Detailed Project Report

Karnal MSME Ayurveda Units Cluster



Chandigarh September 2019



Submitted By: VAPIK Solutions PVT Ltd. (SPV)

Prepared By: Ernst & Young LLP

Submitted to:

Department of Industries & Commerce

Govt. of Haryana

& Development Commissioner (MSME)

Government of India

(For assistance under MSE-CDP Scheme)

Detailed Project Report of Karnal Ayurveda Cluster

24 September 2019

Director Department of Industries & Commerce, Govt. of Haryana 1st Floor, 30 Bays Building, Sector 17, Chandigarh

Dear Sir,

As part of our engagement for providing consulting services for 'MSME Ecosystem Transformation in the state of Haryana' we hereby submit the Detailed Project Report (DPR) for setting up of Common Facility Centre (CFC) at Ayurveda Units Cluster, Karnal for your kind perusal. The deliverable has been prepared in accordance with our engagement agreement with Directorate of Industries, Govt. of Haryana dated 03 January 2017, and our procedures were limited to those described in that agreement. This Detailed Project Report is based on inquiries of and discussions with:

- Directorate of Industries, Govt. of Haryana
- MSME-DI, Karnal
- Members of VAPIK Solutions PVT Ltd. (SPV)
- Ayurveda units located in Karnal
- Industry Experts
- Secondary Research

Our work has been limited in scope and time and we stress that more detailed procedures may reveal other issues not captured here. The procedures summarized in our Detailed Project Report do not constitute an audit, a review or other form of assurance in accordance with any generally accepted auditing, review or other assurance standards, and accordingly we do not express any form of assurance. This Detailed Project Report is intended solely for the information and use of the Office of Directorate of Industries-Haryana or the office of Development Commissioner, Ministry of MSME and is not intended to be and should not be used by anyone other than this specified party.

We appreciate the cooperation and assistance provided to us during the preparation of this report. If you have any questions, please contact the undersigned.

Sincerely,

Amar Shankar, Partner - Advisory Services

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Also, we must extend our sincere thanks to MSME entrepreneurs and other key stakeholders who gave us their valuable time and insights with respect to various dimensions of the Ayurveda units and its support requirements. Without their help, capturing of the industry insights would not have been possible.

Abbreviations

ΑΡΙ	Active Pharmaceutical Ingredients		
ASEAN	Association of Southeast Asian Nations		
AYUSH	Ayurveda, Yoga, Unani, Siddha, Homoeopathy		
BIS	The Bureau of Indian Standards		
CAGR	Compounded annual growth rate		
CETP	Common effluent treatment plant		
CFC	Common Facility Centre		
CST	Central Sales Tax		
DCMSME	Development Commissioner, Ministry of MSME		
DIPP	Department of Industrial Policy and Promotion		
EPC	Export Promotion Council		
EPP	Export Promotion Policy		
EU	European Union		
F & D	Formulation & Development		
FDI	Foreign Direct Investment		
GDP	Gross domestic product		
GOI	Government of India		
GLP	Good Laboratory Practice		
GMP	Good Manufacturing Practice		
GCP	Good Clinical Practice		
GSDP	Gross State Domestic Product		
GST	Goods and Service Tax		
HSIIDC	Haryana State Industrial and Infrastructural Development Corporation		
HPTLC	High-Performance Thin-Layer Chromatography		
KADMA	Karnal Ayurveda Drug Manufacturers Association		
КРМА	Karnal Pharmaceutical Manufacturers Association		
LLP	Limited liability partnership		
МоА	Ministry of AYUSH		

MoMSME	Ministry of Micro, Small & Medium Enterprises		
MoU	Memorandum of understanding		
MSME	Micro, Small & Medium Enterprises		
NABL	National Accreditation Board for Testing and Calibration Laboratories		
NGLPA	National Good Laboratory Practice Authority		
NDRI	National Dairy Research Institute		
NSSO	National Statistical Survey Organization		
O/o of DC-MSME	Office of Development Commissioner - Micro, Small & Medium Enterprise		
OECD	Organization for Economic Cooperation and Development		
PPP	Public Private Partnership		
PVC	Poly Vinyl Chloride		
R&D	Research and Development		
SPV	Special Purpose Vehicle		
SWCA	Single Window Clearance Agency		
UAM	Udyog Aadhar Memorandum		
WHO	World Health Organization		

Detailed Project Report of Karnal Ayurveda Cluster

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EXECUTIVE SUMMARY



Executive summary

The Government of Haryana through the Department of Industries and Commerce intends to transform the MSME sector of the state and put it on a growth trajectory. Several incentives have been offered under the state's ambitious 'Enterprise Promotion Policy (EPP) 2015' to provide an impetus to growth of the MSME sector. An attempt is also being made to actively leverage the grants available under central government schemes. Towards this, the state aims to strengthen the technology infrastructure as well as enhance productivity and competitiveness of various MSME clusters across the state by leveraging funding under the Micro and Small Enterprises Cluster Development Program (MSE-CDP) scheme of Ministry of MSME (led by the office of DCMSME) as well as providing grant under its EPP 2015.

In this context, this Detailed Project Report (DPR) has been prepared to seek grant-in-aid assistance under the MSE-CDP to set up a state-of-the art Common Facility Centre (CFC) in Ayurveda cluster at Karnal District, Haryana.

About the Karnal Ayurveda Cluster

Owing to changing preferences & more informed consumers, the Ayurveda Products market is registering good growth in recent years. Global market size of Ayurvedic products is estimated to be around USD 5170 million in 2019. The market is expected to grow at a CAGR of around 12.2% to

reach around USD 9210 million by 2024. India is the largest market for Ayurveda products with market size of around USD 1200 million. Other major markets for Ayurveda products include Russia, USA, Kazakhstan, UAE, Japan & Asia pacific countries such as Sri Lanka, Pakistan, Indonesia, Myanmar & others.

Ayurveda market consists of products in multiple categories such as Classical Ayurvedic powders (Bhasma), Ayurvedic medicines (tablets, capsules, syrups, eye & ear drops), allied products such as Ayurvedic ointments & oils,



Figure 1: Processing of raw materials

Ayurvedic Nutraceuticals & Personal care products (skin care, hair care, oral care, make-up etc.) Some of the key players in Indian Ayurvedic market include Dabur, Baidyanath & Zandu which account for around 80% of the market. In order to promote traditional systems of medicine including Ayurveda, Indian govt. has set up AYUSH ministry and also incentivized the industry via a lower Goods & Services tax of 5% on classical Ayurveda items.

Karnal has been a traditional hub for Ayurvedic medicines since ancient times but recently it has started taking shape of an industry and has been logging impressive growth in last ten years.

Owing to attractive incentives, most of the large Ayurveda players in India have their manufacturing facilities in states such as Himachal Pradesh & Uttarakhand. Accordingly, there are no large Ayurveda units in Karnal. However, this has given opportunity for the growth of MSME sector in Karnal and accordingly around 50 MSME Ayurveda units are currently operational in Karnal. These units apart from being involved in contract manufacturing & loan licensing, also sell products under their own brand name. The Cluster Units are engaged in Manufacture of Ayurvedic, Nutraceuticals and allied products which include Ayurvedic Powder, tablets, capsules, syrup, ointments, eye & ear drops, Oils, & Ayurvedic Personal Care products.

Many other investors are establishing Ayurvedic manufacturing plants in Karnal after seeing the growth of Ayurvedic product market. Most of the manufacturing industries have good facilities, GMP certified and are associated with Karnal Pharmaceutical Manufacturer Association (KPMA). Cheap labor, affordable transportation cost and easy availability of water are the reasons for fast growth of industry in the region. Introduction of GST has made it easier to attract industrialists to set up their units in Haryana.

Diagnostic Study and Interventions

A diagnostic study was undertaken by the cluster members in 2019 to map the existing business processes in the cluster, identify the gaps and understand the requirements of the cluster. The diagnostic study report (DSR) was compiled by the cluster SPV in close coordination with the District Industries Centre, Karnal and with inputs from MSME-DI.

One of the key problems that Ayurveda units in Karnal face is the availability of standardized & quality raw materials/ APIs with assured delivery timelines. Almost all the Ayurveda units in Karnal are MSMEs, and consequently they are not a priority for large & quality raw material suppliers who prefer supplying to large units with bulk orders or exports to foreign buyers because of greater profits. Consequently, Karnal Ayurveda Units procure herbal extracts/APIs from smaller suppliers & far-off places, where-in there's no assurance in terms of authenticity of

Content & quality and timely delivery.

Also, there is an absence of centralized F&D facility in the cluster to facilitate new product development. There is no common assistance available to Ayurveda unit entrepreneurs for development of formulations for several products manufactured by them. In the absence of these facilities, the units have to rely on their limited capacities or depend mostly on the contract manufacturing model. This is also hindering their capacities to develop products that they can market in their own brand name.

Another pressing problem is the absence of quality testing lab for testing of raw material/finished products. The units have to send the samples of raw materials as well as finished goods to private labs located in far off places such as Panchkula & Delhi and wait for test reports. This often leads to production delays. The charges of these labs are also exorbitant. To address these gap areas/problems being faced by Karnal Ayurveda units, the need to set up a CFC was recommended in the DSR.

The DSR was presented to the state government during first meeting of the State Level Project Steering Committee (SLPSC) on 29 August 2019 and was subsequently approved. The SPV was granted permission to go ahead with preparation of the Detailed Project Report (DPR) for the cluster.

Proposed Common Facility Centre

The proposed CFC will facilitate:

- i. Herbal Extraction Plant
- ii. In-process quality control lab cum R&D Centre

Such a common facility will enable the cluster units in procuring standardized & quality raw materials for their products at reasonable prices and as per the exact specifications required. A common quality cum R&D lab will also enable the cluster units to try new formulations and move up the value chain with greater share of revenue from self-owned brand sales than just contract-manufacturing.

There is no such similar facility available in Karnal and other neighboring districts. The proposed common facilities will be utilized by the SPV members and will also be available to non-members units in and outside the cluster. Potential beneficiaries include the MSME Ayurveda units across Haryana and especially the neighboring districts of Karnal,

Panipat, Ambala, Yamunanagar & Kurukshetra. The facility will provide a much needed infrastructural push to the cluster units and will enable them to become more competitive.

Special Purpose Vehicle for Project Implementation

Post the need identification during the diagnosis study, the cluster units came together to form a Special Purpose Vehicle (SPV) by the name and style of 'VAPIK Solutions Private Ltd.' The SPV was set up as a private limited company under section 7 of the Companies

Act, 2013 and rule 8 of the Companies (Incorporation) Rules, 2014. DIC, Karnal and MSME-DI have played an important role in SPV formation by cluster stakeholders. The SPV was incorporated in 2019 and already includes about 24 members who are subscribing to the necessary equity base of the company. The proposed CFC will be implemented on publicprivate partnership basis through SPV 'VAPIK Solutions Private Limited' by availing support from Government of Haryana (under EPP 2015) and Government of India (under MSE-CDP scheme of DCMSME).



Figure 2: Cluster Meeting held on 05.12.18

The SPV members have a track record of cooperative initiatives. SPV members are also members of prominent cluster associations such as KADMA (Karnal Ayurveda Drug Manufacturers Association), KPMA (Karnal Pharmaceutical Manufacturers Association). Cluster members have been autonomously undertaking several soft interventions to enhance knowledge and exposure of the cluster units on new developments in Ayurvedic products industry. These include exposure visits to raw material suppliers in Nainital & Kala Amb, joint sessions to discuss latest market developments, pain points & growth areas for the cluster, exposure to cluster development initiatives in other clusters, meetings with Ministry of AYUSH, registrations under UAM and awareness programs on new trends in Ayurveda manufacturing industry and new technologies. These programs were conducted in collaboration with DIC, MSME-DI and Ministry of AYUSH.

Project Parameters, Viability & Sustainability

The VAPIK Solutions Pvt. Ltd with support from DCMSME (under MSE-CDP) and state industry department is willing to set up a Centre of Excellence – a Common Facility Centre having a herbal extraction plant & In-process quality control lab cum R&D Centre to undertake job work of cluster units with a total project cost of about INR 1494.62 Lakhs.

The cost of the project and proposed means of finances is tabulated below:

Project Cost

S. No.	Particulars	Total Project Cost (Rs. Lacs)
1	Land	107.50
	a. Land cost	107.50
2	Building & Other Civil Works	289.24
3	Plants & Machinery	949.93
	a. Indigenous	692.8
	b. Imports	
	c. Secondary Machines	251.13
	d. Erection & Commissioning	6
4	Miscellaneous fixed assets (fixture, furniture, firefighting equipment etc.)	17.0
5	Preliminary Expenses (DSR, DPR, Registration, civil engineering drawings with estimates & tender forms, bank appraisal etc.)	42.44
6	Pre-Operative Expenses (Telephone & Stationary, Logistics, electricity connection)	22.13
7	Contingency	
	a. Building @ 2%	5.78
	b. Plant & Machinery @ 5%	38.63
8	Margin money for working capital (Working capital required @ 80% C.U.)	19.31
	Total	1491.97

Table 1: Project Cost

The total project cost is estimated to be INR 1491.97 Lakh. The total contribution of SPV members will amount to INR 149.20 Lakh. Support from MSE-CDP of the DC-MSME is envisaged for INR 1089.14 Lakh and from the government of Haryana is INR 253.63 Lakh.

The assistance to the project from the Govt. of India is envisaged to the tune of 73.00 per cent of the project cost, SPV contribution is to the tune of 10 per cent of the project cost and 17 per cent of the project cost will be contributed by GoH.

Means of finance

	Table	2:	Means	of	finance
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S. No.	Source of finance	Project cos 1500.0	t up to INR 00 lacs	Project cost over INR 1500.00 lacs		Total Amount
		Percentage Contribution	Amount (INR in lacs)	Percentage Contribution	Amount (INR in lacs)	(INR in lacs)
1	Grant-in-aid under MSE-CDP (Govt. of India)	73	1089.14	-	-	1089.14
2	Grant-in-aid (Govt. of Haryana)	17	253.63	-	-	253.63
3	Contribution of SPV	10	149.20	-	-	149.20
	Total					1491.97

The viability and sustainability of the project is evident from the project economics as well as the cooperative spirit and profile of the SPV. Some indicators of the viability are as follows:

Project's financial indicators:

Table 3: Financial Indicators

S. No.	Particulars	Estimates
1	BEP (cash BEP at operating capacity of 70%)	55.42%
2	Av. ROCE (PAT/CE) sans Grant	25.21%
3	Internal Rate of Return (IRR)	21.01%
4	Net Present Value (at a discount rate of 10 per cent) - incorporating viability gap funding (grant) by Gol and GoH	812.16
5	Payback period	5.55 (5 Years & 7 Months Approx.)
6	DSCR	Term Loan not Availed

As evident from the financials above, with viability gap funding under the MSE-CDP and under EPP of GoH, the project is highly viable and sustainable. The project is expected to generate surplus from the first year of operation. Risk and sensitivity analysis considering a decline in user charge/ capacity utilization also validates the project sustainability.

Project Implementation

Project implementation is envisaged to involve a time-frame of about 12 months upon receipt of final approval of grant-in-aid assistance from the Government of India under MSE-CDP. The project will be implemented by the SPV in close association with DIC, Karnal and MSME-DI Karnal. Cluster Development Co-ordination Committee (CDCC) under the chairmanship of Director of Industries, Government of Haryana shall supervise cluster development projects in Haryana.

In addition to CDCC, a Project Management Committee (PMC) comprising the GM, DIC, Karnal; representatives of SPV; representatives of SIDBI and EY experts may be formed to oversee effective monitoring and implementation on regular basis. The project will be executed by SPV, while PMC may report the progress of implementation to the CDCC, SLPSC and DC-MSME.

There is an increasing demand of Ayurveda based products across the country due to changing lifestyles, increasing awareness among consumers about side-effects of allopathic drugs & gradual shift towards traditional medicine that promote preventive care. Apart from Ayurveda medicines, the growth in the global Ayurveda market is primarily led by organic skincare products and anti-ageing, anti-wrinkle creams. The Karnal Ayurveda cluster has an amazing potential to grow and supply its produce in their own brand name. Also, traditional medicine industry like Ayurveda is an ever growing one and offers tremendous opportunities for small Ayurveda units to become contract manufacturers to large firms. The higher disposable incomes will mean that consumers will opt for better health facilities and treatment, thereby increasing the demand for various drugs manufactured by Karnal units.

Against this backdrop, the proposed CFC will provide the much needed standardized raw material, formulation development and quality testing facilities (reducing their reliance on expensive private labs based far off from the cluster) required by the cluster units to move up the value chain and become more competitive. It will address the key pain areas of Ayurveda Units based in Karnal & other nearby districts related to procurement of quality raw materials with assured timelines and at reasonable prices. It is envisaged that good quality herbal extracts will lead to tremendous

improvements in the end product quality of the cluster units. Also, availability of a common Inprocess quality control lab cum R&D centre will enable the cluster units to develop their own formulations and gradually move from contract manufacturing model to self-owned brands with greater profit opportunity.

Expected outcome of the CFC:

Area	Current Scenario	Expected Out Comes in 3 years
Potential Beneficiaries (5 Districts)	150 MSEs	250 MSEs
Cluster Units (Karnal)	About 50 MSEs	About 80 SMEs
Markets	Mostly contract-manufacturing loan licensing for large firms, some units have few small brands	Greater revenue from self-owned brands, more exports opportunities, enhanced brand loyalty because of better quality products
Employment	About 2500 direct employment	About 4500 direct employment
Technology	Lack of facilities to test raw material quality, Lack of a good R&D capabilities to develop new formulations	CFC will have the facility to test the raw material quality at each stage in the production process and hence provide the herbal extract as per the exact specifications of the cluster units. Also common R&D centre will encourage development of new formulations.
Production	Low Quality Raw Materials No assurance in raw material delivery timelines leading to unplanned production shutdowns High In-bound Transportation Costs High Raw material testing costs	Better end-product quality Assured raw material delivery timelines leading to well-planned production schedules Low in-bound transportation costs Lower testing costs
Exports	Current exports from cluster units are negligible	20% of units shall explore international markets and start exporting
Turn Over	About 50 crore	About 100 Crore
Certification	Most units have GMP Certification	Around 10% units shall attain WHO- GMP Certifications

Table 4: CFC Expected Outcomes

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INTRODUCTION



1. Introduction

1.1 Brief Overview of the Cluster

Changing lifestyles, increasing awareness among consumers, concerns about side effects of modern allopathy & rising preference for natural products & traditional medicine have enabled the global Ayurvedic market to flourish in recent years. Global market size of Ayurvedic products is estimated to be around USD 5170 million in 2019. The market is expected to grow at a CAGR of around 12.2% to reach around USD 9210 million by 2024.

India is the largest market for Ayurveda products with market size of around USD 1200 million. Other major markets for Ayurveda products include Russia, USA, Kazakhstan, UAE, Japan & Asia pacific countries such as Sri Lanka, Pakistan, Indonesia, Myanmar & others. In order to promote traditional systems of medicine including Ayurveda, Indian govt. has set up AYUSH ministry and also incentivized the industry via a lower Goods & Services tax of 5% on classical Ayurveda items.

Karnal has been a traditional hub for Ayurvedic medicines since ancient times but recently it has started taking shape of an industry and has been logging impressive growth in last ten years. Owing to attractive incentives, most of the large Ayurveda players in India have their manufacturing facilities in states such as Himachal Pradesh & Uttarakhand. Accordingly, there are no large Ayurveda units in Karnal. However, this has given opportunity for the growth of MSME sector in Karnal and accordingly around 50 MSME Ayurveda units are currently operational in Karnal, 24 of which have already become part of the SPV to facilitate the setting-up of a CFC.

These units apart from being involved in contract manufacturing & Ioan licensing, also sell products under their own brand name. Post 2000, with Indian economy registering high GDP growth, resulting in higher purchasing power of the domestic consumers, changing lifestyles, emphasis upon health & wellness, more spending income in the hands of women consumers, led to rapid growth in the number of Ayurveda manufacturing units in Karnal. Penetration of information sources such as mobiles, laptops & affordable internet plans have led to more informed consumers about potential side effects of allopathy treatment and as such preference for traditional medicine has increased even further. Thus, this increased demand has further fueled growth in Karnal Ayurveda sector with a number of new units coming up in last 3-4 years. In fact, 9 of the 24 members of the cluster SPV have opened up their units in last two years. MSMEs in Karnal, manufacture a range of products such as Oral solid dosage (tablets, capsules, powder), Oral liquid dosage (Syrups), External application (ointment, creams, oils), Personal care (face wash, shampoo, soaps), Ophthalmic and Nasal (eye drops, ear drops).



Figure 3: Cluster Products

Out of 24 units of District Karnal which are already a part of the SPV, 21 units are Micro and 3 are Small sized manufacturing units. All the members of cluster are within the radius of 10 km, however the AYUSH Product manufacturers of Panipat, Ambala, Yamunanagar and Kurukshetra are also interested in being the potential beneficiaries of the proposed CFC.

One of the key problems that Ayurveda units in Karnal face is the availability of standardized & quality raw materials/ APIs with assured delivery timelines. Currently Karnal Ayurveda Units procure herbal extracts/APIs from far-off places such as Kala Amb in Himachal or Nainital in Uttarakhand. However these procured extracts are not standardized, and there's no assurance in terms of authenticity of content & quality. Also procurement from far-off places results in high transportation costs which further increases the cost of final product. Procurement of key raw materials from far-off places results in low assurance in terms of timely delivery, resulting in unplanned manufacturing shut downs.

Therefore, there is a dire need for setting up of a common herbal extraction plant quipped with inhouse testing facilities for guality control and R&D. Setting up of such an herbal extraction plant in Karnal will lead to easy availability of standardized raw materials to Ayurveda units in Karnal and nearby districts. Standardized raw materials will help further improve the quality of finished products of the Karnal Ayurveda Units. It will also help in more planned production schedules because of assured delivery timelines and reduce the cost of production because of lower inbound transportation costs. It is expected that such facility established in Karnal will lead to increased turnover & profitability for existing units and also facilitate emergence of new Ayurveda MSMEs in Karnal and nearby areas.

1.2 About the District

Karnal is one of the most industrialized and historical districts of Haryana. It is famously known as a city of 'Daanveer Karna', as per the ancient Indian epic Mahabharata. Karnal district is known as the 'Rice bowl of India' due to production of huge quantities of rice. It is also famous for presence of premier research institutions such as National Dairy Research Institute (NDRI), Central Soil Salinity Research Institute (CSSRI), and Wheat Research Directorate, National Bureau of Animal Genetics Resources, Sugarcane Breeding Institute etc.





Karnal district is prominently located on the Sher Shah Suri Marg (G.T. Road), and Delhi Ambala rail

Delhi and Chandigarh at a distance of about 125 km from each. Karnal district is strategically located and connects with five different states in proximity, this has fuelled the growth of district by enabling industries to tap market of 5 states. Karnal district lies on the western bank of river Yamuna and forms eastern boundary of the district. The river Yamuna separates Haryana from Uttar Pradesh. The Karnal district is surrounded by Kurukshetra district on its



north-west, Jind & Kaithal district on its west, Panipat district on its south and Uttar Pradesh on east (figure 1 and 2).

1.3 Industrial scenario of Karnal

By late sixties, this region had started feeling the impulses of development. Regions adjacent to GT road (NH-1) recorded considerable economic growth, especially due to industrial development in areas around Delhi. The onset of green revolution, and expansion of agro-based & agriculture oriented industries (particularly rice mills in large numbers) provided an impetus to the growth of the region. Subsequently, the region witnessed a transition from agriculture to industrialization. The Haryana government also undertook several initiatives to promote industrial development in the region. The state ensured creation of massive infrastructure in terms of complete electrification, provision of road transport, expansion of administrative, educational and health facilities in small towns, and establishment of many new industrial townships and urban estates. Suitable infrastructure & location coupled with rising demand for traditional medicine led to rapid growth in number of new Ayurveda units. At present, Karnal has become the major industrial hub with presence of a large number of industries across various segments such as and several industrial sectors such as Ayurveda Units, food processing, rice milling, pharma, packaging, agriculture implements and so on.

1.4 Geographical Traits

The Karnal district lies between 29'09'50" and 29'50' North latitude and 76 31' 15" and 77 12'45" East longitude. The topography of Karnal district is almost plain and well irrigated through tube wells and canals. It has an elevation of 235 to 252 meters (748 feet). Irrigated area is about 205627 hectare, while the gross irrigated area is 388917 hectare. Percentage of the gross irrigated area to total cropped area is 98.72 % while the cropped area is 387111 hectare.



Figure 6: Karnal Canal System

River Yamuna forms eastern boundary of the district and

flows from north to south. The district is a part of the Ganga-Sindhu (Indo-Gangetic) plains and has a well spread network of western Yamuna canal. Its geographical area has been divided in to three agro climatic regions, Khadar, Bhangar and Nardak belt. Khadar starts from Indri-Karnal road one mile away from Karnal covering the area in between Yamuna River and NH-1 up to Patti-Kalyana village. Bhangar area starts from west of Khadar area covering Gharaunda, development block. The Nardak area lies in Nissing, Nilokheri and Assandh development block.

1.5 Demographic Trends and Economic Structure

According to the 2011 census, Karnal district had a population of 1,505,324 (of which male and female were 797,712 and 707,612 respectively), making it the 5th largest district of Haryana in terms of population¹. The district has a population density of about 600 inhabitants per square km. Karnal has a sex ratio of 887 females for every 1000 males, and a literacy rate of about 75%. Overall penetration of higher education in Karnal is lower than the state average.

The percentage of Cultivators to total Workers in 2011 in the district was about 22% whereas during 2001 it was 27%². This infers that people have moved away from farming due to lesser profits. However, the district's economy is still predominantly agriculture based owing to the existence of good irrigation system across the district. Industrial activities have started increasing in the district with due to pro-business environment in the state. This had led to generation of employment in secondary and tertiary sectors.

The existing area under industrial use is approximately 102 hectare including the major industrial estate of HSIIDC in Sector 3 of Karnal. Keeping in view the location, available infrastructure, topography and drainage, an industrial area of 466 hectare has been allocated by Government of Haryana in sectors 1, 2, 37, 40 and 43-A of Karnal district. This units that will be setting up here are expected to provide employment to about 35,000 workers.

¹ http://www.census2011.co.in/census/district/213-karnal.html ² Census 2011: District Census Handbook, Karnal

Overview of the Ayurveda Sector



2. Overview of the Ayurveda Sector

In Sanskrit, Ayurveda means "The Science of Life." Ayurveda knowledge is said to be originated in India more than 5,000 years ago. It is one of the oldest holistic healing system. Also called 'Mother of Healing', it has been taught in the subcontinent for thousands of years in an old school tradition from accomplished masters to their disciples. Ayurveda places a thrust on prevention and encourages the maintenance of health through close attention to balance in one's life, right thinking, diet, lifestyle and the use of natural products. It is said that Knowledge of Ayurveda creates an understanding to align balance of body with mind and consciousness.

Ayurveda acknowledges the presence of three basic types of energy or functional principles that are present in everyone, *vata*, *pitta and kapha*. The cause of disease in Ayurveda is identified to be a lack of proper cellular function due to an excess or deficiency of vata, pitta or kapha. Disease can also be caused by the presence of toxicity in one's body.

There is an important difference between Ayurveda and Western allopathic medicine. Allopathic medicine focuses on symptomatology and disease, and focuses on the usage of drugs and surgery to rid the body of pathogens or diseased tissue.

Ayurveda claims to address all aspects of life – the body, mind and spirit. Through insight, understanding and experience Ayurveda presents a vast wealth of information and develops a causal relationship, both immediate and subtle, for each unique individual.

The principal objectives of Ayurveda include maintenance and promotion of health, prevention of disease and cure of disease using natural methods. Treatment of the disease consists in avoiding causative factors responsible for disequilibrium of the body matrix or of any of its constituent parts through the use of Panchkarma procedures, herbal medicines, suitable diet, activity and regimen for restoring the equilibrium and strengthening the immunity system to prevent or minimize future occurrence of the disease.

Now-a-days there's a rising preference for the Ayurvedic medicines as the Allopathic medicines are costlier and have side effects. Ayurvedic medicines are based on plants, animal's extracts and minerals both in single ingredient drugs and compound formulations. Basic raw materials used in the formulation of Ayurvedic machines are mainly plant origin & hence consumption of Ayurvedic medicine does not produce any major adverse effect on body.

2.1 World Scenario

Global market size of Ayurvedic products is estimated to be around USD 5170 million in 2019. The market is expected to grow at a CAGR of around 12.2% to reach around USD 9210 million by 2024³. Changing lifestyles, increasing awareness among consumers, concerns about side effects of modern allopathy & rising preference for natural products & traditional medicine have enabled the global Ayurvedic market to flourish in recent years.

India is the largest market for Ayurveda products with market size of around USD 1200 million. Other major markets for Ayurveda products include Russia, USA, Kazakhstan, UAE, Japan & Asia pacific countries such as Sri Lanka, Pakistan, Indonesia, Myanmar & others.

Ayurveda market consists of products in multiple categories such Classical Ayurvedic powders (Bhasma), Ayurvedic medicines (tablets, capsules, syrups, eye & ear drops), allied products such as Ayurvedic ointments & oils, Ayurvedic Nutraceuticals & Personal care products (skin care, hair care, oral care, make-up etc.)

Apart from Ayurveda medicines, the growth in the global Ayurveda market is primarily led by organic skincare products and anti-ageing, anti-wrinkle creams. Accordingly major portion of global revenue share of Ayurveda products belongs to the personal care segment.

In terms of broader herbal based traditional medicines market, Europeans Union has the largest share with around 45 % of the total market size. Other key markets are ASEAN countries 19%, Japan 16% and North America 11%. India faces stiff competition from other countries such as China & Japan who have been able to market their products in foreign destinations more successfully.

However, India has advantages in terms of natural availability of herbs. India has 16 Agro-climatic zones, 10 vegetative zones, 15 biotic provinces, 426 biomes, 45000 different plant species and 15000 medicinal plants that include 7000 Ayurveda, 700 in Unani medicine, 600 in Siddha medicine

³ https://www.medgadget.com/2019/02/global-ayurvedic-market-is-booming-with-analysis-of-recent-demand-keyplayers-patanjali-ayurved-limited-emami-group-basic-ayurveda-industry-growth-size-share-end-user-trends-andforecast-till.html

and 30 in modern medicine. This makes India one among 12 mega bio-diverse countries of the world, which despite having only 2.5 % total land area, accounting for over 8 % of the recorded species of the world.

Traditional Chinese Medicine (TCM) uses over ~5000 plant species, while India uses about ~7000. Globally, TCM has been able to capture a much larger share of US\$ 19 billion out of a total estimated market of US\$ 62 billion, whereas Indian herbal medicine is far behind at an estimate of around USD 1 billion.

Ayurveda industry can capture the huge potential which is their in global herbal/traditional products market, if it can address the key issues facing it. Primarily availability of standardized quality raw materials to manufacturing units needs to be addressed. Also, aggressive marketing strategies in foreign markets and strong brand building is one of the areas that needs to be improved upon. Also investments in R&D around Ayurveda products, enabling the units to adopt GLP & GMP practices & a strong patent regime are key areas to be focused upon.

2.2 India's Scenario

India is the largest market for Ayurveda products with market size of around USD 1200 million. Some of the key players in Indian Ayurvedic market include Dabur, Baidyanath & Zandu which account for around 80% of the market. Other major players are Amrutanjan Healthcare, WELEX Laboratories, Lotus Herbals, Khadi Natural, Surya Herbal, Maxcure Nutracedic, Vicco Laboratories, Kerala Ayurveda Ltd., Forest Essentials, The Himalaya Drug Company, Patanjali Ayurved, Hamdard Laboratories, Emami, Charak Pharma, BACFO Pharmaceuticals, Charak Pharma and Ayurvedic LifeStyles Inc.

In order to promote traditional systems of medicine including Ayurveda, Indian govt. has set up AYUSH ministry and also incentivized the industry via a lower Goods & Services tax of 5% on classical Ayurveda items.

Indian Ayurveda Industry suffers from certain challenges, which act as a hindrance to exploit the potential that is there in global traditional medicines market. Some of the key challenges are listed below:

I. Timely availability of raw materials

- II. Lack of standardization in herbal extracts
- III. Costs of procurement
- IV. Lack of streamlined quality control procedures
- V. Less penetration of Hi-tech agricultural practices
- VI. Organic Cultivation practices not widely adopted
- VII. Low investment in R&D on Ayurveda products
- VIII. Lack of well- defined, accepted & well implemented standards
- IX. No targeted marketing & branding activities in foreign markets

India also undertakes exports of Ayurvedic plants & herbs as well as value added herbal products. Exports figures in recent years is as follows:

Table 5: Herbs and Herbal Products Exports

Value in USD Million

Commodity	2015-16	2016-17	2017-18	April-November,2019
				(Estimated)
Plant and Plant	274.14	289.07	330.18	205.45
Portion (Herbs)				
AYUSH and Herbal	364.00	401.68	456.12	290.96
Products				

The ministry of AYUSH (Ayurveda, *Yoga*, Unani, Siddha, and Homoeopathy) set up in 1995 is responsible for promoting research & development in Indian traditional medicines, promoting education of Ayurveda and other indigenous systems, introducing standardizations, and promoting the industry. Teaching institutes in traditional Indian medical systems are managed by Central council of Indian medicines. Govt. has also set-up central council for Research in Ayurveda & Siddha for R&D in these disciplines.

Govt. has also set-up Shellac & Forest Products Export Promotion Council (SHEFEXIL), headquartered at Kolkata, in order to promote exports of Ayurvedic herbs & medicinal plants. Besides this, Pharmaceuticals Export Promotion Council also facilitates promote of Ayurveda based tablets, capsules & syrups etc. Ayurveda units can also utilize other GOI schemes such as Market Access Initiative (MAI) Scheme, Merchandise Exports from India Scheme (MEIS), 'Niryat Bandhu Scheme' in order to further boost their exports. Under MAI scheme, units can claim financial assistance to participate in trade fairs or buyer seller meets, where they can market their products. In MEIS scheme, exporters get incentives in terms of duty scrips which can be used to custom duties, excise duties, service tax etc. Ayurveda units who do not have adequate information on export procedures can make use of Niryat Bandhu scheme, under which GOI conducts orientation & counselling sessions for potential exporters.

Apart from this Ministry of AYUSH also comes up with multiple initiatives to promote Ayurveda products. It provides financial assistance to exporters under its 'International Cooperation Scheme' for participation in business meets, trade fairs & reimbursements of expenses incurred towards product registrations. Ministry of AYUSH also enters into MOUs with other countries for promotion of Indian Ayurveda products. It is also responsible for creating quality standards for Ayurvedic products and accordingly has come up with quality certification standards for traditional products such as AYUSH Mark & Premium mark. It has also launched "Voluntary Certification Scheme for Medicinal Plants Produce (VCSMPP)" which is aimed at encouraging good agricultural practices & good field collection practices for medicinal plants. This is supposed to improve the availability of quality raw materials for manufacturing of Ayurveda products.

2.3 Karnal Ayurveda Industry

Karnal is one of the twenty two districts of Haryana. It has become an industrial hub and is very popular for production of rice, wheat and milk. The city is now emerging as a big pharmaceutical industrial hub. Karnal has been a traditional hub for Ayurvedic medicines since ancient times but recently it has started taking shape of an industry and has been logging impressive growth in last ten years.

Owing to attractive incentives, most of the large Ayurveda players in India have their manufacturing facilities in states such as Himachal Pradesh & Uttarakhand. Accordingly, there are no large Ayurveda units in Karnal. However, this has given opportunity for the growth of MSME sector in Karnal and accordingly around 50 MSME Ayurveda units are currently operational in Karnal. These units apart from being involved in contract manufacturing & loan licensing, also sell products under their own brand name. The Cluster Units are engaged in Manufacture of Ayurvedic, Nutraceuticals and allied products which include Ayurvedic Powder, tablets, capsules, syrup, ointments, eye & ear drops, Oils, & Ayurvedic Personal Care products.
Many other investors are establishing Ayurvedic manufacturing plants in Karnal after seeing the growth of Ayurvedic product market. Most of the manufacturing industries have good facilities, GMP certified and are associated with Karnal Pharmaceutical Manufacturer Association (KPMA). Cheap labor, affordable transportation cost and easy availability of water are the reasons for fast growth of industry in the region. Introduction of GST has made it easier to attract industrialists to set up their units in Haryana.

Karnal has also become the first district in Haryana to get a facility to test medicines, cosmetics and food supplements. The medicine testing laboratory started in the common facility center for the pharma cluster in the industrial area of Sector 3 in Karnal city is a joint venture of the Union and state governments and the Karnal Pharmaceutical Manufacturer Association (KPMA). It has started testing samples and industrialists can get their sample reports in just two days. The testing of raw material will also be done here to eradicate the threat of spurious drugs. However, when it comes to testing of Ayurvedic formulations, the lab in Karnal currently does not have the capability to conduct all kinds of tests required. Hence, Ayurveda units in Karnal get some of the tests done in testing labs of Panchkula or Delhi.

To promote pharma industry in the district, the state government has planned a Pharma Park on around 100 acres near Taraori which will also provide employment to large number of youth.

But there are certain bottle neck for development of this sector

- 1. Lack of availability of standardized raw material
- 2. Lack of documented process validation
- 3. Lack of proper validation of products
- 4. More thrust on allopathy
- 5. Quality assurance protocol

One of the key problems that Ayurveda units in Karnal face is the availability of standardized & quality raw materials/ APIs with assured delivery timelines. Currently Karnal Ayurveda Units procure herbal extracts/APIs from far-off places such as Kala Amb in Himachal or Nainital in Uttarakhand. However these procured extracts are not standardized, and there's no assurance in terms of authenticity of content & quality. Also procurement from far-off places results in high transportation costs which further increases the cost of final product. Also, procurement of key raw materials from far-off places results in low assurance in terms of timely delivery, resulting in unplanned manufacturing shut downs.

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Diagnostics Study Findings



3. Diagnostic Study Findings

The diagnostic study was undertaken by the cluster members during June to July 2019 to map the existing business processes in the cluster, identify the gaps and understand the requirements of the Karnal Ayurveda cluster. The diagnostic study report (DSR) for Karnal Ayurveda Cluster was compiled by E&Y LLP in co-ordination with cluster SPV i.e. VAPIK Solutions Pvt Ltd. and with inputs from DIC, Karnal & MSME-DI, Karnal. Cluster members have actively participated during the need assessment process and suggested the remedial measures to prepare an action plan. Diagnostic study revealed some of the common problems faced by the Karnal Ayurveda Units.

One of the key problems that Ayurveda units in Karnal face is the availability of standardized & quality raw materials/ APIs with assured delivery timelines. Almost all the Ayurveda units in Karnal are MSMEs, and consequently they are not a priority for large & quality raw material suppliers who prefer supplying to large units with bulk orders or exports to foreign buyers because of greater profits. Consequently, Karnal Ayurveda Units procure herbal extracts/APIs from smaller suppliers & far-off places, where-in there's no assurance in terms of authenticity of Content & quality and timely delivery.

Also, there is an absence of centralized F&D facility in the cluster to facilitate new product development. There is no common assistance available to Ayurveda unit entrepreneurs for development of formulations for several products manufactured by them. In the absence of these facilities, the units have to rely on their limited capacities or depend mostly on the contract manufacturing model. This is also hindering their capacities to develop products that they can market in their own brand name.

Another pressing problem is the absence of quality testing lab for testing of raw material/finished products. The units have to send the samples of raw materials as well as finished goods to private labs located in far off places such as Panchkula & Delhi and wait for test reports. This often leads to production delays. The charges of these labs are also exorbitant. To address these gap areas/problems being faced by Karnal Ayurveda units, the need to set up a CFC was recommended in the DSR.

The DSR was presented to the state government during first meeting of the State Level Project Steering Committee (SLPSC) on 29 August 2019 and was subsequently approved. The minutes of the SLPSC meeting highlighting the approval of DSR and permission to undertake DPR is provided as Annexure 9.1.The SPV was granted permission to go ahead with preparation of the Detailed Project Report (DPR) for the cluster. The major findings of the DSR are presented below:

3.1 Cluster Actors and their role

The primary stakeholders in the cluster are the Ayurveda units based in several industrial locations of Karnal. The other stakeholders include the major industry associations - Karnal Ayurveda Drugs Manufacturers Association (KADMA), Karnal Pharma Manufacturers Association (KPMA), Haryana State Industrial and Infrastructural Development Corporation (HSIIDC), regulatory bodies- mainly state pollution control board, large scale pharmaceutical units (customers of the cluster units), raw material suppliers, academic/training institutes, testing labs, common , banks/FIs and Business Development Services (BDS) providers. These cluster actors provide various services to the cluster units. Some of the major cluster actors located in and around the cluster and catering to the units of the region are mentioned below:

3.1.1 Industry Associations, Special Purpose Vehicles

Karnal Pharmaceutical Manufacturers Association (KPMA)

The major association and the key stakeholder of pharmaceutical manufacturers in Karnal is Karnal Pharmaceutical Manufacturers Association (KPMA). The association comprising over 150 pharmaceutical MSMEs as members is undertaking several development activities in Karnal region. The association addresses issues of the pharmaceutical industry and takes up members' grievances with relevant government authorities. RL Sharma is the president and Raman Gupta is the General Secretary of the association at the present.

Karnal Ayurveda Drugs Manufacturers Association (KADMA)

Karnal Ayurveda Drugs Manufacturers Association is an apex institution working towards the development of Ayurveda Industry in the district. There are 30 members in the association who plays a pivotal role in the development of the industry.

> VAPIK Solutions Private Ltd.

VAPIK Solutions Private Ltd. Is a special purpose vehicle formed by the collaboration between 24 Ayurveda manufacturing units in Karnal, incorporated on 2nd January 2019, in order to facilitate the formation of a common facility center in Karnal.

3.1.2 Government Bodies

Ministry of AYUSH

The Ministry of AYUSH was formed on 9th November, 2014 to ensure the development and dissipation of AYUSH system of healthcare. Its focal attention is on the development of Education and Research in Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy.

A 2018 study by the Confederation of Indian Industry (CII) estimated the market share of AYUSH medicines at around US\$3 billion and that India exported AYUSH products of a net worth US\$401.68 million in the fiscal year 2016-17.⁴ The Department of Pharmaceuticals had allocated a budget of ₹ 144 crore to the ministry for 2018-2020 for manufacture of alternative medicines.⁵

Objectives-

- 1. To upgrade the educational standards of Indian Systems of Medicines and Homoeopathy colleges in the country.
- 2. To strengthen existing research institutions and to ensure a time-bound research program on identified diseases for which these systems have an effective treatment.
- 3. To draw up schemes for promotion, cultivation and regeneration of medical plants used in these systems.
- 4. To develop Pharmacopoeia standards for Indian Systems of Medicine and Homoeopathy drugs.

MSME Development Institute, Karnal

MSME - Development Institute, Karnal is a field office of the Development Commissioner (MSME), Ministry of MSME, New Delhi, which is an apex body for formulating, coordinating and monitoring the policies and program for promotion and development of MSMEs in the country. MSME -DI provides a wide range of extension / support services to the MSMEs in the State of Haryana. The institute will be actively involved throughout the project of setting up of CFC for Ayurveda units under MSE-CDP scheme.

⁴https://timesofindia.indiatimes.com/business/india-business/ayush-ministry-aims-to-triple-market-share-of-itsmedicines-services/articleshow/66476035.cms

⁵https://timesofindia.indiatimes.com/business/india-business/ayush-ministry-aims-to-triple-market-share-of-its-medicines-services/articleshow/66476035.cms

District Industries Centre (DIC)

DIC is the most important government stakeholder for the cluster. The office of DIC comes under the Dept. Of Industries and is headed by General Manager who is assisted by functional managers and technical field officers. DIC promotes and routes subsidy to micro and small enterprises in the region. The Karnal DIC is actively promoting cluster development in the district and also helps the local units register under Unique Aadhar Memorandum (UAM). It would play a key role in further growth of the cluster.

Haryana Housing & Urban Development Authority (HUDA)

HUDA plays a key role in land development and execution of development works like roads, water supply, sewage, and drainage etc.

Haryana State Industrial and Infrastructure Development Corporation (HSIIDC)

It is a premier institution which has played a pivotal role in the industrial promotion and investment facilitation. It has played a key role in the wellbeing and progress of Haryana and has been instrumental in the evolution of Haryana from a primarily agrarian state to one of the highly industrialized states in the country. It provides crucial support and environment where budding enterprises could develop. Right from provision of state-of-the-art infrastructure to facilitation, HSIIDC ensures a smooth start up support to the new enterprises.

3.1.3 Educational Institutes

> Shri Krishna Government Ayurvedic College, Kurukshetra, Haryana

Shri Krishna Govt. Ayurvedic College was established in 1975 by the government of Haryana. This college is an important Institution in the state of Haryana. Govt. of India has selected it as State Model Institute of Ayurveda and also sanctioned & released a sum of Rs.200 Lakh. The Department of AYUSH & Govt. of Haryana are taking keen interest and making earnest efforts for the progress & up gradation of this Institution with the initiatives of Govt. of India & Kurukshetra University, Kurukshetra also.

Faculty of Indian Medical System, Gurugram

The institute has a huge inflow of patients and is equipped with latest equipment's providing best adjunct to the Ayurvedic management including diagnostic, prognostic and therapeutic functions for timely screening and interventions. The FIMSH OPD is taking care of the needs of the Patient's in the following diseases & disorders. Faculty has state of the art Research, Panchkarma therapy, Kshar Sutra, Agnikarm, Jalokavacharan, well equipped laboratories, pharmacy with latest machines and equipment, well maintained herbal garden having rare species of medicinal plants.

► Gaur Brahman Ayurvedic College, Rohtak

It was established in 1974 and is one of the most popular Ayurvedic College in the area. The institution has highly qualified staff of different specialization and well equipped department. The institution is recognized by the Central/State Govt. and affiliated to M.D. University, Rohtak. The admission capacity of the institution currently is 70 students per year in BAMS Course through entrance test.

Ayujyoti Ayurvedic College and Hospital, Sirsa

Ayujyoti is one of the best Ayurvedic College & Hospital of western Haryana. Ayujyoti Ayurvedic College & Hospital has been established on Panjuwana-Kharia Road, Jodhpuria, nearly 18 km away from SIRSA Bus Stand with peaceful studies environment. It claims to have ideal student teacher ratio and friendly environment.

National Ayurvedic College, Hisar

Institution is well recognized for its services with a holistic approach to health care, research & training. Established in 2013, this College claims to not only provide course knowledge and its clinical application but also gives highly qualified Doctors to the society.

> CH. Devi Lal College of Ayurveda, Yamunanagar

This institution provides B.A.M.S degree and also offers internship offer for a period of 12 months.

3.1.4 Banks/Fls

Small Industries Development Bank of India (SIDBI)

SIDBI is the apex financial institution responsible for the growth and development of the MSME sector. Almost all the government subsidy schemes and bilateral lines of credit are implemented through SIDBI. Karnal Industry is catered through the SIDBI regional office in Chandigarh, about 120 km from Karnal. The office of SIDBI will also be engaged during execution of this project.

3.1.5 Leading Manufacturers

Most of the units in the cluster are undertaking contract manufacturing and supplying their produce to large pharmaceutical manufacturers based around the Karnal region. Some of the units also manufacture products under their own brand name. Some of the major large manufacturers based in the cluster are Uttam Herbals, Sukhija Ayurvedic Pharmacy, Zee Herbals, North India Life Sciences Pvt.Ltd., Binexo Pharmaceuticals, North India Pharma, Onika Pharmaceuticals, Avikaa Herbs, Vet Health Pharma, Sahi Pharma India Pvt. Limited, Plus Formulations, Cure Quick Herbals, Comex Herbal Products, Xieon Life Sciences Private Limited, Reach Pharmaceuticals Pvt. Ltd. List of the top brands of the clusters are provided in the table below.

S. No.	Brand Name	Product Category	Geographical Area		
Cluster	Cluster Member Brands				
1	Livonip Plus	Liver Syrup	Pan India		
2	Rishi Dard Oil	Massage Oil for Joint and Muscle Pains	South India		
3.	Kuf Nip Plus	Cough Syrup	Pan India		
4.	Kanihya Churan	Churan	All GT Road Belt		
5.	Yashti madhu	Cough Syrup	Haryana		
6.	My Fair Cream	Fairness cream	Pan India		
7	Musli Sutra Caps	Power Caps	North India		
8	Trim Mantra	Power and strength	North India		
9	Gold 50 Caps	Stamina Booster	Pan India		
10	Glow Shine Cream	Fairness Cream	Haryana		
11	Livotin 52 Syrup	Liver Support Syrup	Eastern India		
12	Rakat Safe Syrup	Blood Purifier	South India		
Job Work Brands					
1	Ortho Shakti	Massage Oil for Joint and Muscle Pains	Pan India		

Table 6: Cluster Top Brands

The key stakeholders of Karnal cluster are presented in figure below:



Figure 7: Cluster Stakeholders

3.2 Raw Material Availability for the Cluster

All natural products whether belonging to plants or animals or minerals: all are considered the source of raw material for Ayurvedic medicines. However 600 medicinal plant products, 52 minerals and 50 animal products are commonly used. Extracts used in the formulation of Ayurvedic products are obtained from different states.

Authenticated raw material is the basic starting point in developing a botanical product. In addition, each step of harvest, storage, processing and formulation may dramatically alter the quality and consistency of final product.

Predominately, raw materials for Ayurvedic industries are characterized in following two types:

Active Pharmaceutical Ingredients (APIs): Basic material used for formulations and medicine manufacturing. This is the central ingredient in any drug. APIs are chemically active substance, which are meant to produce the desired effect in the body. e.g. standardized Herb, extracts Inactive Ingredients: These are known as 'excipient' which are intentionally added to a drug for purposes other than the therapeutic or diagnostic effect at the intended dosage Thus, excipients are the inactive or inert substances present inside a drug. E.g. preservatives, binders, thickeners, flavors, sweeteners, stabilizers, colors.

Most of the raw materials used are procured from manufacturers located in Mumbai, Rajasthan, Madhya Pradesh, Himachal Pradesh and Goa.

Other than the raw materials, the major inputs for Ayurveda industry include water, power and fuels such as diesel (used mainly in boiler).

3.3 Cluster Market, Employment, Turnover

3.3.1 Cluster Market

Karnal Ayurveda manufacturing units undertake contract manufacturing for larger firms, also undertake loan licensing contracts & also sell products under their own brand names. Some of the brands of the cluster members such as Livonip Plus, Kuf Nip plus, My fair cream, Gold 50 Caps etc. are sold Pan India. Some brands have significant regional presence such as Rishi Dard Oil, Rakat Safe Syrup in South India, and Livotin 52 syrup in eastern India. Musli Sutra Caps, Trim Mantra have presence primarily in North India. Some brands of the cluster such as Kanihya Churan, Yashti Madhu, and Glow Shine cream are restricted to state of Haryana or across the GT Road belt.

3.3.2 Employment created at the cluster

At present, the Ayurveda units in Karnal & 4 other neighboring districts have employed 2500 person which is expected to nearly double after the intervention and setting up of CFC. 24 Units in the SPV formed employ around 191 people 85 of whom are women.

3.3.3 Cluster turnover

Total turnover of 150 units in the cluster which includes units in Karnal, Yamunanagar, Kurukshetra, and Ambala & Panipat is around 150 Crores. The cumulative annual turnover of 24 MSMEs who are

part of the SPV is estimated at about INR 25.66 crores⁶. The average annual turnover of a micro scale unit is INR 75 Lacs, small scale unit is INR 3 Crores.

However, this turnover is too less in contrast to large scale Ayurveda units many of whom have an annual turnover exceeding 10 crores each. The total turnover from Karnal Ayurveda (including large and SME units) is estimated to be around 53 crores. The turnover details are presented in table below:

Particulars	Turnover (INR
	Crores)
Potential beneficiaries in 5	150
neighboring districts	
Karnal Ayurveda Cluster	53
Turnover of SPV Members	25.66

Table	7:	Cluster	Turnove
Table	7:	Cluster	Turnove

3.4 Production Processes

For the formulation of tablets, **Extract** (e.g. Supari Pak, Ashwgandha Pak) is obtained either in liquid or powder form. In case it is powdered form, sieve is used to remove the impurities from it. Then the extract so obtained is mixed with excipients, binders, stabilizers and other ingredients. The mixture is dried and again impurities are removed using a sieve. Moisture is removed and granule is formed. After lubricating the powder is put into the tablet punching machine. The tablets formed are coated either with



Figure 8: Rass Manikya (Blood Purifier)

sugar or film. Film is a chemical layer coated on the tablets and is a quicker process than coating tablets with sugar layer. In case of coating the tablets with sugar, tablets are further polished. After getting the tablets tested in the certified laboratories, they are packed and dispatched to the market.

⁶Discussions with HPDMA and other key stakeholders

The process involves various stages as mentioned above and these are explained below

1. Dispensing Raw Materials:

Dispensing is the first step in Ayurveda products manufacturing process. During this step, the weight of each ingredient in the mixture is determined according to dose and the material is transferred into clean containers. Raw Herbs are sorted and cleaned. After obtaining Purified herbs, Active Ingredients are extracted.



2. Verification of Materials:

This is the most important aspect in the pharma production process which involves undertaking a number of tests. Inspection is necessary to verify that the correct raw material meets the quality specifications. Samples are taken from the raw materials for these tests.

3. Sifting of Materials:

A sifter is used to sieve dry raw material in powder form and is suitable for separation of foreign objects from dry powder before mixing. The sizing is an important step- the mixing or blending of several solid ingredients is easier and more uniform if the ingredients are approximately the same size.

4. Mixing/Lubrication:

Here, the API is mixed with all its other necessary excipients. A blender is used to mix the API with its excipients and lubricants. The blending machine is used for the homogeneous mixing and lubrication of raw material.



Figure 10: Blender

5. Granulation:

Granulation is a process in which powder particles are made to adhere to each other, resulting in larger, multi-particle entities, so called granules. The granulation method is of two types: dry and wet. The selection between dry and wet method is done based on the

ingredient's individual characteristics and its ability to flow, compress, eject, and disintegrate. Then, the proper granulation process can be applied. This involves conducting a lot of tests for which the units have to rely on private labs located outside the cluster. Dry granulation involves a process wherein the ingredients are blended and their size is reduced and

made compact so as to produce a granular, free flowing blend of uniform size. The process involves the primary powder particles being aggregated under high pressure. There are two main processes. Either a large tablet (known as slug) is produced in a heavy-duty tableting press (a process known as slugging) or the powder is squeezed between two rollers to produce a sheet of material(roller compaction). This dry method may be used for drugs that do not compress well after wet granulation, or those which are sensitive to moisture and heat. In order for the tablet press to



Figure 11: Preparation of Rass Manikya

produce tablets with high quality, it is necessary that the blend of ingredients be dry and of uniform particle size. The API must be evenly distributed within each tablet that is produced.

Wet granulation involves the production of a granule by addition of the liquid binders to the powder mixture. The process develops a massing of a mix of dry primary powder particles using a granulating fluid. The fluid contains a solvent which must be volatile so that it can be removed by drying and be non-toxic. The granulation liquid may be used alone or, more usually, as a solvent containing a dissolved adhesive (also referred to as binder or binding agent) which is used to ensure particle adhesion once the granule is dry. The moisture is then removed with the help of a Fluid Bed Dryer before it is sent to compression.

6. Drying and Sizing:

The mixture is then dried and sized, and finally compressed into tablets. Material is dried to get the desired moisture content in the tablet formation granules. The sizing is an important step- the mixing or blending of several solid ingredients is easier and more uniform if the ingredients are approximately the same size.

7. Compression

The mixture of ingredients is then compressed to get final product. The compression machine squeezes the ingredients into the required



Figure 12: Tablet Formulation

tablet shape with extreme precision and can also press the name of the manufacturer or the product into the top of the tablet.

8. Coating

The tablet coating machine coats the outer surface of the tablet with a thin layer of coating material. This is done to mask the taste/ odor of the tablet, to control the release of the drug from the tablet or to protect the drug/API from the acidity of the stomach's gastric environment. Coating is also used to mask the bitter taste of the tablet. This is an optional step and depends on the usage of the tablet.

9. Testing

This is again followed by sampling of core tablets for quality test. After getting the approval tablets are sent for packaging.



Figure 13: Coating

10. Packaging

Blistering is used to create plastic packaging for the tablets. The primary component of a blister pack is a cavity or pocket made from a formable web like thermoformed plastic. This has a lidding seal of aluminum foil or plastic. Some types of packaging are-Strip packing/ Alu-alu strip (formed by enclosing the tablet between two webs of aluminum foil using the cold foaming technique) and PVC-aluminum: PVC forms the blister and Aluminum foil is the lid.



Figure 14: Packaging

Subsequent to packaging, the final produce is transferred to quarantine area and samples are taken for quality testing of final produce. After the positive outcome of the tests report, the goods are sent for dispatch.

The production methodology is explained in the flow chart below:



Figure 15: Production Process

Machinery and Equipment used in the manufacturing process

The major machines and equipment employed in the Karnal Ayurveda cluster for manufacturing of drugs are mentioned in table.

S. No.	Machine & Equipment	Qty.	Installed Capacity			
Tablets and Capsule Section						
1	Tray Dryer/FBD	1	24 Trays			
2	Multi Mill	1	-			
3	Mass Mixer	1	50 kg			
4	Rotary Tableting	1	Max. 1,29,000 Tab./hr			
5	Coating Pan	1	2 Lakh Tab/ 3 hrs			
6	Automatic Capsule Loader	1	Up to 27,000 Caps/hr			
7	Manual Capsule Filling		Up to 9,000 Caps/hr			
8	Blister Packing		3 Lakh Cap/8 hr			
9	Strip Packing					
10	Tablet and capsule bottle packing	1				
	Machine					
Powder	Section					
1	SS Cone Blender	1	100 kg			
2	SS Octagonal Blender	1	1000 kg			
3	Powder Filling & Sealing	1	500 Sachets/hr			
4	Tin Box Sealing	1	Max. 200/hr			
Liquid/C	il/Eye drops Section					
1	SS Tank (500 Lt/1000 Lt.) with					
	Stirrer					
2	Filtration Unit	1	-			
3	Blister Packing	1				
4	Liquid Filling & Capping	1	2400 Bottles/hr			
5	Cap Sealing	1	2400 Bottles/hr			
Ointmen	t Section					
1	Ointment Manufacturing	1	-			
	Plant/Planetary mixture					
2	Tube Filling and Packing Machine		-			
3	SS Spoons	10				
4	SS Spatula	10				
5	Weighing Scale- Up to 200 kg	2	-			
6	Weighing Scale- Up to 10 kg	2	-			
7	Pouch Sealing Machine (Manual)	1	100 Pouches/hr.			
8	Stirrer	1	-			

Table 8: Machines and Equipment in the Cluster

3.5 Value Chain Analysis

Value chain analysis of the most commonly produced syrup (cough syrup- 200 bottles of 100ml) is presented in table:

Particulars	Cost	% of cost of production
Raw materials	₹ 1046	52.3
Active Ingredients	₹846	
Excipients	₹200	
Labour Cost	₹200	
Packaging Cost	₹754	37.7
Bottle cost	₹ 300	
Сар	₹80	
Label	₹ 30	
Dose Cap	₹44	
Outer Carton	₹244	
Carton Cost	₹60	
Testing	₹10	0.50
Utilities	₹72	3.60
Selling, general and admin		5.5
expenses	₹110	
Transportation	₹8	.40
Total Cost		₹2000
Profit Margin (10%)		₹ 200
Selling Price		₹ 2200

Table	9٠	Value	Chain	Analysis	
rubic	٠.	value	Circuin	Anurysis	,

Source: Stakeholder Consultation Inputs

As visible from the value chain analysis, other than the raw materials (52.3%), Packaging cost accounts for 37.7% and Utilities account for 3.60%. The profit margin of the units when undertaking contract manufacturing is 10% whereas when selling under their own brand the average profit margin is approximately 15%. It is expected that with the setting-up of Herbal extraction plant equipped with quality testing facilities, the raw materials cost will come significantly down because of lower transportation costs and better price points. Also testing costs incurred towards testing of raw materials will also reduce significantly, leading to increased profit margins for the cluster units. Further, with quality raw materials available & R&D facilities, the cluster units can command attractive prices for their improved quality products. It is expected that the current profit margin of 10% will increase to around 14% with these interventions.

3.6 SWOT Analysis

A SWOT (Strength, Weaknesses, Opportunity and Threat) analysis of the MSME Ayurveda units in the cluster is carried out keeping in mind the technology, marketing, product quality, skills, inputs, innovation, business environment and energy/environment compliance of the units. This has helped to understand the real situation of the cluster and the same has been presented in table.

	Current situation		Future		
	Strengths	Weaknesses	Opportunities	Threats	
Markets	Steady local demand for cluster products	Low bargaining power of MSME Ayurveda cluster units' vis-à-vis their large contract manufacturing clients.	Growing domestic market potential due to rising preference for natural products	Intense competition from China in global markets for traditional medicine	
	Ayurveda units in Karnal district	Self-owned brand sales are comparatively low Lack of knowledge &	Potential to supply to US and European markets.	Competition from other major Ayurveda clusters like Hydorobad, Indoro	
	No Large units in Karnal district leading to less competition	Absence of targeted & rationalized marketing	Capacity building of entrepreneurs on export promotion & documentation	and Kerala in domestic markets	
	Contract manufacturing & loan licensing arrangement with large industries	Lack of marketing capabilities of entrepreneurs	Potential for high market growth due to proactive push & support from GOI via Ministry of AYUSH	Major competition from allopathy as Ayurveda is still not universally acceptable.	
	Proximity to Chandigarh and well connected to Delhi	Low level of awareness on exports procedures and opportunities in foreign markets	Potential to sell under their own brand names		
		Low acceptance in foreign countries due to lack of standardization.	Encourage buyer-supplier contacts through fairs, meets, web portal etc.		
			Develop common platform for marketing		
Technology/ Product quality	Capability to produce low volumes competitively	Absence of NABL certified testing and calibration facilities in the cluster	Setting up of a NABL accredited testing lab, formulations & development center, under CFC mode	Increased cost of production because of low volumes	

Table 10: SWOT Analysis

	All small scale units have GMP certifications Easy availability of good quality production machines	Absence of a common formulation & development center Assay testing isn't available in nearby areas.	Provide assistance to small units to adopt WHO GMP, making them more competitive	Low production scales among small units Unavailability of skilled manpower to operate modern machines
	Karnal Ayurveda MSME units significantly tech- savvy in willing to acquire new technology and produce value -added products	Difficulty in procuring quality Raw materials which effects end-product quality Lack of support to small scale units for formulations development	Setting up a common herbal extraction plant in CFC mode to provide standardized raw materials enabling better end- product quality Increased Process automation in manufacturing plants	Might lose competition to vendors with sophisticated technology based on order mature cluster
		Lack of knowledge among small units on operational requirements for implementing WHO GMP	Potential to enhance awareness on usage of modern information & communication technologies	
		Industry is not governed by stringent quality control mechanisms, resulting in untrustworthy products		
Skills/ Manpower	Skills acquired on-the-job	Difficulty in acquiring manpower in the cluster	Conduct training needs assessment	Non-availability of skilled manpower
	Good entrepreneurial skills Many new generation	No mapping of skill-sets required	Establish a dedicated joint training facility in the proposed CFC	Local youth not keen on working in the Ayurveda industry
	amount of knowledge on backward & forward processes & opportunities in Ayurveda value chain	Absence of a dedicated training center for Ayurveda industry	Conduct training programs on required skills (operations, laboratory, packaging, soft skills etc.)	
		Difficult to change behavioral patterns of migrant labor to work in a Ayurveda industry	Engage a local NGO to mobilize regional youth for training	
		Lack of interaction between SMEs and academic		

		institutes providing technical training No mechanism to mobilize regional youth for training Formulation development not focused upon in BAMS courses	Bridge gap between industry and academic institutes providing specialized training programs	
Inputs	Availability of raw materials from units pan India Most of the herbs required for Ayurveda are locally available in India	MSMEs are not a priority for large herbal extract suppliers who prefer sales to large Units or exports sales MSMEs mostly have to procure from smaller suppliers wherein theirs no assurance on quality & delivery timelines No web portal displaying prices and sources of raw materials Fluctuation in raw material quality and prices High energy cost structure because of lack of efficient processes	Potential to solve the raw material quality & delivery problem via a common herbal extract plant Huge potential to develop a portal displaying information (price, suppliers) of raw materials Setting up of a pharma park in Karnal	Rise in price of raw material and fuels Over dependence on Chinese APIs and bulk drugs
Innovation	Ability to manufacture drugs as per demand of large industries with quick modifications in manufacturing processes	No formulation & development facility available in the cluster to assist small units Lack of a standardized IT ERP solution for Ayurveda industry Low investment in R&D Lack of process automation	Setting up a common formulation & development facility, will be a great boon for the cluster Development of a standard IT based ERP solution for Ayurveda units Structured processes for information sharing among SMEs in the cluster Cross-learnings from other progressive clusters	Could lose business to other clusters due to lack of innovation facilities in Karnal cluster Most of the units in the cluster are small scale with not much focus on innovation Reluctance to share information on innovation between units
Business Environent	Steady growth in domestic demand as well as international demand for traditional medicine	Lack of knowledge of regulatory frameworks and government schemes	Establish CFC with latest technologies for testing, calibration & formulation development facilities	Rapid changes in external environment e.g. large industries undertaking contract manufacturing

Pro-active state industry department undertaking several developmental initiatives for the Ayurveda	High cost of industrial land in the cluster	Create better awareness of government schemes and regulations	arrangements with Ayurveda units from other clusters
industry Active industry associations	Lack of common infrastructure/CFC facilities Lack of bargaining power of	Common training plan on marketing, branding & production efficiency for small and medium units	Ayurveda units in other states might give competition to Karnal Ayurveda Cluster
	Lack of a clear long term vision of industrialists.		

3.7 Major Cluster Problems/Gaps Identified

The key problems identified in the cluster that necessitate the need to set up a CFC to enhance the competitiveness of the cluster units are mentioned below:

Absence of nearby standardized herbal extraction plant:

One of the key problems that Ayurveda units in Karnal face is the availability of standardized & quality raw materials/ APIs with assured delivery timelines. Currently Karnal Ayurveda Units procure herbal extracts/APIs from far-off places such as Kala Amb in Himachal or Nainital in Uttarakhand. However these procured extracts are not standardized, and there's no assurance in terms of authenticity of content & quality. Also procurement from far-off places results in high transportation costs which further increases the cost of final product. Also, procurement of key raw materials from far-off places results in low assurance in terms of timely delivery, resulting in unplanned manufacturing shut downs. Setting up of an herbal extraction plant in Karnal will lead to easy availability of standardized raw materials to Ayurveda units in Karnal and nearby districts.

> Absence of centralized Formulation & Development (F&D) facility

There is an absence of centralized F&D facility in the cluster to facilitate new product development. There is no common assistance available to Ayurveda unit entrepreneurs for development of formulations for several products manufactured by them. This is crucial given the dominance of the contract manufacturing model which impedes the information sharing by large players to smaller manufacturers. In the absence of these facilities, the units have to rely on their limited capacities or depend on their buyer (large company) for formulation development. This is also hindering their capacities to develop products that they can market in their own brand name.

Absence of Quality testing lab

There is an absence of quality testing lab for testing of raw material/finished products. Several laws governing the pharma industry require various tests to be conducted by the pharma units. The units have to send the samples of raw materials as well as finished goods to private labs located in far off places such as Panchkula & Delhi and wait for test reports. This often leads to production delays. The charges of these labs are also exorbitant. Although this challenge is being addressed to a certain extent as a lab is being set up in Karnal with support from GOI, but it is not well equipped to test Ayurveda specific related raw material extracts or products samples.

3.8 Key Technologies Missing

The key technologies missing in the cluster (justification for CFC) along with the proposed solution to be set up under the CFC are mentioned in table 6.

S. No.	Facility/Equipment	Technology Gaps Identified	Technology Interventions
1.	Quality Testing Lab	 Quality testing of herbal extracts currently done via sending samples to Panchkula or Delhi Although some units have in-house testing facilities for basic testing of finished Ayurveda products such as Disintegration testing, Identification testing, dissolution testing, friability testing etc., the advanced testing such as all microbiology tests have to be done in far off labs. 	 Setting up of a quality testing lab for testing of herbal extracts

Table 11: Technology Gaps Identified and Interventions

2.	Research & Development (R&D) Centre	 Absence of Research & Development (R&D) facility in the cluster to facilitate new product development In the absence of these facilities, the units have to rely on their limited capacities or depend on their buyer (large company) for formulation development. This is also hindering the capacities of small Ayurveda units to develop products that they can market in their own brand name Small units remain at the low end of value chain 	Setting up of a state of the art research and development centre to facilitate new product development
3.	Automated Herbal Extract plant	 Difficult to find suppliers who provide standardized raw materials. Lack of quality control. Most of the suppliers do not provide quality raw materials as there is an absence of stringent laws Suppliers located in far-off places leading to high in-bound transportation costs 	Setting up of an automatic herbal extraction plant to provide standardized raw materials benefitting the Ayurvedic industries in nearby districts too.

3.9 Cluster Growth Potential:

The strengths of the Ayurveda units in Karnal is the rapid growth in number of new entrepreneurs entering the Ayurvedic Products manufacturing business. In fact, more than 35% of the units who are member of the SPV have started their business in last two years only. The clusters central location to prime markets of Punjab, Haryana, Delhi, U.P., Rajasthan etc. also offers it several advantages in getting contract manufacturing work from larger players. Benefits offered by the state and easy availability of quality power in Haryana offer immense opportunities for the cluster units to grow.

However, stringent regulations (particularly with regard to effluent discharge), lack of formulation development (hence no new product development) and testing facilities, little global exposure, over reliance on large players, increasing competition from other Ayurveda clusters and low cost nations like China are some of the critical issues being faced by the Karnal Ayurveda industry. This is proving to be a deterrent to move up the value chain as it is compelling SMEs to put R&D and innovations on

the backburner. Therefore, Government support under MSE-CDP to set up a CFC will be critical in laying the foundation for Karnal MSMEs to gear-up and face the inescapable challenge.

The Karnal Ayurveda cluster has an amazing potential to grow and supply its produce in their own brand name. The European, African, Middle East market particularly remains untapped and offers incredible export opportunities to the Karnal Ayurveda units. However, this can only be possible if a common facility center with state-of-the art herbal extraction unit, quality testing lab, and R&D unit for formulation development are provided to the cluster. The facility will provide the much needed standardized raw material, formulation development and raw material quality testing facilities (reducing their reliance on expensive private labs based far off from the cluster) required by the cluster units to move up the value chain and become more competitive.

Also, traditional medicine industry like Ayurveda is an ever growing one and offers tremendous opportunities for small Ayurveda units to become contract manufacturers to large firms. The higher disposable incomes will mean that consumers will opt for better health facilities and treatment, thereby increasing the demand for various drugs manufactured by Karnal units.

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Diagnostic Study Recommendations (Proposed CFC)



4. DIAGNOSTIC STUDY RECOMMENDATIONS

Based upon the diagnostic study, intense discussions with various cluster stakeholders and subsequent gap identification, a mix of hard and soft interventions have to be undertaken with government support to improve the competitiveness of the Karnal Ayurveda Cluster. The recommendations for both soft and hard interventions have been elaborated in subsequent sections. The recommendations have been validated in a stakeholder validation meeting held on 8th July 2019. Detailed minutes of the meeting have been attached in Annexure 9.2

4.1 Soft Interventions

The soft interventions can be undertaken immediately upon approval of the DSR by the state government while the hard interventions will only get implemented in the long run. The key soft interventions that will have the maximum impact include:

- Skill development: Mobilization of regional youth through a dedicated agency, increasing industry-academia interface, training programs on soft skills for workers
- Marketing Capacities: Conducting awareness workshops for Karnal Ayurveda units to enable them in leveraging modern low cost but targeted marketing strategies such as digital marketing, social media presence, targeted messaging etc.
- Productivity improvement: Awareness programs on Good Manufacturing Practices (GMP), Good Laboratory Practices (GLP), energy management and implementation of lean manufacturing techniques
- Market diversification: Conducting market studies to identify new domestic/ international buyers, formulate and implement unit level marketing strategies, training programs on export promotion and documentation, establish a common marketing consortiums for tablet/capsule/syrup manufacturers, organize promotional events
- Energy efficiency: Identifying energy conservation measures in units through detailed studies and supporting implementation, training on basic energy conservation techniques, development of templates for unit level energy data recording
- > *Product development*: Technology tie-ups with international firms
- Management capacities: Capacity building of unit owners on contemporary management practices in small businesses, training programs on innovation management.
- Strengthening of industry associations: Capacity building of officials of Haryana Drug Manufacturers Association.

4.2 Hard Interventions for setting up a CFC

The cluster needs the following common infrastructural facilities on an urgent basis to improve the competitiveness of the cluster units and to enable them to realize their full potential:

- Herbal extraction Plant
- In-process quality control lab cum R&D Centre

The state industry department is willing to set up a dedicated Centre of Excellence for the Ayurveda industry– a Common Facility Centre having state-of-the-art automated herbal extraction plant, formulation & development, and quality control lab with a total project cost of INR 14.83 Cr. The facility will provide a much needed infrastructural push to the cluster units and will enable them to become more competitive.

The required infrastructural facilities are detailed below:

4.2.1 Facilities Required in CFC

Herbal Extraction Plant

As mentioned in above sections, Ayurveda units in Karnal face significant problems in regard to the availability of standardized & quality raw materials/ APIs with assured delivery timelines. Currently Karnal Ayurveda Units procure herbal extracts/APIs from far-off places such as Kala Amb in Himachal or Nainital in Uttarakhand. However these procured extracts are not standardized, and there's no assurance in terms of authenticity of content & quality. Also procurement from far-off places results in high transportation costs which further increases the cost of final product. Procurement of key raw materials from far-off places results in low assurance in terms of timely delivery, resulting in unplanned manufacturing shut downs.

Therefore, one of the hard interventions proposed is setting up of a common Herbal extraction plant for cluster members. Setting up of such an herbal extraction plant in Karnal will lead to easy availability of standardized raw materials to Ayurveda units in Karnal and nearby districts. Standardized raw materials will help further improve the quality of finished products of the Karnal Ayurveda Units. It will also help in more planned production schedules because of assured delivery timelines and reduce the cost of production because of lower inbound transportation costs. It is expected that such facility established in Karnal will lead to increased turnover & profitability for existing units and also facilitate emergence of new Ayurveda MSMEs in Karnal and nearby areas. Detailed extraction process is explained in below flow-chart:



In process quality control lab cum R&D Center

As per the as-Is situation, the cluster members send samples of procured extracts to labs in Panchkula or Delhi for testing the quality of raw materials. However, this process is both time-consuming and costly for the units. Therefore, it is also proposed to set up a state-of the-art quality testing lab for testing the samples of herbal extracts produced in the plant. Such a lab will help to ensure a certain level of standardization for the extracts produced in the plant. Also the lab will be able to provide basic R&D facilities for new formulations development by Ayurveda units in Karnal and nearby districts.

Working of CFC is explained in the chart below:



Figure 17: Flowchart of Working of Proposed CFC

4.2.2 Equipment required for proposed Common Facility Centre

In order to have a comprehensive CFC for tablets, syrups, ointments and injectable, the following machines and equipment (Table) have been identified based on the stakeholder consultations, and discussions with industry experts. The details of these test equipment is provided in the table

List of primary machines required

Table 12: List of Primary Machines Required

S.No.	Equipment	Specification	Quantity
A.1	First Phase Grinding & Crushing of Herbs		
1	HERBS WASHING MACHINE	1000 KG / HOUR	1
2	RM Grinder (Pre Crusher)	500 KG PER HOUR	1

3	3 RM Grinder (Pre Crusher) 200 KG PER HOUR		1
A.2	Extraction		
4	Rotary Extractor	6kl	2
5	Vertical Extractor	6KI	3
6	Vertical Extractor	4KL	4
7	Vertical Extractor	2KI	4
8	Open Extractor	3KI	2
9	Open Extractor	2KI	2
A.3	Concentration (Distillation)		
10	Reactor	5kl	2
11	Reactor	4KI	2
12	Reactor	3 KI	3
13	Reactor	2 KI	2
14	Callandria Unit		2
15	Distillation Vessel	5 KI	1
16	Distillation Vessel	2 KI	2
A.4	Accessories for Extractors & Reactors		
17	Condenser	20 Sqm	4
18	Condenser	16 Sqm	6
19	Condenser	12 Sqm	6
20 Condenser		10 Sqm	6
21	Vacuum Receivers-	200L	20
22	Vacuum Receiver - 500L		2
23	Transfer Pumps SS 316		10
A.5	Sedimentation & Day Storage		
24	Settling Tank	2 KI	4
25	Settling Tank	1KI	2
26	Day Storage Tank	4KI	2
A.6	Filtration		
27	Centrifuge	36"	1
28	Centrifuge	24"	1
29	Filter Press	14'' x 10 Plates	1
30	Filter Press	18" x 15 Plates	1
A.7	Drying Section		
31	Rotary Vacuum Padle Dryer	1000L	1
32	Tray Dryer	48 Trays	1
33	Spray Dryer with structure 100kg/hr		1
34	Nutch Filters	500 L	1
35	Nutch Filters	750 L	1
A.8	Solvent Storage Section		

31	Horizontal Underground Storage Tank	10KI	2
32	Horizontal Underground Storage Tank	5KI	1
A.9	Final Processing		
33	Ribbon Blender	200kg	1
34	Double Cone Blender	1000kg	1
35	Multi Mill	3HP	1
36	Vibro Sifter	915 MM	1
37	Vibro Sifter	750 MM	1
38	Impact Pulveriser	100kg/hr GMP	1

▶ List of equipment required for In-Process Quality Control Lab cum R&D Centre

S.No.	Equipment	Specifications	Quantity
1	UV Spectrophotometer Double Beam	Double Beam	1
2	Polari meter		1
3	Refractometer		1
4	TLC Kit		1
5	Hot Air Owen	18" x 18" x 18"	1
6	Muffle Furnace 1200 Degrees	9 x 4 x 4	1
7	Round Bottom Flask	2Ltr	1
8	Heating Mental	2Ltr	1
9	Heating Mental	500ml	1
10	Digital Water Bath	12 Holes	1
11	Melting Point Apparatus		1
12	Vortex Shaker	Borosil	1
13	Desiccator Borosil	250mm	1
14	Mono Quartz Water Distillation Unit	2.5Ltr/Hr Borosil	1
15	Laboratory Glass Dryer	Borosil	1
16	Microprocessor Conductivity TDS meter		1
17	T.D.S. Meter PEN type		1
18	Alcohol meter		1
19	Test Sieve Standard Size	40 mesh	1
20	Test Sieve Standard Size	60 mesh	1
21	Test Sieve Standard Size	80 mesh	1
22	Magnetic Stirrer with Hot Plate		1
23	T.L.C. Plate (Merck)		1
24	Whitman Filter Paper	Superior	1
25	Ordinary Filter Paper		1
26	Thermometer	0 to 100°	1

27	Thermometer	0 to 300°	1
28	Incubator Bacteriological SS Chamber Inside	18" x 18 "x 18"/ 95 Ltr	1
29	BOD Incubator	6 cuft/200Ltr	1
30	Microscope Binocular		1
31	Autoclave Vertical	50Ltr	1
32	Vacuum Oven	24Ltr/300 x 300	1
33	Stability Chamber	200-250Ltr	1
34	Lab Glass ware		1
35	Lab Furniture with Centre Table and PVC Sink Fitting with electric fitting		1
36	Lab Chemicals		1
37	TRACE GC 1110 Main Frame 230V	1	1
38	HPLC with Auto sampler and UV Detector	1	1

List of secondary machines required:

Table 14: List of Secondary Machines Required

S.No.	Equipment	Quantity
1	Steam Boiler with Chimney	1
2	RO Plant	1
3	ETP Plant	1
4	Cooling Tower	1
5	Pipelines for Utilities	
6	Vacuum Pump	2
7	MINI WORKSHOP FOR MAINTENANCE(Lathe Machine, Driller, Tools, Welding Set)	1
8	PILOT PLANT FOR R&D	2
9	DG Set	2
10	Weighing Machine	1
11	Batch Coding Machine	1
12	Powder Pouch Packing Machine	1
13	Liquid Pouch Packing Machine	1
14	Weigh Balance	1
15	Weigh Balance	1
16	Weigh Balance	2
17	SS/MS Racks	50
18	Platforms for entire plant	
19	Computers	4
20	Office Aluminium Panels	

21	Lift for first floor for material	1
22	Cargo lift with small tractor	1

List of other Misc. Fixed Assets required:

Table 15: List of Misc. Fixed Assets Required

S. No.	Particulars
1	Furniture
2	FIRE FIGHTING EQUIPMENT
3	RODENT KILLERS

The description and usage of equipment are given in the table below

Table 16: Description and Usage of Equipment

S.No.	Name of Instrument	Description and usage
1.	Multi-mill	The multi-mill is useful for high speed granulating, pulverizing, mixing, shredding and chopping of a large range of wet and dry materials without any special attachments. As compared to the other common principles of size reduction- grinding, compression, shearing, etc., this machine utilizes the variable force swing hammer blades having knife and impact edges rotating with a carefully selected screen to control size reduction. The perforated screen and blades provide an accurate clearance and reduction of materials to the required size.
2	Vibratory Sifter	Vibro-sifters, also known as safety screeners, vibrating shifters, vibro sieves, check screeners or control sieves, and are used to ensure the correct product quality of powders or liquids by removing oversize contamination. These vibrating sifters fit neatly into production lines, providing considerable screening capacity without requiring excessive headroom. Operating and cleaning is quick and easy, making the sifting machines perfect for all processing industries. A wide range of sizes and options means the machine can be tailored to suit exact needs.
3	Hammer/ Pulveriser	It is used in milling pharmaceutical raw materials, herbal medicines and sugar and is used to process wet and dry granulations and disperse powder mixtures. It is used in powdering of barks, leaves and roots of plants and is used in milling of Active Pharmaceutical Ingredients(APIs), excipients etc.
4.	Grinder	The reduction in the size of particles in pharmaceutical production is very essential. Reduction actually increases the bulkiness and solubility of pharmaceutical tablets. It also enhances the effectiveness and strength of said medication. Grinder is designed for the size reduction of active ingredients (APIs), bulk pharmaceuticals and excipients such as lactose, HPMC and others.
5.	Micronizer	It utilizes fluid energy compressed air, gas or super head steam to grind and classify, in a single chamber with no moving parts. Activated by high pressure air, the particles are accelerated into a high speed rotation in a shallow grinding chamber. As the particles impact on one another their size is reduced. Centrifugal force holds larger particles in the grinding rotation area until they have achieved the desired fine particle size. Centripetal force drags the desired particles towards the static classifier where they are allowed to exit upon achieving the correct particle size. The final particle size is controlled by varying the rate at the feed and propellant pressure.

6.	Rotary Extractor	Rotary Extractors are use in Herbal and Solvent Extraction Plant and Phyto chemical Industry for recovery of solvent with indirect steam heating. Rotary Extractors are best for large extraction capacities. These are designed and machined using flawless raw materials in compliance with international quality standards. Rotary extractor is used to extract the active ingredient present in the dry Herbs/Seed powder/Root/Leaf using suitable solvent.
7.	Vertical Extractor	Vertical extractor is used in herbal and solvent extraction plant and Phytochemical industry for recovery of solvent with indirect steam heating. It is used to extract the Active ingredients present in the dry Herbs/Seed powder/Root/Leaf using suitable solvent.
8.	Nutsche Filters	Nutsche Filters are extensively used in Herbal Extraction Plants and Pharmaceutical Plant Nutsche Filter is a closed vessel designed to separate solid and liquid by filtration under pressure or vacuum. The closed system ensures odorless contamination free and non- polluting working conditions maintaining product purity and hygiene.
9.	Reactor	A chemical reactor is an enclosed volume in which reaction takes place. It is designed in such a way as to maximize net present value of given value chain for the given reaction. It ensures that the reaction proceeds with the highest efficiency towards the desired output product, producing the highest yield of the product while requiring the least amount of money to purchase and operate.
10.	Distillation vessel	Distillation is a process of separating mixtures based on differences in volatilities of components in a boiling liquid mixture and the vapor is cooled and condensed, the condensate will contain more volatile components. Distillation is a unit operation, or a physical separation process, and not a chemical reaction. Distillation columns are designed to achieve this separation efficiently. Distillation is the most common separation technique which involves the heating and cooling of mother liquor.
11	Condenser	A condenser is an equipment which is designed to condense vapor state matter to liquid phase. The temperature change of the condensate from its boiling is not the duty of condenser but it will occur routinely.
12.	Water Vacuum pump	Vacuum pump mechanism is used to remove air or any gas particles from the container that creates vacuum in the vessel. It is used for various industrial applications. It is used in electronics manufacturing units to produce CRT tubes, electric bulbs and lamps, semiconducting materials, glass coating etc. There are various types of vacuum pumps are manufactured as per the industrial needs and applications. It is designed for liquid, water, gas, air execution in paper, coal, Pharmaceutical, textile, oil refineries and many other industrial production houses. It is designed to work on appropriate vapor pressure of the liquid. It is use liquid, generally water to create the required pressure vacuum.
13.	Evaporators	An evaporator is a device in a process used to turn the liquid form of a chemical substance such as water into its gaseous form/vapors. The liquid is evaporated into a gas form of the targeted substance in that process. In the pharmaceutical industry, the evaporation process is used to eliminate excess moisture, providing an easily handled product and improving product stability
14.	Centrifuge	Centrifugation is a process which involves the use of the centrifugal force for the sedimentation of heterogeneous mixtures with a centrifuge, used in industry and in laboratory settings. This process is used to separate two immiscible liquids. More-dense components of the mixture migrate away from the axis of the centrifuge, while less-dense components of the mixture migrate towards the axis. Pharmacists, chemists and biologists may increase the effective gravitational force on a test tube so as to move
		rapidly and completely cause the precipitate ("pellet") to gather on the bottom of the tube.
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15.	Vacuum Tray Dryer	Vacuum Tray Dryer is used mainly for drying of high grade, temperature and oxygen sensitive products. Vacuum Tray Dryer is highly suitable for drying hygroscopic substances, which are dried to very low residual moisture, content level. Frequently vacuum drying cabinets are the sole possibility for drying lumpy, glutinous products or products of low pomposity.
16.	Spray Dryer	In Spray dryer, the material to be dried is sprayed as a fine mist into a hot- air chamber and falls to the bottom as dry powder. The period of heating is very brief and so nutritional and functional damage are avoided. Dried powder consists of hollow particles of low density; widely applied to many foods and pharmaceuticals. Spray Dryers are relatively simple in operation which accept feed in fluid state and convert it into a dried particulate form by spraying the fluid into a hot drying medium.
17.	Double cone blender	Double cone blender is an efficient and versatile machine for mixing of dry powders and granules homogenously. All the contact parts are made of stainless steel. The effective volume for optimum homogeneity is between 35%-70% of gross volume.
18.	Weighing Balance	Weighing balances are most critical part of pharmaceutical industry as it directly impact the final product quality. Weighing balances are based on the principle of load cell.
19.	Cooling Tower	A cooling tower is a specialized heat exchanger in which air and water are brought into direct contact with each other in order to reduce the water's temperature. As this occurs, a small volume of water is evaporated, reducing the temperature of the water being circulated through the tower.
20.	Chilling Plant	It is used in industries majorly. In industrial application, chilled water or other liquid from the chiller is pumped through process or laboratory equipment. Chilled water is used to cool and dehumidify air in mid- to large-size commercial, industrial, and institutional (CII) facilities.
21.	Steam Boiler	Steam boiler is generally used in industries to supply heat energy or Steam. Large capacity steam boiler are used to generate high temperature high pressure steam for power engine to generating power for power plants. Steam Boiler is used wherever a source of steam is required.
22.	ETP Plant	Effluent Treatment Plant or ETP is one type of waste water treatment method which is particularly designed to purify industrial waste water for its reuse and its aim is to release safe water to environment from the harmful effect caused by the effluent.
23.	Laminar Air Flow	LAF work station is capable of maintaining a particulate free work area even when operated in an uncontrolled environment. This is achieved by total removal of air borne droplet nuclei and dust-borne bacteria by unidirectional oriented streamlines of clean air at velocities designed to flush contaminating particulates.
24.	BOD Incubator	BOD incubator is the most versatile and reliable low temperature incubator which is designed to maintain at 20°C, necessary for Biological Oxygen Demand/Biochemical Oxygen Demand (BOD) determination. BOD incubators provide controlled temperature conditions for accelerated tests and exposures. The biological oxygen demand (BOD) is an empirical test in which standardized laboratory procedures are used to determine the relative oxygen requirements of microbes in wastewaters, effluents, and polluted waters.

25.	Bacteriological Incubator	Bacteriological incubator is basically the laboratory equipment which is used for the incubation of biological products under controlled conditions. This medical laboratory equipment is available with digital temperature controller with thermocouple sensor for better temperature accuracy.
26.	Microscope	A microscope is an instrument used to see objects that are too small to be seen by the naked eye. Microscopy is the science of investigating small objects and structures using such an instrument. Microscopic means invisible to the eye unless aided by a microscope.
27.	Autoclave	An autoclave is a subject to pressure that uses pressurized steam to heat the product and get the sterilization of the elements that have previously been entered. Based on this definition, can be designed from small desktop devices, solutions of large size for industrial productions.
28.	Deep freezer	Deep Freezers are designed for storage of biological samples, vaccines, serums, medical specimens at sub-zero temperatures. These chambers are ideal for long term storage & manufactured as per GMP norms and meet all critical requirements in the industry. The deep freezers maintain precise set temperatures, efficient cooling achieve sub-zero temperatures and is safe for long term storage, thus offering a complete solution for simulation of desired temperature in the chamber.
29.	Dehumidifier	Dehumidifier is used to reduce the level of humidity in the air, usually for health or comfort reasons, or to eliminate musty odor. Large dehumidifiers are also used in industry to control the humidity level.
30.	Lyophilizer	Lyophilization is a water removal process typically used to preserve perishable materials, to extend shelf life or make the material more convenient for transport. Lyophilization works by freezing the material, then reducing the pressure and adding heat to allow the frozen water in the material to sublimate.
31.	High-performance liquid chromatography	It is a technique in analytical chemistry used to separate, identify, and quantify each component in a mixture. It relies on pumps to pass a pressurized liquid solvent containing the sample mixture through a column filled with a solid adsorbent material. Each component in the sample interacts slightly differently with the adsorbent material, causing different flow rates for the different components and leading to the separation of the components as they flow out of the column.
32.	Gas Chromatography	A type of automated chromatography (a technique used to separate mixtures of substances) in which the mixture to be analyzed is vaporized and carried by an inert gas through a special column and thence to a detection device. The special column can contain an inert porous solid (in gas-solid chromatography) or a liquid coated on a solid support (in gas-liquid chromatography). The basic aim with GC is to separate each component that was in the mixture so that it produces a different peak in the detection device output which is graphed on a chart recorder. GC is a valuable tool in biochemistry (and other fields of chemistry, as in the analysis of perfumes).
33.	Polari meter	A Polari meter is a scientific instrument used to measure the angle of rotation caused by passing polarized light through an optically active substance. Some chemical substances are optically active, and polarized light will rotate either to the left or right when passed through these substances.
34.	Spectrophotometer	The spectrophotometer is an optical instrument for measuring the intensity of light relative to wavelength. Electromagnetic energy, collected from the sample, enters the device through the aperture (yellow line) and is separated into its component wavelengths by the holographic grating. Simply put, the grating acts to separate each color from the white light. The separated light is then focused onto a CCD array detector where the intensity of each wavelength (or each color if in the visible region) is then measured by a pixel of the array. The CCD is then read-off to a

		computer and the result is a spectrum which displays the intensity of each wavelength of light.
35.	HPTLC	High-Performance Thin-Layer Chromatography (HPTLC) is the most advanced form of TLC and comprises the use of chromatographic layers of utmost separation efficiency and the employment of state-of-the-art instrumentation for all steps in the procedure: precise sample application, standardized reproducible chromatogram development and software controlled evaluation.

4.3 Expected Outcome after Intervention:

The project will be beneficial for individual units in Karnal & nearby districts and the cluster as a whole. The setting up of CFC is expected to generate the following benefits for the cluster units:

- Cluster units shall have access to good quality standardised herbal extracts as per the specifications required
- Quality raw material inputs shall ensure significant improvements in the end-product quality of cluster units
- Proposed CFC will ensure timely delivery of raw material requirements to the cluster units resulting in well planned production schedules
- Sourcing herbal extracts from the CFC shall lead to low inbound transportation costs for units in Karnal & nearby districts making them more price competitive
- Better product quality & price competitiveness will lead to more contract manufacturing , loan licensing work from larger players
- Centralised testing & formulation development lab shall enable the cluster units to enhance their revenue from self-owned brands
- Increase in business of existing units leading to significant employment generation in the units in Karnal & nearby districts
- Significant increase in number of entrepreneurs entering the Ayurveda products manufacturing sector
- Better product quality, more planned production leading to expansion of potential market pan-India & increase in number of exports contracts for the cluster units.

The potential results in 3 years after commissioning of CFC vis-a-vis the current situation is mentioned in table 17.

Area	Current Scenario	Expected Out Comes in 3 years
Potential Beneficiaries (5 Districts)	150 MSEs	250 MSEs
Cluster Units (Karnal)	About 50 MSEs	About 80 SMEs
Markets	Mostly contract-manufacturing loan licensing for large firms, some units have few small brands, some brands restricted only to North India & GT Road belt	Greater revenue from self-owned brands, increased presence of brands pan India, more exports opportunities, enhanced brand loyalty because of better quality products
Employment	About 2500 direct employment	About 4500 direct employment
Technology	Lack of facilities to test raw material quality, Lack of a good R&D capabilities to develop new formulations	CFC will have the facility to test the raw material quality at each stage in the production process and hence provide the herbal extract as per the exact specifications of the cluster units. Also common R&D centre will encourage development of new formulations.
Production	Low Quality Raw Materials No assurance in raw material delivery timelines leading to unplanned production shutdowns High In-bound Transportation Costs High Raw material testing costs	Better end-product quality Assured raw material delivery timelines leading to well-planned production schedules Low in-bound transportation costs Lower testing costs
Exports	Current exports from cluster units are negligible	20% of units shall explore international markets and start exporting
Turn Over	About 50 crore	About 100 Crore
Certification	All units have GMP Certification	Around 10% units shall attain WHO- GMP Certifications

Table 17: CFC Potential results in 3 years

Special Purpose Vehicle (SPV) for Project Implementation



5. Special Purpose Vehicle (SPV) for Project Implementation

The micro and small units at Karnal Ayurveda cluster came together to form a Special Purpose Vehicle (SPV) as a private limited company under section 7 of the Companies Act, 2013 and rule 18 of the Companies (Incorporation) Rules, 2014. The SPV is named as 'VAPIK Solutions Private Limited' with CIN being U93090HR2019PTC077586. The SPV was registered on 2nd day of January 2019. The certificate of registration along with Memorandum of Association (MoA) and Articles of Association (AoA) is provided in *Annexure 9.3 (a) & 9.3 (b)*. The company has an authorized paid up capital of INR 10.00 Lakhs which shall be enhanced in near future. The members are largely micro or small sized firms (registered units) involved in Ayurveda Products Manufacturing and predominately based in Karnal.

DIC, Karnal and MSME-DI both played an important role in SPV formation by cluster stakeholders. The SPV was incorporated in 2019, has 24 members and already includes about 24 shareholders who are subscribing to the necessary equity base of the company. The SPV shall be open for new members to join and for the existing members to leave while maintaining a minimum member base of at least 20 at all times. The current members are already conducting meetings in nearby districts such as Yamunanagar, Ambala etc. to further increase the membership base. The proposed CFC will be implemented on public-private partnership basis through SPV 'VAPIK Solutions Private Limited' by availing support from Government of Haryana (under EPP 2015) and Government of India (under MSE-CDP scheme of DCMSME).

The SPV members have a track record of cooperative initiatives. SPV members are also members of prominent cluster associations such as KADMA (Karnal Ayurveda Drug Manufacturers Association), KPMA (Karnal Pharmaceutical Manufacturers Association). Cluster members have been autonomously undertaking several soft interventions to enhance knowledge and exposure of the cluster units on new developments in Ayurvedic products industry. These include exposure visits to raw material suppliers in Nainital & Kala Amb, joint sessions to discuss latest market developments, pain points & growth areas for the cluster, exposure to cluster development initiatives in other clusters, meetings with Ministry of AYUSH, registrations under UAM and awareness programs on new trends in Ayurveda manufacturing industry and new technologies. These programs were conducted in collaboration with DIC, MSME-DI and Ministry of AYUSH.

The SPV has conducted a series of stakeholder consultations (with various members, DIC, MSME-DI Karnal and EY experts) during finalization of project components, selection of technologies and development of Detailed Project Report. The SPV has been instrumental in spreading the awareness

about cluster development under MSE-CDP in Karnal and has also helped in validation of DSR. It has kept the state government and the MSME-DI Karnal engaged during the entire period of development of DSR and DPR.

5.1 Shareholder Profile & Shareholding Mix

List of Directors: The SPV has five directors. The details of the directors are furnished in table 18. Other than these directors, the SPV will have provision of having one director each from state government (DIC) and centre government (DCMSME/MSME-DI). The SPV comprises members from micro and small Ayurveda Products manufacturing units. Units are homogeneous in nature in terms of products manufacturing and activities performed by the cluster units.

S. No.	Director Name	Name of the unit	Address
1	Vikas Singla	Stallion Enterprises	208-L, SECTOR-3, HSIIDC, KARNAL- 132001 HARYANA
2	Avnish Bhardwaj	Binexo Pharmaceuticals	PLOT NO-148, SECTOR-3, HSIIDC, KARNAL-132001 HARYANA
3	Anup Bhardwaj	North India Lifesciences	PLOT NO-241, SECTOR-3, HSIIDC, KARNAL-132001 HARYANA
4	Abhishek Gupta	ONIKA Pharmaceuticals	208-C, BLOCK-III, SECTOR-3, HSIIDC, KARNAL-132001
5	Abhimanyu Dawar	Anant Herbal Products	VILLAGE UCHANI, G.T. ROAD KARNAL-132001 HARYANA

Table 18: List of Directors

The lead promoters/ shareholders have successful experience as well as broad market knowledge in Ayurveda products manufacturing and they are also well versed with the benefits of cluster developmental initiatives. These units are financially viable in nature. Post the DSR validation, the MSME DI also acknowledged the genuineness and enthusiasm of the SPV members to undertake project initiative under MSE-CDP.

Members and contribution to paid-up capital

Members of the SPV have been engaged in manufacturing at Karnal for many years. SPV directors/ members of the SPV also have considerable experience in manufacturing & marketing of Ayurveda products. Directors/members have been in close interactions with technical experts, government institutions and machinery suppliers. The SPV was formed with the objective to take up cluster level activity in a joint and coordinated manner, wherein all units have equal say. Details of SPV members along with their contact persons, unit details, UAM numbers and products manufactured are provided in table 19.

S.No	SPV Unit	NAME & Contact-no	Turno- ver	Address	UAM	DETAILS OF PRODUCTS
1	COMEX HERBAL PRODUCTS	Paramjeet Singh 98138-27887	7	123, SECTOR-3, HSIIDC, KARNAL- 132001 HARYANA	HR10A0007116	AYURVEDIC TABLETS, CAPSULES, SYRUPS, POWDERS,OILS, ETC
2	XIEON LIFE SCIENCES PRIVATE LIMITED	Yogesh Singla 92157-14500	900	PLOT NO- 171, SECTOR-3, HSIIDC, KARNAL- 132001 HARYANA	HR10B0001974	HERBAL SHAMPOO, SYRUPS, LOTIONS,CREAMS,OILS, ETC
3	REACH PHARMACEUTICALS PVT. LTD.	M.K. Chabra 98110-55658	10	5456, GALI NO- 9, SHIV COLONY, KARNAL- 132001 HARYANA	HR10A0007260	AYURVEDIC TABLETS, CAPSULES, SYRUPS, POWDERS,OILS, ETC
4	AYUSHI HERBS	Virender Narwal 98124-04465	7	VPO NARUKHERI, KARNAL- 132001 HARYANA	HR10A00007272	AYURVEDIC CAPSULES, SYRUPS, POWDERS,OILS, ETC
5	UTTAM HERBALS	Gaurav Batra 99966-10090	15	187- SECTOR-3, HSIIDC, KARNAL- 132001 HARYANA	HR10A00007240	AYURVEDIC TABLETS, CAPSULES, SYRUPS, POWDERS,OINTMENTS,JUICES,OILS, ETC
6	SUKHIJA AYURVEDIC PHARMACY	R.P. Sukhija 94160-30652	35	159, SECTOR-3, HSIIDC, KARNAL- 132001 HARYANA	HR10A00007117	AYURVEDIC TABLETS, CAPSULES, SYRUPS, POWDERS,OILS, ETC
7	CURE QUICK HERBALS	Harish Chawla 99966-69000	147	PLOT NO- 14, SECTOR-3, HSIIDC KARNAL- 132001 HARYANA	HR10A00000333	AYURVEDIC TABLETS, CAPSULES, SYRUPS, POWDERS,OILS, ETC
8	GOURJA FOODS AND AGRO PRODUCTS	Anshul Garg 95180-00039	170	PLOT NO-1, AGARSEN INDUSTRIAL AREA, OPP. KAMBOPURA, KARNAL- 132001 HARYANA	HR10A00007120	AYURVEDIC TABLETS, POWDERS,OILS, ETC
9	ANANT HERBAL PRODUCTS	Sunita Dawar 9416030641	45	VILLAGE UCHANI, G.T. ROAD KARNAL- 132001 HARYANA	HR10A00006709	AYURVEDIC TABLETS, CAPSULES, SYRUPS, POWDERS,OINTMENTS,OILS, ETC

Table 19: SPV Member Details

10	STALLION ENTERPRISES	Vir Bhan 89306- 52786	100	208-L, SECTOR- 3, HSIIDC, KARNAL- 132001 HARYANA	HR10A0007192	AYURVEDIC TABLETS, CAPSULES, SYRUPS, POWDERS,OILS, ETC
11	DAKSH PHARMACEUTICALS	Raj Kumar 70153-76485	10	VILL. SAIDPURA, NEAR WATER TANK, KARNAL- 132001 HARYANA	HR10A0007212	AYURVEDIC CAPSULES, SYRUPS, POWDERS,OILS, ETC
12	VET HEALTH PHARMA	Vandana Gulati 94160-47167	40	RAJIV PURAM, PHOOSGARH ROAD, KARNAL- 132001 HARYANA	HR10A0007174	AYURVEDIC TABLETS, SYRUPS, POWDERS,OILS, ETC
13	SHUKTI FOOD AND PHARMA CO.	J.R.P. Arora 78760-75000	25	GAUSHALA ROAD, KARNAL- 132001 HARYANA	HR10A0007123	AYURVEDIC CAPSULES, SYRUPS, POWDERS,OILS, ETC
14	BINEXO PHARMACEUTICALS	Avnish Bhardwaj90341- 06000	65	PLOT NO-148, SECTOR-3, HSIIDC, KARNAL- 132001 HARYANA	HR10B0002249	AYURVEDIC TABLETS, CAPSULES, SYRUPS, POWDERS,OILS,SHAMPOO,OINTMENT, ETC
15	NORTH INDIA LIFESCIENCES PVT LTD	Anup Bhardwaj 89503-11000	600	PLOT NO-241, SECTOR-3, HSIIDC, KARNAL- 132001 HARYANA	HR-10B0007188	AYURVEDIC TABLETS, CAPSULES, SYRUPS, POWDERS,OILS,SHAMPOO,OINTMENT, ETC
16	AVIKAA HERBS	Sankalp Arora 90342-00455	20	163-H, SECTOR- -3, HSIID, KARNAL- 132001 HARYANA		AYURVEDIC SYRUPS, POWDERS,OILS, ETC
17	SWISS BIOHERBALS	Rajni Vaid 92155-32377	15	SWISS BIOHERBALS, 1ST FLOOR, VILLAGE KACHWA, DISTT. KARNAL- 132001 HARYANA		AYURVEDIC TABLETS, CAPSULES, SYRUPS, POWDERS,OILS, ETC
18	K.R LABORATORY	Rajeev Kumar 92542-11500	50	ANSAL ROAD, VILL. KAMBOPURA, KARNAL	HR10A0007673	AYURVEDIC TABLETS, CAPSULES, SYRUPS, POWDERS,OILS, ETC
19	PMG HEALTHCARE	Munish Garg 9991090930	80	VILL. KAMBOPURA, KARNAL	HR10A0002347	AYURVEDIC CAPSULES, SYRUPS, POWDERS,OILS, ETC
20	SARTHAK AYUSH AND FOODS	Gaurav Vats 9215291007	80	198-A, SECTOR- 3, KARNAL	HR10A0008526	AYURVEDIC TABLETS, CAPSULES, SYRUPS, POWDERS,OILS, ETC
21	LIBERTY DRUGS GRAM UDYOG SAMITI	Kamal Muteraja 85290-19695	20	VIKAS NAGAR, PHOOSGARH ROAD KARNAL	APPLIED FOR	AYURVEDIC TABLETS, CAPSULES, SYRUPS, POWDERS,OILS, ETC
22	EXOD HERBALS	Himanshu Chawla 98125- 70000	20	RAWAR ROAD, KARNAL	APPLIED FOR	AYURVEDIC CAPSULES, SYRUPS, POWDERS,OILS, ETC

23	SAHI PHARMA INDIA PVT. LIMITED	Javed Hussain 80778-26778	5	VILLAGE UCHANI, NEAR ZEE LABORATORIES, G.T. ROAD KARNAL- 132001 HARYANA	HR10A00006711	AYURVEDIC CAPSULES, SYRUPS, POWDERS,OILS, ETC
24	ONIKA PHARMACEUTICALS	G.K. Gupta 98967-11666	100	208-C, BLOCK- III, SECTOR-3, HSIIDC, KARNAL- 132001	HR10A00001612	HERBAL BOLUSES, SYRUPS, POWDERS,OILS, ETC

The shareholding pattern of members of the registered SPV includes the contribution from every member of SPV and no individual shareholder holds more than 10 per cent equity stake in the capital of the company. Details of SPV shareholders along with shareholding percentage, Total investment, employment & date of establishment is provided in table 20.

S.No	SPV Unit	Total Investment	Investment in plant & machinery	No. of Employees	% Stake in SPV	LICENSE NO	DATE OF ESTABLISHMENT
		IN Crores	IN Lakhs				
1	COMEX HERBAL PRODUCTS	1.1	5	8	2	ISM-842(HR)	04-01-2017
2	XIEON LIFE SCIENCES PRIVATE LIMITED	0.5	35	10	7	264-L-COS(H)	03-06-2007
3	REACH PHARMACEUTICALS PVT. LTD.	0.55	10	5	3	ISM-259(HR)	04-01-2010
4	AYUSHI HERBS	0.43	8	4	4	ISM-529(HR)	11-01-2003
5	UTTAM HERBALS	0.37	7	5	4	ISM-876(HR)	02-01-2018
6	SUKHIJA AYURVEDIC PHARMACY	2.3	10	9	4	AYUR- 133(HR)	19/05/1987
7	CURE QUICK HERBALS		18	8	2	ISM-383(HR)	08-07-2003
8	GOURJA FOODS AND AGRO PRODUCTS	1.4	20	9	4	ISM-750(HR)	24/04/2015
9	ANANT HERBAL PRODUCTS	0.71	21	10	6	ISM-349(HR)	15/01/2001
10	STALLION ENTERPRISES	0.5	25	10	7	ISM-816(HR)	22/10/2016
11	DAKSH PHARMACEUTICALS	0.28	5	6	4	ISM-856(HR)	04-01-2017
12	VET HEALTH PHARMA	0.4	5	5	4	RENEWAL APPIED FOR	04-01-2005
13	SHUKTI FOOD AND PHARMA CO.	0.6	30	10	4	ISM-822(HR)	29/04/2017

Table 20: SPV Members % Stake & Total Investment

14	BINEXO PHARMACEUTICALS	0.5	30	8	7	ISM-666(HR)	04-01-2014
15	NORTH INDIA LIFESCIENCES PVT LTD	7.7	20	8	7	ISM-905(HR)	04-01-2018
16	AVIKAA HERBS	1.3	20	8	3	ISM-868(HR)	04-01-2018
17	SWISS BIOHERBALS	0.7	15	8	2	ISM-868(HR)	22/05/2017
18	K.R LABORATORY	0.8	25	9	4	ISM-680(HR)	04-02-2014
19	PMG HEALTHCARE	0.75	20	10	3	ISM-821(HR)	04-12-2017
20	SARTHAK AYUSH AND FOODS	0.55	20	9	3	ISM-635(HR)	28/09/2012
21	LIBERTY DRUGS GRAM UDYOG SAMITI	0.32	10	8	3	ISM-287(HR)	04-01-1998
22	EXOD HERBALS		10	8	4	ISM-391(HR)	04-01-2003
23	SAHI PHARMA INDIA PVT. LIMITED	0.1	9	6	2	ISM-923(HR)	10-11-2018
24	ONIKA PHARMACEUTICALS	0.4	20	10	7	KNL-418	25/04/2003

5.2 Initiatives undertaken by the SPV

As mentioned in detail in section 4.1 (Soft interventions recommended and action taken), the SPV members have proactively undertaken a lot of capacity building initiatives to promote the cooperation among cluster units and enhance knowledge and exposure of the units. These initiatives have been undertaken in collaboration with DIC, Karnal, and Ministry of AYUSH & MSME-DI Karnal etc. The major initiatives are:

- Pursuing initiatives in close coordination with MSME-DI and DIC, Karnal to facilitate understanding of cluster development, common procurement, marketing, available government support, latest technology for common facility etc.
- Exposure visits to raw material (herbal extract) suppliers in Kala Amb, Himachal Pradesh & Nainital, Uttarakhand to understand latest technology in Herbal extraction process & quality control procedures.
- Conducting various programs for capacity building, awareness generation and technological advancement in the cluster as well as participation in similar programs organized by stakeholders.
- Meetings with Ayurveda manufacturing units in nearby districts such as Yamunanagar, Ambala etc. to add more members to the SPV
- Meetings for finalising the building layout plan for the CFC & Identification of land for construction of CFC.

The preparation of DSR was facilitated by the SPV and SPV representatives took an active part in the presentation of the DSR & the subsequent discussion during the SLPSC meeting.

5.3 SPV Roles and Responsibilities

The SPV will play an important guiding role in the overall management and operations of the CFC. It will provide direction to the management of the CFC and will monitor usage and performance of the CFC. The SPV will constantly report to the state and the centre government about the performance of the CFC. The major roles and responsibilities that are envisaged to be performed by the SPV post the submission of this DPR are mentioned below:

- > Coordinating with the state industry department and the MSME-DI for DPR approvals in the SLPSC
- > Accompanying EY experts to various meetings at the state and central government departments
- Execution of land purchase in the name of SPV
- Garnering the SPV project contribution from the members
- > Assisting the EY team in providing inputs to the DCMSME technical committee, if required
- Formation of purchase committees for procurement of goods and services
- > Establishing, operating and maintaining all common facilities as mentioned in the DPR
- Obtain any statutory approvals/clearances from various government departments
- Recruit appropriate professionals to ensure smooth execution of the CFC
- Collection of user charges from members and other users of the facilities as per the decided rates so as to meet the recurring expenses and future expansions of the CFC.
- > Preparation and submission of progress reports to state industry department and DCMSME

The Memorandum and by-laws of the Cluster SPV indicate the democratic process in terms of decision making on the basis of votes. All members of SPV will meet once every fortnight/month to discuss/resolve operational issues. The management of the CFC will be a two tier structure for smooth and uninterrupted functioning. The executive body i.e. Board of Directors; will include office bearers elected/nominated from time to time including one nominee of State Government (DIC) and DC-MSME, they will also remain present during meetings.

While various estimates on user charges/service fee are presented in this DPR, all decisions including usage priority of facilities by members will be made by unanimous decision of the members. The CFC will seek direction and guidance from the SPV Board of Directors and the day to day administration will be taken care of by the management that shall be appointed by the SPV BoD. Their role is detailed below:

- Board of Directors: The BoD will be the main governing body and will oversee the operations of the CFC. They will have the decision making power in terms of fixation of user fees (for members and non-members) and usage of reserves etc. for future expansion. The Chairman and Managing Director will oversee the entire operations; each Director will be entrusted with specific responsibility like marketing, technical, finance, public relations etc. based on their interests and experience.
- Managerial, Technical and Administrative staff: A competent and well qualified professional with background in Ayurveda Products Manufacturing industry will be appointed as the Chief Executive Officer (CEO), who will look after day to day operations of CFC and shall be directly reporting to the Board of Directors. Each facility will have its own technical staffs (supervisors, operations and helpers) as per the requirement. The details of manpower and other requirements are already mentioned in the DPR in the Project Economics section. There shall be provisions for administrative staff such as accounts personnel, marketing professional and store keepers etc. to ensure effective functioning of the CFC. The proposed organizational structure of the CFC is given in Figure 26

Figure 26: Proposed Organisational Structure of the CFC



Detailed Project Report of Karnal Ayurveda Cluster

Project Economics



6. Project Economics

6.1 Project Cost & Means of Finance

6.1.1 Project Cost

The total project cost is estimated at INR 1491.97 Lakhs (INR 14.92 crores). The project cost for setting up a CFC for Karnal Ayurveda cluster includes the following:

- 1. Land and site development
- 2. Building and civil works
- 3. Machinery and equipment
- 4. Miscellaneous fixed assets
- 5. Preliminary & Pre-operative expenses
- 6. Contingency
- 7. Margin money for working capital

The detail of each project component is provided below:

1. Land and Building

Land

The proposed CFC would require space for construction of buildings, pre-fabricated structure for installation of machinery and provision for stocking material. A lot of space also needs to be left open considering the industry FAR norms in the state. Considering the space requirements of the proposed facilities in the CFC and the FAR norms, it is estimated that a plot of about 1 acre (43560 sq. ft) shall be required.

The cluster SPV has identified a plot of land at village - Mainmati, 10 km away from the Karnal city. The total plot area is 1 Acre & the same shall be purchased in the name of the SPV. As per the Haryana Urban Development Authority (HUDA) Erection of Buildings Regulations, 1979, maximum permissible coverage on ground (built up area) is 60% of area of an industrial site. This shall allow an area of 26136 sq. ft. (2904 sq. yards) for CFC construction.

Cluster members have already obtained a consent letter from the owner of the land to sell a plot of 1 Acre for 1 Crore Rupees. Land shall be registered in the name of SPV subsequent to in-principle approval of DPR by DC-MSME. The document highlighting the same and establishing the proof for availability of land is provided in *Annexure 9.4*. A provision of INR 7.50 Lakhs has been kept in the project cost to cover the stamp duty & other charges.

Building

The built up area of the facility will comprise of two storied building with a total covered area of 9746 sq. ft. The CFC will also have a shed area of 15000 sq. ft. and a boundary wall of 10,000 sq. ft. Indicative building layout plan is provided in *Annexure 9.5*. The total cost of construction of the building including shed, boundary wall, Soil filling & foundations for boiler, storage tank & extractor, electrical works & bore well is estimated to be INR 289.24 Lakhs. The building estimate duly certified is provided in *Annexure 9.6*. Hence, the total cost of land, site development, stamp duty as well as construction of building is estimated at INR 396.74 lakhs

S. No	Particulars	Amount
Α.	Land	
1	Land With Registration (1 Acre)	107.50
В.	Technical Civil Work	
2	Building RCC 8400 sq. ft.	115.00
3	Shed 15000 sq. ft.	115.00
4	Boundary Wall 10,000 sq. ft.	20.00
5	Ground Level Soil Filling	9.00
6	Foundation for boiler, storage tank and extractor	7.00
7	Bore well	2.3
8	Electricity Fitting	11.60
9	Electricity Panels	9.34
10	Total Building	289.24
	Total (Land + Building)	396.74

Table	21:	Land	&	Building	Costs
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2. Plant & Machinery:

As detailed in section 4.2 (Hard interventions), an Herbal extract plant & an in-process quality control lab cum R&D Centre have been recommended to enable cluster units enhance their competitiveness. The machines have been categorized as primary and secondary machines & other miscellaneous fixed assets. Primary machines shall be primarily used for job work, whereas the auxiliary/supporting machines for functioning of primary machines have been categorized as secondary machines. The facilities proposed at CFC include machinery for grinding, extraction, distillation, filtration, drying and solvent storage section for raw herbs & quality control lab. The total cost of plant and machineries including taxes has been estimated at INR 949.93 Lakhs.

The details of the proposed machinery items are presented in the table 22, 23 & 24. The detailed specifications and quotations of the machines are provided in Annexure 9.7. A provision of 1.5% of the base price of each machine to the tune of INR 11.51 Lakhs has been considered towards packing & transportation related charges. The SPV has considered quotations for machinery from suppliers

based on the manufacturer's reputation, service support, price and quality. However, an open tendering system shall be followed as per Government Financial Rules (GFR) for procurement of these machineries during project execution and selected vendors will be further invited to negotiate.

S. No	Equipment	Specification	Quantity	Price
A.1	First Phase Grinding & Crushing of Herbs			
1	HERBS WASHING MACHINE	1000 KG / HOUR	1	3.80
2	RM Grinder (Pre Crusher)	500 KG PER HOUR	1	9.20
3	RM Grinder (Pre Crusher)	200 KG PER HOUR	1	6.80
A.2	Extraction			
4	Rotary Extractor	6kl	2	40.00
5	Vertical Extractor	6KI	3	40.00
6	Vertical Extractor	4KL	4	50.00
7	Vertical Extractor	2KI	4	30.00
8	Open Extractor	3KI	2	10.00
9	Open Extractor	2KI	2	9.00
A.3	Concentration (Distillation)			
10	Reactor	5kl	2	28.00
11	Reactor	4KI	2	25.00
12	Reactor	3 KI	3	30.00
13	Reactor	2 KI	2	16.00
14	Callandria Unit		2	25.00
15	Distillation Vessel	5 KI	1	11.20
16	Distillation Vessel	2 KI	2	11.20
A.4	Accessories for Extractors & Reactors			
17	Condenser	20 Sqm	4	17.00
18	Condenser	16 Sqm	6	21.00
19	Condenser	12 Sqm	6	19.00
20	Condenser	10 Sqm	6	17.00
21	Vacuum Receivers-	200L	20	23.00
22	Vacuum Receiver -	500L	2	4.50
23	Transfer Pumps	SS 316- 3HP	10	6.00
A.5	Sedimentation & Day Storage			
24	Settling Tank	2 KI	4	12.60
25	Settling Tank	1KI	2	4.20
26	Day Storage Tank	4KI	2	11.20

Table 22: List of proposed primary machinery

A.6	Filtration			
27	Centrifuge	36"	1	8.40
28	Centrifuge	24"	1	7.40
29	Filter Press	14" x 10 Plates	1	3.80
30	Filter Press	18" x 15 Plates	1	6.50
A.7	Drying Section			
31	Rotary Vacuum Padle Dryer	1000L	1	22.00
32	Tray Dryer	48 Trays	1	7.00
33	Spray Dryer with structure	100kg/hr	1	40.00
34	Nutch Filters	500 L	1	1.40
35	Nutch Filters	750 L	1	1.90
A.8	Solvent Storage Section			
31	Horizontal Underground Storage Tank	10KI	2	12.50
32	Horizontal Underground Storage Tank	5KI	1	5.00
A.9	Final Processing			
33	Ribbon Blender	200kg	1	4.50
34	Double Cone Blender	1000kg	1	8.00
35	Multi Mill	3HP	1	2.00
36	Vibro Sifter	915 MM	1	1.40
37	Vibro Sifter	750 MM	1	1.10
38	Impact Pulveriser	100kg/hr GMP	1	10.50
	Total			624.10
	Add: Packing/Transportation @ 1.5% of base price			7.93
	Total			632.03

Table 23: List of proposed secondary machinery

S. No	Equipment	Quantity	Price
1	Steam Boiler with Chimney 3TPH	1	48
3	RO Plant (2000 LPH)	1	8.50
4	ETP Plant	1	13.00
5	Cooling Tower (250 TR)	1	6.50
6	Pipelines for Utilities		30.00
7	Vacuum Pump (10HP)	2	4.20
8	MINI WORKSHOP FOR MAINTENANCE(Lathe Machine, Driller, Tools, Welding Set)	1	9.11
9	PILOT PLANT FOR R&D (2*500 L)	2	30
10	DG Set 125 KV	2	15.00
11	Weighing Machine	1	8.00

12	Batch Coding Machine	1	3.00
13	Powder Pouch Packing Machine	1	5.00
14	Liquid Pouch Packing Machine	1	4.50
15	Weigh Balance (500 KG)	1	0.40
16	Weigh Balance (300 KG)	1	0.40
17	Weigh Balance (100 KG)	2	0.20
18	SS/MS Racks	50	9.00
19	Platforms for entire plant		26.90
20	Computers	4	1.2
21	Office Aluminium Panels		5.81
22	Lift for first floor for material		10.05
23	Cargo lift with small tractor		9.55
	Total		248.31
	Add: Packing/Transportation @ 1.5% of base price (except Computers)		2.82
	Total		251.13

Table 24: List of proposed Lab Equipment

S. No	Equipment	Specifications	Quantity	Price
1	UV Spectrophotometer Double Beam	Double Beam	1	5.90
2	Polari meter		1	0.48
3	Refractometer		1	0.27
4	TLC Kit		1	0.32
5	Hot Air Owen	18" x 18" x 18"	1	0.44
6	Muffle Furnace 1200 Degrees	9 x 4 x 4	1	0.38
7	Round Bottom Flask	2Ltr	1	0.01
8	Heating Mental	2Ltr	1	0.04
9	Heating Mental	500ml	1	0.03
10	Digital Water Bath	12 Holes	1	0.27
11	Melting Point Apparatus		1	0.20
12	Vortex Shaker	Borosil	1	0.24
13	Desiccator Borosil	250mm	1	0.18
14	Mono Quartz Water Distillation Unit	2.5Ltr/Hr Borosil	1	0.55
15	Laboratory Glass Dryer	Borosil	1	0.32
16	Microprocessor Conductivity TDS meter		1	0.27
17	T.D.S. Meter PEN type		1	0.05
18	Alcohol meter		1	0.06
19	Test Sieve Standard Size	40 mesh	1	0.03
20	Test Sieve Standard Size	60 mesh	1	0.03
21	Test Sieve Standard Size	80 mesh	1	0.03

22	Magnetic Stirrer with Hot Plate		1	0.12
23	T.L.C. Plate (Merck)		1	0.06
24	Whitman Filter Paper	Superior	1	0.01
25	Ordinary Filter Paper		1	0.00
26	Thermometer	0 to 100°	1	0.01
27	Thermometer	0 to 300°	1	0.01
28	Incubator Bacteriological SS Chamber 18" x 18 "x 18"/ 95 Inside Ltr		1	0.41
29	BOD Incubator	6 cuft/200Ltr	1	0.65
30	Microscope Binocular		1	0.27
31	Autoclave Vertical	50Ltr	1	0.38
32	Vacuum Oven	24Ltr/300 x 300	1	0.33
33	Stability Chamber	200-250Ltr	1	4.37
34	Lab Glass ware		1	2.66
35	Lab Furniture with Centre Table and PVC Sink Fitting with electric fitting		1	3.25
36	Lab Chemicals		1	2.66
37	TRACE GC 1110 Main Frame 230V	1	1	10.27
38	HPLC with Auto sampler and UV Detector	1	1	24.49
	Total			60
	Add: Packing/Transportation @ 1.5% of base price			0.76
	Total			60.76

S.No.	Particulars	Price
1	Primary Machines	624.1
2	Secondary Machines	248.31
3	Lab Equipment	60
4	Packing & Transportation	11.51
5	Erection & Commissioning	6
	Total	949.93

Table 25: Total Plant & Machinery Costs

3. Miscellaneous Fixed Assets:

The CFC would also require fixed assets such as furniture, electricity panel & fitting, staff canteen, lift, bore well, fire-fighting equipment and cargo lift etc. for smooth running of operations. The total estimated capital expenditure for purchase of miscellaneous fixed assets is estimated to be Rs. 17 Lakhs. Details are provided in table below.

1.50

42.44

Table 26: Miscellaneous Fixed Assets

S. No	Particulars	Price
1	Furniture	7
2	FIRE FIGHTING EQUIPMENT	8
3	RODENT KILLERS	2
	Total	17

4. Preliminary Expenses:

The preliminary expenses are envisaged as expenses incurred for registration of SPV, project management charges, detailed civil engineering drawings with estimates, tendering forms, bank appraisal, tendering cost and preparation of DSR & DPR of the cluster.

Particulars S. No. Amount 1 SPV Incorporation 0.45 Project Management Charges (@2% 2 of Project cost) 29.84 Project Report Preparation (DSR & 3 DPR) 10.00 Civil engineering design with 4 0.15 estimates 5 Tender forms & tendering cost 0.50

Bank Appraisal

Total

Table 27: Preliminary Expenses

5. Pre-operative Expenses:

6

Pre-operative expenses include expenses for telephone, stationary, logistics during the project implementation period & one-time electricity connection costs. The total expenditure for pre-operative expenses are estimated at INR 22.13 Lakh (table 28).

Table 28: Pre-operative Expenses

S. No	Particulars	Price
	Telephone & Stationary &	
1	logistics	1.50
2	One time electricity connection	20.63
	Total	22.13

6. Provision for Contingencies:

As per the guidelines of MSE-CDP a provision for contingencies has to be made on plant/machinery and buildings. Contingencies estimated @2% on building and civil works (totalling INR 289.24 lakh) amounts to INR 5.78 lakh while contingencies on plant and machinery (totalling INR 772.56 lakh) have been estimated at 5%, which amounts to INR 38.63 Lakh.

7. Margin Money for Working Capital:

The total working capital requirement during the first year of operation at 70% capacity utilization is estimated at INR 97.31 lakh with margin money requirement of INR 19.31 Lakh (20% of working capital requirement as margin). The working capital requirement has been calculated based on requirement of consumables, utilities, manpower costs, sundry debtors etc.

8. Summary Project Cost:

A summary of total estimated project cost is presented in table below:

S. No.	Particulars	Total Project Cost (Rs. Lacs)
1	Land	107.50
	a. Land cost	107.50
2	Building & Other Civil Works	289.24
3	Plants & Machinery	949.93
	a. Indigenous	692.8
	b. Imports	
	c. Secondary Machines	251.13
	d. Erection & Commissioning	6
4	Miscellaneous fixed assets (fixture, furniture, firefighting equipment etc.)	17
5	Preliminary Expenses (DSR, DPR, registration, civil engineering drawings with estimates & tender forms, bank appraisal etc.)	42.44
6	Pre-Operative Expenses (Telephone & Stationary, Logistics, electricity connection etc.)	22.13
7	Contingency	
	a. Building @ 2%	5.78
	b. Plant & Machinery @ 5%	38.63
8	Margin money for working capital (Working capital required @ 80% C.U.)	19.31
	Total	1491.97

Table 29: Summary of Total project Cost

6.1.2 Means of Finance

The project will be financed from three sources: equity from SPV, grant-in-aid from Govt. of India (under MSE-CDP) and grant-in-aid from Govt. of Haryana (under EPP 2015). Working capital loan will be secured from a local bank. The assistance to the project from Govt. of India under MSE-CDP is envisaged to the tune of 73% of the project cost. Govt. of Haryana will contribute 17% of project cost and SPV will be required to contribute 10% of project cost. Table 30 summarizes the means of finance for the project:

S. No.	Source of finance	Project cos 1500.0	t up to INR 00 lacs	Project cos 1500.0	st over INR 00 lacs	Total Amount
		Percentage Contribution	Amount (INR in lacs)	Percentage Contribution	Amount (INR in lacs)	(INR in lacs)
1	Grant-in-aid under MSE-CDP (Govt. of India)	73	1089.14	-	-	1089.14
2	Grant-in-aid (Govt. of Haryana)	17	253.63	-	-	253.63
3	Contribution of SPV	10	149.20	-	-	149.20
	Total	100%	1491.97			1491.97

т	able	30:	Means	of	Finance
	able	50.	Means	UI.	1 mance

1. Share Capital:

The contribution of the SPV members will be the way of subscription to shares in the SPV 'VAPIK Solutions Pvt Ltd.' registered as a Private Limited Company. The extent of paid-up share capital/equity contribution would be INR 149.20 lakh contributed by the cluster SPV.

The authorised share capital of the company is INR 10.00 lakhs. The extent of share capital/equity contribution by each member will be restricted to a maximum of 10% of total contribution to the share capital of the company. Details of the current shareholding have been provided in the Annexure 9.8

2. Grant-in-Aid:

Grant-in-aid of INR 1089.14 lakh is expected from Government of India. The grant received under MSE-CDP will only be utilized to procure plant and machinery for the project. In addition, grant-in-aid of INR 253.63 lakh is expected from Government of Haryana under EPP 2015. The grant received as per EPP (MSE-CDP) will be utilized to bridge the gap funding in plant & machinery and building for CFC.

6.2 Expenditure Estimates:

In this section, a detailed estimate of expenditure of the CFC has been conducted on eight hours two shift operation basis. This has been estimated based upon extensive inputs by the cluster members and the prevalent rates of consumables, utilities and manpower in the cluster. This section considers annual cost of undertaking job work and expenditure estimates. The critical components related to expenditure comprise consumables, manpower, electricity and also expenditure on repair and maintenance of assets, insurance and administrative overheads.

Other elements comprise expenditures by the way of interest toward working capital loans, miscellaneous expenses and non-cash depreciation expenditure.

1. Consumables:

Machines installed at the CFC shall require consumables during operations and completion of the job work. Consumables are critical components of project facilities and may be understood in terms of inks, wipes, cleaning solution, paper and blades etc. The annual requirement of consumables is provided in table 31.

S. No.	Herb Name	Processe d per day	No. of days of processin g in a month	Consumable s Required	Monthl y Amount	Annual Amoun t @ 70 % C.U. in Rs. Lakhs	Annual Amoun t @ 80% C.U.in Rs. Lakhs
1	Aswagandh a	2000	13	ethanol, water, other consumables , lab consumables	3.50	29.39	33.59
2	Shatavari	2000	13	ethanol, water, other consumables , lab consumables	3.50	29.39	33.59
3	Boswilia	1000	13	ethanol, water, other consumables , lab consumables	1.88	15.79	18.04

4	Harad	1000	13	ethanol, water, other consumables , lab consumables	1.88	15.79	18.04
5	Amla	1000	13	ethanol, water, other consumables , lab consumables	1.88	15.79	18.04
6	Banava	1000	12	ethanol, water, other consumables , lab consumables	1.73	14.57	16.65
7	Bhumi Amla	1000	12	ethanol, water, other consumables , lab consumables	1.73	14.57	16.65
8	Shankpushp i	1000	12	ethanol, water, other consumables , lab consumables	1.73	14.57	16.65
9	Bacopa	1000	12	ethanol, water, other consumables , lab consumables	1.73	14.57	16.65
10	Neem Patta	1000	12	ethanol, water, other consumables , lab consumables	1.73	14.57	16.65
11	Papaya Patta	1000	12	ethanol, water, other consumables , lab consumables	1.73	14.57	16.65

12	Gurmar	1000	12	ethanol, water, other consumables , lab consumables	1.73	14.57	16.65
	Total					208.15	237.89

2. Manpower Requirements:

Another major expenditure head is the manpower, facilities installed at CFC will require manpower to function effectively as mentioned in section 5.3 of the report. The total manpower requirement for the project would be about 42 persons. The manpower required under project has been divided under two categories: Direct & Indirect. Direct manpower is required for operations of the plants while indirect manpower is required for administrative purposes. The annual expenditure on salary component for direct manpower is estimated at INR 69.09 lakh and for indirect at 18.60 lakhs at 70% C.U. The total expense on manpower at 70% C.U. is projected at INR 7.31 lakh per month or INR 87.69 lakh per annum. The details of monthly and yearly expenses for manpower required for running the project is provided in table 32 and 33.

Category	No. of Manpower Required	Monthly Compensation (INR) per person	Yearly Compensation (INR) per person	Total salary & wages per annum (INR)	Total salary & wages per Year (INR lakh)
Herbal Extraction Plant					
Plant Head	1	50000	600000	600000	6.00
Shift In charge	2	35000	420000	840000	8.40
Operators	4	25000	300000	1200000	12.00
Helpers	4	15000	180000	720000	7.20
Unskilled workers	12	12000	144000	1728000	17.28

Electrician	2	15000	180000	360000	3.60
Maintenance Head	1	20000	240000	240000	2.40
Maintenance Helper (plumber etc.)	2	12000	144000	288000	2.88
Boiler Head	1	30000	360000	360000	3.60
Helpers	4	15000	180000	720000	7.20
In-process Quality Contro	ol Lab				
Lab In charge	1	50000	600000	600000	6.00
Lab assistant	1	20000	240000	240000	2.40
Total (A+B+C)	35	299000	3588000	7896000	78.96
	19.74				
	98.70				
	69.09				

Table 33: Expenses Related to Salary: Indirect Manpower

Category	No. of Manpower Required	Monthly Compensation (INR) per person	Yearly Compensation (INR) per person	Total salary & wages per annum (INR)	Total salary & wages per Year (INR lakh)
CDE	1	25000	300000	300000	3.00
Accountant	1	30000	360000	360000	3.60
HR Executive	1	15000	180000	180000	1.80
Store Keeper	2	15000	180000	360000	3.60
GateKeeper	2	12000	144000	288000	2.88
Total	7	97000	1164000	1488000	14.88
	3.72				
	18.60				

3. Utilities:

Proposed CFC requires power for operation of machinery as well as other supporting equipment for smooth operations. The total connected load requirement has been estimated at 319.69 KW including a buffer of 10%. Table 34 depicts the machine and equipment wise power requirement in the CFC. The drawn power is conservatively assumed at 60% of the connected load in the case of operating facilities and shop floor.

Table 34: Power Requirement of machinery, facility

S. No.	Machine Name	Power Requirement (kW)/ Connected Load	Total power requirement (60% of drawn power) kWh
1	RM Grinder (Pre Crusher) 500kg/hr	22.06	13.24
2	RM Grinder (Pre Crusher) 200kg/hr	14.71	8.83
3	Herbs washing machine	10.00	6.00
4	Rotary Extractor- 6kl (2 Nos)	11.03	6.62
5	Reactor 5KL (2 Nos)	11.03	6.62
6	Reactor 4kl (2 Nos)	7.35	4.41
7	Reactor 3KI (3 Nos)	11.03	6.62

8	Reactor 2 KI (2 Nos)	4.41	2.65
9	Transfer Pumps SS 316- 3HP (10 Nos)	22.06	13.24
10	Centrifuge 36"	5.52	3.31
11	Centrifuge 24"	3.68	2.21
12	Filter Press - 18" x 15 Plates	2.21	1.32
13	Rotary Vacuum Paddle Dryer- 1000L	7.35	4.41
14	Tray Dryer - 48 Trays	22.06	13.24
15	Spray Dryer - 100kg/hr	14.71	8.83
16	Ribbon Blender- 200kg	3.68	2.21
17	Double Cone Blender - 1000kg	11.03	6.62
18	Multi Mill - 3HP	2.21	1.32
19	Vibro Sifter - 30"	1.10	0.66
20	Impact Pulveriser - 100kg/hr GMP	11.03	6.62
21	Steam Boiler with Chimney	11.03	6.62
22	RO Plant	2.21	1.32
23	ETP Plant	3.68	2.21
24	Cooling Tower	11.03	6.62
25	Chiller	7.35	4.41
26	Vacuum Pump 5HP	3.68	2.21
27	Vacuum Pump 3 HP	2.21	1.32
28	Vacuum Pump - 2HP	1.47	0.88
29	Weighing Machine	1.47	0.88
30	Batch Coding Machine	0.74	0.44
31	Powder Pouch Packing Machine	0.74	0.44
32	Liquid Pouch Packing Machine	0.74	0.44
33	Air Conditioners	20	12.00
34	Others (Lightings, Fans etc.)	20	12.00
35	Lift for first floor for material	6	3.6
	Total	290.62	174.37
	Buffer Connected Load (10% of Total Connected Load)	29.06	
	Total Connected Load for the CFC	319.69	

Total monthly power consumption assuming 60% drawn power, 2 shifts per day & 25 working days in a month, comes out to be 69749.80 units. It is further assumed that 80% of the power requirement will be met via direct power supply and 20% of the power requirement will be met via the diesel generator. Fix charges for connection of 319.69 kW at the rate of Rs. 173 per kW comes out to be 102 Rs. 55305.78 per month. Envisaged annual expenditure in terms of both fixed & variable power related charges is represented in table 35.

Total power Requirement per month	69749.80 Units
Direct power @ 80%	55799.84 Units
DG @ 20%	13949.96 Units
ELECTRIC POWER CHARGE PER MONTH	INR
Fixed Charges for kWh @ Rs. 173 per kW	55305.78
Energy Charges @ Rs. 9 per units	502198.58
DG @ Rs. 25 per unit	348749.02
Total Variable Charges	850947.60
Total Monthly Charges	906253.38
Annual Charges (INR Lakhs)	108.75
Annual Charges (INR Lakhs) @ 70% C.U.	78.12

Table 35: Expenses Incurred towards Power Requirement

4. Annual Repairs and Maintenance Expenses:

The annual repairs and maintenance expenses have been estimated to be Rs. 28.96 lakh. The details are presented in the table 36:

Maintenance and repair of building @ 2%	5.78
Maintenance and repair of plant and machineries @3%	23.18
Total Amount	28.96
Amount @ 70% C.U.	20.27
Amount @ 80% C.U.	23.17

Table 36: Annual Repairs & Maintenance Expenses

5. Insurance and miscellaneous Administrative Expenses:

Insurance shall be a critical component of asset protection at CFC. Insurance is computed on the basis of 0.5 per cent on the fixed assets. Cost of insurance shall vary with depreciation of asset and varies as per depreciated value calculated on the basis of WDV. Miscellaneous administrative expenses are estimated at a lump-sum of INR 12.00 lakh per year. The cost of miscellaneous expenses is considered to be fixed irrespective of scale of operation. The details are presented in the table 37:

S. No.	Expenditure Component	Amount for 1st Year (INR Lakhs)	Amount for 2nd Year (INR Lakhs)	Amount for 3rd Year (INR Lakhs)
1	Insurance Charges (Estimate @ 0.5% on fixed assets (such as buildings, civil works, and Plant & machinery, including related contingency expenses of approx. INR 44 Lakh)	6.42	5.61	4.83
2	Miscellaneous Expenses (Stationery, communication, travelling, and other misc. overheads)	12.00	12	12

Table 37: Insurance & Miscellaneous Expenses



18.42 17.61 16.83

6.3 Working Capital Requirements:

Working capital has been calculated in terms of one month's operating expenses required for the CFC. The operating expenses include consumables, salaries, utilities, repair & maintenance, insurance and miscellaneous administrative expenses. Margin money for working capital is a part of the initial project cost and rest of working capital will be borrowed from a local bank in Karnal. While calculating the project cost 20% of working capital is shown as margin for working capital and the remaining will be borne by SPV as borrowings. The working capital required is estimated to INR 97.31 lakh during the first year of operation (70% C.U.). Further, total working capital required at an operating capacity of 80% comes out to INR 111.32 lakh. The corresponding margin money for working capital requirement at 70% capacity utilisation amounts to INR 19.31 lakhs, and the corresponding loan amounts to INR 78 lakhs. The interest on bank loan (@11.0% per annum) amounts to INR 8.58 lakh at 70% capacity utilisation. Computation of working capital and margin money requirement for 10 years is presented in table 38.

S. No	Particulars	No. of Months	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
			70%	80%	85%	90%	100%	100%	100%	100%	100%	100%
1	Consumables	1	17.35	19.82	21.06	22.30	24.78	24.78	24.78	24.78	24.78	24.78
2	Utilities (Power)	1	6.51	7.36	7.79	8.21	9.06	9.06	9.06	9.06	9.06	9.06
3	Working Expenses (Manpower)	1	7.31	8.54	9.42	10.36	11.88	12.48	13.10	13.75	14.44	15.16
4	Sundry Debtors (Sales Value)	1	66.15	75.60	80.33	85.05	94.50	94.50	94.50	94.50	94.50	94.50
5	Working capital (Total expenses)		97.31	111.32	118.59	125.93	140.22	140.82	141.44	142.10	142.78	143.51
6	Working Capital Margin		19.31	33.32	40.59	47.93	62.22	62.82	63.44	64.10	64.78	65.51
7	Working Capital Loan		78.00	78.00	78.00	78.00	78.00	78.00	78.00	78.00	78.00	78.00
8	Interest on Working capital loan @11% p.a.		8.58	8.58	8.58	8.58	8.58	8.58	8.58	8.58	8.58	8.58

Table 38: Working Capital & Margin Money Requirements

6.4 Depreciation Estimates:

Estimates of depreciation are non-cash expenditure and presented in this section on the basis of Written down Value (WDV) method as per Income Tax act. Accounting for depreciation would facilitate sustainability of operations in terms of developing a fund for replacement of assets. The surplus fund that is accumulated over the years could facilitate the replacement of such assets toward the end of the envisaged asset life of 10 years. Depreciation of building is considered at the rate of 10% per year, depreciation of plant and machinery at 15% a year, depreciation of computer at 60% a year, depreciation of furniture at 10% a year and depreciation of miscellaneous fixed assets at the rate of 15% a year as per the WDV method. Depreciation based on Written down Value method (WDV) has been used for computation of net profit. The computation as per WDV method is provided in table 39.

DEPRECIATION (Written Down Value)										
Particulars	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Land										
Opening Balance	107.50	107.50	107.50	107.50	107.50	107.50	107.50	107.50	107.50	107.50
Less : Depreciation	-	-	-	-	-	-	-	-	-	-
Closing Balance	107.50	107.50	107.50	107.50	107.50	107.50	107.50	107.50	107.50	107.50
Building and Civil Work:										
Opening Balance	295.02	265.52	238.97	215.07	193.57	174.21	156.79	141.11	127.00	114.30
Less: Depreciation @ 10%	29.50	26.55	23.90	21.51	19.36	17.42	15.68	14.11	12.70	11.43
Closing Balance	265.52	238.97	215.07	193.57	174.21	156.79	141.11	127.00	114.30	102.87
Plant & Machinery										

Table 39: Depreciation Estimates

Opening Balance	988.56	840.27	714.23	607.10	516.03	438.63	372.83	316.91	269.37	228.97
Less: Depreciation @ 15%	148.28	126.04	107.13	91.06	77.41	65.79	55.93	47.54	40.41	34.35
Closing Balance	840.27	714.23	607.10	516.03	438.63	372.83	316.91	269.37	228.97	194.62
Computers										
Opening Balance	1.20	0.48	0.19	0.08	0.03	0.01	0.00	0.00	0.00	0.00
Less: Depreciation @ 60%	0.72	0.29	0.12	0.05	0.02	0.01	0.00	0.00	0.00	0.00
Closing Balance	0.48	0.19	0.08	0.03	0.01	0.00	0.00	0.00	0.00	0.00
Furniture										
Opening Balance	7.00	6.30	5.67	5.10	4.59	4.13	3.72	3.35	3.01	2.71
Less: Depreciation @ 10%	0.70	0.63	0.57	0.51	0.46	0.41	0.37	0.33	0.30	0.27
Closing Balance	6.30	5.67	5.10	4.59	4.13	3.72	3.35	3.01	2.71	2.44
Other Misc. Fixed Assets										
Opening Balance	10.00	8.50	7.65	6.89	6.20	5.58	5.02	4.52	4.07	3.66
Less: Depreciation @ 15%	1.50	0.85	0.77	0.69	0.62	0.56	0.50	0.45	0.41	0.37
Closing Balance	8.50	7.65	6.89	6.20	5.58	5.02	4.52	4.07	3.66	3.29
Total Depreciation	180.71	154.36	132.48	113.82	97.86	84.19	72.48	62.44	53.81	46.41
Depreciated value	1228.58	1074.22	941.74	827.92	730.06	645.87	573.39	510.95	457.14	410.72
6.5 Income/Revenue estimates:

The CFC is expected to generate revenue by way of user charges that shall be levied based upon the quantity of herbs processed for a particular member. The user charges shall vary based upon the user i.e. the SPV members and non SPV members and also the processing charge may be different for different herbs based upon the respective processes. The user charges will be less for the SPV members as compared to non-members. Firms based outside Karnal can also avail the facility at CFC based on availability and payment of charges. The major income sources for CFC are envisaged via the processing of 12 key herbs which are of prime importance to any Ayurvedic products manufacturing unit.

The user charges have been estimated based upon the operational expenses of the CFC and the prevalent market rates in Haryana. Estimation of user charges for availing services at CFC has been done on a conservative basis for 10 years. The idea behind the CFC is not to make profits but to benefit cluster units increase their competitiveness. The surplus generated will enable the CFC to meet the operational expenses and provision for replacement of assets toward the end of the envisaged asset life of 10 years. The relevance and appropriateness of user charges is also evident from the fact that the rates fixed help meet operating expenditures and provide sustainable replacement of assets. It is also envisaged that the CFC will generate enough income to sustain and grow, making it an absolutely viable project.

The estimated user charges for various herbs are presented in table 40.

S.No.	Herbs Processed	Quantity Processe d per day (2 shifts)	No. of days of processin g in a month	Total quantity processe d	Processin g Price per Kg	Monthly Revenue generation potential (INR Lakh)	Annual Revenue generation potential (INR Lakh) @ 300 working days	Amoun t @ 70% C.U.	Amoun t @ 80% C.U.	Amount @ 85% C.U.
1	Aswagandh a	2000	13	26000	54.00	14.04	168.48	117.94	134.78	143.21
2	Shatavari	2000	13	26000	54.00	14.04	168.48	117.94	134.78	143.21
3	Boswilia	1000	13	13000	54.00	7.02	84.24	58.97	67.39	71.6
4	Harad	1000	13	13000	54.00	7.02	84.24	58.97	67.39	71.6
5	Amla	1000	13	13000	54.00	7.02	84.24	58.97	67.39	71.6
6	Banava	1000	12	12000	54.00	6.48	77.76	54.43	62.21	66.10
7	Bhumi Amla	1000	12	12000	54.00	6.48	77.76	54.43	62.21	66.1
8	Shankpushp i	1000	12	12000	54.00	6.48	77.76	54.43	62.21	66.1
9	Васора	1000	12	12000	54.00	6.48	77.76	54.43	62.21	66.1
10	Neem Patta	1000	12	12000	54.00	6.48	77.76	54.43	62.21	66.1
11	Papaya Patta	1000	12	12000	54.00	6.48	77.76	54.43	62.21	66.10
12	Gurmar	1000	12	12000	54.00	6.48	77.76	54.43	62.21	66.1
	Total						1134.00	793.80	907.20	963.90

Table 40: Projected Annual Income

Total gross revenue in-flow is estimated to be INR 793.80 lakhs per annum on an operating capacity of 70%. For projection purposes, operating capacity of 70% is considered during first year, 80% in the second year, 85% in 3rd year, 90% in 4th year, and 100% from 5th year onwards.

6.6 Projected Profit & Loss Statement:

The projections for income and expenditures of the CFC has been conducted for ten years. The projections have been undertaken based upon the income and expenditure heads mentioned in previous sections. The projected statements highlight income, expenses, profits earned, income tax and net profit etc. The details are presented in the table 41.

PROFIT & LOSS ACCOUNT										
Particulars	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Number of working days	300	300	300	300	300	300	300	300	300	300
Number of shift	2	2	2	2	2	2	2	2	2	2
Capacity Utilisation in %	70%	80%	85%	90%	100%	100%	100%	100%	100%	100%
A. Income										
(User/ Service Charge)	793.80	907.20	963.90	1020.60	1134.00	1134.00	1134.00	1134.00	1134.00	1134.00
B. Cost of Production :										
1. Utilities Power (Fixed +										
Variable)	78.12	88.33	93.43	98.54	108.75	108.75	108.75	108.75	108.75	108.75
2. Direct labour and wages	69.09	82.91	92.49	102.83	119.97	125.97	132.27	138.88	145.82	153.12
3. Consumable	208.15	237.89	252.76	267.62	297.36	297.36	297.36	297.36	297.36	297.36
4. Repair and Maintenance	20.27	23.17	24.62	26.07	28.96	28.96	28.96	28.96	28.96	28.96
5. Depreciation	180.71	154.36	132.48	113.82	97.86	84.19	72.48	62.44	53.81	46.41
Total Cost of production	556.34	586.65	595.78	608.88	652.90	645.23	639.82	636.39	634.71	634.60

Table 41: Projected Profit & Loss Statement

C. Administrative expenses :										
6. Manpower (Indirect)	18.60	19.53	20.51	21.53	22.61	23.74	24.93	26.17	27.48	28.85
7. Insurance	6.42	5.61	4.83	4.17	3.60	3.11	2.69	2.33	2.02	1.75
8. Misc Expense	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
Total Administrative Expenses	37.02	37.14	37.34	37.70	38.21	38.85	39.62	40.50	41.50	42.60
D. Financial expenses :										
9. Interest on Working capital										
loan @ 11% per annum	8.58	8.58	8.58	8.58	8.58	8.58	8.58	8.58	8.58	8.58
Total Financial Expenses	8.58	8.58	8.58	8.58	8.58	8.58	8.58	8.58	8.58	8.58
E. Total Expenses B+C+D	601.94	632.37	641.70	655.16	699.69	692.67	688.02	685.47	684.79	685.78
F. Profit A - E	191.86	274.83	322.20	365.44	434.31	441.33	445.98	448.53	449.21	448.22
G. P&P Expenses written off	12.91	12.91	12.91	12.91	12.91	0.00	0.00	0.00	0.00	0.00
H. Income before Tax (F-G)	178.95	261.92	309.29	352.53	421.39	441.33	445.98	448.53	449.21	448.22
I. Adjustment of Loss	-	-	-	-	-	-	-	-	-	-
J. Income Tax @ 25.17%	45.04	65.92	77.85	88.73	106.06	111.08	112.25	112.90	113.07	112.82
K. Net Profit /Loss for the year	133.91	195.99	231.44	263.79	315.33	330.25	333.73	335.64	336.14	335.40
L. Cumulative Surplus	133.91	329.90	561.34	825.13	1140.46	1470.71	1804.44	2140.07	2476.22	2811.62

Income tax implication is computed at the rate of 25.17% per cent including all surcharges & cess. The incidence of tax ranges from INR 45.04 Lakh per annum for year 1 to INR 112.51 lakh per annum in year 10. As evident from the table above, the project is financially viable. A cumulative surplus of about INR 2811.62 Lakh shall be earned by the SPV even after accounting for taxation and depreciation at the end of ten years. This surplus generated shall be used for further addition in the machinery or improvement and up-gradation of facilities. Additionally, the SPV intends to conduct other development activities in the cluster that shall be funded through the surplus generated by CFC.

6.7 **Projected Balance Sheets:**

The annual balance sheets for the CFC have been projected based upon estimates in the earlier sub-sections with regard to various current and fixed liabilities and also current and fixed assets. As evident from the projections, a considerable amount of reserves and surplus gets accumulated. These shall also be utilized for expansion of CFC and undertaking other cluster developmental activities. Decision on deployment of reserves and surplus' accumulated will be based on the performance of the project and requirements of cluster firms and members of SPV. The projected balance sheets are as under Table 42.

PROJECTED BALANCE SHEET											
Particulars	At the end of impl. Period	lst Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year
A. Fixed Assets											
Gross Block	1408.08	1408.08	1227.38	1073.02	940.54	826.72	728.86	644.67	572.19	509.75	455.94
Less : Depreciation (WDV)		180.71	154.36	132.48	113.82	97.86	84.19	72.48	62.44	53.81	46.41
Net Block		1227.38	1073.02	940.54	826.72	728.86	644.67	572.19	509.75	455.94	409.52
Total Fixed Assets (A)	1408.08	1227.38	1073.02	940.54	826.72	728.86	644.67	572.19	509.75	455.94	409.52
B. Current Assets											
Cash & bank Surplus (B.F)	19.31	284.69	623.71	978.06	1342.55	1733.62	2117.38	2486.76	2840.64	3177.57	3495.74
Sundry Debtors		66.15	75.60	80.33	85.05	94.50	94.50	94.50	94.50	94.50	94.50
Other Assets		74.00	88.80	106.56	127.87	153.45	184.14	220.96	265.16	318.19	381.82

Table 42: Projected Balance Sheet

C. P&P Exp	64.57	51.66	38.74	25.83	12.91	0.00	0.00	0.00	0.00	0.00	0.00
Total Current Assets (B+C)		476.50	826.85	1190.77	1568.38	1981.57	2396.01	2802.22	3200.29	3590.25	3972.06
Total Assets (A+B+C)	1491.97	1703.88	1899.87	2131.31	2395.10	2710.43	3040.68	3374.41	3710.04	4046.19	4381.59
D. Current Liabilities											
Working Capital Loan		78.00	78.00	78.00	78.00	78.00	78.00	78.00	78.00	78.00	78.00
Total Current Liabilities (D)		78.00	78.00	78.00	78.00	78.00	78.00	78.00	78.00	78.00	78.00
E. Fixed Liabilities											
Shareholders' Contribution	149.20	149.20	149.20	149.20	149.20	149.20	149.20	149.20	149.20	149.20	149.20
Grant under MSE-CDP	1089.14	1089.14	1089.14	1089.14	1089.14	1089.14	1089.14	1089.14	1089.14	1089.14	1089.14
Grant from GoH	253.63	253.63	253.63	253.63	253.63	253.63	253.63	253.63	253.63	253.63	253.63
Reserves and Surplus		133.91	329.90	561.34	825.13	1140.46	1470.71	1804.44	2140.07	2476.22	2811.62
Total Fixed Liabilities (E)		1625.88	1821.87	2053.31	2317.10	2632.43	2962.68	3296.41	3632.04	3968.19	4303.59
Total Liabilities (D+E)	1491.97	1703.88	1899.87	2131.31	2395.10	2710.43	3040.68	3374.41	3710.04	4046.19	4381.59

6.8 Cash flow statement

Cash flow statement indicates the cash balance and the liquidity position of the project over the years. Table 43 presents the sources and disposal/uses of funds statement of the project.

Particulars	Implementation	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
A. Source Funds :											
Cash Accruals (Profit before Tax + Interest Paid)		200.44	283.41	330.78	374.02	442.89	449.91	454.56	457.11	457.79	456.80
Increase in capital	149.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Depreciation		180.71	154.36	132.48	113.82	97.86	84.19	72.48	62.44	53.81	46.41
Increase in WC Loan		78.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Increase in Grant-in-aid from GoH	253.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Increase in Grant-in-aid under MSE-CDP	1089.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Sources	1491.97	459.15	437.77	463.26	487.84	540.75	534.11	527.04	519.55	511.61	503.21
B. Use of Funds :											
P&P Expenses	64.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Increase in fixed assets	1408.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Increase in other Assets	0.00	74.00	14.80	17.76	21.31	25.57	30.69	36.83	44.19	53.03	63.64
Increase in Sundry Debtors		66.15	9.45	4.72	4.72	9.45	0.00	0.00	0.00	0.00	0.00

Table 43: Cash Flow Statement

Interest		8.58	8.58	8.58	8.58	8.58	8.58	8.58	8.58	8.58	8.58
Taxation		45.04	65.92	77.85	88.73	106.06	111.08	112.25	112.90	113.07	112.82
Total Use of Funds	1472.66	193.77	98.75	108.91	123.35	149.67	150.35	157.66	165.67	174.68	185.03
C. Net Surplus (A -B)	19.31	265.38	339.02	354.35	364.49	391.08	383.75	369.38	353.88	336.93	318.18
D. Cumulative Balance	19.31	284.69	623.71	978.06	1342.55	1733.62	2117.38	2486.76	2840.64	3177.57	3495.74

The cash flow statement showcases the available net surplus for 10 years of the CFC operations. Depreciation is also considered under WDV method for cash flow calculations along with adjusted preliminary expenses. As most of the capital expenditure is being supported as grant under the MSE-CDP scheme and EPP 2015, therefore it does not have any negative effect on the Cash flow, in terms of interest, etc.

6.9 Break-even analysis:

The break-even (BE) estimates of the project indicate the level of activity at which the total revenues of the project equals the total costs. From this point, a project is expected to start generating profits. As per the calculations, the CFC achieves break even in the sixth year of its operations. BE estimates at level of activity relevant to the first year and subsequent year of activity are provided in table 44.

Particulars	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
	70%	80%	85%	90%	100%	100%	100%	100%	100%	100%
A. Total Earning by way of user charges	793.80	907.20	963.90	1020.60	1134.00	1134.00	1134.00	1134.00	1134.00	1134.00
B. Variable costs										
Consumables	208.15	237.89	252.76	267.62	297.36	297.36	297.36	297.36	297.36	297.36
Utilities (power- variable charge)	71.48	81.69	86.80	91.90	102.11	102.11	102.11	102.11	102.11	102.11
Interest on WC Loan	8.58	8.58	8.58	8.58	8.58	8.58	8.58	8.58	8.58	8.58
Repair & Maintenance	20.27	23.17	24.62	26.07	28.96	28.96	28.96	28.96	28.96	28.96
Manpower (Direct)	69.09	82.91	92.49	102.83	119.97	125.97	132.27	138.88	145.82	153.12
Misc. Expenditure (90% variable)	7.56	8.64	9.18	9.72	10.80	10.80	10.80	10.80	10.80	10.80
Total Variable Cost (B)	385.13	442.88	474.42	506.72	567.79	573.78	580.08	586.70	593.64	600.93
C. Contribution (A-B)	408.67	464.32	489.48	513.88	566.21	560.22	553.92	547.30	540.36	533.07
D. Fixed Overheads (Cash)										
Manpower (Indirect)	18.60	19.53	20.51	21.53	22.61	23.74	24.93	26.17	27.48	28.85
Utilities (Power - fixed charges)	6.64	6.64	6.64	6.64	6.64	6.64	6.64	6.64	6.64	6.64
Insurance	6.42	5.61	4.83	4.17	3.60	3.11	2.69	2.33	2.02	1.75
Misc. Expenditure (10% Fixed)	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20

Table 44: Break Even Analysis at various C.U.

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Sub-total (D)	32.85	32.97	33.18	33.54	34.05	34.69	35.45	36.34	37.33	38.44
E. Fixed Overheads (Non- cash)										
Depreciation	180.71	154.36	132.48	113.82	97.86	84.19	72.48	62.44	53.81	46.41
Preliminary & Pre-operative expenses w/off	12.91	12.91	12.91	12.91	12.91	0.00	0.00	0.00	0.00	0.00
Sub-total (E)	193.62	167.28	145.39	126.73	110.77	84.19	72.48	62.44	53.81	46.41
F. Total Fixed Overheads	226.48	200.25	178.57	160.27	144.82	118.88	107.94	98.77	91.15	84.85
Break-even point (F/C)	55.42%	43.13%	36.48%	31.19%	25.58%	21.22%	19.49%	18.05%	16.87%	15.92%

Book break-even point in first year of operation at 70% C.U. come out to be 55.42%. The CFC is expected to realise profit from 1st year of operation. Therefore, very low risk is involved in the project.

Moreover, the SPV members have the potential to run the facility for more number of shifts per month resulting in enhanced capacity utilization and generation of more revenues. In that case, project will break even earlier than estimated. Additionally, the approach has been to develop projections based upon conservative estimates (costs on a higher side and user charge/ revenues on a lower side) whereas, in real the revenues may be far higher.

6.10 Feasibility analysis summary and sustainability indicators:

A summary of the financial analysis in terms of key financial indicators such as ROCE (Return on Capital Employed), Net Present Value (NPV), Break Even Point (BEP) and the Internal Rate of Return (IRR) is presented in table 45. The indicators validate the financial viability and sustainability potential of the proposed project.

S. No.	Particulars	Estimates
1	BEP (cash BEP at operating capacity of 80%)	55.42%
2	Av. ROCE (PAT/CE) sans Grant	25.21%
3	Av. ROCE (PAT/CE) with Grant	93.36%
4	Internal Rate of Return (IRR)	21.01%
5	Net Present Value (at a discount rate of 10 per cent) - incorporating viability gap funding (grant) by GoI and GoH	NPV is positive and high (Rs. 812.16 lakh) at a conservative project life of 10 years
6	Payback period (in years)	5.55
7	DSCR	Not Applicable (no term loan in this project)

Table 45: BEP, ROCE, NPV & IRR

The annual estimates in the context of ROCE estimation are presented in table 46 as below:

Table 46: Annual estimates of ROCE

Particulars	1Yr	2Yr	3Yr	4Yr	5Yr	6Yr	7Yr	8Yr	9Yr	10Yr	Average
Earnings Before Interest and Tax (EBIT)	178.95	261.92	309.29	352.53	421.39	441.33	445.98	448.53	449.21	451.72	376.08
Capital Employed (with GOH grant)	402.83	402.83	402.83	402.83	402.83	402.83	402.83	402.83	402.83	402.83	402.83
Capital Employed (Sans grant)	1491.97	1491.97	1491.97	1491.97	1491.97	1491.97	1491.97	1491.97	1491.97	1491.97	1491.97
ROCE = EBIT/Capital Employed											
ROCE (With GOI Grant)	44.42%	65.02%	76.78%	87.51%	104.61%	109.56%	110.71%	111.35%	111.51%	112.14%	93.36%
ROCE (Sans Grant)	11.99%	17.56%	20.73%	23.63%	28.24%	29.58%	29.89%	30.06%	30.11%	30.28%	25.21%

The average value of ROCE (considering grant-in-aid from GOI) is 93.36%. This indicates the high techno-economic viability of the project on significant contribution from government of India as grant 119

toward project cost. Capital employed are those essentials excluding the grant component to the project. Ignoring the possibility of grant assistance from the GoI, the ROCE works out to 25.21%.

Net present value is calculated considering a standard discounting factor of 10%. NPV for a period of 10 years for the project is positive and high at Rs. 812.16 Lakhs. The internal rate of return is also high at 21.01%, signifying the viability of the project. Payback period is estimated at around 5 years & 7 months. Thus, above ratios & parameters indicate strong financials for the project.

6.11 Additional revenue sources

Additional sources of revenue shall also be explored by the SPV via offering the herb processing services to non-member units in Karnal & nearby districts, thereby increasing number of shifts per month. CFC will also look at the possibility of using its lab as a joint research & formulation development centre for the cluster units. The SPV members are strong believers of the cluster concept and would like to explore potential of undertaking cluster initiatives to improve the backward and forward linkages of the cluster units.

However, in order to ensure conservativeness in income estimates, in the initial years, the income earning possibilities of such revenues are not captured in this DPR.

6.12 Risk analysis & Sensitivities

Risk in the project is relatively low in the context of the following:

- Promoters are experienced: Risk in the project is quite low given the strength and profile of the SPV members. SPV members have considerable experience in the Ayurveda Products manufacturing industry, and are well versed in handling the various issues & challenges in running a job work based manufacturing unit. Some of the members are marketing their products pan India are well aware of the broad trends in the global Ayurveda products industry.
- Facility is pre-marketed: Evidently, the Ayurveda MSMEs in Karnal are in dire need of a Herbal extraction plant and a significant capacity of the core facility to be established shall be easily availed by members of the SPV themselves, thus the facility already has a captive market.
- Sustainability indicators in terms of the strength of the SPV and the economics of the project: Evidence of cooperative initiatives of SPV members as articulated in previous chapters; for instance, in terms of pursuing several joint efforts, joint visits to backward & forward facilities in the value chain, registering the SPV and proceeding towards identification of land, and

securing commitment from members, vis-à-vis progressively mobilizing necessary paid up capital, all reflect the strength of the SPV.

High economic viability indicators upon considering the benefits of grant-in-aid under the MSE-CDP and EPP 2015 also serve as evidence of techno-economic viability and sustainability of the project. A sensitivity analysis has been carried out to ascertain the impact on the project should there be any loss of revenue. This has been calculated assuming drop in user charges. Major financial parameters are still attractive. The important parameters related to the sensitivity analysis are presented in table 47.

S. No.	Particulars	Base case	With 5% decline in user charge	With 10% decline in user charge
1	BEP (cash BEP at operating capacity of 80%)	55.42%	61.34%	68.66%
2	Av. ROCE (EBIT/CE)	25.21%	21.72%	18.23%
3	Internal Rate of Return (IRR)	21.01%	18.10%	15.01%
4	Net Present Value (at a discount rate of 10 per cent) - incorporating viability gap funding (grant) by Gol and GoH	812.16	580.04	347.42

Table 47: Sensitivity Analysis

Even assuming a fall in user charge, IRR is favourable & NPV is positive & high. From the above it is evident that the project is very viable even under (unlikely) risky environment circumstances.

6.13 Assumptions for financial calculations:

The financial statements and project profitability estimates in this DPR are based on the following assumptions:

- 1. The total project cost is pegged @ INR 1491.97 Lacs on the basis of estimates and quotations.
- 2. To finance the project, a total of INR 1491.97 Lacs is required. The financing will consist of grant from central government, government to Haryana and contribution by SPV.
- 3. In the financial projections and analysis, year 2020 is the envisaged period of project implementation also involving construction of buildings and installation of plant, machinery and other equipment. This period will commence from the date of final approval 121

by DCMSME under MSE-CDP. The financial projections thereafter are prepared for 10 years of operation starting 2021.

- 4. The Registered SPV will manage CFC, and these services are to be used by the SPV for member as well as non-member units. The common facility will benefit registered SPV as well as non-member firms who (in some cases) may not afford to contribute to necessary equity capital.
- 5. The CFC will operate for 25 days a month, that is, for 300 days a year on an eight hour two-shift basis. Operation on two shift basis is assumed for purposes of projecting income estimates.
- 6. Capacity utilization is assumed at 70% in the first year; 80% for second, 85% for third, 90% for fourth and 100% thereafter. This is a conservative estimate for first 5 years as SPV members alone could avail over 100 per cent of the installed capacity on two-shift basis.
- 7. The workings with regard to expenses related to the project have been tabulated and categorized in terms of those related to consumables, manpower, electricity, and miscellaneous administrative expenditures.
- 8. Repairs and maintenance is provided @ 2% of building cost and @ 3% of plant and machinery cost at varying capacity utilization.
- 9. Insurance is provided @ 0.5% on fixed assets including building & civil works, machinery, contingency as fixed cost at all capacity utilization.
- 10. Fixed charges per kW of electric connection shall be charged @ INR 173 and variable charges @ INR 9 per unit consumed.
- 11. Income estimates have been projected most conservatively. The prescribed user charges are competitive vis-à-vis charges for similar services in other regions.
- 12. Depreciation on fixed assets is calculated on Written down value (WDV) Method as per Income Tax Act.
- Provision for income tax has been made @ 25.17% including various cess & surcharge. This
 is the rate prescribed for Private Limited Companies as per the announcement of finance
 ministry in September 2019.
- 14. Profitability estimates in terms of ROCE, NPV, and IRR are computed considering operating results for first 10 years of operation.

Project Implementation & Monitoring



7 Project Implementation and Monitoring

7.1 Envisaged Implementation Framework

I. Time frame: Project implementation is envisaged to involve a time-frame of about 12 months upon receipt of final approval of grant-in-aid assistance from the Government of India under MSE-CDP.

II. User Base: The facilities may be used by SPV members and non-members. However, the charges will vary. The SPV will also be open for new entrants subject to them subscribing to the shareholding of the SPV, and them being genuinely pro-active and interested in cluster initiatives. The BoD of SPV can decide on same or differential user charges for both members and non-members or based upon the volume of the output.

III. **Project implementation schedule:** The project implementation schedule envisaged over a period of 12 months involves several activities. They are elaborated upon in the table 48.

Activity/Month	1	2	3	4	5	6	7	8	9	10	11	12
Collecting Contribution from SPV members												
Transfer of land in the name of SPV												
Receipt of final sanction from Gol												
Preparation of detailed drawings												
Formation of purchase committee												
Inviting E tenders for building construction and purchase of machines												
Construction of facilities												
Obtaining statutory clearances and approvals												

Table 48: Project Implementation Schedule

Purchase of machinery and equipment						
Installation and trial run of machinery and equipment						
Arrangement of working capital						
Monitoring of the project by BoD						
Monitoring of the project by PMC						
Commencement of operations of the facility						

As indicated in the table above, the facility is expected to be operational in 12 months' time.

IV. Contractual agreements/MoU with member units: Agreements have been indicatively finalized in terms of utilisation of assets in respect of shareholders.

A total of 24 units are currently participating in the SPV and all these units have agreed to contribute towards the SPV share of the project cost. The SPV directors are conducting further meetings to add more members to the SPV and also collecting consent letters from potential non-members who would like to use the facilities of the CFC or herb processing. The utilization of common facility will be in line with the proposed shareholding pattern. The consent letter wherein the member units agree for payments of 10% share of cost of CFC as member of SPV is under process and will be submitted in due course of time and as per in-principal approval from DCMSME.

V. Memorandum and By-Law of Registered Company: MOA, AOA and bye laws are indicative of the management and decision making structure of the SPV. All the members of SPV have paid an advance and are members of the Registered Private Entity. Few other units are also willing to be members of the SPV and once the CFC is approved and sanctioned from GoI, many more members will be interested to subscribe to the shares of the SPV.

VI. Availability of Land & Status of Acquisitions: Land is being procured by the SPV for the proposed CFC at Mainmati village in Karnal district. A plot of land of area 1 acre has already been identified by the SPV and consent letter already obtained from the current owner to sell the land to the SPV at a price of Rs.1 Crore.

VII. Availability of Requisite Clearances: SPV is in the process of procuring land with all required clearances. Electricity is already available in the area and the proposed CFC can easily be connected to the grid. The other required clearances (environment, labour etc.) shall be obtained in due course.

VIII. O & M Plan: The revenue stream for O&M is dependent on realization of user charges from the SPV members and other users/MSMEs in the case of various facilities. As detailed in the financial section, the cash incomes are sufficient to meet operating expenditures, overheads as well as depreciation for sustainable replacement of assets. The SPV will also have to keep a track of maintenance of assets through collection of user charges from the members/ users.

7.2 Monitoring Mechanism

As mentioned in the implementation schedule, the following key activities shall be conducted during establishment of the CFC:

- Building Construction
- Electrical works
- Purchase of machinery & commissioning
- Trial production
- Commercial production

The successful implementation of above activities will depend on the following aspects:

- Implementation of above within the time frame
- Supervising and overseeing the implementation of the proposals and fine tuning and advocating more measures, if needed depending on the site conditions
- Project level monitoring indicators to evaluate the implementation of the CFC proposal at recommended intervals
- Suitable purchase mechanisms for proposed plant & Machinery, Periodical reporting of the status of implementation and monitoring of the results of key performance indicators, and
- Constant evaluation of the measures implemented based on the data available from project level monitoring and status reports and providing directions accordingly.

The Cluster Development Co-ordination Committee (CDCC) under the chairmanship of Director of Industries, Government of Haryana will oversee the implementation of the proposed CFC.

The committee will operate under the overall monitoring of the State Level Project Steering Committee (SLPSC). Other key stakeholders such as representatives of cluster SPV, related government departments, support institutions, cluster level industry associations and consultants will act as members of the overseeing committee.

The members may comprise the following:

- > Director, Industries and Commerce, Government of Haryana (Chairman)
- Concerned Joint Director, Department of Industries and Commerce
- ▶ Director, MSME-DI Karnal
- ▶ GM, DIC Karnal
- ► HSIIDC state officer
- SIDBI general Manager
- President of related industry association
- Directors of VAPIK Solutions Pvt Ltd. (SPV)
- ▶ EY Cluster Development Expert under MSME project

The meeting of CDCC may be held on quarterly basis to review performance of the cluster. The CDCC will guide monitoring and implementation of the project.

In addition, for close monitoring of the implementation of the Karnal Ayurveda cluster CFC project, a Project Management Committee (PMC) comprising the GM, DIC, Karnal, and representatives of SPV, and EY experts shall be constituted to directly oversee effective monitoring and implementation.

The project will be implemented through SPV and PMC will report progress of implementation to the CDCC as well as State Level Steering Committee and DC-MSME.

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CONCLUSION



8. Conclusion

The Karnal Ayurvedic Products manufacturing industry is a fast growing one, with more than 50 MSME units operating in close vicinity. The units are growth oriented and some prominent members are shipping their products pan – India. However, these units being MSMEs are not a priority for quality herbal extract suppliers for whom the first priority invariably is large clients such as Dabur, Baidyanath, Zandu etc. or exports to foreign countries. The Karnal Ayurveda MSMEs thus face numerous difficulties in the procurement of herbal extracts which are a key raw material for their products. The units thus are forced to source their extracts from small inefficient suppliers, in which case the extracts are generally not standardized, quality is uncertain and are procured from far-off locations which leads to delivery delays and heavy inbound transportation costs. Poor quality of extracts also effects the quality of final product reducing the competitive advantage.

Absence of a testing and calibration lab in the cluster adds to their woes as the units need to get their samples tested from private labs that are located far off and charge a hefty amount. This often leads to material wastages and production delays.

In this context and to improve the competitiveness of Ayurveda units in Karnal, government support under MSE-CDP to set up a CFC will be critical in laying the foundation for Karnal cluster units to become more competitive in both pricing terms & better product quality.

In order for the cluster to realize its full potential, a common facility center with state-of-the art herbal extraction plant with in-process quality testing lab cum formulation development center was recommended in the diagnostic study report. The facility will provide the much needed standardized raw materials/ herbal extracts/APIs reducing their reliance on low quality herbal extract vendors & expensive private labs based far off from the cluster. This would enable cluster units to produce better quality products at competitive prices and also enable them in developing new formulations for their products. Additionally presence of such a CFC in Karnal will also enable existing units to increase their production, install new production capacity and encourage new entrepreneurship in Ayurveda products manufacturing in Karnal & nearby districts. .

The total project cost (including plant/machinery and buildings) is estimated to be INR 1491.97 Lakhs. The project shall be implemented by the SPV 'VAPIK Solutions Private Limited' which has been constituted by the cluster firms. The SPV has proactively undertaken a number of initiatives and have acted upon the proposed soft interventions in the DSR. A number of capacity building programs and exposure visits have been organized by the SPV for the benefit for its members.

The CFC will be set up with support from DCMSME and the state government (Department of Industries) under a PPP mode. The land for the project has already been identified by the SPV and shall be acquired immediately upon in principle approval by DCMSME. The central government and the state industry department is envisaged to provide grant for setting up of the modern machines under the MSE-CDP scheme and the EPP 2015. The SPV members have proposed to contribute 10% of the project cost. The total contribution of SPV members will amount to INR 149.20 Lakh. Support from MSE-CDP of the DC-MSME is envisaged to be INR 1089.14 lakh (73.00%), and from the GoH is INR 253.63 lakh (17%). 80% of the working capital requirement for the project will be financed via a working capital loan, with margin money @ 20% of the working capital requirement considered in the project cost itself. The project is financially viable and is expected to generate enough revenue to ensure its sustainability.

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ANNEXURE



9. Annexure

9.1 Minutes of Meeting: SLPSC

Minutes of Meeting: State Level Project Steering Committee meeting of Diagnostic Study Report (DSR) of Ayurveda Cluster, Karnal under MSE-CDP Scheme

Date:	29 th August 2019	Time: 11:30 AM-12:00 PM	Venue: Knowledge Centre, Haryana Civil Secretariat, Chandigarh			
Agenc	la:					
\succ	Presentation on Dr	aft DSR prepared by EY				
\succ	Discussion on key p	problem areas of cluster units				
\succ	Discussion on prop	osed hard interventions				
\succ	Sensitization of the	e stakeholders on the MSE-CDP	scheme			
\succ	Discussion on appr	oval of DSR and next steps				
Atten	dees					
•	Sh. Devender Singh, Additional Chief Secretary (Industries), Haryana					
•	Sh. R C Dahra, Adv	isor (MSME Development), Hary	/ana			
•	Sh. Sunil Kumar, Assistant Director, MSME-DI, Karnal					
•	Sh. Anil Kumar, General Manager, DIC Karnal					
•	Sh. Brijpal, Assista	nt Director (Industries), Haryana	а			
•	Sh. G. Kamal Kishore, Secretary, Finance					
•	Members of Karnal Ayurveda Cluster					
•	Sh. Upinder Singh Dhingra, EY PMU					
•	Sh. Arunesh Sharm	na, EY PMU				
•	Sh. Saharsh Tiwari	, EY PMU				

W/ACS, Industries Haryana sensitized the committee & the cluster members regarding the objectives, guidelines & project clearance procedure of the MSE-CDP scheme of Govt. of India. He highlighted how cluster formation helps MSMEs address their common pain areas and become competitive vis-à-vis large players, and the scheme guidelines for the formation of common facility centre laid down in the scheme. He also touched upon the various steps involved at state & centre level for project approval. EY made a detailed presentation to the committee regarding the current status of the Karnal Ayurveda cluster, the findings of the Diagnostics Study Report and the proposed interventions.

Discussion and Action Points

EY presented the Global & Indian scenario of the Ayurveda Industry highlighting the attractive growth (CAGR ~ 12.2%, FY'19-24) & consequent business opportunity in the sector. Role of Ministry of AYUSH to promote cluster activity in Ayurveda products & services was also highlighted. Findings of the DSR for Karnal Ayurveda cluster units were presented, including the average investment, revenue, employment, products manufactured, & SPV status

Number of MSME Units	About 50
Major Products	 Ayurvedic Powders Tablets & Capsules Syrups & Oils Ointments Eye & Ear Drops Personal Care Products
SPV Formation Status	The SPV has been registered with 24 members at present. The members are conducting further meetings in Karnal, Yamunanagar, Ambala & other nearby districts etc. to add more members to the SPV
Average Investment of SPV members (Land, Building, Plant & Machinery)	Around 93 Lakhs
Average Revenue of SPV members	Around 1.07Cr
Average employment of SPV members	8 employees
Related Industry Association	 KADMA: Karnal Ayurveda Drug Manufacturers Association KPMA: Karnal Pharmaceuticals Manufacturers Association

- SPV members briefed the committee on the developments & technology enabled improvements in Ayurveda based products over the years
- EY presented end-to-end value chain in the Ayurveda products industry along with different processes involved in manufacturing
- Major problem areas of the cluster units identified during the DSR preparation were discussed by the committee & SPV members in detail. Difficulty in procuring good quality standardised herbal extracts, was identified as the key problem. Other problem identified was lack of a centralised testing & formulation development facility for the cluster units
- Hard interventions proposed in the DSR including setting up of an Herbal extraction unit along with an in-process quality control lab as part of the CFC were discussed along with the tentative project cost & means of finance required.

Proposed Intervention	Setting up of Common facility Centre (CFC) comprising the		
	following facilities:		
	Herbal Extraction Plant		
	 In process quality control cum R&D Centre 		
Tentative Project Cost &	Tentative total project cost: INR 14.83 Cr		
Means of finance	 Plant & Machinery: 11.43 Cr 		
	Land & Building: 3.4 Cr		
	Means of Finance		
	 Support from DCMSME: 10.37 Cr 		
	Contribution from State Govt.: 2.96 Cr		
	Contribution from SPV: 1.50 Cr		
Land (Requirement &	Land to be identified and provided by SPV		
Arrangement)			

- Committee members deliberated on the proposed recommendations and were satisfied that the proposed CFC will help alleviate the key problem areas, resulting in better quality products & increase in business and employment for the cluster.
- Cluster members were asked by the committee to proactively conduct further meetings with Ayurveda Units in Karnal & nearby districts to add more members.
- The DSR was consequently approved by the SLPSC and the committee directed EY to prepare the Detailed Project Report for the proposed CFC.

Selected photos of the meeting and the list of participants are provided below:



1. Selected Photographs of the Meeting



2. List of Participants:

Attendance Sheet of 6th State Level Project Steering Committee (SLPSC) Meeting to be held on 29.08.2019 at 11:00 AM under the Chairmanship of Sh.Devender Singh, IAS, Additional Chief Secretary to Government of Haryana, Industries and Commerce Department, to examine case under MSE-CDP scheme of MoMSME, Government of India.

Sr. No.	Name of the officer/SPV	Designation	Mobile No.8 email address	Signature
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9.2 Minutes of Meeting: DSR Stakeholder Validation

Minutes of Meeting: Stakeholder Validation meeting of Diagnostic Study Report (DSR) of Karnal Ayurveda Cluster, Karnal under MSE-CDP Scheme

Date: 8 th July 2019	Time: 12:00 PM-2:00 PM	Venue: Karnal Club, Karnal					
Agenda:							
Presentation on Dr	aft DSR prepared by EY						
Discussion on prop	Discussion on proposed hard interventions						
Sensitization of the	e stakeholders on the MSE-CDP	scheme					
Clarifications on iss	Clarifications on issues / concerns of cluster members						
Discussion on form	ation of SPV and key milestones	5					
Attendees							
🕨 Sh. RC Dahra, Advi	sor (Clusters), Haryana						
🕨 Sh. Sunil Kumar, A	ssistant Director, MSME-DI, Kar	nal					
🕨 Sh. Anil Kumar, Ge	Sh. Anil Kumar, General Manager, DIC Karnal						
Members of Karnal	Members of Karnal Ayurveda Cluster						
Sh. Arunesh Sharm	Sh. Arunesh Sharma, EY PMU						
🕨 Sh. Vikas Tiwari, E	Y PMU						
🕨 Sh. Ashish Syal, Fa	cilitation Resource, EY PMU						

Members of the cluster welcomed Sh. RC Dahra, Consultant (Clusters), Sh. Sunil Kumar, Assistant Director, MSME-DI, Karnal & Sh. Anil Kumar, General Manager, DIC, Karnal. Sh. Arunesh Sharma & Sh. Vikas Tiwari from EY PMU sensitised the participants about the MSE-CDP scheme of the Ministry of MSME, GOI under which the project is being taken up. They mentioned that the Ministry of MSME is proactively undertaking a variety of initiatives to provide an impetus to the growth of the country's MSME sector. They provided an overview of the cluster and elaborated on various aspects of the proposed project.

Discussion and Action Points

- The participants were satisfied with the recommendations provided in the DSR to set up a Herbal extraction plant, & In process quality control lab cum R&D Centre that will enable the Ayurveda manufacturing units in Karnal & nearby districts in becoming more competitive and acquire more market share.
- The Common Facility Centre will have machinery to process raw herbs into herbal extracts and test the herbal extracts for standardisation. The members highlighted the need for such a facility and articulated how the facility would benefit the cluster as a whole.
- Members also informed that they face difficulties in procuring standardised herbal extracts, as MSME units are not a priority for large herbal extract players for whom Exports & Large

Indian players are the first priority. MSMEs fulfil their raw material requirements from small fragmented players, where quality & authenticity is an issue.

- Sh. RC Dahra sensitized the members on the concept of cluster development and encouraged them to set up the CFC in true spirit that can benefit all the members.
- The Advisor, Clusters, directed EY team to create the process map for processing of raw herbs in the CFC plant & mention the total investments in land, building & machinery of the members of the SPV formed in the DSR
- Further, the role of SPV in executing the project was highlighted. It was mentioned that SPV 'VAPIK Solutions PVT Ltd.' currently has 24 members and it was advised to increase the membership from Karnal & nearby districts so more units can benefit from setting-up of the CFC. Details of existing members have also been provided in the DSR.
- Sh. Sunil Kumar briefed the members on terms & conditions of workings of a CFC under MSE-CDP scheme.
- The next steps were discussed with the participants, including preparation of DPR, identification of equipment and doubts regarding these were clarified.
- The participants validated the DSRs findings and expressed their agreement with the recommendations.

Sh. R C Dahra urged the participants to avail benefits under various other schemes and incentives offered under EPP 2015. Going forward, he assured the members of all possible support from the industry department. He informed that the DSR will be put up for approval to the Director Industries & Commerce soon.

Sh. Lalit Bansal, SPV member extended a vote of thanks and appreciated the MSME-DI, Karnal & DI&C for their support & hand-holding in taking the case of Karnal Ayurveda Cluster forward.

Selected photos of the meeting and the list of participants are provided below:

1. Selected photos of the meeting





2. List of Participants

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9.3 Minutes of Meeting: DPR Stakeholder Validation

Minutes of Meeting: Stakeholder Validation meeting of Detailed Project Report (DPR) for Ayurveda Cluster, Karnal under MSE-CDP Scheme of DCMSME

Date: 25 th November 2019	Time: 12:30 PM-2:30 PM	Venue: Karnal Club, Karnal					
Agenda:							
 Presentation on the draft DPR of Karnal Ayurveda Cluster prepared by EY Discussion on constitution of SPV and shareholding pattern Discussion on proposed facilities in the CFC particularly plant and machineries Validation of recommendations by key stakeholders 							
Attendees							
Sh. RC Dahra, Adviso	Sh. RC Dahra, Advisor (MSME Development), Haryana						
🕨 🕨 Dr. Satish Khatkar, D	Dr. Satish Khatkar, Drug Licensing Authority, AYUSH Department, Haryana						
Sh. Sunil Kumar, Ass	Sh. Sunil Kumar, Assistant Director, MSME-DI, Karnal						
Sh. Rakesh Vaid, MSI	Sh. Rakesh Vaid, MSME-DI, Karnal						
Sh. Anil Kumar, Gene	Sh. Anil Kumar, General Manager, DIC Karnal						
Members of Karnal A	yurveda Cluster						
Sh. Upinder Singh Dh	ingra, Manager, EY PMU						
Sh. Arunesh Sharma,	Senior Consultant, EY PMU						

Members of the cluster welcomed Sh. RC Dahra, Advisor (MSME Development), Dr. Satish Khatkar, Licensing Authority, AYUSH Department Haryana, Sh. Sunil Kumar, Assistant Director, MSME-DI, Karnal, Sh. Rakesh Vaid, MSME-DI, Karnal & Sh. Anil Kumar, General Manager, DIC, Karnal. Mr. Abhishek Gupta of Karnal Ayurveda SPV thanked the Haryana industry department and the EY team for conducting extensive stakeholder consultations and developing the DPR of the cluster.

EY PMU team delivered a presentation on the draft DPR of the project. The presentation is provided in Annexure 1. The presentation provided an overview of the cluster and elaborated on various aspects of the proposed project. The major project component as highlighted are mentioned below:

- 1. Land: The requirement has been estimated as 1 Acre (4840 sq. yards) and the SPV has identified a plot of land in Mainmati village, Karnal. A consent letter has been obtained from the current owner for the sale of land to the SPV at a cost of INR 1 Crore.
- 2. **Building:** A two storied building (RCC Structure) is proposed to be constructed with a total covered area of 8400 sq. ft. at a cost of Rs. 115 Lakh. A shed area of 15000 sq. ft. is proposed for the CFC at a cost of another Rs. 115 Lakh. Total cost of building including Earth filling, Foundation for Boiler, Borewell, & Electric Work is estimated at INR 289.24 Lakhs
- 3. Plant and Machinery: A range of modern machinery required for extraction, distillation, sedimentation, filtration, drying and lab equipment have been proposed. Total Cost of primary machines is estimated at Rs. 692.80 Lakhs. Required Secondary machinery for CFC such as Steam boiler, RO plant, ETP plant etc. with a total cost of Rs. 251.13 Lakhs have also
been proposed in the DPR. These machines will enable the cluster units in getting the required herbs processed at the CFC and use good quality standardised herbal extracts for their Ayurvedic products, resulting in better product quality & increased cost competitiveness for cluster units.

Further, the role of SPV in executing the project was highlighted. It was mentioned that the cluster units have set up a SPV in the name and style of 'VAPIK Solutions Pvt. Ltd." The SPV has been registered as a private limited company under Companies Act 2013. Moreover, the SPV has autonomously undertaken a range of initiatives such as awareness programs, exposure visits, interaction with proposed machinery suppliers etc. This establishes the fact that the SPV is capable enough to undertake hard intervention under the project and is geared up to take the project to its logical conclusion. Officials of AYUSH Department Haryana have also been actively advising the SPV members with a view to promote traditional medicine MSMEs

Discussion and Action Points

- SPV for project implementation: The SPV members provided a brief about their production set up, Ayurvedic products and markets. The members also highlighted how their individual units will benefit from the cluster intervention. The SPV currently has 24 shareholding members. Some new members were also present & their key concern was on becoming members of proposed CFC, whether they will be eligible to take benefit under other Govt. Schemes. Sh. Sunil assured the new members that while units can have shareholding in only one SPV, they can be non-shareholding members of other CFCs also. Sh. Sunil asked the SPV members to add more shareholding members as well as non-shareholding members to the SPV and increase the membership base of SPV to around 100. Dr. Satish Khatkar confirmed that there are around 1000 registered Ayurvedic units in Haryana, 700 of whom are operational and the AYUSH department would assist in adding such units to the SPV.
- Land NOC Issue: With respect to the Land identified in Mainmati village, Karnal, the SPV members mentioned that since the land is outside the municipality area, the CLU for industrial use will not be required. Sh. Dahra asked the SPV members to obtain a no objection certificate from Town & Country Planning, Karnal for industrial usage of Identified Land.
- Building Estimate: Sh. Dahra observed that the current estimate in DPR for construction of building at 1370 per sq. ft. is on the higher side and needs to be verified as per the current prevailing rates in Karnal
- Machinery:
 - Sh. Dahra inquired about the usage of the proposed machines by the cluster units. The members confirmed that the proposed machines are essential for processing of herbs into standardised extracts
 - SPV members also confirmed that the cost of individual machines mentioned in the DPR are as per the current prevailing market rates
 - Dr. Satish Khatkar also confirmed that proposed machinery and their respective costs are as per the requirements of a herbal extract plant and would help the cluster units in enhancing the quality of their Ayurvedic products
 - Sh. Dahra observed that 80% capacity utilization of the CFC in first year might be difficult to achieve, and DPR may be modified to have a 70% utilization in first year to arrive at financial indicators.

The participants, particularly the SPV members validated the recommendations and mentioned that the proposed CFC will enable the cluster units become more competitive and even diversify their product offerings.

Highlighting the vision of the state government, Sh. Dahra, in his concluding remarks, mentioned that the department wants the state to progress and its industries, particularly the MSMEs to flourish and the cluster focused interventions is a well proven approach across the world for MSME development.

Sh. Sunil, in his remarks, stressed upon the need to add more members to the SPV and educated the participants on the guidelines of MSE-CDP scheme, SPV constitution and operational rules of Common Facility Centre.

Dr. Satish Khatkar promised support from AYUSH Department Haryana for successful implementation of the proposed CFC.

Lastly, Sh. Dahra mentioned that the DPR will be taken up for approval and further submission to DCMSME during the upcoming State Level Project Steering Committee.

The meeting ended with a vote of thanks by Sh. Sanjay Batra of Golden Herbs Laboratories.

Selected photos of the meeting & list of participants are provided below:



List of Participants:

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9.4 Certificate of Incorporation



GOVERNMENT OF INDIA MINISTRY OF CORPORATE AFFAIRS

Central Registration Centre

Certificate of Incorporation

[Pursuant to sub-section (2) of section 7 of the Companies Act, 2013 (18 of 2013) and rule 18 of the Companies (Incorporation) Rules, 2014]

I hereby certify that VAPIK SOLUTIONS PRIVATE LIMITED is incorporated on this Second day of January Two thousand nineteen under the Companies Act, 2013 (18 of 2013) and that the company is limited by shares.

The Corporate Identity Number of the company is U93090HR2019PTC077586.

The Permanent Account Number (PAN) of the company is AAGCV7411F

The Tax Deduction and Collection Account Number (TAN) of the company is RTKV06039F

Given under my hand at Manesar this Second day of January Two thousand nineteen .

Digital Signature Certificate Keerthi Thej N Deputy Registrar Of Companies For and on behalf of the Jurisdictional Registrar of Companies Registrar of Companies Central Registration Centre

Disclaimer: This certificate only evidences incorporation of the company on the basis of documents and declarations of the applicant(s). This certificate is neither a license nor permission to conduct business or solicit deposits or funds from public. Permission of sector regulator is necessary wherever required. Registration status and other details of the company can be verified on www.mca.gov.in

Mailing Address as per record available in Registrar of Companies office:

VAPIK SOLUTIONS PRIVATE LIMITED HOUSE NO. 7, NYAYPURI, NEAR KARAN STADIUM, KARNAL, Kamal, Haryana, India, 132001



* as issued by the Income Tax Department

9.4 a Memorandum of Association:

[Pursuant to Schedule I (see the Companies Act, 2013)]	SPIC <i>e</i> MOA	
		(e-Memorandum of Association
MOA language: () Eng	ish CHindi	
SRN of RUN	H31256845	Pro-fill
• Table applicable to com	any as notified under schedule I	of the companies Act, 2013
Table A- MEMORANDUM	FASSOCIATION OF A COMPANY L	LIMITED BY SHARES
1. The Name of the Compa	TV IS VAPIK SOLUTIONS PRIVA	TE LIMITED
2.The Registered office of t	he company will be situated in the	e state of Haryana-HR
3.(a)The objects to be pursue	d by the company on its incorpora	ation are
 To set up common facility for i formulation manufacturers and o To propare, process and mani material bank. To import, export, horbs, raw fi To manufacture herbal internet. 	nanufacturing standardized herbs, her her manufacturers who use these item facture standardized Ayurvedic herbs erbs, herbai or their extracts, bahasme slates for pharmaceuticals, ayurvedic	thal extracts, oils and bahasms for Herbal/ Aayush/ Unani finished ns as intermediate product or raw Material. I, powder, bhasms and their extracts and to make a herbal raw s. s and other menufacturers or consumers.
3.(b)Matters which are noces	sary for furtherance of the object:	s specified in clause 3(a) are

Page 1 of 5

To purchase, hire, rent, on contract or acquire in exphange or in amalgamations, licenses or otherwise solely or jointly with other all such equipment structures, cranes, vehicles and other such related equipments required for the purpose of the main business of the Company. 2. To negotiate and/ or enter into agreement and contracts with individuals. Companies, corporation, firms and other such organizations, in India, or abroad for obtaining or providing technical, financial or any other such assistance for carrying out all or any of the objects of the Company and create a network of associates in India or abroad and on the basis of know-how and/or financial participation and for technical collaboration and to acquire or provide necessary formulae or patent rights for furthering the main objects of the Company. 3. To subscribe, assist and guarantee the payment of money by or the performance of any contract, engagement or obligation by any person or Companies and in particular customers of the Company or any person or Companies with whom the Company may have or intended to have business relations

4. To adopt such means of making known the business of the Company as may seem expedient to attain the main objects of the Company.

To acquire by purchase, subscription or otherwise and to receive, hold, own, guarantee, assign exchange, transfer, montgage, pledge or otherwise dispose of any of the shares of the capital stock, or any voting trust certificate in respect of the shares of the capital, stock, script, warrants, rights, bonds, debentures, notes, trust, receipts and such other securities, obligations, chose in action and evidences of indebtness or interest issued or created by any corporation, Companies, syndicates, associations, firms, trusts or persons, public or private or by the Government or by any state territory, province, Municipality, or by any Governmental agency and as owner thereof to poss and exercise all the rights, powers and privilege of ownership and the right to execute, consent and vote thereon and to do any or all acts and things necessary or advisable for the preservation, protection, improvement or enhancement in value thereof.

5. To enter into partnership or into any arrangement for sharing profits or losses or any union of interest, joint-ventures, reciprocal concessions or co-operation with any person or persons or Company or Companies carrying on or engaged in or about to carry on and engaged in main business or transaction of the Company. 7. To acquire and takeover either the whole or part of business, goodwill, trademarks, patents and property, assets and liabilities of any

person or persons, firm or corporation for carrying on main business of the Company.

8. To establish branches and agencies of the Company in India or elsewhere and to discontinue the same whenever necessary.

9. To pay for any property or rights acquired by the Company either in cash or by the issue of fully of partly paid shares or by the issue of the securities or partly in one mode or partly in another and on such terms as may be determined. 10. To open Bank accounts with any Bank and to pay into and draw money from such accounts.

11. To pay out of funds of the Company all costs, charges and expenses which the Comment of technical fees or with respect to the

promotion, formation, establishment and registration of any Company and/or the issue of its capital or which the Company shall consider to be preliminary, including therein the cost of printing and stationery, brokers fees and lawyers or any other experts fees and expenses attendant upon the formation of agencies, branches and local boards.

12. To procure the registration of the Company in or under the law of any foreign country to attain the main objects of the Company. 13. Subject to the provisions of section 230 to 240 of the Companies Act, 2013, to amalgamate or merge or to enter into partnership or into any arrangement for sharing profits, union of interests, co-operation, joint-venture of reciprocal concession with any person or persons, partnership firm- firms, or Company or Companies carrying on or engaged in main business or transaction of the Company

14. To obtain information as to any invention which may seem capable of being used for any of the purposes of the Company or the acquisition of which may seem calculated directly or indirectly to benefit the Company or may appear likely to be advantageous or useful to the Company and to use, exercise, develop or grant loanses, privileges in respect of the property rights or information so acquired and to assist, encourage and spend money in making experiments of all inventions, patents and rights which the Company may acquire or propose to acquire

15. To adopt such means of making known the business of the Company as may seem expedient and in particular by advertising in the press, by circulars, by purchase and an exhibition on works of art or interest, by publication of books and periodicals and by granting prizes, rewards and donation.

16. To draw, made, accept, endorse, discount, execute and issue promissory notes, bills of exchange, bills of lading, warrants, debentures and such other negotiable or transferable instruments of all types.

17. To remunerate any person or Company for services rendered or to be rendered in acting as trustees for debentures, debenture stock holders or placing or assisting to place or guarantee the placing of any of the shares in the Company's capital or debentures, debenture stocks or other securities of the Company or in or about the formation or promotion of the Company or to conduct of its business or for guaranteeing payment of such debentures or such other debenture-stock and interest.

18. To appoint attorney and agents and associates whether on commission or otherwise and constitute agencies and sub agencies of the Company in India or elsewhere.

19. To distribute any of the property of the Company in specie or in kind among the members, in the event of winding up, subject to the provisions of the Companies Act, 2013.

20. To enter into any arrangements with any Government or any authority Supreme, Municipal, Local or otherwise that may seem beneficial to any of the Company's object and to apply for, promote and obtain any act of Parliament privilege, concessions, licenses, or authorization of the Government or any other such authority whether local or otherwise for enabling the Company to carry on its objects for extending any of the powers of the Company and to carry out, exercise and comply with any such act, privilege, concession, license or authorization.

21. To lease or let out on hire, pledge, mortgage, hypothecate, the whole or any part of the undertaking of the Company or any land, business property, rights or assets of any kind of the Company or any share or interest therein respectively, in such manner and for such consideration as the Company may think fit, and in particular for shares, debentures or securities of any other such body corporate having altogether or in part similar to those of the Company.

22. To establish and maintain or procure the establishment and maintenance of any provident hand or any contributory or non contributory pension or superannuation fund and to give or procure the giving of donations, gratuities, pensions, allowances, emoluments, bonuses, profit sharing bonus, benefits or any other payments to persons who are or were at any time in the employment or service of the Company. its predecessors in business or is alled to or associated with the Company or with any such subsidiary, or who are or were any time Directors or officers of the Company or any of such other Company as aforesaid and the wives, widows, families, dependents or connection of any such person and to provide for the welfare of all or any of the aforesaid persons, from time, by subscribing, subsiding, or contributing to any institution, associations, funds, clubs, trusts, profit sharing or other schemes any by building, contributing to building or dwelling houses or quarters and by providing, subscribing, or contributing towards recreation, hospitals and dispensaries, medical and other attendance and to make payment to or towards the insurance as aforecaid either alone or in conjunction, with any such other

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4. The liability of the member(s) is limited and this liability is limited to the amount unpaid, if any, on the shares held by them.

5. The share capital of the company is			1,000.0	00.00	rupees, divided into,	
100,000.00	Equity	sha	es of	10.00	rupees each	

6 We, the several persons, whose names and addresses are subscribed, are desirous of being formed into a company in pursuance of this memorandum of association, and we respectively agree to take the number of shares in the capital of the company set against our respective names:

Page 3 of 5

5,NO.							
	Name, Address, Description	and Occupation	DIN/PAN/Passport Number	No. of taken	shares	DSC	Dated
1	Vikas Singla 5/o Sh. Virbhan S Karnal- 132001 (Haryana) (Bus	ngia R/o 1436, Sector-7, inoss)	06272573	20000	Equity		27/12/18
2	Awnish Bhardwaj S/o Sh. Om P House No. 615, New Prem Nay (Haryana) (Business)	03387915	20000	Equity		27/12/18	
3	Anup Bhardwaj S/a Sh. Om Pa House No. 615 New Prem Nag (Heryana) (Business)	03387902	20000	Equity		27/12/18	
4	Abhishek Gupta S/o Sh. Gopa Sector-7, Urban Extate, Karnal	02237104	20000	Equity		27/12/18	
5	Abihimanyu Dawar S/o Gulsha Nyaypuri, Near Karan Stadium (Business)	n Dawar R/o H. No. 7. , Karnal-132001 (Hr)	CIQPD8023E	20000	Equity		27/12/18
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Name Address, Descripti		ion and Occupation	DIN/PAN/Passport Number/ Membership Number		t DSC	Dated	
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Page 4 of 5

9.4 b Articles of Association:

[Pursua the Cor	Pursuant to Schedule I (see Sections 4 and 5) to the Companies Act, 2013)] FORM NO. INC-34 SPICe AO					
404 la	nauane	(e-Articles of Association)				
SRN o	of RVA	H31256845 Profil notified under schedule Lof the companies Act. 2013 is applicable to the company.				
19231	<u> </u>	VAPIK SOLUTIONS PRIVATE LIMITED				
		A COMPANY LIMITED BY SHARES				
	Artic	Description				
	0110	Interpretation				
	3	 (1) In these regulations (a) "Company" means "VAPIK SOLUTIONS PRIVATE LIMITED', (b) "Office" means the registered office of the Company, (c) "Act" means the companies Act, 2013, (d) "Seal" means the common seal of the Company, (e) "Directors" Means directors of the Company and includes persons occupying the position of the director by whatever name called. (2) Unless the context otherwise requires, words or expressions contained in these regulations shall bear the same meaning as in the Act or any statutory modification thereof in force at the date at which these regulations become binding on the company. 3) The Company is a Private Company within the meaning of Section 2(68) of the Companies Act, 2013 and accordingly (i)Restrict the right to transfer of shares. (ii) Limit the number of its member to two hundred. Provided that where two or more persons hold one or more shares in a Company Jointly they shall for the purpose of this clause, be treated as a single member. Provided further that: (a) persons who are in the employment of the company, and (b) persons who are in the employment of the company, and (b) persons to having been formerly in the employment of the company were members of the company while in that employment and have continued to be members after the employment ceased, shall not be included in the number of members (ii) Prohibits any invitations to the public to subscribe for any securities of the Company.				
		Share capital and variation of rights				
	□ <u> </u> 1	Subject to the provisions of the Act and these Articles, the shares in the capital of the company shall be under the control of the Directors who may issue, allot or otherwise dispose of the same or any of them to such persons, in such proportion and on such terms and conditions and either at a premium or at par and at such time as they may from time to time think fit.				
	2	 (i) Every person whose name is entered as a member in the register of members shall be entitled to receive within two months after incorporation, in case of subscribers to the memorandum or after allotment or within one month after the application for the registration of transfer or transmission or within such other period as the conditions of issue shall be provided, - (a) one certificate for all his shares without payment of any charges; or (b) several certificates, each for one or more of his shares, upon payment of twenty rupees for each certificate after the first. (ii) Every certificate shall be under the seal and shall specify the shares to which it relates and the amount paid-up thereon. (ii) In respect of any share or shares held jointly by several persons, the company shall not be bound to issue smare than one certificate, and delivery of a certificate for a share to one of several joint holders shall be sufficient delivery to all such holders 				

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	з	(i) If any share certificate be worn out, defaced, mutilated or tom or if there be no further space on the back for endorsement of transfer, then upon production and sumender thereof to the company, a new certificate may be issued in lieu thereof, and if any certificate is lost or destroyed then upon proof thereof to the satisfaction of the company and on execution of such indemnity as the company deem adequate, a new certificate in lieu thereof shall be given. Every certificate under this Article shall be issued on payment of twenty rupees for each certificate.
٥	4	Except as required by law, no person shall be recognised by the company as holding any share upon any trust and the company shall not be bound by, or be compelled in any way to recognise (even when having notice thereof) any equitable, contingent, future or partial interest in any share, or any interest in any fractional part of a share, or (except only as by these regulations or by law otherwise provided) any other rights in respect of any share except an absolute right to the entirety thereof in the registered holder.
	5	(i) The company may exercise the powers of paying commissions conferred by sub-section (6) of section 40, provided that the rate per cent or the amount of the commission paid or agreed to be paid shall be disclosed in the manner required by that section and rules made thereunder. (ii) The rate or amount of the commission shall not exceed the rate or amount prescribed in rules made under sub-section (6) of section 40. (iii) The commission may be satisfied by the payment of cash or the allotment of fully or partly paid shares or partly in the one way and partly in the other.
	8	(i) If at any time the share capital is divided into different classes of shares, the rights attached to any class (unless otherwise provided by the terms of issue of the shares of that class) may, subject to the provisions of section 48, and whether or not the company is being wound up, be varied with the consent in writing of the holders of three-fourths of the issued shares of that class, or with the sanction of a special resolution passed a a separate meeting of the holders of the shares of that class. (ii) To every such separate meeting, the provisions of these regulations relating to general meetings shall mutatis mutantis apply, but so that the necessary quorum shall be at least two persons holding at least one-field the instead charas of the class in mutantism.
	7	The rights conferred upon the holders of the shares of any class issued with preferred or other rights shall not, unless otherwise expressly provided by the terms of issue of the shares of that class, be deemed to be varied by the creation or issue of further shares ranking parts apassu therewith.
	8	Subject to the provisions of section 55, any preference shares may, with the sanction of an ordinary resolution be issued on the terms that they are to be redeemed on such terms and in such manner as the company before the issue of the shares may, by special resolution, determine.
		Lien
	9	 (i) The company shall have a first and paramount lien (a) on every share (not being a fully paid share), for all monies (whether presently payable or not) called, or payable at a fixed time, in respect of that share; and (b) on all shares (not being fully paid shares) standing registered in the name of a single person, for all monies presently payable by him or his estate to the company: Provided that the Board of directors may at any time declare any share to be wholly or in part exempt from the provisions of this clause. (ii) The company's lien, if any, on a share shall extend to all dividends payable and bonuses declared from time to time in respect of such shares.
	10	The company may sell, in such manner as the Board thinks fit, any shares on which the company has a lien: Provided that no sale shall be made (a) unless a sum in respect of which the lien exists is presently payable; or (b) until the expiration of fourteen days after a notice in writing stating and demanding payment of such part of the amount in respect of which the lien exists as is presently payable, has been given to the registered holder for the time being of the share or the person entitled thereto by reason of his death or insolvency.
	11	 (i) To give effect to any such sale, the Board may authorise some person to transfer the shares sold to the purchaser thereof (ii) The purchaser shall be registered as the holder of the shares comprised in any such transfer. (iii) The purchaser shall not be bound to see to the application of the purchase money, nor shall his title to the

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	12	 (i) The proceeds of the sale shall be received by the company and applied in payment of such part of the amount in respect of which the lien exists as is presently payable. (ii) The residue, if any, shall, subject to a tike lien for sums not presently payable as existed upon the shares before the sale, be paid to the person entitled to the shares at the date of the sale.
		Calls on shares
	13	 (i) The Board may, from time to time, make calls upon the members in respect of any monies unpaid on their shares (whether on account of the nominal value of the shares or by way of premium) and not by the conditions of allotment thereof made payable at fixed times: Provided that no call shall exceed one-fourth of the nominal value of the share or be payable at less than one month from the date fixed for the payment of the last preceding call. (ii) Each member shall, subject to receiving at least fourteen days' notice specifying the time or times and place of payment, pay to the company, at the time or times and place so specified, the amount called on his shares. (iii) A call may be revoked or postcomed at the discretion of the Board.
	14	A call shall be deemed to have been made at the time when the resolution of the Board authorizing the call was passed and may be required to be paid by instalments.
	15	The joint holders of a share shall be jointly and severally liable to pay all calls in respect thereof.
	16	(i) If a sum called in respect of a share is not paid before or on the day appointed for payment thereof, the person from whom the sum is due shall pay interest thereon from the day appointed for payment thereof to the time of actual payment at ten per cent per annum or at such lower rate, if any, as the Board may determine.
_	-	(F) The Board shall be at liberty to waive payment of any such interest wholly or in part.
	17	 (i) Any sum which by the terms of issue of a share becomes payable on allotment or at any fixed date, whether on account of the nominal value of the share or by way of premium, shall, for the purpose of these regulations, be deemed to be a call duly made and payable on the date on which by the terms of issue such sum becomes payable. (ii) In case of non-payment of such sum, all the relevant provisions of these regulations as to payment of interest and expenses, forfisiture or otherwise shall apply as if such sum had become payable by virtue of a call duly made and notified.
	18	The Board (a) may, if it thinks fit, receive from any member willing to advance the same, all or any part of the monies uncelled and unpaid upon any shares held by him; and (b) upon all or any of the monies so advanced, may (until the same would, but for such advance, become presently payable) pay interest at such rate not exceeding, unless the company in general meeting shall otherwise direct, twelve per cent per annum, as may be agreed upon between the Board and the member paying the sum in advance.
		Transfer of shares
	19	(i) The instrument of transfer of any share in the company shall be executed by or on behalf of both the transferor and transferoe. (ii) The transferor shall be deemed to remain a holder of the share until the name of the transferee is entered in the recider of memory of the transferoe.
	20	The Board may, subject to the right of appeal conferred by section 58 decline to register
	21	The Board may decline to recognise any instrument of transfer unless

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		22	On giving not less than seven days' previous notice in accordance with section 91 and rules made thereunder, the registration of transfers may be suspended at such times and for such periods as the Board may from time to time determine: Provided that such registration shall not be suspended for more than thirty days at any one time or for more
-		_	than forty-five days in the aggregate in any year.
			transmission of shares
		23	(i) On the death of a member, the survivor or survivors where the member was a joint holder, and his nominees or legal representatives where he was a sole holder, shall be the only persons recognised by the company as having any title to his interest in the shares. (ii) Nothing in clause (i) shall release the estate of a deceased joint holder from any liability in respect of any
		_	share which had been jointly held by him with other persons.
		24	 (i) Any person becoming entitled to a share in consequence of the death or insolvency of a member may, upor such evidence being produced as may from time to time properly be required by the Board and subject as hereinafter provided, elect, either (a) to be registered himself as holder of the share; or (b) to make such transfer of the share as the deceased or insolvent member could have made.
			(ii) The Board shall, in either case, have the same right to decline or suspend registration as it would have had if the deceased or insolvent member had transferred the share before his death or insolvency.
			(i) If the person so becoming entitled shall elect to be registered as holder of the share himself, he shall deliver or send to the company a notice in writing signed by him stating that he so elects.
		25	(ii) If the person aforeseid shall elect to transfer the share, he shall testify his election by executing a transfer of the share.
			(iii) All the limitations, restrictions and provisions of these regulations relating to the right to transfer and the registration of transfers of shares shall be applicable to any such notice or transfer as aforesaid as if the death or insolvency of the member had not occurred and the notice or transfer were a transfer signed by that member.
		- 24	A person becoming entitled to a share by reason of the death or insolvency of the holder shall be entitled to the same dividends and other advantages to which he would be entitled if he were the registered holder of the share, except that he shall not, before being registered as a member in respect of the share, be entitled in respect of it to exercise any right conferred by membership in relation to meetings of the company:
			Provided that the Board may, at any time, give notice requiring any such person to elect either to be registered himself or to transfer the share, and if the notice is not complied with within ninety days, the Board may thereafter withhold payment of all dividends, bonuses or other monies payable in respect of the share, until the requirements of the notice have been complied with.
			Forfeiture of shares
		27	If a member fails to pay any call, or instalment of a call, on the day appointed for payment thereof, the Board may, at any time thereafter during such time as any part of the call or instalment remains unpaid, serve a notice on him requiring payment of so much of the call or instalment as is unpaid, together with any interest which may have accrued.
	T		The notice aforesaid shall
		28	(a) name a further day (not being earlier than the expiry of fourteen days from the date of service of the notice on or before which the payment required by the notice is to be made; and
			(b) state that, in the event of non-payment on or before the day so named, the shares in respect of which the call was made shall be liable to be forfelted.
		29	If the requirements of any such notice as aforesaid are not complied with, any share in respect of which the notice has been given may, at any time thereafter, before the payment required by the notice has been made, be forfeited by a resolution of the Board to that effect.

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	30	 (i) A forfaited share may be sold or otherwise disposed of on such terms and in such manner as the Board thinks fit. (ii) At any time before a sale or disposal as aforesaid, the Board may cancel the forfaiture on such terms as it thinks fit.
	31	 (i) A person whose shares have been forfeited shall cesse to be a member in respect of the forfeited shares, but shall, notwithstanding the forfeiture, remain liable to pay to the company all monies which, at the date of forfeiture, were presently payable by him to the company in respect of the shares. (ii) The liability of such person shall cease if and when the company shall have received payment in full of all such monies in respect of the shares.
	32	 (i) A duly verified declaration in writing that the declarant is a director, the manager or the secretary, of the company, and that a share in the company has been duly forfeited on a date stated in the declaration, shall be conclusive evidence of the facts therein stated as against all persons claiming to be entitled to the share; (ii) The company may receive the consideration, if any, given for the share on any sale or disposal thereof and may execute a transfer of the share in favour of the person to whom the share is sold or disposed of; (iii) The transferee shall thereupon be registered as the holder of the share; and (iv) The transferee shall not be bound to see to the application of the purchase money, if any, nor shall his title to the share be affected by any irregularity or invalidity in the proceedings in reference to the forfeiture, sale or disposal of the share.
	33	The provisions of these regulations as to forfeiture shall apply in the case of nonpayment of any sum which, by the terms of issue of a share, becomes payable at a fixed time, whether on account of the nominal value of the share or by way of premium, as if the same had been psyable by virtue of a call duly made and notified.
		Alteration of capital
	34	The company may, from time to time, by ordinary resolution increase the share capital by such sum, to be divided into shares of such amount, as may be specified in the resolution.
	35	Subject to the provisions of section 61, the company may, by ordinary resolution, (a) consolidate and divide all or any of its share capital into shares of larger amount than its existing shares; (b) convert all or any of its fully paid-up shares into stock, and reconvert that stock into fully paid-up shares of any denomination; (c) sub-divide its existing shares or any of them into shares of smaller amount than is fixed by the memorandum; (d) cancel any shares which, at the date of the passing of the resolution, have not been taken or agreed to be taken by any person.
	36	Where shares are converted into stock, (a) the holders of stock may transfer the same or any part thereof in the same manner as, and subject to the same regulations under which, the shares from which the stock arose might before the conversion have been transferred, or as near thereto as circumstances admit. Provided that the Board may, from time to time, fix the minimum amount of stock transferable, so, however, that such minimum shall not exceed the nominal amount of the shares from which the stock arose. (b) the holders of stock shall, according to the amount of stock held by them, have the same rights, privileges and advantages as regards dividends, voting at meetings of the company, and other matters, as if they held the shares from which the stock arose; but no such privilege or advantage (except participation in the dividends and profits of the company and in the assets on winding up) shall be conferred by an amount of stock which would not, if existing in shares, have conferred that privilege or advantage. (c) such of the regulations of the company as are applicable to paid-up shares shall apply to stock and the words "share" and "stock-holder" respectively.

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		Proceedings at general meetings
	42	 (i) The Board may, whenever it thinks fit, call an extraordinary general meeting. (ii) If at any time directors capable of acting who are sufficient in number to form a quorum are not within India, any director or any two members of the company may call an extraordinary general meeting in the same manner, as nearly as possible, as that in which such a meeting may be called by the Board.
	41	All general meetings other than annual general meeting shall be called extraordinary general meeting.
		General meetings
	40	Notwithstanding anything contained in these articles but subject to the provisions of sections 68 to 70 and any other applicable provision of the Act or any other law for the time being in force, the company may purchase it own shares or other specified securities.
		Buy-back of shares
		(ii) Any agreement made under such authority shall be effective and binding on such members.
	39	(a) to make such provisions, by the issue of fractional certificates or by payment in cash or otherwise as it thinks fit, for the case of shares becoming distributable in fractions; and (b) to authorise any person to enter, on behalf of all the members entitled thereto, into an agreement with the company providing for the allotment to them respectively, credited as fully paid-up, of any further shares to which they may be entitled upon such capitalisation, or as the case may require, for the payment by the company on their behalf, by the application thereto of their respective proportions of profits resolved to be
		(ii) The Board shall have power
		allotments and issues of fully paid shares if any; and (b) generally do all acts and things required to give effect thereto.
Ц		(a) make all appropriations and applications of the undivided profits resolved to be capitalised thereby, and all
100		(c) A securices premium account and a capital redemption reserve account may, for the purposes of this regulation, be applied in the paying up of unissued shares to be issued to members of the company as fully paid bonus shares; (E) The Board shall give effect to the resolution passed by the company in pursuance of this regulation. (6) Whenever such a resolution as aforesaid shall have been passed, the Board shall
		 (B) paying up in full, unissued shares of the company to be allotted and distributed, credited as fully paid-up, t and amongst such members in the proportions aforesaid; (C) partly in the way specified in sub-clause (A) and partly in that specified in sub-clause (B).
	38	 (ii) The sum aforesaid shall not be paid in cash but shall be applied, subject to the provision contained in clause (iii), either in or towards
		(b) that such sum be accordingly set free for distribution in the manner specified in clause (ii) amongst the members who would have been entitled thereto, if distributed by way of dividend and in the same proportions.
		(a) that it is desirable to capitalise any part of the amount for the time being standing to the credit of any of the company's reserve accounts, or to the credit of the, profit and loss account, or otherwise svailable for distribution; and
		(i) The company in general meeting may, upon the recommendation of the Board, resolve
		Capitalisation of profits
	37	(a) its share capital; (b) any capital redemption reserve account; or (c) any share premium account.
		The company may, by special resolution, reduce in any manner and with, and subject to, any incident authorised and consent required by law -

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			(i) No business shall be transacted at any general meeting unless a quorum of members is present at the time when the meeting proceeds to business.
		43	 (ii) Save as otherwise provided herein, the quorum for the general meetings shall be as provided in section 103.
		44	The chairperson, if any, of the Board shall preside as Chairperson at every general meeting of the company.
		45	If there is no such Chairperson, or if he is not present within fifteen minutes after the time appointed for holding the meeting, or is unwilling to act as chairperson of the meeting, the directors present shall elect one of their members to be Chairperson of the meeting. 1. Vikas Singla 2. Avnish Bhardwaj 3. Anup Bhardwaj 4. Abhishek Gupta 5. Abhimanyu Dawar
		48	If at any meeting no director is willing to act as Chairperson or if no director is present within fifteen minutes after the time appointed for holding the meeting, the members present shall choose one of their members to be Chairperson of the meeting.
			Adjournment of meeting
			(i) The Chairperson may, with the consent of any meeting at which a quorum is present, and shall, if so directed by the meeting, adjourn the meeting from time to time and from place to place.
		-	(ii) No business shall be transacted at any adjourned meeting other than the business left unfinished at the meeting from which the adjournment took place.
		4/	(iii) When a meeting is adjourned for thirty days or more, notice of the adjourned meeting shall be given as in the case of an original meeting.
			(iv) Save as aforesaid, and as provided in section 103 of the Act, it shall not be necessary to give any notice of an adjournment or of the business to be transacted at an adjourned meeting.
			Voting rights
n	П		Subject to any rights or restrictions for the time being attached to any class or classes of shares,
	245336	48	 (a) on a show of hands, every member present in person shall have one vote; and (b) on a poll, the voting rights of members shall be in proportion to his share in the paid-up equity share capital of the company.
		49	A member may exercise his vote at a meeting by electronic means in accordance with section 106 and shall vote only once.
		50	(i) In the case of joint holders, the vote of the senior who tenders a vote, whether in person or by proxy, shall be accepted to the exclusion of the votes of the other joint holders.
			(ii) For this purpose, seniority shall be determined by the order in which the names stand in the register of members.
		51	A member of unsound mind, or in respect of whom an order has been made by any court having jurisdiction in lunacy, may vote, whether on a show of hands or on a poll, by his committee or other legal guardian, and any such committee or guardian may, on a poll, vote by proxy.
		52	Any business other than that upon which a poil has been demanded may be proceeded with, pending the taking of the poll.
		53	No member shall be entitled to vote at any general meeting unless all calls or other sums presently payable by him in respect of shares in the company have been paid
		54	 (i) No objection shall be raised to the qualification of any voter except at the meeting or adjourned meeting at which the vote objected to is given or tendered, and every vote not disallowed at such meeting shall be valid for all purposes. (ii) Any such objection made in due time shall be referred to the Chairperson of the meeting, whose decision shall be final and conclusive.
			Provv

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	55	The instrument appointing a proxy and the power-of-attorney or other authority, if any, under which it is signed or a notarised copy of that power or authority, shall be deposited at the registered office of the company not less than 48 hours before the time for holding the meeting or adjourned meeting at which the person named in the instrument proposes to vote, or, in the case of a poli, not less than 24 hours before the time appointed for the taking of the poli; and in default the instrument of proxy shall not be treated as valid.
	56	An instrument appointing a proxy shall be in the form as prescribed in the rules made under section 105
	57	A vote given in accordance with the terms of an instrument of proxy shall be valid, notwithstanding the previous death or insanity of the principal or the revocation of the proxy or of the authority under which the proxy was executed, or the transfer of the shares in respect of which the proxy is given: Provided that no intimation in writing of such death, insanity, revocation or transfer shall have been received by the company at its office before the commencement of the meeting or adjourned meeting at which the proxy is used.
		Board of Directors
	58	The number of the directors and the names of the first directors shall be determined in writing by the subscribers of the memorandum or a majority of them.
	59	 (i) The remuneration of the directors shall, in so far as it consists of a monthly payment, be deemed to accrue from day-to-day. (ii) In addition to the remuneration payable to them in pursuance of the Act, the directors may be paid all travelling, hotel and other expenses properly incurred by them (a) in attending and returning from meetings of the Board of Directors or any committee thereof or general meetings of the company; or (b) in connection with the business of the company.
	60	The Board may pay all expenses incurred in getting up and registering the company.
	61	The company may exercise the powers conferred on it by section 85 with regard to the keeping of a foreign register; and the Board may (subject to the provisions of that section) make and vary such regulations as it may thinks fit respecting the keeping of any such register.
	62	All cheques, promissory notes, drafts, hundis, bills of exchange and other negotiable instruments, and all receipts for monies paid to the company, shall be signed, drawn, accepted, endorsed, or otherwise executed, as the case may be, by such person and in such manner as the Board shall from time to time by resolution determine
	63	Every director present at any meeting of the Board or of a committee thereof shall sign his name in a book to be kept for that purpose.
	64	 (i) Subject to the provisions of section 149, the Board shall have power at any time, and from time to time, to appoint a person as an additional director, provided the number of the directors and additional directors together shall not at any time exceed the maximum strength fixed for the Board by the articles. (ii) Such person shall hold office only up to the date of the next annual general meeting of the company but shall be eligible for appointment by the company as a director at that meeting subject to the provisions of the Act.
		Proceedings of the Board
	65	 (i) The Board of Directors may meet for the conduct of business, adjourn and otherwise regulate its meetings, as it thinks fit. (ii) A director may, and the manager or secretary on the requisition of a director shall, at any time, summon a meeting of the Board.
	66	(i) Save as otherwise expressly provided in the Act, questions arising at any meeting of the Board shall be decided by a majority of votes.
	67	(ii) In case of an equality of votes, the Chairperson of the Board, if any, shall have a second or casting vote. The continuing directors may act notwithstanding any vacancy in the Board; but, if and so long as their number is reduced below the quorum fixed by the Act for a meeting of the Board, the continuing directors or director may act for the purpose of increasing the number of directors to that fixed for the quorum, or of summoning a general meeting of the company, but for no other purpose.

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68 (i) If no such Chaiperson is slected, or if at any meeting the Charperson is not present within five minutes after the time appained for hoking the meeting, the directors present may choose one of their number to be Chaiperson of the meeting. (ii) The Board may, subject to the provisions of the Act, delegate any of its powers to committees consisting of such member or members of its body as it threas fit. (iii) The Board may, subject to the provisions of the Act, delegate any of its powers to committees consisting of such member or members of its body as it threas fit. (iii) The Board may, subject to the provisions of the powers so delegated, conform to any regulations the may be imposed on it by the Board. (ii) A committee may related Chaiperson of its meetings. 70 (i) If no such Chaiperson is elected, or if al any meeting the Chairperson is not present within five minutes after the firms appointed for hoking the meeting. (ii) A committee may meet and adjourn as it thrinks fit. (i) A committee may meet and adjourn as it thrinks fit. 71 (ii) Coustions arising at any meeting of a committee thereod or by any preson acting as a director, the not disclose arising at any meeting as directing as adversation. 72 72 The Board or if any preson acting as a director, any any difter the members of the group of the member of the group of them were disqualified. 73 Board or if a committee thereof, for the time being artifted to recove notice of a member of the Board or committee thereof or by any preson acting as threasing. 74 Chief Executi	1	78	Subject to the provisions of section 123, the Board may from time to time pay to the members such interim dividends as annear to it to be a stiffed by the profile of the company.
68 (i) If no such Chairperson is elected, or if at any meeting the Chairperson is not present within five minutes after the time appointed for holding the meeting, the directors present may choose one of their number to be Chairperson of the meeting. (ii) The Board may, subject to the provisions of the Act, delegate any of its powers to committees consisting of such members or members of its body as it threas th. (iii) The Board may, subject to the Board. (iii) The Board may, subject to the Board. (iii) The Board may, subject to the Board. (iii) A committee so formed shall, in the exercise of the powers so delegated, conform to any regulations the may be ingoed on it by the Board. (iii) A committee may elect a Chairperson of its meetings. 70 (ii) A committee may elect a Chairperson of its meeting. (iii) A committee may meet and adjourn as it thinks fit. 71 (i) Constitute any meeting of a committee shall be determined by a majority of votes of the members to its may be appointed for holding the meeting. 72 (i) A committee may meeting of a committee there was some delect in the appointment of any or meeting of a committee there was some delect in the appointment of any or meeting of a committee there was some delect in the appointment of any or meeting and was qualified to a committee there or a committee there and adjourn any subject or a committee there was some delect in the appointment of any or meeting the Chairperson at the meeting. 72 73 Board or a committee there theappointe to reason hold bean duy appoint and was quali		17	The company in general meeting may declare dividends, but no dividend shall exceed the amount recommended by the Board.
68 (i) If no such Chairperson is elected, or if at any meeting the Chairperson is not present within five minutes after the time appointed for holding the meeting, the directors present may choose one of their number to be Chairperson of the meeting. (ii) The Board may, subject to the provisions of the Act, delegate any of its powers to committees consisting of such members or members of the body as it thinks fit. 69 (ii) The Board may, subject to the Board. (iii) A committee so formed shall, in the exercise of the powers so delegated, conform to any regulations the may be imposed on it by the Board. (iii) A committee may elect a Chairperson of its meetings. 70 (ii) A committee may elect a Chairperson of its meeting. 71 (ii) A committee may elect a Chairperson of its meeting. 72 (iii) A committee may meet and adjourn as it thinks fit. 73 (ii) A committee may meet and adjourn as it thinks fit. 74 (i) Questions arising at any meeting of a committee shall be determined by a majority of votes of the meeting. 73 (ii) A committee may meet and adjourn as it thinks fit. 74 (i) Questions arising at any meeting of a committee shall be determined by a majority of votes of the meeting. 74 (i) Questions arising at any meeting in the Act, a resolution in writing, signed by all the members of the Board or or a committee thereof, for the lime being avointed and was qualified. 74 All act done in any ma			Dividends and Reserve
68 (i) If no such Chairperson is elected, or if at any meeting the Chairperson is not present within five minutes after the time appainted for holding the meeting, the directors present may choose one of their number to be Chairperson of the meeting. (i) The Board may, subject to the provisions of the Act, delegate any of its powers to committees consisting of such member or members of its body as it thinks fit. (ii) An committee so formed shall, in the exercise of the powers so delegated, conform to any regulations the may be imposed on it by the Board. (ii) An committee so formed shall, in the exercise of the powers so delegated, conform to any regulations the may be imposed on it by the Board. (ii) A committee may elect a Chairperson of its meeting. (ii) A committee may meet and adjourn as it thinks fit. (iii) A committee may meeting of a committee shall be determined by a majority of votes of the meeting. (iii) A committee may meeting of a committee shall be determined by a majority of votes of the emethor present, and in case of an equality of votes, the Chairperson shall have a second or casting vote. (iii) A committee may meeting of a committee shall be determined by a majority of votes of the meeting. (ii) A committee may be afterwards discovered that there was some detect in the appointment of any or or more of such directors or of any person acting as a director, save as etherwise axpressity provided in the Act, a resolution in writing, signed by all the members of the Board or o committee thereof that there your any of them Board or committee, duly conveneed and field. 72 Save as etherwise actin temms at an		76	(i) The board shall provide for the sale custody of the seal. (ii) The seal of the company shall not be affixed to any instrument except by the authority of a resolution of the Board or of a committee of the Board authorised by it in that behalt, and except in the presence of at least two directors and of the secretary or such other person as the Board may appoint for the purpose; and those two directors and the secretary or other person aforesaid shall sign every instrument to which the seal of the company is so affixed in their presence.
68 (i) If no such Chairperson is elected, or if at any meeting the Chairperson is not present within five minutes after the time appainted for holding the meeting, the directors present may choose one of their number to be Chairperson of the meeting. (i) The Board may, subject to the provisions of the Act, delegate any of its powers to committees consisting of such member or members of its body as it thinks fit. (ii) Any committee so formed shall, in the exercise of the powers so delegated, conform to any regulations the may be imposed on it by the Board. (ii) An committee so formed shall, in the exercise of the powers so delegated, conform to any regulations the may be imposed on it by the Board. (ii) A committee may elect a Chairperson of its meeting. (iii) A committee may meet and adjourn as it thinks fit. (ii) A committee may meet and adjourn as it thinks fit. 71 (i) Coustions arising at any meeting of a committee shall be determined by a majority of votes of the meeting. (ii) A committee may meet and adjourn as it thinks fit. 71 (i) Coustions arising at any meeting of the Eard or of a committee shall be determined by a majority of votes of the emethe present, and in case of an equality of votes, the Chairperson shall have a second or casting vote. 72 All acts done in any meeting of the Eard or of a committee thered or by any of them persent data as director. 73 Source of such directors or of any person acting as alrector, save as cherevice advised or reacting was charling as a director. 73 <			The Seal
68 (i) If no such Chairperson is elected, or if at any meeting the Chairperson is not present within five minutes after the time appointed for holding the meeting, the directors present may choose one of their number to be Chairperson of the meeting. 0 (ii) The Board may, subject to the provisions of the Act, delegate any of its powers to committees consisting of such member or members of its body as it thinks fit. 69 (ii) The Board may, subject to the provisions of the Act, delegate any of its powers to committees consisting of such member or members of its body as it thinks fit. 69 (ii) An committee so formed shall, in the exercise of the powers so delegated, conform to any regulations the may be imposed on it by the Board. 10 (i) A committee so formed shall, in the exercise of the powers present may choose one of their members lob Chairperson of the meeting. 70 (ii) If no such Chairperson is elected, or if at any meeting the Chairperson is not present within five minutes after the time appointed for holding the meeting, the members present may choose one of their members lob Chairperson of the meeting. 71 (i) A committee may meet and adjourn as it thinks fit. 71 (i) Clussitions arising at any meeting of a committee shall be determined by a majority of votes of the member or more of such directors or of any person acting as adrestor, shu notwithstanding that it may be afterwards discovered that there was some delect in the appointment of arry or or more of such directors or of any person acting as adressid, or that they or any of the members of the Board or or a committee thereof, for the time being entitled to receive notice o		75	A provision of the Act or these regulations requiring or authorising a thing to be done by or to a director and chief executive officer, manager, company secretary or chief financial officer shall not be satisfied by its being done by or to the same person acting both as director and as, or in place of, chief executive officer, manager, company secretary or chief financial officer.
68 (ii) If no such Chairperson is elected, or if at any meeting the Chairperson is not present within five minutes after the time appointed for holding the meeting, the directors present may choose one of their number to be Chairperson of the meeting. 1 (i) The Board may, subject to the provisions of the Act, delegate any of its powers to committees consisting of such members or members of its body as it thinks fit. 69 (ii) Any committee so formed shall, in the exercise of the powers so delegated, conform to any regulations the may be imposed on it by the Board. 10 (ii) A committee may elect a Chairperson of its meetings. 70 (ii) If no such Chairperson is elected, or if at any meeting the Chairperson is not present within five minutes after the time appointed for holding the meeting. 70 (ii) If no such Chairperson is elected, or if at any meeting the Chairperson is not present within five minutes after the time appointed for holding the meeting. 71 (i) A committee may meet and adjourn as it thinks fit. 71 (ii) Questions arising at any meeting of a committee shall be determined by a majority of voles of the member present, and in case of an equality of voles. the Chairperson shall have a second or casting vole. 72 All acts done in any meeting of the Board or of a committee thareod or by any person acting as a director, shall note at age of an equality of voles. the Chairperson shall have a second or casting vole. 72 73 All acts done in any meeting of the Board or of a committee thareod or by any person acting as a direc		74	 (i) A chief executive officer, manager, company secretary or chief financial officer may be appointed by the Board for such term, at such remuneration and upon such conditions as it may thinks fit; and any chief executive officer, manager, company secretary or chief financial officer so appointed may be removed by means of a resolution of the Board; (ii) A director may be appointed as chief executive officer, manager, company secretary or chief financial officer
68 (ii) If no such Chairperson is elected, or if at any meeting the Chairperson is not present within five minutes after the time appointed for holding the meeting, the directors present may choose one of their number to be Chairperson of the meeting. 1 (i) The Board may, subject to the provisions of the Act, delegate any of its powers to committees consisting of such member or members of its body as it thinks fit. 69 (ii) Any committee so formed shall, in the exercise of the powers so delegated, conform to any regulations th may be imposed on it by the Board. 1 (ii) A committee may elect a Chairperson of its meetings. 70 (ii) If no such Chairperson is elected, or if at any meeting the Chairperson is not present within five minutes after the time appointed for holding the meeting, the members present may choose one of their members to I Chairperson of the meeting. 70 (ii) If no such Chairperson is elected, or if at any meeting the Chairperson is not present within five minutes after the time appointed for holding the meeting, the members present may choose one of their members to I Chairperson of the meeting. 71 (ii) A committee may meet and adjourn as it thinks fit. 71 (ii) A committee may meeting of a committee shall be determined by a majority of votes of the member present, and in case of an equality of votes, the Chairperson shall have a second or casting vote. 72 74 (ii) Cuestions arising at any meeting of a committee thereof or by any person acting as a director, shall have a such directors or of any person acting as alorestid, or that they or any of them were			Chief Executive Officer, Manager, Company Secretary or Chief Financial Officer
68 (ii) If no such Chairperson is elected, or if at any meeting the Chairperson is not present within five minutes after the time appointed for holding the meeting, the directors present may choose one of their number to be Chairperson of the meeting. 0 (i) The Board may, subject to the provisions of the Act, delegate any of its powers to committees consisting of such member or members of its body as it thinks fit. 69 (ii) Any committee so formed shall, in the exercise of the powers so delegated, conform to any regulations th may be imposed on it by the Board. 10 (ii) A committee may elect a Chairperson of its meetings. 70 (ii) If no such Chairperson is elected, or if at any meeting the Chairperson is not present within five minutes after the time appointed for holding the meeting. 11 (ii) A committee may elect a Chairperson of its meetings. 70 (ii) If no such Chairperson is elected, or if at any meeting the Chairperson is not present within five minutes after the time appointed for holding the meeting. 12 (ii) A committee may meet and adjourn as it thinks fit. 71 (ii) A committee may meet and adjourn as it thinks fit. 71 (ii) A committee may meeting of a committee shall be determined by a majority of votes of the member present, and in case of an equality of votes, the Chairperson shall have a second or casting vote. 72 72 All acts done in any meeting of the Board or of a committee thereof or by any person acting as a director, sho notwithstanding that it may be afterwa		73	Save as otherwise expressly provided in the Act, a resolution in writing, signed by all the members of the Board or of a committee thereof, for the time being entitled to receive notice of a meeting of the Board or committee, shall be valid and effective as if it had been passed at a meeting of the Board or committee, duly convened and held.
Image: Set		72	All acts done in any meeting of the Board or of a committee thereof or by any person acting as a director, shal notwithstanding that it may be afterwards discovered that there was some defect in the appointment of any on or more of such directors or of any person acting as aforesaid, or that they or any of them were disqualified, be as valid as if every such director or such person had been duly appointed and was qualified to be a director.
Image: Second		71	(ii) Questions arising at any meeting of a committee shall be determined by a majority of votes of the member present, and in case of an equality of votes, the Chairperson shall have a second or casting vote.
		70	(ii) If no such Chairperson is elected, or if at any meeting the Chairperson is not present within five minutes after the time appointed for holding the meeting, the members present may choose one of their members to be Chairperson of the meeting.
68 (ii) If no such Chairperson is elected, or if at any meeting the Chairperson is not present within five minutes after the time appointed for holding the meeting, the directors present may choose one of their number to be Chairperson of the meeting.		69	 (i) The Board may, subject to the provisions of the Act, delegate any of its powers to committees consisting of such member or members of its body as it thinks fit. (ii) Any committee so formed shall, in the exercise of the powers so delegated, conform to any regulations that may be imposed on it by the Board. (ii) A committee so formed shall, or the exercise of the powers so delegated, conform to any regulations that may be imposed on it by the Board.
the second state and the secon		68	(ii) If no such Chairperson is elected, or if at any meeting the Chairperson is not present within five minutes after the time appointed for holding the meeting, the directors present may choose one of their number to be Chairperson of the meeting.

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			may be declared and paid according to the amounts of the shares.
			may be declared and paid according to the amounts of the shares.
		οIJ	regulation as paid on the share.
			shares during any portion or portions of the period in respect of which the dividend is paid; but if any share is issued on terms providing that it shall rank for dividend as from a particular date such share shall rank for dividend accordingly.
		81	The Board may deduct from any dividend payable to any member all sums of money, if any, presently payable by him to the company on account of calls or otherwise in relation to the shares of the company.
		82	(i) Any dividend, interest or other monies payable in cash in respect of shares may be paid by cheque or warrant sent through the post directed to the registered address of the holder or, in the case of joint holders, to the registered address of that one of the joint holders who is first named on the register of members, or to such person and to such address as the holder or joint holders may in writing direct.
			(ii) Every such cheque or warrant shall be made payable to the order of the person to whom it is sent.
		83	Any one of two or more joint holders of a share may give effective receipts for any dividends, bonuses or other monies payable in respect of such share.
		84	Notice of any dividend that may have been declared shall be given to the persons entitled to share therein in the manner mentioned in the Act.
		85	No dividend shall bear interest against the company.
			Accounts
		86	(i) The Board shall from time to time determine whether and to what extent and at what times and places and under what conditions or regulations, the accounts and books of the company, or any of them, shall be open to the inspection of members not being directors.
			(ii) No member (not being a director) shall have any right of inspecting any account or book or document of the company except as conferred by law or authorised by the Board or by the company in general meeting.
			Winding up
П	П		Subject to the provisions of Chapter XX of the Act and rules made thereunder
-			(i) If the company shall be wound up, the liquidator may, with the sanction of a special resolution of the company and any other sanction required by the Act, divide amongst the members, in specie or kind, the whole or any part of the assets of the company, whether they shall consist of property of the same kind or not.
		87	(ii) For the purpose aforesaid, the liquidator may set such value as he deems fair upon any property to be divided as aforesaid and may determine how such division shall be carried out as between the members or different classes of members.
			(iii) The liquidator may, with the like sanction, vest the whole or any part of such assets in trustees upon such
			trusts for the benefit of the contributories if he considers necessary, but so that no member shall be compelled to accept any shares or other securities whereon there is any liability.

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	88	Every officer of the company shall be indemnified out of the assets of the company against any liability incurred by him in defending any proceedings, whether civil or criminal, in which judgment is given in his favour or in which he is acquitted or in which relief is granted to him by the court or the Tribunal.
\boxtimes		Others
	89	 The Company shall have power to issue shares and other securities including debentures, on a private placement and/or preferential basis in accordance with the provisions of section 42 and/or section 62 of the companies act, 2013/or any other provisions of the act as may be applicable. Subject to the provisions of section 62 and 63, the company shall have power to issue any securities of the company by way of Right issue or to employees under a scheme of employees stock option or preferential issue or bonus issue under the discretion of the board in accordance with the applicable Act or Rules.

Page 11 of 13

Name, Address, De Vikas Singla S/o Sh. Sector-7, Karnal-1320 Avnish Bharchwaj S/o	scription and Occupation Virbhan Singla R/o 1436, 101 (Haryana) (Business)	DIN/PAN/Passpor Number 05272573	t Plac		D5C	Dated
Vikas Singla 5/o Sh. Sector-7, Karnal-1320 Avnish Bhardwaj 5/o	Virbhan Singla R/o 1436, 101 (Haryana) (Business)	05272573	KARNAL			
Avnish Bhardwaj S/o						27/12/2018
(Haryana) (Business)	Sh. Om Parkash Bhardwaj R/ v Prem Nagar Karnal-132001	03387915	KARNAL			27/12/2018
Anup Bhardwaj S/o Sl House No. 615 New (Haryana) (Business)	n. Om Parkash Bhardwaj R/o Prem Nagar Kamal-132001	03387902	KARNAL			27/12/2018
Abhishek Gupta S/o 5 1724, Sector-7, Urbar (Business)	ih. Gopal Kishore Gupta R/o 1 Estate, Kamal-132001 (Hr)	02237104	KARNAL			27/12/2018
Abhimanyu Dawar S/ No. 7, Nyaypuri, Ne 132001 (Hr) (Business	o Sh. Gulshan Dewar R/o H. ar Karan Stadium, Karnal-)	CIOPD8023E	KARNAL			27/12/2018
2			<i>a</i>			
		gned Berore we	and the start	1		
Name	Address, Description	and Occupation	DIN/PAN/ Passport Number/ Membership Number	Place	DSC	Dated
A. ROHIT	SCO-28, Sec-14, Opp. Karnal-132001 (Haryar	Krishne Mandir, 5 na)	514495	KARNAL		27/12/2018
	(Haryana) (Business) Anup Bhardwaj 5/o Si House No. 615 New (Haryana) (Business) Abhishek Gupta S/o S 1724, Sector-7, Urbar (Business) Abhimanyu Dawar S/ No. 7, Nyaypuri, Ne 132001 (Hr) (Business Name Name	(Haryana) (Business) Anup Bhardwaj S/o Sh. Om Parkash Bhardwaj R/o House No. 615 New Prem Nagar Karnal-132001 (Haryana) (Business) Abhishek Gupta S/o Sh. Gopal Kishore Gupta R/o 1724, Sector-7, Urban Estate, Karnal-132001 (Hr) (Business) Abhimanyu Dawar S/o Sh. Gulshan Dawar R/o H. No. 7, Nyaypuri, Near Karan Stadium, Karnal- 132001 (Hr) (Business) S Name Address, Description S ROHIT A ROHIT SCO-28, Sec-14, Opp. Karnal-132001 (Haryar	(Haryana) (Business) Anup Bhardwaj S/o Sh. Om Parkash Bhardwaj R/o 03387902 House No. 615 New Prem Nagar Karnal-132001 (Haryana) (Business) Abhishek Gupta S/o Sh. Gopal Kishore Gupta R/o 02237104 1724, Sector-7, Urban Estate, Karnal-132001 (Hr) (Business) Abhimanyu Dawar S/o Sh. Gulshan Dawar R/o H. CIOPD8023E No. 7, Nyaypuri, Near Karan Stadium, Karnal- 132001 (Hr) (Business) Signed Before Me Name Address, Description and Occupation Karnal-132001 (Haryana)	(Haryana) (Business) KARNAL Anup Bhardwaj S/o Sh. Om Parkash Bhardwaj R/o 03387902 KARNAL House No. 615 New Prem Nagar Karnal-132001 KARNAL (Haryana) (Business) Abbishek Gupta S/o Sh. Gopal Kishore Gupta R/o 02237104 KARNAL Abbishek Gupta S/o Sh. Gopal Kishore Gupta R/o 02237104 KARNAL 1724, Sector-7, Urban Estate, Karnal-132001 (Hr) KARNAL (Business) Rohimanyu Dawar S/o Sh. Gulshan Dawar R/o H. CIOPD8023E No. 7, Nyaypuri, Near Karan Stadium, Karnal- KARNAL 132001 (Hr) (Business) Signed Before Me DIN/PAN/ Passport Number/ Membership Number Name Address, Description and Occupation Number/ Membership Number A SCO-28, Sec-14, Opp. Krishma Mandir, 514495 St4495	(Haryana) (Business) KARENAL Anup Bhardwaj S/o Sh. Om Parkash Bhardwaj R/o 03387902 KARENAL House No. 615 New Prem Nagar Karnal-132001 KARENAL (Haryana) (Business) Abhishek Gupta S/o Sh. Gopal Kishore Gupta R/o 02237104 KARENAL 724, Sector-7, Urban Estate, Karnal-132001 (Hr) KARENAL KARENAL (Business) Business) KARENAL KARENAL No. 7, Nyaypuri, Near Karan Stadium, Karnal- CIOPD8023E KARENAL Image: Stadium, Karnal- Signed Before Me Signed Before Me Image: Stadium and Occupation Image: Place Number/ Place Number Name Address, Description and Occupation Number/ Place Nembership Number Place Nembership Number A ROHIT SCO-28, Sec-14, Opp. Krishme Mendir, 514495 KARNAL KARNAL	(Haryana) (Business) KARNAL Anup Bhardwaj S/o Sh. Om Parkash Bhardwaj R/o 03387902 KARNAL House No. 615 New Prem Nagar Karnal-132001 KARNAL (Haryana) (Business) (Haryana) (Business) Abhishek Gupta S/o Sh. Gopal Kishore Gupta R/o 02237104 KARNAL 1724, Sector-7, Urban Estate, Karnal-132001 (Hr) KARNAL (Business) CIOPD8023E KARNAL Abhimanyu Dawar S/o Sh. Gulshan Dawar R/o H. CIOPD8023E KARNAL No. 7, Nyaypuri, Near Karan Stadium, Karnal- Signed Before Me Signed Before Me DIN/PAN/ Passport Number/ Name Address, Description and Occupation Number/ Number/ Number Place DSC A SCO-28, Sec-14, Opp. Krishne Mandir, 514495 KARNAL

Checkform

Modify

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9.5 Identification of Land: Consent Letter

TO WHOMSOEVER IT MAY CONCERN

THIS IS TO CERTIFY THAT I SIMLA RANI W/O SUMER CHAND R/O, KARNAL IS THE OWNER OF 2 ACRES AND 14.5 MARLA LAND IN MAINMATI VILLAGE, KARNAL. M/S VAPIK SOUTIONS PVT. LTD (AYURVEDIC CLUSTER) THROUGH THEIR DIRECTOR MR. ANUP BHARDWAI APPROACHED ME AND I HAVE GIVEN CONSENT TO SELL ONE ACRE LAND FOR RS 1 CRORE TO M/S VAPIK SOLUTIONS PVT. LTD. (AYURVEDIC CLUSTER) ON THE APPROVAL OF THE CLUSTER.

THE ABOVE SAID CONSENT IS VALID FOR 4 MONTHS

Sink Raw 26/07/2019

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9.6 Building Layout:





9.7 Building Estimate

	NO.:- EM/08/2019	
	COST ESTIMATE FOR NEW CO	Dated: 21-08-20
-	<u>K</u>	ABNAL
0	WNER: - M/s VAPIK SOLUTION PVT 1 TD /	
TC	TAL AMOUNT:- ₹ 2,59.00.000 00	(Onder Ayurverdic CFC Cluster)
P/	RT-1 THE SPECIFICATIONS OF	
1.	No. of Floors and height of each #	ION
	a constangia di each tioor	Euilding Height 12'-0"
2.	Plinth area floor-wise (Processed)	Shed Height 32:-0"
	(Proposed)	Total Building = 9746.00 Soft. Shed = 15,000.00 Soft
3	Type of construction-load bearing	1 Load bearing wells
4.	R.C.C frame/ Steel frames Walls	· Lood bearing wans
5.	Doors & Windows	 Brick masonry in cement sand mortar.
6.	Flooring	: Wooden Door & Window
7	Finishing	: Simple Flooring
		 Cement plastering with superior quality interior and exterior grade painting on Walts & cellings.
В.	Roofing and terracing	: R.C.C Slab roofing & Shed Roof
э.	General	: P.V.C concealed conduit type of
		Wiring with superior quality electrical

All types of civil work starting from foundation to finishing level will have to be carried out. The estimated Cost of the above construct ion as per he above specifications comes out as under-

Total covered area of All floor 9746.0 Sqft @ ₹ 1180/- Per sqft. = ₹ 1,15,00,280.00 Total covered area of Shed 15,000.0 Sqft @ ₹ 767/- Per sqft. = ₹ 1,15,05,000.00 Boundary wall 10,000.0 Sqft @ ₹ 200/- Per sqft. =₹ 20,00,000.00 Add L/s for Earth Filling Road <u>5 =</u> 9,00,000.00 2,59,05,200.00 Total Say = ₹ 2,59,00,000.00

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THE BREAK UP OF COST , breakup of the estimated cost at different stages of structure on various items of works aved will be as under.-

Sr. No	Description	Percentage Factor on	1	Amount
1 .1	Foundation & Plinth i.e. up to D.P.C level.	7.5 %	2	19.42.500.00
2.	Masonry work up to door level of ground floor including cost of the chowkats	8.0 %	2	20.72.000 or
3	Up to roof level on casting of roof slab of Ground floor	13.0.%		
4.	Masonry work up to door level of first floor including cost of the chowkats	25%		33,67,000.00
5,	Up to roof level on casting of roof slab of first floor	50%		12 05 000 00
6	Plastering on walls & R.C.C surfaces	5.0 %		12,95,000.00
7.	Flooring	17.5 %	2	45,32,500.00
: ⁸	Joinery/ Wood work	15.0 %	,	38,85,000.00
9.	Painting / Finishing and installation of sanitary & electrical fittings	19.0 %	*	49,21,000.00
10.	Miscellaneous	- 7.5%	,	19,42,500.00
-	Total	100.00%	7	2,59,00,000.00

Part IV, REMARKS

Participation of the

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- Andreas - Andreas

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4 9 The owners have informed the portion of the building that is to be constructed.

The cost of the construction has been calculated as per the prevailing market rates of the construction having the above specifications.

Dated : 21-08-2019

Riace : Karnal .

Ar. Dalip Khurana Ar. DALIP KHURANA Piezo, Secon 12, UE, KARNA

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Quotation of Foundation for Boiler:





CHAHAL BOILERS PVT. LTD.

Chahat Boilers Pvt. Ltd., Panauri Road, Gharaunda - 122114 Karsai (Haryana)	- D
I mail chahalbeiters280gnail.com Web: www.ohahalbollers.net	P





	TECHNO-COMMER	CIAL OFFER		
Ref No.	CBPL-2562	Bated	09/11/2010	
M/s	VAPIK SOLUTION PVT LTD KARNAL	Kind	Mr. GULSHAN	

SUBJECT: Techno-Commercial Offer for <u>3TPH</u> Agro Waste Fired Boiler. Dear Sir,

With reference to the above subject, we thank you very much for giving us an opportunity to submit our Techno commercial offer for your Boiler requirement. We thank you for evincing interest in CBPL.

ANNEXURE -II SCOPE OF CBPL

DESCRIPTION	QTY.
BOILER SHELL	4 COLUMNS(RCC)
WATER WALL MEMBRANE PANEL	4 COLUMNS(RCC)
APH	4 COLUMNS(RCC)
CYCLONE	4 COLUMNS(RCC)
CHIMNEY	APDR
ID AND FD FAN	APDR
NUT AND BOLTS FOR FOUNDATIOS	APDR

APDR*- AS PER DESIGN REQUIREMENT

Chahai Boilors Prt. Ltd., Panauri Road, Gharaunda - 132114- Karnal (Haryana)	BB
E mail: shahalkollers280gmail.com Wet: www.shahalboilers.net	MB



CHAHAL BOILERS PVT. LTD. PANAURI ROAD, GHARAUNDA

ANNEXURE-V PRICE

We are quoting for foundation of 3 tph boiler

Total cost as mentioned in Annexure-1	7.00	Laces/each
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Payment Terms:

For Supply of Equipment:

- 30% advance against commercially clear & confirmed order.
- 30% within 30 days
- 40% against Commissionig.

General terms and Conditions:

GST as applicable against relevant sales tax form IS INCLUDED IN PRICE .

For CHAHAL BOILERS PVT. LTD.

ACCEPTED BY CLIENT

Mob. +919315681860, +919354655552

Chahai Boilers Pvt. Ltd., Panauri Road, Gharaunda – 132114 Karnal (Haryana) Phone: +01-03156-61860/ +91-03546-55552 E mail: ohahalboilers28@gnail.com Wob: www.chahalboilers.net

Quotation for Borewell:

(1) 0184-2353220, 4013220 (H O.) 0184-4073220 (H O.) 02543-65225 (Mpo.) GSTIN No. : 06AAGFK8833R1ZK 滚 E-mail: Establishedware 1007 (Surnet com ASH HARDWARE MERCHANTS KAIL Deats to Electric Motors, Monoblock Pump, Tubewell, Approved Flumbers (Writer & Sewar Connection) H.O. : Kenjpura Road, Near Karan Gate, KARNAL Submersible Pump Hand Pump Parts, Pipes, & Pipes Fittings, . B.O. : Subzi Mandi Road, Near Kalander Sahib, KARSKAL Sanitary ware, Tiles & Water Tanks Custation & stimeri. Dated. Ref. No. Vapik Solution Res cord. Kormal d. 300to luc Pike 92 10 D.T. C 249 port 73501-0' & 1 Sumersitle Paul 15M.P. 3900000 @ 39000/r e 2500/r 3, Sumersile Pennel Ason 4500-1 Jali Filter + filter nove. e 4sodr 4, 9600-96001 Summille Cable . 0 18800 -5 1800/r 0 Flowed & Rend / Rotain & 4000/r NRV / NILLE & 1500/r La Jean Champer of & 3000/r Symernike Renny and Castange Benny and And Castange Benny and And Castange Benny and And Castange Benny and And Castange B loning 3" 9 2 × 11020 6 ydoore 1500-,2, 30000-D, AP, 35001 194700 10, Scanned with CamScanner

Quotation for Electricity Fittings:

GST NO. 06AAAFG9040Q1Z3				DATE 6-11-2019	
Mobile No. 9896155575					
G.M. ELECTRONICS, Railwa	y Road Karnal	QUTATION COM. PERFORMA INVOICE			
	VAPIK SO	LUTION Pvt Ltd	Karnal		
ITEM		OUT	DATE	AMOUNT	
DVC DIIDE IGI 1"		200057	5.5	110	
PVC REND1"		2000F1	0.0	2440	
PVC J BOX1"		200FL	0.0	2990 5290	
		50000	22	1500	
WIRE 1MM		308010	725	21750	
WBE 15MM		50 ROLL	1087	54350	
WIRE 2.5MM		30 8011	1745	52350	
WIRE 4MM		10 BOLL	2605	26050	
WIRE 6MM		6 BOLL	3950	23700	
VIRE 10MM		4 8011	6895	27580	
WIRE 16 MM		4 BOLL	11045	44180	
ED LIGHT 12W		100PC	450	45000	
ED LIGHT 6W		150PC	250	37500	
ED BETAN20W		50 PC	275	13750	
NOTOR STATER MK1		15 PC	1790	26850	
MOTOR STATER MU2 STAF	DELTA	5 PC	11315	56575	
COPPER CABEL 2.5MM*3CC)RE	200MTR	66.3	13260	
COPPER CABEL 4 MM*3CO	RE	200MTR	103	20600	
COPPER CABEL 6MM*3COF	E	300MTR	148	44400	
COPPER CABEL 10 MM*3CC	RE	200MTR	255	51000	
TP MCB 10A		15 PC	578	8670	
rp MCB 16A		10 PC	578	5780	
FP MCB 32A		10 PC	578	5780	
TP MCB 63A		5 PC	1100	5500	
MCB BOX 4POLE		40 PC	128	5120	
MCCB 160A4POLE		1 PC	10015	10015	
CONTRACTOR MNX70		4 PC	5645	22580	
STATER ETP PLANT		5 PC	1890	9450	

				4.00	
		LAB AREA			
PVC PIPE1"		15IOFT	55	825	
BAND 1"		120PC	85	1020	
JB0XT"		120PC	22	2640	
WIRE1MM		20 BOLL	725	14500	
WIRE 1.5MM		30 BOLL	1087	32610	
WIRE 2.5MM		15 PC	1745	26175	
WIRE 4MM		10 ROLL	2605	26050	
MCB SP6T032A		24 PC	120	2880	
MCB BOX 6WAY TPND	Ð	1PC	2007	2907	
SWITCH 10A	22.	200PC	35	7000	
SUCKET 10A		50 PC	83	4150	
SUCKET 16A		20 PC	115	2300	
REGULATOR		20 PC	390	7800	
SHEET 12M		10 PC	160	1600	
SHEET 6M		40PC	110	4400	
SHEET 4M		50 PC	75	3750	
SWITCHIGA		20 PC	90	1990	
		MAIN			
PVC CABEL 185MM*3.5	CORE	150MTR	776	116400	
MAIN SWITCH 308A	0.000.00	1PC	12999	12999	
BUSBAR400A	CHARGE IN	1PC	8390	\$390	
CHANGE OVER SWITC	HIDEA	1PC	19987	19987	
MCCB400A		1PC	8789	8789	
	TOTAL			950000	
		ALL RATE GST PAID			
		PAYMENT AGIANST DELIVERY	_		
		TOTAL AMOUNT NINE LAKH FIFTY T	HOUSAND ONLY		
Quotation for Labor Charges for Electricity Fitting:

M. 198963-55410 -मार यहां हा प्रकार की किनलों फिल्टिंग की जाती है। जनरेटर ज टेम्बरेरी लड्डेट किसाये पर भी मिलते हैं। माम्ब उच्चाना जिल्ला कारनाल RHIT UNI IT WART FRAME ST S. JU.7 Guatitions To Vapik Socutions Put liter Karinal Eastweith Fitting Charges Shed 15000 Syres alos- 150000-Office Brock 6500 SaFerol- 65000 P. 310000-Term condition. JST. Actuals 751. WARE Company - monther a

Quotation for Electricity Panels:

		and a second second second		100
	THEEL	ECTR	ICAL HU	<u>1R</u>
	SCO 94, First	Floor, Mi	ugal Canal, Karr	sal
	M. No: +91-9999438	020, elec	tricalhub.knl@)	gmail.com
-	ng/11/2019			
Ref No	r: TEH/VS/19-20/129			
Kind.	Atta.: Mr.Gulshan			
Sub: 0	Quotation for Main LT Panel with Po	wer factor	panel	
Projes	t: - Industrial/Commercial			
Dear 8	iir.			
This h	as reference to your enquiry & discussions of We are pleased to submit our comps	ais you had nitive offer	with us regarding ; as per details below	your requirement of v for your
This h L.T.Pai consid	as reference to your enquiry & discussions. sel, We are pleased to submit our comps eration:	us you had nitive offer	with us regarding ; as per details below	your requirement of v for your
This h LT Par consid	as reference to your enquiry & discussionsel. We are pleased to submit our componenties:	tis you had nitive offer	with us regarding) as per details below	your requirement of a for your
This h L.T. Par consid	as reference to your enquiry & discussioned. We are pleased to submit our componentiant: SUMMAR	ns you had nitive offer	with us regarding y as per details below STS	your requirement of w for your
This h LT Pa consid	as reference to your enquiry & discussionel. We are pleased to submit our compseration:	nis you had nitive offer ty OF COS	with us regarding ; as per details below STS Unit Price	Your requirement of w for your
This h L.T.Pa consid	ns reference to your enquiry & discussions of the set. We are pleased to submit our components:	ets you had nitive offer ty OF COS	with us regarding) as per details below STS Unit Price	Your requirement of v for your Total Amount
This h L.T.Pa consid	as seference to your enquiry & discussions. set. We are pleased to submit our compsonation: SUMMAR Description Main LT Panel with Power Factor	ers you had nitive offer ev of Cos	with us regarding) as per details below STS Unit Price	Total Amount
This h L.T.P.a consid	as reference to your enquiry & discussionset. We are pleased to submit our componentiant: SUMMAR Description Main LT Panel with Power Factor punel	ens you had mitive offer ty OF COS QTY 1	with us regarding y as per densits below STS Unit Price 09,34,279/-	Total Amount 199.34,27%-

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For any further clarification please feel free to contact us,

Thanks & Regards

The Electrical Hub Roban Mehta Mob: 9999438020 Email: electricalhub Anl@gmail.com

Head Office /factory Address: D-33,5AI KUNJ,New Palam Vihar ,Gurgaon -122001. Branch Office - 5CO -94, First Floor, Mugal Canal, Kamal-132001.

COMMERCIAL TERMS AND CONDITION

Prices:

The above prices are on ex-works basis inclusive of Packing & Forwarding charges, but exclusive of taxes, dutias and any other levies.

Taxes & Duties:

GST is INCLUDED in the above mentioned prices

Inland Freight, Insurance & Unloading of material at site:

Unloading is Exclusive and Freight is included in the above mentioned prices

Insurance and Unloading of material at site is excluded from our scope.

Woodes Crate Packing: If required shall be charged extra @ 2% on the basic value agreed



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Since it's entirely a tailor made project hence no order is subject to cancellation whether in part or full unless requested by purchaser and

accepted in writing by the seller. In the event of any cancellation, purchaser shall pay the seller, 35% of the order value as cancellation charges.

Services:

The Warranty against the switchgear is two year which will be provided by the manufacturing Company where as the two year of manpower service for any fault or repair will be provided by Surva Automation and Control.

Validity:

2 Weeks from the date of this offer

We sincerely bust you will find our offer in line with your requirements



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9.8 Machinery Quotations



Reg. Office: Anant Building, Railway Road, Saharanpur - 247001 (U.P.) India Works : C 24-25, UPSIDC, Pilihani Industrial Area, Ambaia Road, Saharanpur-247232 (U.P.) INDIA Mobie : +91-7351111444, +91-9557399977 E-mail : info@ahakumbhariangg.com, Web : www.shakumbhariangg.com

DATE: 05/11/19

REF NO. SEW/Q-193/18-19

To

Kind Attn: M/s VAPIK Solutions Pvt. Ltd

SUB: Quotation forPlant & Machinery

Dear Sir,

Kindly refer to your enquiry regarding Manufacturing & supply of **Plant &Machinery**. We are pleased to quote our lowest possible rates for the above said. Thanking you & assuring you of our best services.

Sincerely

For SHAKUMBHARI ENGINEERING WORKS

AakashMehra

(Auth. Signatory)

Mob +91- 7351111444, +91-7417867779

Subject to Saharanpur Jurisdiction only

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Reg. Office: Anant Building, Railway Road, Saharanpur - 247001 (U.P.) India Works : C 24-25, UPSIDC, Pilkhani Industrial Area, Ambela Road, Saharanpur-247232 (U.P.) INDIA Mobile : +91-7351111444, +91-9557399977 E-mail : inlo@shakumbhariengg.com, Web : www.shakumbhariengg.com

PERFORMA INVOICE

A.	Plant & Machinery	Qty.	Rs. In lakhs
	First Phase Grinding & Crushing of Herbs	10.000	3015
1	HERBS WASHING MACHINE (1000 KG/HOUR)	1	3.8
2	RM Grinder (Pre Crusher) (500 kg/ HOUR)	1	9.2
3	RM Grinder (Pre Crusher) (200 kg/ HOUR)	1	6.8
	Extraction		
1	Rotary Extractor-6kl	2	40
2	Vertical Extractor-6kl	3	40
3	Vertical Extractor-4ki	4	50
4	Vertical Extractor-2ki	4	30
5	Open Extractor-3kl	2	10
6	Open Extractor-2kl	2	9
	Concentration (Distillation)		
1	Reactor 5 kl-	2	28
2	Reactor 4 kl-	2	25
3	Reactor 3 kl-	3	30
4	Reactor 2ld-	2	16
5	Cellendrie Unit	2	25
6	DISTILLATION VESSEL-5KL	1	11
7	DISTILLATION VESSEL-2KL	2	11
	Accessories for Extractors & Reactors		
1	Condenser 20 Sqm	4	17
2	Condenser 16 Sam	6	21
3	Condenser 12 Sqm	6	19
4	Condenser 10 Sam	6	17
5	Vacuum Receivers-200L	20	23
6	Vacuum Receivers-500L	2	4.5
7	Transfer Pumps SS 316-3HP	10	6
	Sedimentation & Day Storage	1. 10	0.000
1	Settling Tank 2 Kl	4	12.6
2	Settling Tank 1 Kl	2	4.2
3	Day Storage Tank-4 Kl	2	11.2
	Filteration		



Reg. Office: Anant Building, Railway Road, Saharanpur - 247001 (U.P.) India Works : C 24-25, UPSIDC, Pilkhani Industrial Area, Ambela Road, Saharanpur-247232 (U.P.) INDIA Mobile : +91-7351111444, +91-9557399977 E-mail : inlo@shakumbhariengg.com, Web : www.shakumbhariengg.com

1	Centrifuge 35"	1	8.4
2	Centrifuge 24"	1	7.4
3	Filter Press-14"x10 Plates	1	3.8
4	Filter Press-18"x15 Plates	1	6.5
	Drying Section		
1	Rotary Vacuum Padle Dryer-1000L	1	22
2	Tray Dryer-48 Trays	1	7
3	Spray Dryer-100kg/hr WITH STRUCTURE	1	40
4	NUTCH FILTERS(SOO LITRE)	1	1.4
5	NUTCH FILTERS(750 LITRE)	1	1.9
20	Solvent Storage Section	1.1	10.00
1	Horizontal Underground Storage Tank-10K	2	12.5
2	Horizontal Underground Storage Tank-5KI	1	5
	Final Processing		
1	Ribbon Blender-200 kg	1	4.5
2	Double Cone Blender-1000 kg	1	В
3	Multi Mill-3 HP	1	2
4	Vibro Sifter-915 MM	1	1.4
5	Vibro Sifter-750 MM	1	1.1
6	Impact Pulveriser-100 kg/hr GMP	1	10.5
	Utilities		
1	Steam Boiler with Chimney 3TPH	1	48
2	RO Plant (2000LPH)	1	8.5
3	ETP Plant		13
4	Coling Tower(250 TR)	1	6.5
5	Pipelines for Utilities		30
6	Vacuum Pump 10HP	2	4.2
7	PILOT PLANT FOR R&D(2*500 L)		32.5
8	DG SET 125.KV	2	15
	Other General Items	1.00	24.232
1	Dharam Kanta		8
2	Batch Coding Machine		3
3	Powder Pouch Packing Machine		5
4	Liquid Pouch Packing Machine		4.5
5	Weigh Balance 500 kg		0,4



Reg. Office: Anant Building, Railway Road, Saharanpur - 247001 (U.P.) India Works : C 24-25, UPSIDC, Pilkhani Industrial Area, Ambela Road, Saharanpur-247232 (U.P.) INDIA Mobile : +91-7351111444, +91-9557399977 E-mail : info@shakumbhariengg.com, Web : www.shakumbhariengg.com

6	Weigh Balance 300 kg		0.4
7	Weigh Balance 100 kg	2	0.2
8	SS/MS RACKS	50	9
D.	FURNITURE AND OTHERS	qty	0.00
1	Furniture		7
2	Erection & Comissioning		6
3	FIRE FIGHT EQUIPMENTS		8
4	RODENT KILLERS		2
	τοται		\$34.9

TERMS:

1. GST: 18% included

- 2. Payment: 50% Advance, 50% against Performa Invoice prior to delivery.
- Allpayments by D/D or Chequeonly.
- 3. Freight extra as actual.
- 4. Packing & Forwarding Charges 1% extra
- 5. Quotation valid for 07 Days only.
- 6. Delivery: within 12-14 weeks.
- 7. All Inspection if required will be made at our Factory.

Sincerely

For SHAKUMBHARI ENGINEERING WORKS



AakashMehra

(Auth. Signatory)

Mob. 7351111444, +91-7417867779

Subject to Saharanpur Jurisdiction only

Mob.: 094162-19434, 098961-77570

Dated : 05/09/2019



GSTIN: 06AFTPC8323E1ZI

RAJAN SCIENTIFIC TRADERS (A House of Lab Chemicals & Glass Ware) Auth. Distributor : Borceil, CDH, Hach USA, Eutech, Mettler Toledo (Ranin) Micropipette, Weighing Balances, Water Testing Equipments, Surgical Items & E.I. Equipments Mfrs. of : All Type Scientific Instruments

QUATATION

To The Vapik Solutions Pvt Ltd 7, Nyay Puri Karnal Dear Siz

Sub: Offer for LABORATORY WITH INSTRUMENTS

St. No.	Description	Std. Size/ Capacity	Unit Price IN RS
1	UV Spectrophotometer Double Beam	Double Beam	500000
2	Polarimeter		41000
3	Refractometer		23000
4	TLC Kit		27000
5	Hot air Owen	18" x 18" x 18"	37000
6	Muffle Furnace 1200"	9x4x4	32000
7	Round bottom Flask	2Ltr	680
8	Heating Mental	2Ltr	3700
9	Heating Mental	500ml	2900
10	Digital Water Bath	12 Holes	23000
11	Melting Point Apparatus		17000
12	Vortex Shaker	Borosil	20000
13	Dessicator Borosil	250mm	15000

14	Mono Quartz Water Distillation Unit	2.5Ltr/Hr Borcsil	46500
15	Laboratory Glass Dryer	Borosil	27000
16	Microprocessor Conductivity TDS meter		23000
17	T.D.S. Meter PEN type		4000
. 18	Alcohol meter		5000
19	Test Sieve Standard Size	40 mesh	2200
20	Test Sieve Standard Size	60 mesh	2200
21	Test Sieve Standard Size	80 mesh	2300
22	Magnetic Sterrir with Hot Plate		10000
23	T.L.C. Plate (Merck)		5000
24	Whatman Filter Paper	Superior	650
25	Ordinary Filter Paper		350
26	Thermo Meter	0 to 100°	450
27	Thermo Meter	0 to 300"	490
28	Incubator Bacteriological SS Chamber Inside	18° x 18 ° x 18° / 95 Ltr	35000
29	BOD Incubator	6 cuft/200Ltr	55000
30	Microscope Bionucalar		23000
31	Autoclave Vertical	50Ltr	32000
32	Vaccum Oven	24Ltr/300 x 300	28000
33	Stability Chamber	200-250Ltr	370000
34	Lab Glass ware		225000
35	Lab Furniture with Centre Table and PVC Sink Fitting with electric fitting also		275000
36	Lab Chemicals		225000
37	TRACE GC 1110 Main Frame 230V	1	870000
- 38	HPLC with Autosampler and UV Detector	1	2075000

TOTAL

5,084,420.00

Terms & Conditions:

- GST@18% extra as applicable on above quoted item
 NET Rate quoted above

F.O.R at Department

Warranty 12 Months

Shop No. 25, Globe Market, Near Meera Ghati Chowk, KARNAL - 132 001 (Haryana) Ph. 0184-4032375 e-mail : rajanscientifictraders@gmail.com, rajanscientifictraders@yahoo.com **Quotation of Mini-Workshop for maintenance:**



Trems & Condition-

ADVANCE :- 1/3* value of order in advance at the time by placing firm order & balance against delivery at work QUAILTY -- Excellent as regard to finish , workmanship & accuracy

- Frice is net /Ex Work at Batala

- inspection by your authorized represtative at our work prior to dispetch

- subject to Bataln jurisdictions only Works at F. D.P. Batala workshop

Quotation of SS Platforms:

TECH FAB VENTURES

Designers ,Consultants,Fabricators 50A, 52A ,Chabra Complex , Ambala Road, Saharanpur

Mail Id:- techfabventures@gmail.com GSTIN :- 09AAPFT0433MIZQ

REF NO. TFV/Q-26/19-20

DATE: 10/08/19

То

Kind Attn: M/s VAPIK Solutions Pvt. Ltd

Mail id : vapiksar@gmail.com

SUB: Quotation for SS PLATFORM

Dear Sir,

Kindly refer to your enquiry regarding Manufacturing & supply of 'SS PLATFORM'. We are pleased to quote our lowest possible rates for the above said.

Thanking you & assuring you of our best services.

Sincerely

FOR TECH FAB VENTURES

Rajesh Khanuja

(Auth. Signatory)

Mob. +91- 9897672544

Subject to Saharanpur Jurisdiction only

TECH FAB VENTURES

Designers , Consultants, Fabricators

50A, 52A ,Chabra Complex , Ambala Road, Saharanpur Mail Id:- techfabventures@gmail.com GSTIN :- 09AAPFT0433MIZQ

S. No.	Des	Rate	
1.	MS/ SS 304 Working Platform For Reactors/ Extractors / Phyto unit/ Condensers /dryers SIZE : • 10000 X 6000 X 4500 MM TOP HT. (10.0 M X 6M X 4.5 M)- 02 no. • 6500 x 4000x4500 mm top ht. (6.5 M x 3M x 4.5 M) - 0 1 no. • 6000 x 3000 x 4000 mm top ht. (6M x 3 M x 4 M) - 01 no.		
	SPECIFICATIONS:-		
	Coloumn- MS	1048 200	
	Base Plate for Coloumn	: 400x350x20 mm th	
	Top Plate	300x300x16	
	Distance Between Coloumn	: 2000 mm	
	Top Beam- MS	0.00000000	
	Top Beam	: ISMB250	
	•	With suitable reinforcements	
	 Platform Top-SS304 		
	 Top Sheet for platform 	: 5 mm th., Chequered Plate	
	 Support For Chequered Plate 	: Rect. Pipe 100x50x2 Th.	
	 Railing – SS304 		
	 Height of Railing 	: 1000 mm	
	 Railing Coloumn 	: 50Nb 55304 Pipe	
	 Distance Between Coloumn 	: 1500-2000mm	
	Hand Rail	: 40 Nb SS Pipe	
	Middle Pipe	: 40 Nb	
	 Toe Guard 	: 100 mm Ht., 50 mm from Bottom,	

QUOTATION

TECH FAB VENTURES

Designers , Consultants, Fabricators

50A, 52A ,Chabra Complex , Ambala Road, Saharanpur Mail Id:- techfabventures@gmail.com GSTIN :- 09AAPFT0433MIZQ

100		made of Flat 100mmx 6 th.				
•	 Railing to be provided all around platform including ladders except sides facing factory wall 					
٠	Stair Case –SS304	1222 22230 22				
	No. of Staircase	: At least 2-3 Nos. as per layout				
	Angle of Staircase	: 50-60° for easy climb				
•						
	Width of Stair case	: 1500 mm				
•	Width of Foot Step	: 250 mm				
•	Flight	; 175 - 200 mm max.				
•	Foot Step	: Chequered plate 5 mm th.				
•	Side plate for stair case	: 55 Flat 200W x 12 th.				
•	Side Railing	: 1000 mm high with Toe Guard				
		Will be provided on both sides				
	The Entire Platform	will be Pre fabricated in facory in pieces,				
Arg	on Welded , Polished and the	en transported and Erected/Assembled/				
wel	ded on site as per requirem	ent . All MS Parts will be coated with 2				
coa	ts of Red Oxide primer and to	wo coats of rust resistant paint				

TECH FAB VENTURES

Designers ,Consultants,Fabricators

50A, 52A ,Chabra Complex , Ambala Road, Saharanpur Mail Id:- techfabventures@gmail.com GSTIN :- 09AAPFT0433MIZQ

QUOTATION FOR PLATOFRM

S.NO.	ITEM DESCRIPTION	RATE	GST @18%	AMOUNT
1	MS/ SS 304 PLATFORMS	21,80,000-00	3,92,400-,00	25,72,400-00
2	ERECTION/COMMISSIONING AT SITE	1,00,000-00	18,000-00	1,18,000-00
ŝ l			TOTAL	26,90,400-00

TERMS AND CONDITIONS :-

1. Payment : 50% Advance, 50% against Performa Invoice prior to

delivery. All payments by D/D or Cheque only.

2. Freight : Extra as actual.

3. Packing & Forwarding Charges : 1% extra

4. Quotation : Valid for 15 Days only.

5. Delivery : within 30-40 DAYS.

6. All Inspection, if required will be made at our Factory.

Sincerely

For TECH FAB VENTURES

RAJESH KHANUJA

(Auth. Signatory)

Mob. +91-9897672544

Quotation for Computers:

THE STEW CHARACTERNERS OF SEALCHINE EVALUATION TRADICAL STRATEGY AND A STRATEGY A STRATEGY AND A STRATEGY PHILED THAT MATTAGENT BERNO SIMIL Nopik Solution-PVT The. (Anyweredue ofe) Kamal gue shondowar 28 agrinousan Subjet Gristation Such following are states Deletigeten Votters 420 03 = & 34600 1,03800 Is julite up 1005 PSC 01 et 16000 16,000 2 hunter HP 1005 PSC 01 et 16000 16,000 1 19,800 Bank Name: HUFC BANK, Kunjpera Road, Karnal A/C. No : 50200023549719, IFSC : HDFC 0000195 Authorsteed Distantioners For Bart your Oullas ALL LEP D-Link Mercury & Maya tran be 10

Quotation for Office Aluminum Panels:

AT THE BE BER PERMON PICE C **Bansal Aluminiums** All Sinds of Glass Aluminium Doors, Woolcows, Feasing Elevation, Halling, Toffee Glass Fitting & Folls Cosing Shop No. 354, Char Chaman, Near Sanatan Dharm Mander, KABNAL-132 001 (HBL) - 5 J# J+R militar Unpath Solution Par 20 styre la from P Acres Roll Brint havedang of francy Alexander Day, wondowed Calib- Citty with all Take Alimon within clean com, some about hand many A all Type of Hardwing Taken Housedall, Margar & Town Port of Feeting System 12000 Note - Payment Terms SASA. 617 18.1. Sty pourse C. Tital was an Dalivy 11 1 After Capito Justo Romer

Quotation of Lift for first floor for material:



Ref. MEP1/10/10/2019/NI/9070

Contact Mr. Sudhir Ph. +919817713002 E-mail snles@miltonelevator.com Date 10.0.2019 Subject: New installation Goods lift Address: - Mr. Gulshan Dawar Karnal, Haryana

Dear Sir,

We are thankful for the courtexy extended to the undersigned during his visit to our premises. We are pleased to submit our agreement for the supply, installation, testing and commissioning of lift at your above mentioned site. We are undertake this opportunity to introduce ourselves as one of the fastest growing AN ISO 9001:2015 certified elevator company in India with latest highly advanced global technology of micro controller based Control Panel with Serial Communication System "developed indigenously". We have equipped unmatched manufacturing and fechnological infrastructure including testing arrangements with computer controlled machines, which ensure the reliability of the equipment installed by us.

Thanking you and assuring you of our best services at all the times.

Payment schedule

Our price for new installation of Lift at the Site: Mr. Guluban Dawar Karnal, Haryana as per terms & condition is as given

Sr. No.	Туре	Basic Contract Value (Rs)	No. of Lift	Total Contract Value (Rs)	
1.	Goods Lift	10,05,000.00	01	10,05,000.00	

(GST 18% including as applicable)

Payment Term

- > 30% on Confirmation of order.
- > 50% after material reached at site
- ➤ 10 % on Erection Work Completion
- ➤ 10% on Handover Lift

For Milton Elevator Pvt Ltd

For Mr. Gulshan Dewar

Authorised Signatory

Authorised Signatory

Page 1 of 6

the technical specifications	of the offered which bevalor us onder."	
Туре	Goods Lift with Geared Machine	_
Quantity	01 No.	
Capacity	1000 Kgs	
Speed	0.30 m/s	
Type of Machine	Torin Drive / Montanari Italy / Geared Motor with Braking	
Stops & Openings	02 stops & 02 openings	
Floor Designation	<u>6,1</u>	
Controls	Push button control, selective collective	
Car Design Modal	Mild Steel	
Car Side Panel	Mild Steel	
False Ceiling	Mild Steel with Cross Flow Fan and LED Lighting Fixture	
Car Entrance	Collapsible Channel Gate	
Landing Entrance	Collapsible Channel Gate	
Cat Size	mm wide x mm deep x mm high (approx.)	
Door Opening	About mm wide x mm height	
Car Operating Panel	Dot Matrix Scrolling Display with position & Directional Indicator	
Landing Operating Panel	Soft Press with visual LED Call Confirmation	
Rope	13 mm Usha Martin	
Guide Rail	Bonely with Male Female Coupling System	
Elevator Well	2700 mm width x 2400 mm depth	
Machine Room	Above Shaft Headroom	
Elevator Pit Required	1500 mm with water Proofing	
Overhead	4500 mm	
Flooring	Vinyl Flooring	
Signal	Indication of all landings, floor position indicator for all landings	
Special Features	Overload detection and Fireman control switch	_
	Over Speed Governor	
	Button Braile marked, rugged, self illuminated LED number and ring	
	Automatic Car Light and Fan	
	Free service for one year	

For Milton Elevator Pvt Ltd

For Mr. Guishan Dawar

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Page 2 of 6

Quotation of Cargo Lift:

Rama	AAADAP/TADICIDA PATI Authorized David	LE COMP	MARYANA)	B HEW HOLLAHD
h	o safe col	chan Rd 4	¥	DATED
		QUOTATION/ESTIM	ATE	
ij	One New Materia 3630 /	ALL ARRESONDEREDS		Rs.
	Tractice on per supplier by the	nguny including 30117 & OUS	-	7,55,610-00
n	VEAN Code : 8701			/
29	HPA.2			/
				<u>-7,55, 582-0</u>
Sei	en labe	Jiffy Jie notice & shall be preveable	Thermony ng at delivery time o	l okg
Prices	are subject to change without	Interest in state of particular	2	For Patil & Com

9.9 Shareholding Pattern

S.N o	SPV Unit	Total Investment	Investmen t in Land, Building, furniture, fixture	Investmen t in plant & machinery	NAME &contact-no	Turnover	Employme nt	Address	% of Stake	DETAILS OF PRODUCTS
		IN Crores	IN Crores	IN LAKHS		IN LAKHS				
1	COMEX HERBAL PRODUCTS	1.1	1.05	5	Paramjeet Singh 98138-27887	7	8	123, SECTOR-3, HSIIDC, KARNAL- 132001 HARYANA	2	AYURVEDIC TABLETS, CAPSULES, SYRUPS, POWDERS,OILS, ETC
2	XIEON LIFE SCIENCES PRIVATE LIMITED	0.5	0.15	35	Yogesh Singla 92157-14500	900	10	PLOT NO- 171, SECTOR-3, HSIIDC, KARNAL- 132001 HARYANA	7	HERBAL SHAMPOO, SYRUPS, LOTIONS,CREAMS,OILS, ETC
3	REACH PHARMACEUTICA LS PVT. LTD.	0.55	0.45	10	M.K. Chabra 98110-55658	10	5	5456, GALI NO- 9, SHIV COLONY, KARNAL- 132001 HARYANA	3	AYURVEDIC TABLETS, CAPSULES, SYRUPS, POWDERS,OILS, ETC
4	AYUSHI HERBS	0.43	0.35	8	Virender Narwal 98124-04465	7	4	VPO NARUKHERI, KARNAL- 132001 HARYANA	4	AYURVEDIC CAPSULES, SYRUPS, POWDERS,OILS, ETC

5	UTTAM HERBALS	0.37	0.3	7	Gaurav Batra 99966-10090	15	5	187- SECTOR-3, HSIIDC, KARNAL- 132001 HARYANA	4	AYURVEDIC TABLETS, CAPSULES, SYRUPS, POWDERS,OINTMENTS,JUICES,OILS , ETC
6	SUKHIJA AYURVEDIC PHARMACY	2.3	2.2	10	R.P. Sukhija 94160-30652	35	9	159, SECTOR-3, HSIIDC, KARNAL- 132001 HARYANA	4	AYURVEDIC TABLETS, CAPSULES, SYRUPS, POWDERS,OILS, ETC
7	CURE QUICK HERBALS			18	Harish Chawla 99966-69000	147	8	PLOT NO- 14, SECTOR-3, HSIIDC KARNAL- 132001 HARYANA	2	AYURVEDIC TABLETS, CAPSULES, SYRUPS, POWDERS,OILS, ETC
8	GOURJA FOODS AND AGRO PRODUCTS	1.4	1.2	20	Anshul Garg 95180-00039	170	9	PLOT NO-1, AGARSEN INDUSTRIAL AREA, OPP. KAMBOPURA, KARNAL- 132001 HARYANA	4	AYURVEDIC TABLETS, POWDERS,OILS, ETC
9	ANANT HERBAL PRODUCTS	0.71	0.5	21	Sunita Dawar 9416030641	45	10	VILLAGE UCHANI, G.T. ROAD KARNAL- 132001 HARYANA	6	AYURVEDIC TABLETS, CAPSULES, SYRUPS, POWDERS,OINTMENTS,OILS, ETC

10	STALLION ENTERPRISES	0.5	0.25	25	Vir Bhan 89306-52786	100	10	208-L, SECTOR- 3, HSIIDC, KARNAL- 132001 HARYANA	7	AYURVEDIC TABLETS, CAPSULES, SYRUPS, POWDERS,OILS, ETC
11	DAKSH PHARMACEUTICA LS	0.28	0.23	5	Raj Kumar 70153-76485	10	6	VILL. SAIDPURA, NEAR WATER TANK, KARNAL- 132001 HARYANA	4	AYURVEDIC CAPSULES, SYRUPS, POWDERS,OILS, ETC
12	VET HEALTH PHARMA	0.4	0.35	5	Vandana Gulati 94160-47167	40	5	RAJIV PURAM, PHOOSGARH ROAD, KARNAL- 132001 HARYANA	4	AYURVEDIC TABLETS, SYRUPS, POWDERS,OILS, ETC
13	SHUKTI FOOD AND PHARMA CO.	0.6	0.3	30	J.R.P. Arora 78760-75000	25	10	GAUSHALA ROAD, KARNAL- 132001 HARYANA	4	AYURVEDIC CAPSULES, SYRUPS, POWDERS,OILS, ETC
14	BINEXO PHARMACEUTICA LS	0.5	0.2	30	Avnish Bhardwaj90341 -06000	65	8	PLOT NO-148, SECTOR-3, HSIIDC, KARNAL- 132001 HARYANA	7	AYURVEDIC TABLETS, CAPSULES, SYRUPS, POWDERS,OILS,SHAMPOO,OINTME NT, ETC

15	NORTH INDIA LIFESCIENCES PVT LTD	7.7	7.5	20	Anup Bhardwaj 89503-11000	600	8	PLOT NO-241, SECTOR-3, HSIIDC, KARNAL- 132001 HARYANA	7	AYURVEDIC TABLETS, CAPSULES, SYRUPS, POWDERS,OILS,SHAMPOO,OINTME NT, ETC
16	AVIKAA HERBS	1.3	1.1	20	Sankalp Arora 90342-00455	20	8	163-H, SECTOR- -3, HSIID, KARNAL- 132001 HARYANA	3	AYURVEDIC SYRUPS, POWDERS,OILS, ETC
17	SWISS BIOHERBALS	0.7	0.55	15	Rajni Vaid 92155-32377	15	8	SWISS BIOHERBALS, 1ST FLOOR, VILLAGE KACHWA, DISTT. KARNAL- 132001 HARYANA	2	AYURVEDIC TABLETS, CAPSULES, SYRUPS, POWDERS,OILS, ETC
18	K.R LABORATORY	0.8	0.55	25	Rajeev Kumar 92542-11500	50	9	ANSAL ROAD, VILL. KAMBOPURA, KARNAL	4	AYURVEDIC TABLETS, CAPSULES, SYRUPS, POWDERS,OILS, ETC
19	PMG HEALTHCARE	0.75	0.55	20	Munish Garg 9991090930	80	10	VILL. KAMBOPURA, KARNAL	3	AYURVEDIC CAPSULES, SYRUPS, POWDERS,OILS, ETC

20	SARTHAK AYUSH AND FOODS	0.55	0.35	20	Gaurav Vats 9215291007	80	9	198-A, SECTOR- 3, KARNAL	3	AYURVEDIC TABLETS, CAPSULES, SYRUPS, POWDERS,OILS, ETC
21	LIBERTY DRUGS GRAM UDYOG SAMITI	0.32	0.22	10	Kamal Muteraja 85290-19695	20	8	VIKAS NAGAR, PHOOSGARH ROAD KARNAL	3	AYURVEDIC TABLETS, CAPSULES, SYRUPS, POWDERS,OILS, ETC
22	EXOD HERBALS			10	Himanshu Chawla 98125- 70000	20	8	RAWAR ROAD, KARNAL	4	AYURVEDIC CAPSULES, SYRUPS, POWDERS,OILS, ETC
23	SAHI PHARMA INDIA PVT. LIMITED	0.1	0.01	9	Javed Hussain 80778-26778	5	6	VILLAGE UCHANI, NEAR ZEE LABORATORIES , G.T. ROAD KARNAL- 132001 HARYANA	2	AYURVEDIC CAPSULES, SYRUPS, POWDERS,OILS, ETC
24	ONIKA PHARMACEUTICA LS	0.4	0.2	20	G.K. Gupta 98967-11666	100	10	208-C, BLOCK- III, SECTOR-3, HSIIDC, KARNAL- 132001	7	HERBAL BOLUSES, SYRUPS, POWDERS,OILS, ETC

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