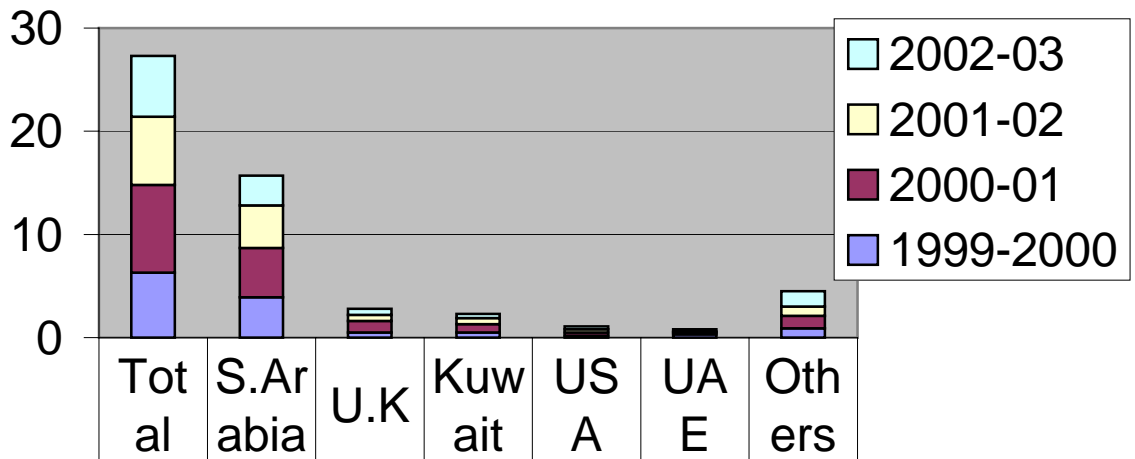
Courtesy DGCIS



**India's Exports of Basmati Rice
(1999-2000 to 2002-03)
(Qty. in lakh Tonnes)**

Courtesy: DGCIS

India's Exports of basmati Rice (1999-2000 to 2002-03)



2002-03	5.9	2.9	0.6	0.4	0.3	0.2	1.5
2001-02	6.6	4.1	0.6	0.6	0.3	0.1	0.9
2000-01	8.5	4.8	1.1	0.8	0.3	0.2	1.2
1999-2000	6.3	3.9	0.5	0.5	0.2	0.3	0.9

Non Basmati Rice exports is freely allowed by Govt. of India under OGL even without Inspection Certificates from Inspection Council, Govt. of India.

For Brown Basmati Rice Exports RCAS certificate is given by APEDA followed by authentication certificate by Export Inspection Council (Rice meant for Export to EU&UK). For white Basmati Rice RCAS certificate is not required. APEDA charges a fee of Rs. 60/- per tone of rice out of which it is Rs. 50/- for Basmati Development Fund & Rs. 10/- towards APEDA fee. The RCAS (Regn cum

Allocation Certificate) is valid for 3 months with extension of 40 days upto 6 months (3 times).

For scheduled products i.e. Rice, a cess tax is applicable @ 0.3% of total FOB value. The BDS fund generated by APEDA is used to promote the Export development of Rice trade & safeguard in National /International policies including patent issues. For exporting units APEDA-An authority of Min. of Commerce & Industry, Govt. of India, promotes and monitors the exports of agro products including the rice and provides various financial & grant in aid assistance to exporters.

In case of Non Exporting Rice milling units, Ministry of Food Processing, Govt. of India has laid down various promotional schemes including financial assistance scheme for their development. These include for infrastructure development / HACCP /ISO/QMS Certification and training etc..

3.4 Technology:

- a) In District Karnal the production capacity of Rice Milling plants varies from 0.5 Ton/ hr to 8 tons/hr. In SSI sector the plants are mainly up to 2 Tons/pr. hr. capacity. 68% of the units have the plant capacity of 1 Ton/hr whereas 16% are having plant capacity of 2 Ton/hr.

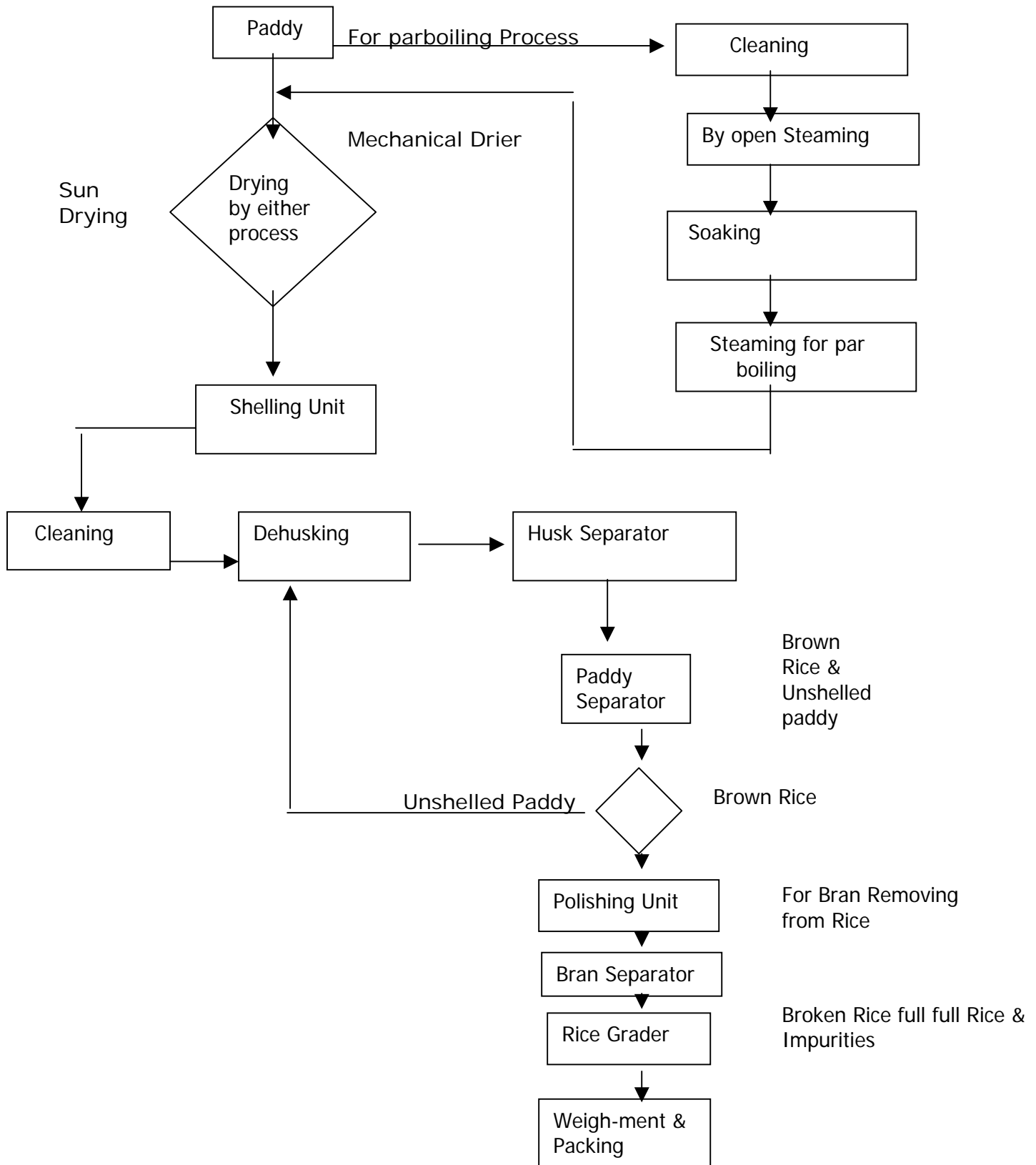
The technology of Rice Milling manufacturing differ in view of the following aspects/involvements.

- 1) Parboiling /Raw rice processing
- 2) Super Polishing /Refining for customized/Exports market
- 3) Automation /Semi automation

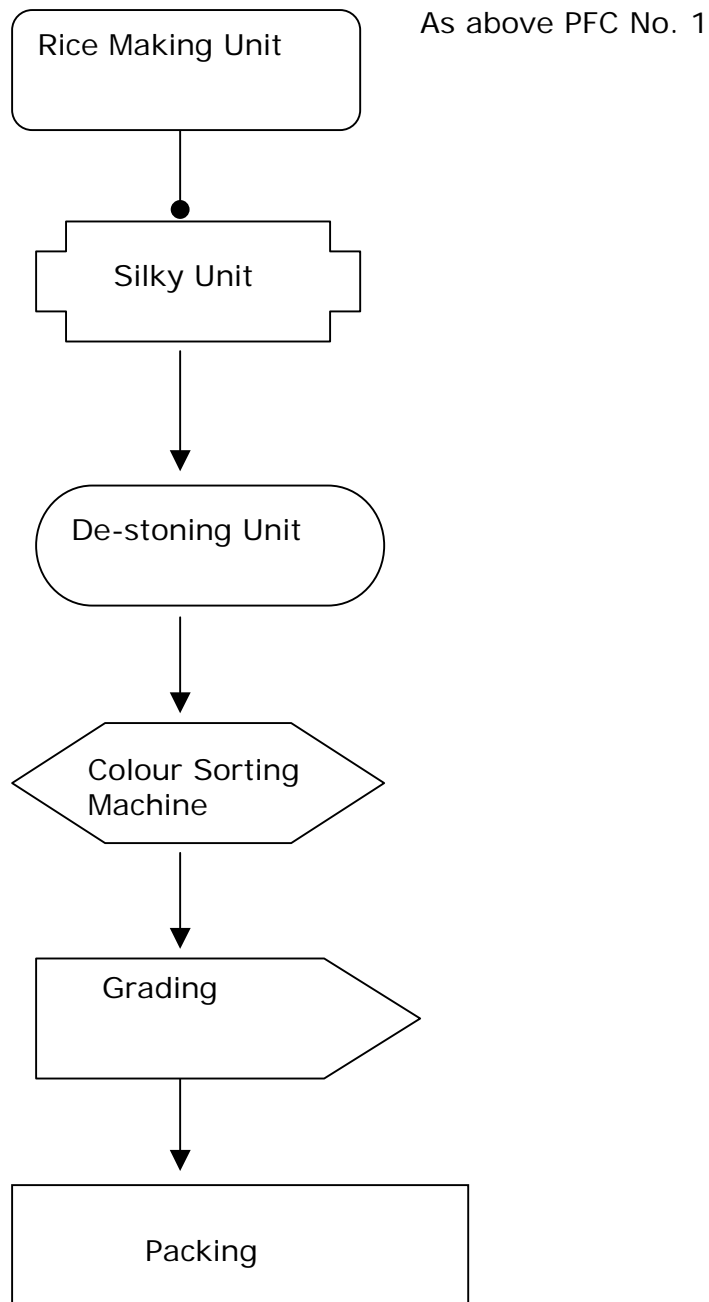
The technology process flow employed by the units in view of above aspects is highlighted below:

21. RAW RICE /PARBOILED RICE PROCESSING FLOW CHART

Raw Rice Processing:



II. PROCESS FLOW CHART FOR Super Polishing/ Refining for customized or Exports MARKET.



III. Automation /Semi Automation:

In the advanced plants supplied by manufacturers at Japan, German or other countries which are fully/ semi automatic are one line / chain processing plants. These are very costly plants and control each and every activity /process of the plant including Automatic cleaning, grading , Drying, Milling , separation, Bran separators, De-stoning, computerized sorting and packaging unit. The production capacity and efficiency of such plants is enormous and prove highly effective and produce quality product.

COST STRUCTURE

The price structure of various plants is as below:

- 1) 1 Ton /hr capacity plant –Indigenous - Rs. 7 to 11 lac
 - 2) 2 Ton /hr ----- - Rs. 12 to 15 lac
 - 3) Fully Automatic plant (Stackey Japan) - Rs. 4 cr. To 5 cr.
 - 4) Silky plant - Rs. 2 lacs to Rs. 4 lacs.
 - 5) Colour Sorting plant-computerised – –Rs. 25 to 50 lakhs
- Japan/USA/UK
- 6) De-stoning machine -Rs. 80000 to Rs. 4 lacs
 - 8) Effluent Treatment Plant -Indigenous Rs. 4 to 8 lacs

C) Yield:

i) Against custom milled rice, Govt. of India has specified 68% yield from parboiled rice and 67% yield from raw rice.

The normal rice yield is given below:

Rice by wt = 67%)
Husk =21%) 30.5% on the basis of 14% moisture (Dry Paddy)
Rice Bran = 8%)
Small Broken=2%)
Rice Husk small=1/2%

Less 1.5 to 2.0% - chalk/chakki etc.

In case of parboiled rice 1 to 2% moisture by wt. is added.

In case the broken rice quantity is more the net rice yield further decreases leading to net loss due to of broken rice(which is cheaper)

d) Technological Deficiencies:

i)The study has revealed that most of the units have installed indigenous & non standard local fabricated plants from Haryana & Punjab the quality of rice produced is inconsistent and broken %age is much on higher side. These plants are not fully efficient in terms of energy conservation, maintenance and productivity and hence lead to higher cost of production.

ii) The manpower employed by the units is neither fully professional and nor consistent. Quality assurance & quality control mechanism has not been employed. The Quality Management System for effective controls and customer satisfaction are also missing. Most of the units have also not employed measuring & testing equipments/labs for routine & acceptance /type testing of the product Neither product standards are being followed nor calibration of these equipments are carried out, if available.

iii) Further the units are not competent in the various processing techniques in the following areas:

- a) Storage techniques for Rice, Bran & Paddy
- b) Drying techniques
- c) Parboiling techniques
- d) Polishing methods
- e) Effluent Treatment
- f) Appropriate Dehusking
- g) Effective marketing & export techniques.
- h) Product standardization & Quality Assurance Standards.

Due to above the productivity, Quality, cost and customer satisfaction is greatly effected leading to higher cost of production & quality deterioration.

3.5 BENCH MARKING CLUSERS:

Rice/Milling industry prevails mainly in the States like UP, Uttranchal, Punjab, Haryana, Orissa, W.B, Andhra Pradesh, Tamilnadu, Bihar, Assam & Karnataka at National level. These States produce Rice of both Basmati & Non Basmati varieties. The Basmati varieties are mainly produced in Punjab, Haryana, UP & Uttranchal. As far as exports of fine quality Basmati rice from the country is concerned 75% of it is exported from the State of Haryana only & is followed by the Punjab. Therefore the Bench Marking cluster in the country is considered as Haryana & Punjab which are rich in production, exports, quality and technology. Few fully automatic plants from world top manufactures i.e stacke Japan & sorting machines imported from USA, UK & Japan have also been installed by few units in district Karnal.

For parboiled & Raw rice Taraori in district Karnal is stated as Top in the quality. The quality of Amritsar Rice (Punjab) also stands remarkable in the country. Amritsar is also a considerable rice cluster in the State of Punjab.

In the International market, Thailand, USA & UK have been termed as the best clusters. These countries are basically producing short grain non basmati varieties. Besides the Europe & UK also procure Brown Basmati semi processed rice from India and finally process further as per their customized requirements. The milling industries of these countries mainly employ automatic advanced technology of processing, professional human resource and well managed organizations having concept of TQM, appropriate & modern technology & continuous R&D activities.

In non basmati rice India faces tough competition with Thailand, Philippines & Vietnam whereas in Basmati rice Indian stands top most in the world as far as value structure is concerned.

CHAPTER-4

4.0 CLUSTER ACTORS & THEIR ROLE

4.1 CORE CLUSTER ACTORS, THEIR ROLE & EFFECTIVENESS

The rice milling industry involve various cluster actors which play a direct or indirect role for the cluster development. These include following:

- I. Rice Milling industry
- II. Industries Associations
- III. Controlling and Direct promotional institutions
- IV. Other Promotional & R&D institutions

1) RICE MILLING INDUSTRY:

As detailed in Chapter 3.2 (II the State of Haryana owns 950 Rice Milling industries which include 221 units in the district Karnal. These units include 19 exporting units which export their products to various developed & developing countries including USA, UK, Kuwait, S. Arabia, UAE, Philippines, Malaysia, Bangladesh & Indonesia etc. These units include 8 units in medium /large scale sector & rest are in SSI sector.

68% of the units have their installed production capacity of rice milling to the tune of 1 Ton/hr & 16% are with the capacity of 2 Tons/hr. The State of Haryana including units mainly in district Karnal, Kaithal, Kurukshetra, Jind & Sonapat account for 75% of total exports of Basmati Rice from the country.

The units in SSI sector have installed traditional low productive non automotive machines and mainly work for the period of 5 months with effect from October to February linked with the paddy season. The rest of the season is called off season and units are mostly un operational except for exporting units which work for the period of mainly 11 months in a year excluding 1 month for maintenance of the plant.

The exporting units, large & medium units and few non exporting units have installed efficient productive plants including computerized colour sorting machines, testing labs & have the quality assurance arrangement. The production of the industry in the year 2002-03 has been of Rs. 1200 crores with Export of Rs. 700 crore.

II) Industries Associations:

The Rice milling industry in the district is established in various district blocks, Village & Tehsil including Karnal, Taraori, Assandh, Gharaunda, Indri, Jundla, Nilokheri, Nissing, Nigdu, Biana, Gheer & Kunjpura. Accordingly various main industries associations exists as below in district Karnal:

- 1) Haryana Rice Exporters Association
- 2) Karnal Rice Millers Association, Karnal
- 3) Rice Millers Association, Taraori
- 4) Rice Millers Association, Gharaunda
- 5) Rice Millerers Association, Nissing
- 6) Rice Millers Association, Indri

The above Rice millers Associations mainly look after the interests of Rice Millers of their respective areas covering the entire industries members and main rice dealers (by few associations) .

The Haryana level Rice Millers Associations is a State Level Association is an active association and looks after the interest of State industries and work in coordination with associations of district levels as well as Regional /Block level.

The District level & regional level associations are operating mainly from the Office of factories of respective Presidents of the association.

No separate association level offices have been established by the district /regional level associations. Neither any separate staff for the association activities has been appointed nor any magazine /periodical or regular data /information flow among members exist. Besides this these associations also do not undertake developmental activities for their members except for policy issues. Their activities are mainly directed towards changes in the policy matters which are taken up with the respective Govt./agency from time to time.

III CONTROLLING & DIRECT PROMOTIONAL INSTITUTIONS:

The Institutions that directly control & promote the Rice Milling activities are listed below:

- a) Ministry of Agriculture, Govt. of India
- b) Food & Supplies Department Govt. of Haryana
- c) APEDA-Agriculture & Processed Food Products Export Development Authority, Min. of Commerce & Industry, Govt. of India.
- d) Food Corporation of India and State Procuring agencies.
- e) Ministry of Food Processing, Govt. of India
- f) Standard Certification Agencies.

The involvement & role of these institutions is highlighted below:

a) Ministry of Agriculture, Govt. of India:

In order to protect the interests of farmers to get them minimum price of paddy and avoid their exploitation by intermediaries, Govt. of India under its Policy every year fixes up the Minimum Support Price of various crops including paddy. The State Govt. is directed to watch & monitor the price stabilization and in case the price is found lowering than MSP various State designated agencies take up the bulk purchase of paddy as per the specifications & thereby maintain the minimum support price.

b) Food & Supplies Department, Govt. of Haryana:

The State Food & Supplies Department on the policy directions of Govt. of India to invokes and maintain minimum support price of paddy for farmers and controls its milling & feeding to central pool. The State has notified the Haryana Rice Procurement (Levy) Control order and accordingly every year notifies and promulgate a KHARIF PROCUREMENT POLICY AND POLICY ON CUSTOM MILLING PADDY. Under above policies as explained in chapter 3.2 (II) the State Govt. has made procedures & criteria to maintain minimum support price of paddy including Paddy Milling & delivering of rice by rice Milling Industries, Levy obligation, Levy price /CMR price, Paddy allotment, time schedule for milling, delivery of levy / custom milled rice to central pool, procurement arrangements, allotment of mandies & allocation, and payment system etc.

In the event of paddy price falling below MSP the designated agencies procure the paddy as per specifications and get it milled from Rice milling units and feed it to the central pool as per the procedure and criteria. Food & Supplies, Deptt Govt. of Haryana controls this arrangement as per the Haryana Rice Procurement Control order, Kharif Procurement Policy and Policy on custom milling of Paddy.

c) Food Corporation of India & State Procuring Agencies:

As highlighted above, the Food Corporation of India and following other agencies, affect the procurement of paddy from the mandies in the event of price falling below the MSP under current KPP 2003-04. Their purchase share is also highlighted below:

- 1) Food & Supplies Department -20%
- 2) HAFED -33%
- 3) FCI -20%
- 4) Haryana Ware Housing Corpn-9%
- 5) CONFED -9%
- 6) Haryana Agro Industries Corporation-9%

The role of these agencies is to procure the paddy & get it milled from Rice Millers & feed to the central pool as per the policies described above. Besides the Food Corporation of India has also been designated to receive and store the milled rice on behalf of Central pool.

d) APEDA

APEDA is an Agricultural & Processed Food products Export Development Authority of Min. of Commerce & Industry, Govt. of India and is engaged in augmenting , promoting and monitoring the exports of agro products including rice. It also provides financial assistance to merchant & industrial exporters and has formulated various schemes approved by Govt. of India. APEDA's scheduled products category include cereals, Basmati and Non Basmati rice.

The other major services of APEDA includes following:

- 1) Formation of Agricultural Export Processing Zones. AEZ entail export promotion with partnership of farmers, processors, exporters, central & State Govt. agencies and flow of information & data.
- 2) Intervention in fiscal issues like rebate in Excise, custom, sales tax, mandi tax & State & Central Govt. levels for the units falling in the zone.
- 3) Financial assistance & grant in aids and reduction in interest on credits by banks.
- 4) Legal, administrative & Tariff & non tariff related issues.

APEDA has so far established 32 AEZs with approval of respective states Govt. & agencies including for BASMATI RICE in PUNJAB. The proposal is also going on to establish a similar AEZ in the State of Haryana mainly for Rice Rich districts Karnal, Soenpat, Kurukshetra, Kaithal & Jind since a long time. This is held up for the approval from Haryana Govt. especially due to substantial revenue loss due to various incentives to the units falling under it.

The APEDA's assistance also includes carrying out export inspection passing on trade enquires received from importers & financial cum grant in assistance in infrastructure development, ISO-9000/HACEP/TQM certification, assistance in participation in International Trade Fairs. & Training etc.

e) Ministry of Food Processing

Ministry of Food Processing formulates & implements the policies for food processing industries within overall national priorities and objectives as well facilitate the environment for healthy growth of food processing industry. The major activities related to Rice Milling Industries are as below :-

I) Financial cum grant in aids for following activities :-

- a) Technologies upgradation/ modernisation of food processing industries.
- b) Setting up of food processing & training centre.
- c) Creation of infrastructure facilities for running degree/diploma courses and training programmes for food processing.
- d) Training programmes.
- e) For quality assurance & safety concept, codex standards, R&D including TQM, Bar coding, ISO 9000 , ISO 14000, HAC, GMP and Good Hygienic practices(GHP), Q.C. Laboratory.

- f) For Schemes for Backward & forward integration and other promotional activities
- ❑ Under backward linkages in procuring units ensure that high quality seeds, fertilizers, pesticides and technical know-how is provided to growers in time.
 - ❑ Under forward linkage to ensure regular market by establishing linkages with market and assistance in market, surveys, test marketing and land & building etc.
 - ❑ For general advertisement to build awareness among the commoner.
 - ❑ For promotional activities like organizing seminars/workshops/symposium/studies/surveys/feasibility reports.
 - ❑ For participation in National/International exhibitions or fairs.
 - ❑ For strengthening Industry Association by compilation analysis, publication of statistics and dissemination information.
 - ❑ For food fortification i.e. for dietary diversification & food fortification using simple technologies by supplementing micronutrients.
- g) Scheme for infrastructure development
- ❑ To develop food parks for infrastructure and common facilities for use by small and medium enterprises which enhance value addition.
 - ❑ To develop packaging centres to promote new technologies of packaging.
 - ❑ For value added centres to enhance shelf life, higher realization integrating value chain, information flow and trace ability etc.

II ASSISTANCE BY PADDY PROCESSING RESEARCH CENTRE THANJAVUR (T.N.)

- It is an autonomous body under Administrative Control of Ministry of Food Processing. It was set up in 1984 and carries basic research work on different applied aspects of rice processing and by product utilization like drying, storage, parboiling, milling, bran stabilization and oil extraction etc.

e) STANDARD CERTIFICATION AGENCIES

Various national and international standard certification agencies play active role in product, and process standardization, packaging and sampling standardization. The other part is quality management system/TQM ISO 9000,14000 & HACCP certification etc. The following agencies assists in this regard.

- i) Bureau of Indian Standards.
- ii) About 38 International Certification agencies providing certification in ISO-9001-2000, ISO-14000 and HACCP systems installation.

IV OTHER PROMOTIONAL & R&D INSTITUTIONS

There are many other promotional and R&D institutions which directly or indirectly play vital role in promoting the Rice Milling Industries as below :-

S.NO.	NAMES OF INSTITUTION	NATURE OF SERVICES PROVIDED
1.	Indian Council of Agricultural Research	<i>R&D in paddy/Rice</i>
2.	Paddy Processing Research Centre	<i>R&D on Rice processing & byproducts utilization, Training & Consultancy</i>
3.	Central Rice Research Institute, Cuttack	<i>R&D in paddy/rice & training</i>
4.	Rice Divisions of various Agricultural universities including Punjab & Haryana Agricultural universities	<i>-do-</i>
5.	National Productivity Council	<i>Consulting in Energy Conservation, Pollution Control, Cost reduction, I.T., QMS/HACCP/ISO-9000 /ISO-14000 Certification, various studies and production engineering management studies and training.</i>
6.	Small Industries Service Institute, Karnal	<i>Training in Export Marketing, EDP/MDPs, Consultancy</i>
7.	Directorate of Industries/District Industries Centre of State	<i>State Govt. Industries regulatory/Monitoring agency</i>
8.	Small Industries Development Bank of India (SIDBI)	<i>Financial assistance, Grant in aids</i>
9.	Nationalised Banks	<i>Financial Assistance</i>
10.	Indian Institute of Packaging	<i>Consultation & Training for packaging</i>
11.	Director General Foreign Trade	<i>Export/Import code number for export items</i>
12.	Export Credit Guarantee Corporation	<i>Export Credit Insurance</i>
13.	Export Inspection Council	<i>Export Inspection</i>

4.2 SIGNIFICANT POLICIES & ISSUES

I) The significant developmental policies involved in Rice Milling Industry trade are as below :-

- a) Govt. of India's Policies for minimum support price for paddy and rice storage in central pool.
- b) Haryana Rice Procurement(Levy) Control Order

- c) Kharif Procurement Policy.
- d) Custom Milling of Paddy Policies.
- e) State Industrial Policies determining rice milling industry in negative list.
- f) Developmental policies of Ministry of Food Processing Industries & APEADA
- g) Cluster Development programme/Policies of Min. of SSI Govt. of India.

Above policies have been discussed in detail in the preceding chapters of this report.

Besides all the developmental policies of various organizations, the State Industries Department has put the Rice Milling Industries in the negative list mainly due to achievement of its saturation level. Owing to this Rice Milling Industry does not qualify for any subsidized incentives from State Govt. as applicable to other SSI industries. Presently however, no such incentive is available to any of the industries in the state from state Govt.

II The field studies have also revealed that the exporting units are given special incentives over the non exporting SSI units likes reduced bank interest rates & s.tax /VAT exemption etc.

III. Also the FCI under its policy supply Rice to the exporters at much reduced/subsidized rate. The exporters further process this rice as per the requirements of buyers and export it.

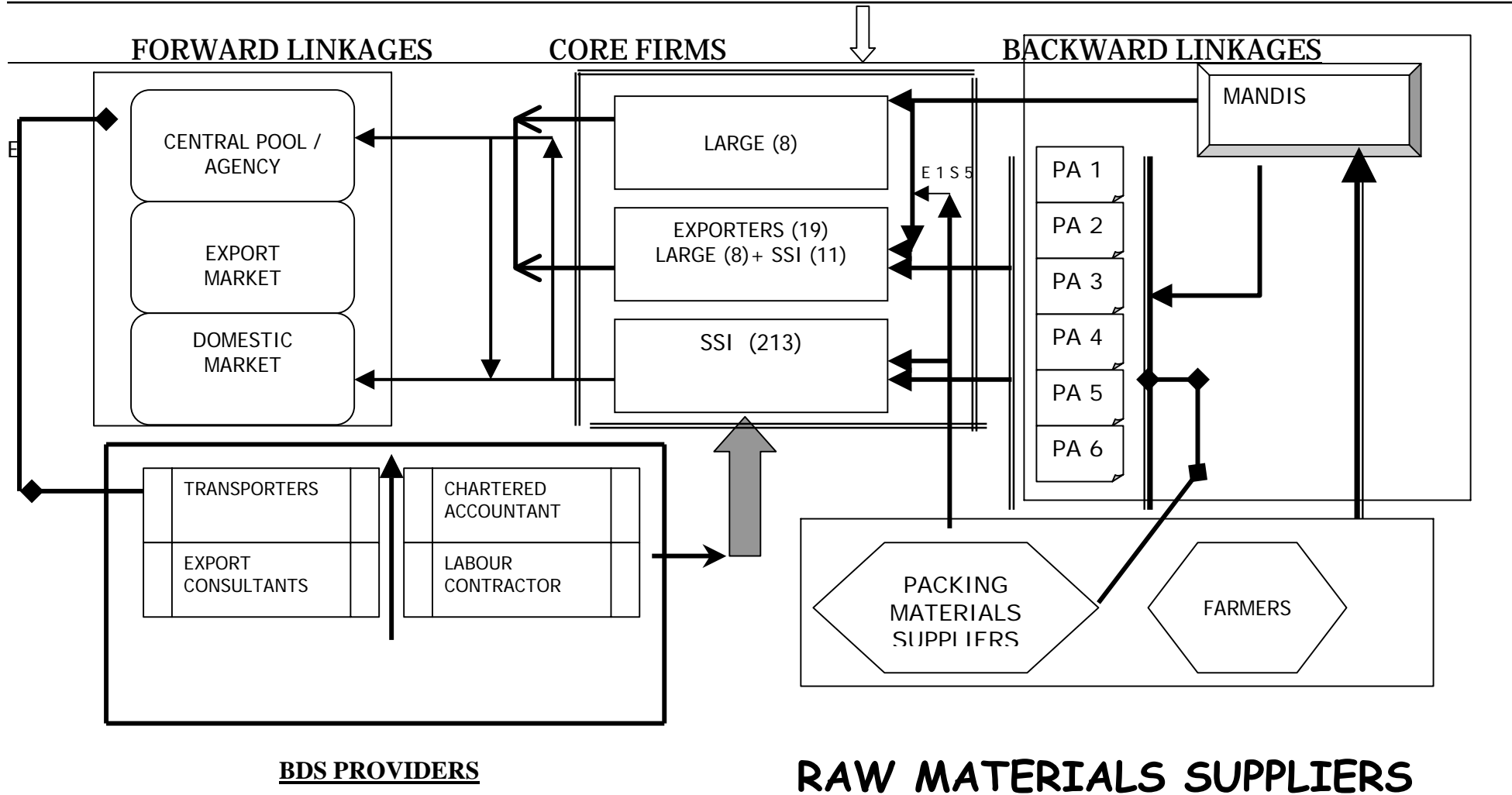
Owing to this the cost of rice to the non exporting units works out substantially higher than that of the exporters thereby leading to their hard competition in the market especially when non exporting units intend to supply their products in bulk to the exporters.

IV) The establishment of agricultural export processing zone for the basmati rice in Punjab, non implementation of VAT in Punjab and UP, and reduction in other levies there many units from Haryana have reportedly seen shifted to the above neighbouring states. An estimated figure of 40% of closure/shifting of rice milling units from Haryana including Karnal has been attributed to these reasons by the industries/associations.

INSTITUTIONS

ITP EIC	AP E DA	MIN. OF FOOD PROCCSSING	FOOD & SUPPLIES DEPARTME	PP RC	CR RI	IC AR	A Us	N P C	SIDBI & BANKS	SISI DIC	DGFT ECGC	CETIFICA- TION AGENCIES	TESTING LABS
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4.3 PRESENT CLUSTER MAP



MAINTENANCE & JOB WORK PROVIDERS

CHAPTER-5

5.0 ANALYSIS OF BUSINESS OPERATIONS (AOBO)

5.1 KINDS OF FIRMS & PATTERN:

As detailed in Chapter 3.2 (II), there are mainly three kinds of firms i.e. large/medium industries, SSI Industries, Exporting units (both in SSI & Large sector). The installed plant capacity of these units also differ as detailed below:

No. of large/medium units	-	8
No. of SSI units	-	213
No. of Exporting units (Large & SSI)	-	19 (11 + 8)

The production /plant capacity of these units is as below:

S.NO.	PLANT CAPACITY	NO. OF UNITS
1.	0.5 M.T/Hr	10
2.	0.75 MT/Hr	5
3.	1 MT/Hr	151
4.	1.5 MT/Hr	5
5.	2 MT/Hr	35
6.	3 MT/Hr	8
7.	4 MT/Hr	1
8.	5 MT/Hr	2
9.	6 MT/Hr	2
10.	8 MT/Hr	1
11.	32 MT/Hr	1

The exporting units mainly work for 11 months in a year and go for maintenance for 1 month non exporting units mainly work for the period of five months i.e. with effect from October to February.

5.2 BACKWARD & FORWARD LINKAGES, BDS PROVIDERS & RAW MATERIALS SUPPLIERS

BACKWARD LINKAGES

The backward linkages include the important feeders to the core firms. As detailed in Chapter 3.3 they are further listed below :

a) State Designated Paddy Procurement Agencies

- Food Corporation of India
- Food & Supplies Department
- HAFED
- CONFED
- Haryana Agro Industries Corporation
- Haryana warehousing corporation

b) **Different Mandis (Grain Market) & Farmers**

The purchase of paddy is undertaken by these agencies from Mandis/Farmers as per the State Policy and given to Rice milling industries for custom milling. The units however also purchase the paddy directly from the Mandis/through open auction.

II) FORWARD LINKAGES :

The forward linkages include Export Market, Domestic Market and Central Pool. The exporters supply their products to export market with the assistance of various institutions including DGFT, ECGC & APEDA. The domestic marketing for Rice, Rice husk and rice bran is done by the units as per their policies, procedures and segments.

III) BDS Providers:

The business development providers mainly include transporters, chartered accountants, Export consultants, labour contractors and maintenance job work providers etc. They provide necessary services as per the particular requirement of the unit(s).

IV The Raw material suppliers

It mainly include the farmers through mandi channel the contract farmers and the packing materials suppliers.

VALUE CHAIN ANALYSIS

I) VALUE ANALYSIS OF RICE MILLING UNIT (CMR)-RAW RICE

PROCESS FLOW	PROCESS COST/VALUE (Rs.)	ACCUMULATED VALUE(Rs.)	REMARKS
PADDY (Gd A)	580 Per Qtl.	580.00	Value of MSP
↓			
Taxes & Levies			
VAT - 4%			
AARAT- 2.5%			
MKT FEE- 2%			
CESS FEE - 2%			
+			
CLEANING, LOADING, MISC. - 1.5%			
Total 12% →	69.60 per Qtl.	649.60	
↓			
DRYING →	9/- Per Qtl.	658.60	
↓			
DEHUSKING & POLISHING →	20 Per Qtl.	678.60	
↓			
GRADING →	Rs. 2/- per Qtl.	680.60	
↓			
a) YIELD @ 67% (RAW RICE) →		Rs. 1015.80	FOR PARBOILED RICE, YIELD IS 68%
↓			
CUSTODY & MAINT CHARGES 12/- P. Qtl.		1027.80	Charges Paid by DFSC/Agencies
		1053.00	
SALE PRICE →			
NET PROFIT →		25.20 Per Qtl.	
GROSS PROFIT →		25.20 per qtl	

Cost of Rice Bran (7%) @ Rs. 500/- = Rs. 35/-
per qtl. per oil

Cost of Rice Husk (19%)@ Rs. 100/- = Rs. 19/-
p. qtl.

Total = Rs. 79.20/-

Overall Gross Profit = Rs. 79.20/- *

% age of Gross Profit on Sales = 7.5%

*This excludes overhead & Admn.
expenses

vii) VALUE ANALYSIS FOR PAR BOILED RICE (Gd-A) CMR

- a) YIELD FOR PARBOILED RICE = 68%
- b) Addl Expenses for Par boiling = Rs. 10/- per Qtl.
- c) Sale price of Parboiled Rice = Rs. 1038.20/-

REFER (I) ABOVES

- d) GRADING
 - LEVEL COST Rs.680.60
 - COST OF PAR BOILING Rs. 10.00 per Qtl.
 - TOTAL COST Rs. 690.60
- e) YIELD 68%
 - TOTAL COST PER QTL Rs. 1015.58
 - CUSTODY & MAINT. CHARGES Rs. 12.00
 - Total Rs. 1027.58
 - SALE PRICE = Rs. 1038.20
 - LESS COST Rs. 1027.58
 - NET PROFIT =Rs.10.62/-per Qtl.
 - COST OF RICE BRAN & HUSK = Rs. 54/-

TOTAL GROSS PROFIT = Rs. 64.62/- per qtl.

% AGE OF GROSS PROFIT ON SALE 6.2%

The % age of gross profit on Sale in respect of CMR Rice has been found as 7.5% for Raw Rice and 6.2% for parboiled Rice. In view of the quantum of work load given by purchasing agencies this profit margin appears to be rational.

5.4 PROBLEMS IDENTIFIED

During analysis of business operations various problems have been identified and are discussed below :

- i) Product and Raw materials
- ii) Technology
- iii) Marketing
- iv) Entrepreneurship and management
- v) Human resource and training
- vi) Finance
- vii) Business development services
- viii) Infrastructural facilities
- ix) Govt. policy
- x) Promotional aspect-Association/others

I) PRODUCT AND RAW MATERIAL

- a) Various varieties of Basmati and non Basmati Rice are grown and produced in the district. The cost of Basmati varieties of Paddy is nearly 50 to 90% higher than the cost of Non Basmati paddy and similar is the case in respect of finished Basmati Rice. Even in super finished rice the cost of Basmati rice is 2 to 3 times the cost of few varieties of non basmati rice. In District Karnal, the

- b) total area sown under Paddy in the year 2001-02 was 159000 hectare. This included 17000 hectare of Basmati and rest for non basmati paddy. The area sown under basmati paddy has been merely 10.69% on an average this % has been 15-20% in the past.

Since Basmati variety fetch more price both for paddy as well as finished product and Karnal belt has most suitable environment for world class basmati production there is a need to increase the area for cultivation of Basmati paddy in this District

- c) The state Kharif procurement most policy has standardized the specifications of milled rice to be procured back by purchasing agencies from the Rice Millers. This specification remarkably specify the % age of Brokers Rice, De-husked grains and other impurities as below on much higher side

S.NO.	REFRACTIONS	MAX. LIMIT %	
		GRADE A RICE	Common Rice
1	Broken *		
	Raw	25.0	25.0
	Parboiled	16.0	16.2
2	Damaged/Slightly damaged		
	Raw	2.0	2.0
	Parboiled	4.0	4.0
3	Chalky grains		
	Raw	5.0	5.0
4	Admixture of lower class	3.0	3.0
	Raw/parboiled		
5	Foreign matter **	0.5	0.5
	Raw/parboiled		
6	Discolored grains		
	Raw	3.0	3.0
	Parboiled	5.0	5.0

7	Red grains Raw/Parboiled	10.0	-
8	De-husked grains Raw/Parboiled	12.0	12.0
9	Moisture Content *** Raw/Parboiled	14.0	14.0

* Including 1% small broken

** Not more than 0.25% by weight shall be mineral matter & not more than 0.1% by wt. Shall be impurities of animal origin.

*** Rice (both Raw & Parboiled) can be procured with moisture content upto a maximum limit of 15% with value cut. There will be no value cut upto 14% Between 14% to 15% moisture value cut will be applicable at the rate of full value.

The maximum limit of Broken rice, Damaged/slightly damaged Rice, Discolored Rice, Chalky and Red grains , Dehusked grains and mixture indicated in the specifications are much on higher side. The above limits can be reduced and out put quality enhanced by improving seeds quality, improving cultivation, technique and properly training the farmers in paddy cultivation. The Broken rice and dehusked grains %age can however be reduced be using, appropriate Rice milling technology and trained manpower as well.

Few units have been reported using the system of CONTRACT FARMING . Under the system the necessary support with regard to quality seed, farmers training, Infrastructural and other inputs are provided by the rice millers to the farmers as per contract and the paddy produced as per desired quality is bought back as per agreement. This way they are reducing % age of impurities mentioned above.

c) It has been expressed by the units/ associations that most of the paddy is harvested with combine harvesting machines by farmers. Due to unstandardised and faulty designed combine harvesting machines a substantial quantity of rice grains inside the paddy gets crack under stress including formation of deshusked paddy. This leads to enhanced broken percentage during rice milling.

Besides the premature cutting and high moistured paddy gives rice to broken percentage of rice during milling as well as inferior rice quality and other rejections. These shortcomings further bring down the rice yield percentage from 67/68%. The combine harvester machines may, therefore, be emphasized for better designing by their manufacturers/ R& D and other

institutions. This may improve the rice yield and rejection/ broken percentage.

d) The sathy paddy reportedly consumes the water to the tune of 5000 ltrs. Per kg. against normal consumption of water of 2000 ltrs. Moreover, its quality and yield is poor to the tune of 57-58%. It has therefore, been emphasized to discourage the growth of sathy paddy.

e) It has also been emphasized by the industry to seek the assistance of concerned universities /R&D institutions for improvement in the rice yield and its quality.

iii) TECHNOLOGY

- a) Most of the units in District are using traditional technology and have installed locally fabricated plants which are un standardised from the angle of their capacity, materials/mechanism used maintenance & productivity. This contribute remarkably to the increased broken rice and dehusked and damaged paddy % age. Further due to their frequent and costly maintenance the production cost and their effective utilisation is also affected.

Few organized units and exporters have installed semi automatic/fully automatic plants and other machines from the reputed manufacturers of the world including STACKEY, JAPAN, SORTEY (UK) & BHULLAR (GERMANY). These units have enhanced theirs productivity and product quality as per the quality conscious importers/ customer's requirements.

The cost of automatic plants and other machines supplied by above companies of Japan, USA & UK is much on higher side ranging from Rs. 2 to 5 crores for Automatic plants and from Rs. 30 to 80 lacs for computerized sorting machines. The small units however may not be in a position to install these costly machines besides in such cases their investment cost may cross the SSI limit.

On the other hand it has been informed that there are few plants/machinery suppliers from China and other countries which supply the automatic plants at the cost of Rs. 20 to 40 lacs in comparison to plants worth crores of Rupees supplied by Japanese, USA & UK companies.

The units are not aware of such suppliers and if so they could install these machines/plants.

- b) There is a scope of improvement in various processes like parboiling, storage, paddy drying, polishing and grading etc. The methods adopted by most of the units are traditional and unscientific/non professional. They give rise to the broken %age and affect product quality and productivity. Besides there is an utter need of employing scientific energy conservation, pollution control and safety methods.

- c) Most of the units have not standardized their product, processes, working systems as well as quality assurance system. This lead to the haphazard working, un standardization and inefficiency. Therefore, there is a need to induce, quality management system ISO 9000 in many units and training of their human resources.

MARKETING

Appropriate Marketing is very important input required by the units. More than 90% of the units are non exporting units. They have expressed their dissatisfaction over the policy of incentives given by Govt. to the exporters especially in case of tax, exemptions, reduced ROI and subsidised rate of rice supplied to them by the procuring agencies/central pool for the purpose of exporting. They claim their cost of production to be 20-25% higher than the cost of exporters due to which they are unable to compete with supply to them. Some of the non exporting units have desired to become exporters but are not aware of the potential importers, exports documentations and procedure and other formalities.

Besides, they need to be trained in various marketing management techniques like branding, trade marking, costing and pricing techniques and various marketing methods.

IV) ENTREPRENEURSHIP AND MANAGEMENT

Most of the entrepreneurs in the Rice milling trade are IIInd generation entrepreneurs and have learnt from their ancestors and the market in a traditional way. In order to further enhance the productivity, quality, customer satisfaction, effective utilization of resources and continual improvement. there is a need to induce various modern management techniques in the units. This may go a long way in widening the vision of the entrepreneurs and growth of industries at National/International level.

V) HUMAN RESOURCE AND TRAINING

In order to manage the industry in a professional manner to get optimum outputs there is an utter need to upgrade the competency of personal at various levels i.e. for technical, managerial and at top level as per the needs of changed environment.

VI) FINANCE

Adequate & liberal finance requirement has been expressed by many units particularly for bulk procurement & storage of paddy plant modernization & upgradation. The unit desire finance at reduced rate of interest as applicable to the exporting units. Besides for undertaking training, process upgradation including energy conservation, pollution control and addition of infrastructure and induction of quality management systems/ISO:9000 etc. the units will be needing more finance.

The exporters /industries have desired to reduce the existing rate of interest of finance at par with the international rate of interest to the tune of 3-4 %. This will reduce the cost of production and improve the profitability.

VII) BUSINESS DEVELOPMENT SERVICES

The units are actively availing the BDS services from transporters, CAs, Banks, Maintenance job workers & labour contractors etc. The R&D & other institutes like ICAR, PPRC, Agricultural Universities, Standard Certification agencies, CRR1, NPC, IIP, APEDA, ECGC, DGFT, SIDBI & SISI etc. are in existence but are rarely approached by the industry except by few organised units who have been benefited. There is a need to make the industry aware of various services available & provided by these institutions.

The Paddy Processing Research Centre of Ministry of Food Processing is located at Thanjavur (Tamil Nadu). It is the only such specialized centre which provide R&D, information, training & other assistance in Paddy processing techniques. Being this Institute at a far distant place the units do not find it feasible to approach for the assistance. Besides there is no common testing laboratory existing in this area needed to provide testing/Q.C services for Rice, Paddy & Rice Bran. Therefore, these services have to be made available in this area.

VIII) INFRASTRUCTURAL FACILITIES

The Rice Milling units in the district are scattered at different locations and are mainly established at village/suburban areas. The roads and electricity supply is mostly available to these units. Private Transport facility is also available. The exporting units mostly work for 11 months in a year leaving one month for plant maintenance & other units mainly work for five months season with effect from October to February.

a) In order to promote export from this area including district Karnal, Kaithal, Kurukshetra, Sonapat & Jind a proposal for declaration of Agriculture Export Zone(AEZ) was mooted by APEDA in the past on demand of the industries & was under consideration of the State Govt. for approval in order to provide financial, administrative, fiscal and legal support to the rice exporting units of the above districts. It has been informed that the proposal has been declined by the State Govt. due to substantial financial burden.

The major benefits included under AEZ may be as below:

- a) Financial assistance from Central & State Govt. agencies for different schemes for setting up of infrastructure, R&D, training & extension Services, land development & market development.
- b) Benefits under EPCG scheme & duty reduction.
- c) Speedy disposal of applications for financial assistance.
- d) Crop management systems and assistance cell.
- e) Uninterrupted power supply & avail duty free diesel for generators as per EXIM Policy and concessional power supply.

- f) Duty free raw material for packaging & sales tax exemption on processed products sold in domestic market.
- g) To modify Transport Act to allow single axle vehicles to container cargo.
- h) Net working of roads in cluster & potable water.
- i) Crop loans and finance schemes.
- j) Efficient market information system for farmers.

Since Haryana has topped in country in Rice exports in the year 2002-03, there is utmost need to approve & establish AEZ in this area.

b) The district and State is facing the shortage of power supply. Some units have suggested the use of paddy husk/bio-mass for captive/collective power generation to improve power supply and use of bye products.

c) The technical institutions in Haryana & neighbouring States reportedly do not offer educational/technical courses related to the rice engineering and rice milling. It has therefore, been emphasized to introduce such courses preferably at Diploma /Degree level to provide key technical manpower to the industry. The Industries and Associations have desired that the State Govt. should develop an industrial area of 200 acres in district Karnal with necessary infrastructures exclusively for the establishment of rice milling industry for its further growth.

X) GOVT. POLICY:

a) Non exporting units demand concession at par with exporters to effectively compete in the market. They have expressed that due to their 20 to 25% higher cost of production than the exporting units as well as S.Tax/VAT & other levies exemption by the neighboring States i.e. Punjab & U.P. about 40% of the rice milling units from the State have closed or shifted to neighboring States causing major set back to the industry in the district as well as State of Haryana.

b) Haryana State is levying VAT tax and many other States reportedly have not implemented the VAT. The associations/industry has emphasized the Tax structure to be uniform in the country and only Govt, of India should have the authority to regulate and collect the Tax.

X) PROMOTIONAL ASPECTS-ASSOCIATIONS:

The Rice Milling industries association in the district in general & non exporting units associations in particular in the district Karnal lack in providing following inputs to their member units:

- i) Market information & data flow
- ii) Trainings & Motivational Programmes.
- iii) Developmental activities including participation in technical workshops, Trade fairs, R&D and technical dissemination information.

Therefore, there is a need to effectively organize these activities for the up gradation of the industry.

CHAPTER-6

6.0 SWOT ANALYSIS:

The SWOT ANALYSIS of the cluster has been undertaken in terms of following parameters:

1. Market
2. Technology
3. Inputs availability
4. Innovation capability
5. Human Resource /Skill
6. Business Environment

This analysis identify the strong & weak areas as well as threats & opportunities envisaged in the cluster as below:

S. NO.	PARAMETERS	STRENGTH	WEAKNESS	OPPORTUNITY	THREATS
1.	Markets	<ul style="list-style-type: none"> *Strong presence in International & Domestic market. *Market support available under Levy/CMR Policy *Most suitable climatic environment 	<ul style="list-style-type: none"> * Long 6 months off season for majority of non exporting units *Weak Brand equity of non exporting units * Compulsory & controlled marketing for levy rice., 	<ul style="list-style-type: none"> *Tremendous exports potential *Substantial institutional support available. *Non-exporting units to club for common brand and export. 	<ul style="list-style-type: none"> *Strong competition from asian countries. *Patent exploitation of Indian Basmati by International market.
2.	Technology	<ul style="list-style-type: none"> * Low cost fabricated machines * Technological infrastructure available. 	<ul style="list-style-type: none"> *High production /automatic plants very costly & mostly imported beyond reach of SSI sector. *Entrepreneurs not aware of sources of low cost imported automatic plants and appropriate processing techniques. *Locally fabricated plant are un – 	<ul style="list-style-type: none"> *Potential for productivity. * cost reduction & quality enhancement by use of appropriate technology/QM S. 	<ul style="list-style-type: none"> * Traditional Technology, standard & non professional MS leading to high cost may retard the industry both at domestic / International market.

			standardised & low productive		
3.	Inputs Availability	<ul style="list-style-type: none"> * Bulk supply of raw materials at competitive price. *Exporters given incentives and subsidised materials. * Local resources available. 	<ul style="list-style-type: none"> * Controlled MSP of paddy & compulsion of levy rice supply. * Non Exporters production cost high. 	<ul style="list-style-type: none"> *Large Domestic /International market available. * Potential for non exporting units to Export. * Available Institutional support may be exploited 	Imposition of taxes & levies in comparison to neighbouring states may further lead to closure/shift of industries to neighbouring states.
4.	Innovation Capacity	<ul style="list-style-type: none"> * Capability to produce world class quality * Ability to run non standardized machines 	<ul style="list-style-type: none"> . * Technological specialised support not easy approachable and available at district place. * Low willingness to adopt new methods. 	<ul style="list-style-type: none"> * Participation in Trade fairs, Exhibition, Trainings & Workshops & Induction of QMS etc. may lead to higher productivity market scope & efficiency 	<ul style="list-style-type: none"> * Without induction of innovative business tools the trade may lack behind & die.
5.	Skills	<ul style="list-style-type: none"> *Workers mostly skilled for traditional technology 	<ul style="list-style-type: none"> *No Skill upgradation trainings . * No rice processing training Institute available in the region. 	<ul style="list-style-type: none"> *Increased technical &managerial awareness & trainings may lead to productivity, quality and efficiency 	<ul style="list-style-type: none"> * Skill base needs upgradation to adopt latest technology and management systems
6.	Business Environment	Ability of Export segment to grow & meet International challenges.	Heavy taxes/levies & controlled trade has lead to closure /shift of units.	Tremendous growth potential with Institutional & Policy support.	Non approval of AEZ by State & imposition of Taxes, Levies in comparison to neighbouring states may taper down the industry.

7.0 STRATEGIC INTERVENTIONS

The rice milling industry at Karnal has got enough growth potential especially in terms of exports, standardization, training, improving rejections & marketing. The details of problems encountered by the industry have been highlighted in Chapter 5.4 of the report. In view of above, the specific areas identified where interventions are needed are given below:

- i) Emphasis on growth of more Basmati varieties by farmers & their training to reduce impurities while milling in terms of chalky grain, Broken, admixture of lower class varieties, Red & discolored grains etc.
- ii) Use of standardized & low cost automatic/high production machines and awareness on their sourcing, Rice Milling techniques, Drying, Polishing, grading, packaging, energy conservation, safety, pollution control, marketing & export documentation / procedure and QMS / ISO 9000.
- iii) Training & Awareness about Institutional support available.
- iv) Marketing exposure in terms of advanced clusters, trade fairs & Exhibitions.
- v) Induction of Quality Management System/ ISO 9000/HACCP for better efficiency, continual improvement & Market growth.
- vi) Establishment of Agriculture Export Zone to boost up export trade and development of infrastructure by way of an industrial area of 200 acres exclusively for rice industry at Karnal by State Govt.
- vii) Motivation for exports to non-exporting units individually or by formation of consortium.
- viii) Liberalisation of State Policy at par with neighboring States, simplification of procedures for CLU & removing the rice milling industry from negative list determined by the State Industries Department.
- ix) Strengthening of Industry Associations to promote Industries.
- x) To establish a net work among all the cluster actors for sustainability.
- xi) Involvement of supporting and educational institutions for development of the industry.

CHAPTER-8

8.0 VISION AND OBJECTIVES

8.1 VISION

THE VISION OF KARNAL RICE MILLING CLUSTER IS TO ESTABLISH AND SUSTAIN AS MOST EFFICIENT. MODERNISED AND EXCELLENCE MODEL IN QUALITY RICE PRODUCTION & PARTICULARLY WITH EYE ON GROWTH IN EXPORT MARKET.

8.2 OBJECTIVES

In view of strategic interventions proposed and vision of the cluster the measurable objectives for three years period i.e. with effect from April 2004 to 31st December 2006 have been established below:

- 1) To increase export.
- 2) To induce ISO 9000/HACCP/other quality certifications in 5 units
- 3) To organize process/technology upgradation related 6 Nos. of seminars/workshops/training programmes to improve efficiency/quality and reduce rejections.
- 4) To organize workshops/demonstrations of international/national plant and machinery suppliers..
- 5) To induce energy conservation and pollution control system.
- 6) To organize 3 training programmes in export procedure and documentation and marketing management.

9.0 ACTION PLAN

S. No ..	Activity Year	Time period	Total fund require ment	Share of fund		
				SISI/DCSSI	SI	CA
	2004-05					
A.	Capacity Building					
1.	Awareness Programme on Cluster Development (1 day) - 2 Nos.	April 04 May 04	15000/- 15000/-	15000/- 15000/-	- -	- -
2	Programme on Capacity Building of Rice Millers Associations (1 day)	June 04	15000/-	10000/-		5000/- (Assn.)
B.	Marketing Development					
1.	Training programme on Export Procedure & Documentation.	June 04	25000/-	20000/-		5000/- (Assn.)
C	Technology Upgradation					
1.	Awareness programme on ISO-9000 (1 day)	June 2004	10000/-	10000/-		
2.	Training/workshop on Reduction in Broken in Milling, rejections & Parboiling Technique (2 days)	Sept., 2004	25000/-	20000/-		5000/-
3	Workshop/Training on Storage/drying/Grading /Polishing techniques & marketing (2 day)	Jan., 2005	30000/-	25000/-		5000/-
D	Monitoring & progress Review Programme (1 No.)		20000/-	20000/-		

2005-06						
A.	CAPACITY BUILDING					
1.	Exposure visit to good cluster, Tirapur/ Ludhiana/other.	Nov., 04	125000/-	100000/-		25000/-
B. MARKETING DEVELOPMENT						
2.	Training Programme on Export Management & Documentation (2 days)	April, 2005	25000/-	20000/-		5000/-
3.	Workshop on Export Packaging	March 06	40000/-	30000/-		10000/-
C TECHNOLOGY UPGRADATION						
1.	ISO 9000 Awareness / Documentation	July, 2005	25000/-	20000/-		5000/-
2.	Workshop/Training programme on Energy Conservation(2 days)	Oct., 2005	30000/-	25000/-		5000/-
3.	Demonstration of International/National plant & machinery suppliers Information/Technology (2 days) – 1 No.	Jan., 05	150000/-	90000/-	40000 /- Bank/ SI	20000/-
4.	Monitoring & progress Review Programme (1 No.)		20000/-	20000/-		
2006-2007 (Upto Dec., 2006)						
MARKETING DEVELOPMENT						
1.	Workshop/Training programme on Export Procedure & Documentation (2 day)	Oct., 2006	25000/-	20000/-		5000/-
TECHNOLOGY UPGRADATION						
1	Workshop on Pollution Control	May 2006	25000/-	20000/-		5000/-
2.	Awareness Programme on ISO-9000/QMS (1 day)	July, 2006	10000/-	10000/-		
3.	Workshop on Energy Conservation	Dec., 2006	30000/-	25000/-		5000/-
4	Programme on Impact of Cluster development/ End report		40000/-	40000/-		

BUDGETARY ESTIMATE

S.No.	Activity/Particulars	Amount Required	Sub Total (Rs.)
1.	Stationery/OE/Transport	40000/-	
2.	T.E.	30000/-	
3.	Labtop Computer, Printer, & UPS	1,50,000/-	
4.	Computer 1 No.	50,000/-	
		2,70,000/-	2,70,000/-

2004-2005

1.	Activities proposed in 04-05	1,55,000/-	
2.	OE/POL	1,00,000/-	
3.	TE	1,00,000/-	
4.	Misc.	20,000/-	
		3,75,000/-	3,75,000/-

2005-2006

1.	Activities proposed in 05-06	4,15,000/-	
2.	OE/POL	1,00,000/-	
3.	TE	1,00,000/-	
4.	Misc.	40,000/-	
		6,55,000/-	6,55,000

2006-07 (upto Dec., 06)

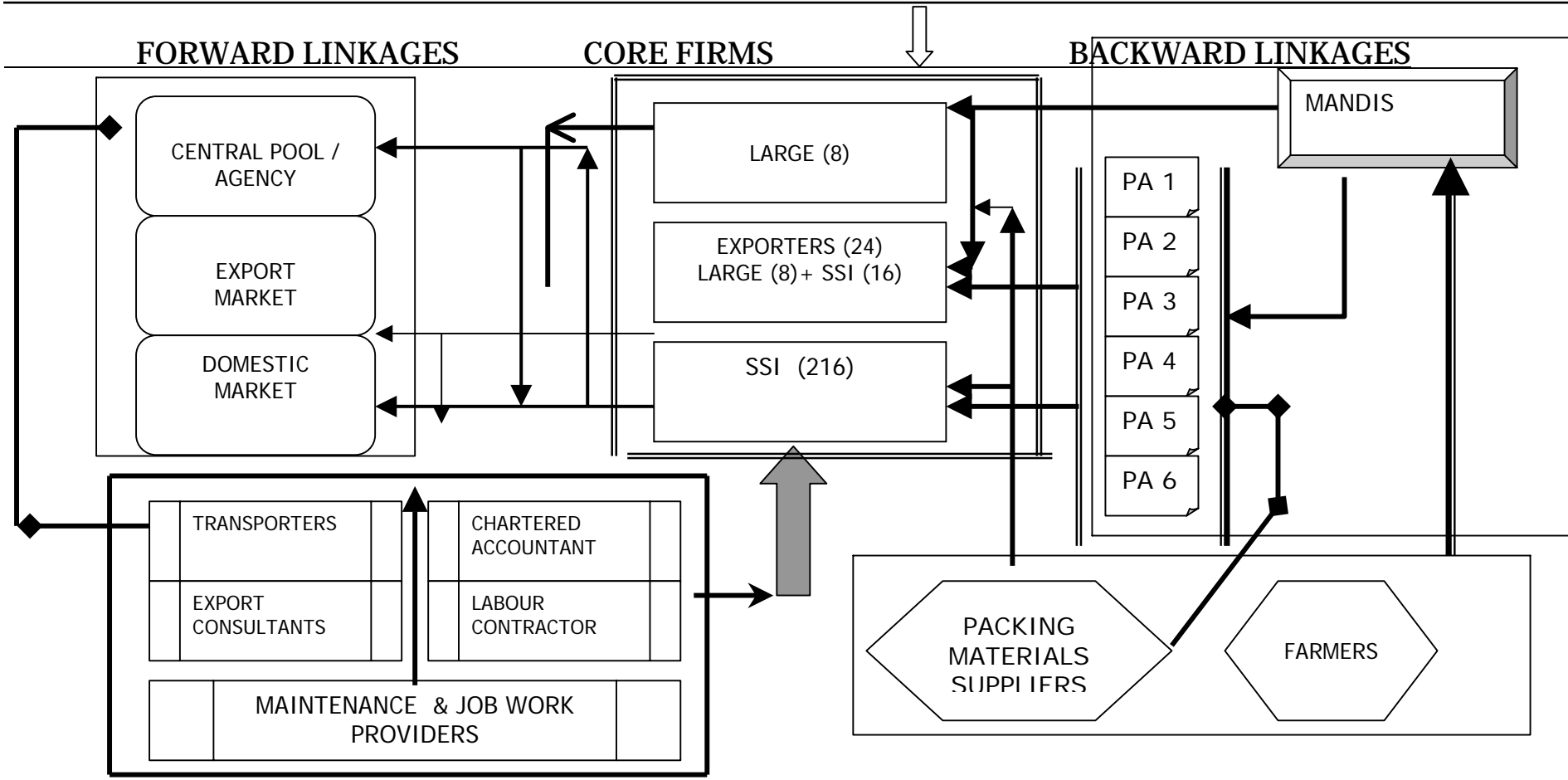
1.	Activities proposed in 05-06	1,30,000/-	
2.	OE/POL	80,000/-	
3.	TE	80,000/-	
4.	Misc.	20,000/-	
		3,10,000/-	3,10,000

Grand Total: Rs. 16,00,000/-

INSTITUTIONS

ITP EIC	AP E DA	MIN. OF FOOD PROCCSSING	FOOD & SUPPLIES DEPARTME	PP RC	CR RI	IC AR	A Us	N P C	SIDBI & BANKS	SISI DIC	DGFT ECGC	CETIFICA- TION AGENCIES	TESTING LABS
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10.0 FUTURE CLUSTER MAP



BDS PROVIDERS

RAW MATERIALS SUPPLIERS

Annexure -1

Area, Production and Yield of Rice During 1999-2000 and 2000-01 in Respect of Major Rice Producing States Alongwith coverage under Irrigation.

Area - Million Hectares,

Production: Million tones,

Yield - Kg/Hectare

State	Area	% of Total Area	Production	% of total Production	Cumulative % of Total Production	Yield	Area	% of Total Area	Production	% of total Production	Cumulative % of Total Production	Yield	% Coverage under Irrigation during 1998-99
1	2	3	4	5	6	7	8	9	10	11	12	13	14
West Bengal	5.44	12.26	12.43	14.65	14.65	2287	6.15	13.62	13.76	15.34	15.34	2237	25.9
Uttar Pradesh	5.84	13.17	11.54	13.60	28.24	1976	6.08	13.46	13.23	14.75	30.10	2176	66.2
Andhra Pradesh	4.03	9.08	11.45	13.49	41.73	2842	4.01	8.88	10.64	11.86	41.96	2650	95.9
Punjabn	2.61	5.88	9.15	10.78	52.52	3506	2.60	5.76	8.72	9.72	51.68	3347	89.8
Tamilnadu	2.11	4.76	7.22	8.51	61.02	3415	2.16	4.78	7.53	8.40	60.08	3481	93.5
Bihar	3.67	8.27	5.42	6.39	67.41	1475	5.00	11.07	7.25	8.08	68.16	1450	41.1
Orissa	4.43	9.99	4.61	5.43	72.84	1041	4.60	10.19	5.19	5.79	73.95	1127	38.0
Assam	2.67	6.02	4.00	4.71	77.55	1495	2.65	5.87	3.86	4.30	78.26	1459	21.7
Karnataka	1.48	3.34	3.73	4.39	81.95	2520	1.45	3.21	3.72	4.15	82.40	2564	70.9
Chhatisgarh	3.60	8.12	3.24	3.82	85.77	900	*	*	*	*	*	*	*

Haryana	1.05	2.37	2.68	3.16	88.92	2559	1.08	2.39	2.58	2.88	85.28	2385	99.8
57													
Maharashtra	1.51	3.40	1.95	2.30	91.22	1285	1.52	3.37	2.56	2.85	88.14	1684	*
Jharkhand	1.48	3.34	1.64	1.93	93.15	1111	*	*	*	*	*	*	*
Gujarat	0.65	1.47	1.01	1.19	94.34	1553	0.66	1.46	0.98	1.09	89.23	1482	70.6
Madhya Pradesh	1.67	3.76	0.96	1.13	95.48	574	5.35	11.85	6.38	7.11	96.34	1191	23.3
Kerala	0.35	0.79	0.75	0.88	96.36	2162	0.35	0.78	0.77	0.86	97.20	2204	55.8
Others	1.77	3.99	3.09	3.64	100.0	@	1.50	3.32	2.51	2.80	100.00	@	-
All India	44.36	100.00	84.87	100.00		1913	45.16	100.00	89.68	100.00		1986	52.3

@ Since Area / Production is low, yield rate is not worked out.

- the relevant estimates are included in their respective parent states from where these states were carved out.

Note: States have been arranged in descending order of percentage share of production during 2000-01

Annexure-II**YEAR WISE AREA SOWN UNDER BASMATI RICE-DISTRICT KARNAL**

Area in '000 hect.)
(Avg.yield in kg.per hect.)
Production in '000 M.T.

Year	Total Area Sown under Paddy Crop	Area Sown under Basmati rice	Average Yield Basmati Rice	Production Basmati Rice	Production Paddy (Total)
1999	162	52	1325	70	-
2000	158	45	1250	56	-
2001	166	42	1200	50	470 (2001-02)
2002	159	17	1000	17	465 (2002-03)
2003	167 (Estimated)	53 (Estimated)	N/A	N/A	-

Courtesy: State Agriculture Department, Karnal