DEPARTMENT OF AGRICULTURE
Directorate of Horticulture
(GOVERNMENT OF ODISHA)

PROJECT INFORMATION MEMORANDUM

TERMINAL MARKET COMPLEX, SAMBALPUR, ODISHA

Prepared By

IL&FS Cluster Development Initiative Limited

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Background and Introduction to the Project Information Memorandum

In 2007, the Directorate of Horticulture, Government of Odisha, decided to set up three Terminal Market Complexes in the state under the Terminal Market Complex Scheme of the National Horticulture Mission. The locations selected for setting up these markets included Cuttack, Berhampur and Sambalpur. Subsequently, Directorate of Horticulture, Odisha engaged National Institute of Agriculture Marketing (NIAM), Rajasthan to prepare a Detailed Project Report for the proposed Terminal Market Complex at Sambalpur. NIAM submitted the DPR in 2008. However, the Private Entrepreneur (PE) selection process could not be completed.

Govt. of India came out with revised Guidelines for Setting up of Terminal Market Complex in 2009. Consequently, the state started afresh the process of selection of Financial Institution (FI) and IL&FS Cluster Development Initiative Limited (IL&FS Clusters) was selected as the FI who would be responsible for executing the bid management process (including preparation of the Project Information Memorandum, Global Tender Notice, Request for Qualification and Request for Proposal documents) leading to the selection of the PE who would ultimately execute the project.

This Project Information Memorandum (PIM) has been prepared by IL&FS Clusters keeping in mind the PIM preparation framework laid down in Annexure 2 of the *Operational Guidelines for Setting up a Terminal Market Complex 2009.* This PIM document elaborates on aspects such as site and location details, production and arrivals of horticultural produce in the catchment area, mandatory infrastructure required for setting up the TMC, a tentative project cost and revenue projections along with cost and operating assumptions. The objective of preparing a comprehensive PIM is to inform prospective investors about the nature and scope of investment that the project envisages and answer the queries they may have regarding project implementation. It may be highlighted here that the project cost and subsequent revenue projections have been arrived at keeping in mind two scenarios- one in which land cost is assumed at circle rates and the other in which land cost is assumed at market rates proposed by Directorate of Horticulture. It may ultimately be decided by the State Government as to which scenario it finds more suitable for attracting investors to execute this project.

The proposed facilities, tentative project cost and subsequent revenue projections are in no way binding on the private entrepreneur who would be selected to execute the project and the private entrepreneur will have the liberty to make his own business plan in accordance with the Operational Guidelines.

To prepare the PIM, data and information has been collected from both primary and secondary sources. Secondary data for the study was obtained from documents provided by the Odisha Horticulture Development Society, office of the Deputy Director of Horticulture, Sambalpur and various other documents of the National Horticulture Board. Documents released by the Industrial Promotion and Investment Co-operation of Odisha Ltd. from time to time, Operational Guidelines for Setting up a Terminal Market Complex 2009 and the Detailed Project Report prepared by NIAM for Setting up of Terminal Market Project at Sambalpur have also been referred to.

In order to validate the data obtained from the above mentioned secondary sources, the team conducted an extensive two-week field survey of the proposed site and markets/mandis in the catchment area. Some of the places visited and surveyed included Sambalpur and Bargarh. The activities during these visits included interviews and focused group discussions with officials of Horticulture Department at Sambalpur, horticulturalists from various districts, farmers, farmers' clubs, commission agents, food processors, owners of cold chains and various other stakeholders in the marketing system in the catchment areas.

Chapter 1:
Introduction to the Concept of Terminal Markets

1.1 Terminal Market Complex- An Innovative Market Mechanism

The marketing of agricultural produce in the country has been mostly regulated over the years. This regulation has been aimed at achieving a two-fold objective. The first and foremost objective has been to ensure food security for the country's large and growing population. The other important aim of regulation has been to create a mechanism that would help farmers earn remunerative prices for their produce which would in turn encourage them to produce more. Thus, it was aimed at protecting the interests of the farmers who, it was felt, would be deprived of their just returns by traders.

To achieve the said objectives, state governments and union territories enacted Agricultural Produce Marketing Committee Act (APMC), which facilitated setting up of network of physical markets across the country. These markets were aimed at providing easy market access to the farmers and ensure a fair price realization for them in a transparent manner.

Exhibit 1: Picture of an APMC Market

However, over the years it was realized that, ironically, these markets, instead of protecting the interests of farmers, often became restrictive as the farmers became compelled to bring their produce to the market yard and were often at the mercy of traders and commission agents for sale of their produces. The license system for traders and commission agents further made the APMC markets function in a non-transparent manner and led to high marketing costs. As the food retail market makes rapid progress and consumers become more discerning, it has been found that the APMC markets are coming in the way of free market play restricting choices of both the farmers and consumers. It is against this background that National Horticulture Mission came with the concept of Terminal Market Complexes.

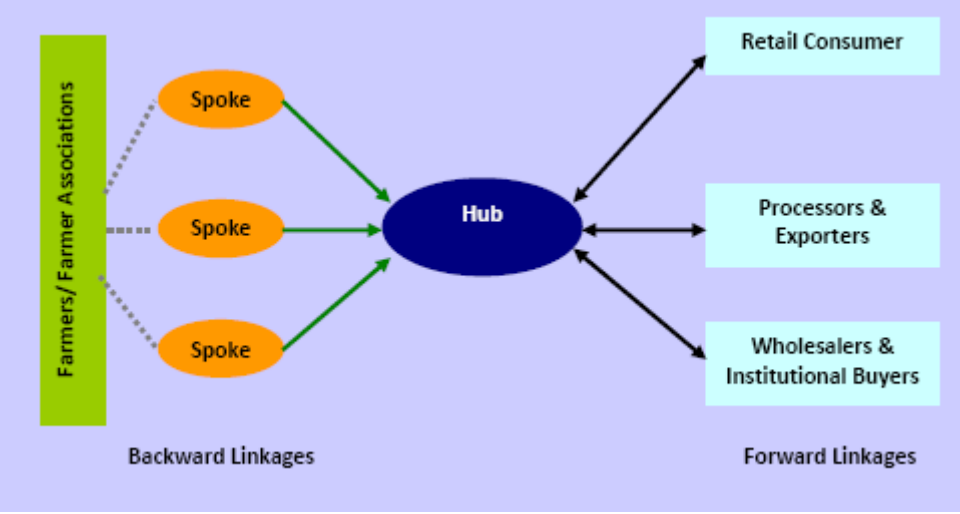
It has been envisaged that the successful implementation of the Terminal Market Scheme may lead to larger price realization for farmers, facilitate larger investment & increased productivity, reduce wastages and create an efficient food distribution network.

India is witnessing high inflation rates of food commodities and supply side inflation happens to be one of the ingredients causing this price rise. Wastages caused due to lack of infrastructure for transportation and storage of agricultural produce is contributing to inflationary pressures. In such a scenario, reforms in the agricultural marketing and distribution mechanism may help in containing food inflation and ensuring food security.

The Concept/Envisaged Model of the Terminal Market Complex

The Terminal Markets (TM) are envisaged to be implemented in a Public Private Partnership (PPP) mode. To make these TM sustainable, the model provides for modern post harvest infrastructure in these markets along with backward linkages. These markets are proposed to operate on a Hub-and-Spoke Format wherein the Terminal Market (the hub) would be linked to a number of Collection Centres (CC) (the spokes). The Terminal Markets are envisaged to establish backward linkages with farmers through the collection centres and forward linkages through wholesalers, distribution centres, processing units and exporters. Collection Centres in the villages are supposed to integrate producers and retailers, processing units and exporters into the market system. An electronic auction system in these markets is to be provided for transparency in price fixation and competition. The exhibit below shows the concept of the Terminal Market Complex.

Exhibit 2: Concept of Terminal Market Complex

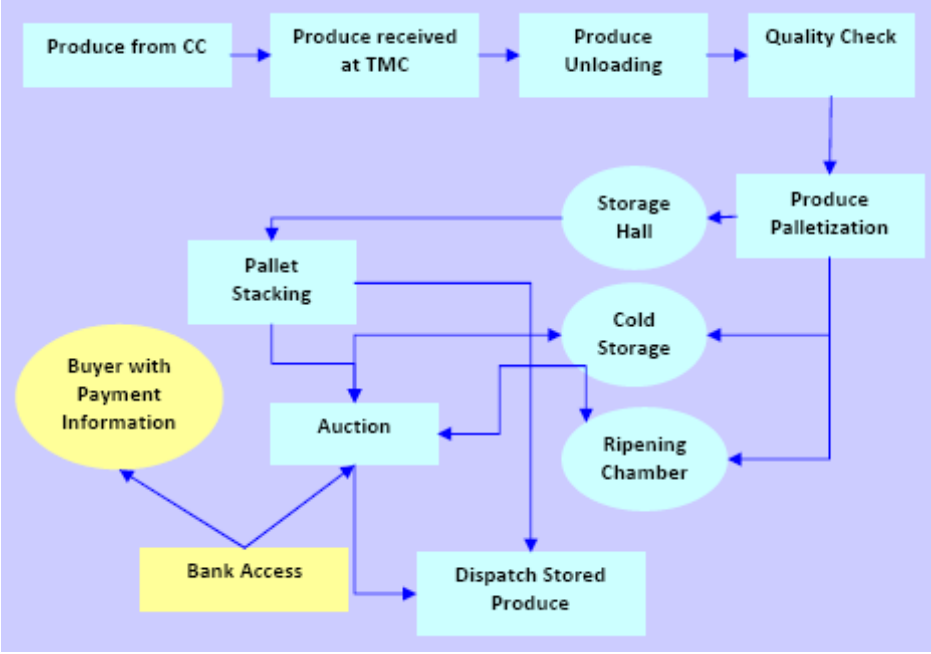


The Terminal Markets are to be built, owned and operated by the selected Private Enterprise (PE) through Competitive Bidding process. PE may be individuals, Group

of Farmers/Growers/Consumers, Partnership/ Proprietary firms, Companies, Marketing Boards, Corporations, Co-operatives, Producer Organizations and Self Help Groups. It could also be a consortium of entrepreneurs from, inter-alia, agri-business, cold chain, logistics, warehousing, agri-infrastructure and related background.

The Terminal Markets can market all perishable commodities including fruits, vegetables, flowers, aromatics, herbs, milk, dairy, poultry, meat, fish and marine products etc. However, the annual throughput for perishable horticultural products such as fruits, vegetables, flowers, medicinal plants, aromatics, herbs etc handled by TMC should not be less than 70% of the throughput capacity of the TMC. Though Non-perishables can also be handled in the TMC, its volume with other perishable products (other than horticultural produce) shall not exceed 30% of throughput capacity of TMC. The Exhibit below shows the envisaged flow of produce in a Terminal Market Complex.

Exhibit 3: Flow of Produce in a Terminal Market Complex



To incentivize the Private Entrepreneur, a floor subsidy of 25% of the respective project cost is offered to private entrepreneurs to bid for setting up Terminal Market Complex. In the competitive bidding, all bidders will be eligible to quote bid subsidy from 25% up to 40% of their respective project cost with maximum subsidy of INR 50 crore. For the purpose of calculation of subsidy, the unit cost ceiling shall be Rs 150.00 crore. The Project will be awarded to the successful bidder quoting least subsidy amount in INR. PE can charge 2% as aggregation and auction charges for first three years. Afterwards it can fix the suitable charges based on commercial viability. Also, the PE has been given full freedom to fix the service charges based on

commercial and viability considerations for ancillary services provided in the market. However, PE has to meet the service levels as prescribed in the Operation Management Development Agreement (OMDA) for the Terminal Markets.

1.2 Potential for a Terminal Market in Odisha

Odisha- A Preferred Investment Destination

In the last few years, Odisha has emerged as a preferred investment destination in the country. In the year 2009, Odisha was second top Domestic Investment destination in the country, only behind Gujarat, according to an analysis of ASSOCHAM Investment Meter (AIM) Study on Corporate Investments. Odisha's share was 12.6 percent in total investment in the country. During 2009, it received investment proposal worth INR 200,846 crore. In 2009, the state was also adjudged as '3rd best place to do business in India' as per a World Bank Study. Being able to attract investment has been a significant achievement for a state which was not considered favorably by investors till a few years ago. The project implementation rate in the state has also been growing steadily and has increased from 34 per cent in 2005 to 45 per cent in 2010 as per a study conducted by Industrial Promotion and Investment Co-operation of Odisha Ltd.

"Odisha has now achieved the Indian national average in terms of the time spent by management in dealing with regulations and government authorities"- **United Nations Industrial Development Organization Survey**

Odisha- Inherent Advantages in Agriculture

Despite fast growing tertiary and secondary sectors, Odisha's economy is still more agriculture-dependent when compared to many other Indian states. The state's agriculture sector offers employment and sustenance to more than 60% of total work-force.

The National Commission on Farmers has concluded that Eastern India (which includes Odisha) presents uncommon opportunities for becoming another "fertile crescent" even as the present fertile zone comprising Punjab, Haryana and Western UP has reached a state of economic and ecological distress.

Even as the country faces the prospects of stagnation in agriculture, Odisha is being talked about as a destination of immense potential due to several inherent advantages.

As per a study conducted by Industrial Promotion and Investment Co-operation of Odisha Ltd., net area sown and forest area jointly account for more than 73 per cent of total land in Odisha. The State has a cultivated area of 61.80 lakh hectares out of which 29.14 lakh hectares is high land, 17.55 lakh hectares is medium land and 15.11 lakh hectares is low land. The Area Sown More than Once (ASMO) has been on a rise in the state and hence an overall cropped area of approximately 122 lakh hectares offers huge investment potential to the food processing and agro industry. In addition, Odisha possesses 10 agro-climatic zones and 8 major soil types. The cropping intensity for Odisha has grown over the years from 157 per cent in 2005-06 to 163 per cent in 2009-10. The state also presents immense scope for the growth of organic food industry since historically; the use of fertilizers and pesticides by farmers has been low in the state as compared to other states.

As regards production, Odisha boasts of a wide variety of crops, vegetables, fruits and flowers. The agro-climatic conditions in the state are suited to growth of perennial fruit crops like mango, litchi, guava, orange, lime and annual fruit crops like banana, pineapple and papaya; vegetables like brinjal, cabbage among others and spices like turmeric. The low-temperature hilly areas offer ideal conditions for growing off-season vegetables. Floriculture is also expanding. Major vegetables grown in the state include brinjal, tomato, cole crops, pea, okra and potato. Major flowers grown in the state include marigold, rose and gladiolus. The production and variety has increased manifold since implementation of various schemes under the National Horticulture Mission. The details of various kinds of produce in the State are given in Chapter 3.

To summarize, increasing total area under irrigation and enhanced usage of fertilizers and pesticides coupled with providing better know-how, technology and financing channels to farmers and implementation of several other initiatives under the National Horticulture Mission augurs well for the development of agriculture and allied activities in Odisha.

Odisha- Agriculture a Thrust Sector for the Government

To realize the large potential the agriculture and allied services sector stands to offer, the government has initiated policy reforms and a range of interventions are under implementation. A few prominent ones are highlighted as follows:

- *Agriculture Policy 2008:* State Government brought out a "New Agricultural Policy" to enhance productivity of major crops and for shifting the emphasis from "subsistence" agriculture to profitable commercial agriculture.
- The Government has a Farm Mechanization Programme that aims at promoting easy availability of the appropriate farm machines.

- Odisha Agro Industries Corporation (OAIC) assists in marketing various agricultural inputs and farm machineries through a network at district and sub-district levels.

- Development and promotion of markets and complexes like **Krushak Bazaars** (aim to train farmers, create primary rural markets, and launch awareness campaigns), **Terminal Market Complexes (TMCs)** near Cuttack, Sambalpur & Berhampur under the PPP mode to provide a fair share of consumer price to the producer as well as ensure high quality and hygiene of the produce, **Market yards** under the Revised Long Term Action Plan (RLTAP) scheme for Koraput, Bolangir and Kalahandi (KBK) districts (aim at facilitating the selling and procurement of crop products, and ensure farmers can get a reasonable price for their produce) and **Agri-export Zones (AEZs)** proposed to be established in PPP mode.

- Promotion of strengthening marketing channels of agricultural produce through bodies like **Odisha State Marketing Federation (OSMF)** which functions as the apex organization with 51 regional cooperative marketing societies that undertake several marketing initiatives, **Regulated Market Committees** which facilitate backward and forward market integration of agricultural produce and formation of **Rural Producers' Organizations** for specific commodities to enable them to have appropriate market linkages through Federations.

- Odisha has several other organizations such as Odisha State Oilseeds Growers' Federation and large-sized Agricultural Multi-purpose Societies (LAMPS) to cater to needs to different stakeholders in agricultural marketing.

- To promote private participation in the sector, agro-processing sector has been identified as one of the thrust sectors in Industrial Policy Resolution (IPR) 2007 provided the project cost is a minimum of Rs. 25 crore and creates direct employment generation for at least 100 people. The fiscal incentives for such projects range from stamp duty, VAT and entry tax exemption to interest and investment subsidies.

Odisha- An Expanding Consumption Basket

On the demand side, too, Odisha, with a population of approximately 41.9 million (Source: Census of India 2011- Provisional Population Totals), growing at about 14 percent between 2001 and 2011, is a large and growing market for food products.

As per the data of Directorate of Economics & Statistics, Odisha, the state's per capita income in 2010-11 stood at Rs. 36,000. The per capita incomes in the state have increased at a CAGR of 14.1 percent in the last decade (Source: CMIE).

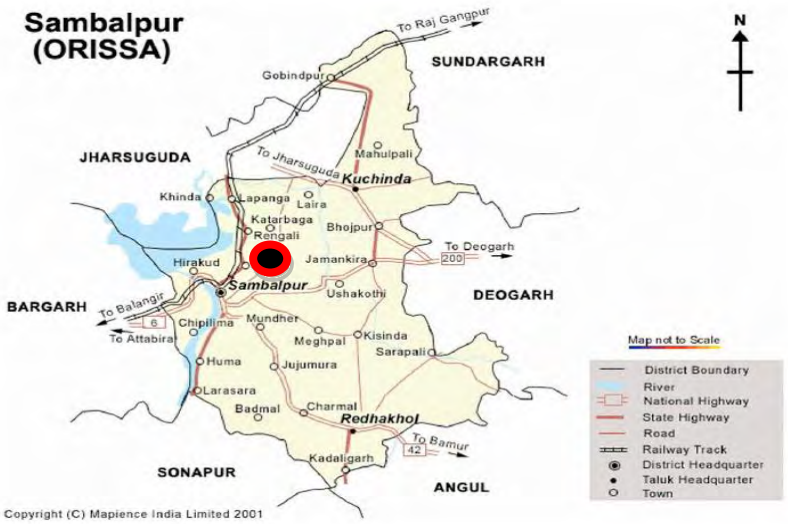
In view of growing population and per capita incomes, Odisha offers an opportunity as an expanding consumption basket since expenditure on food products contributes approximately 55 percent share in the total expenditure incurred by the people of the state.

Odisha has also enacted reforms to the APMC Act by including in the Act provisioning of activities like direct marketing, contract farming and markets in Private/Co-op Sector. Implementation of these provisions, along with setting up of the proposed terminal market, has the potential of reforming the agricultural marketing scenario in the state.

1.3 The Proposed Terminal Market- Nildunguri, Sambalpur

The Odisha Horticulture Development Society has under its possession 60 acres of land in Nildunguri, District Sambalpur to set up a Terminal Market Complex. The Site is situated on National Highway 6, sixteen kilometers from Sambalpur town.

Exhibit 4: The Location of the TMC



The proposed terminal market has been designed so as to address the infrastructure issues in the existing agri-produce value chain and aims to establish strong and seamless supply chain mechanism under a hub-and-spoke model. The objective of the proposed market is to enable farmers realize a higher value for their produce.

The proposed terminal market would stand to offer significant opportunity for private investors, as it is strategically located and well connected by rail and road. The

Terminal Market has a strong catchment area in the radius of 100 km and is the hub of horticulture crop production in the state. Also, due to sound connectivity through national highways and rail network and located close to Sambalpur, it offers an easy access to various consumption markets both in and outside the state. The location of terminal market is shown in the picture below.

Details of the location, site, connectivity, availability of water & power and other details have been elaborated in a later chapter.

Chapter 2:
Introduction to the State

2.1 Introduction to Odisha

Location/Geography

Odisha has an area of approximately 156,000 sq km which makes it the ninth largest state in India by area. It is surrounded by the Bay of Bengal on the East, Jharkhand and West Bengal on the North, Chhattisgarh on the West and Andhra Pradesh on the South. Twelve rivers flow across the state with Mahanadi, Brahmani and Indirabati being a few prominent ones.

Connectivity

The total road network in the state is estimated at 2.38 lakh km including approximately 3700 km of National Highway and 28,300 km of state highway. National Highways 5, 6, 23 and 43 pass through the state. The state has approximately 2300 km of railway routes including 91 km of narrow gauge. The state government is also in the process of building a 50-mile long sub-urban rail link from Chandikhol to Khurdha on National Highway 5, which is one of the busiest roads in India. The government has also proposed to introduce Mass Rapid Transit System (MRTS). Biju Patnaik Airport in Bhubaneshwar is the only airport in the state. In addition, there are 13 airstrips and 16 helipads at several places in the state. The Airport Authority of India (AAI) plans to add another domestic terminal to the existing airport in Bhubaneswar, with an investment of Rs.1600.0 million. Moreover, AAI is looking to modernize and expand the Jharsuguda airport. Odisha is a principal maritime state and has a coastline of 480 km. Paradeep Port located in Odisha is one of the 12 major ports in the country.

Administration

The capital of the state is Bhubaneshwar and other prominent cities are Cuttack, Rourkela, Berhampur, Sambalpur, Baleshwar and Puri. Administratively, the state is divided into 30 districts, 58 sub-divisions, 316 tahasils, 314 blocks, 6234 gram panchayats and 51,349 villages.

Exhibit 5: Road Network in Odisha

Demographics

According to the 2011 census of India, the total population of Odisha is 41,947,358, of which 21,201,678 (50.54%) are male and 20,745,680 (49.46%) are female, or 978 females per 1000 males. This represents a 13.97% increase over the population in 2001. The population density is 269 per sq km. The literacy rate is 73.45% with 82.4% of males and 64.36% of females being literate, according to 2011 census. Data on life expectancy shows that the life expectancy in the state is over 62 years, higher than the national average.

Economy

In the five-year period between 2004–05 and 2008–09, Odisha's Gross State Domestic Product (GSDP) has grown by approximately 8.50 percent making it the fourth fastest growing state, behind Gujarat, Bihar and Uttarakhand. In 2009-10, the GSDP at current prices stood at INR 150,946 crore, growing at 12.98 percent per annum from the previous year. GSDP at Constant Prices stood at INR 90,229 crore, growing at 8.35 percent per annum compared to the previous financial year.

In recent years, the contribution of the services sector has become more pronounced, accounting for approximately 47 percent in the state GSDP. The share of the industrial sector stands at about 23 percent and that of agriculture and allied activities

stands at approximately 30 percent of GSDP. *(Source: Govt. of Odisha, Annual Budget 2010-11)*

2.2 Agricultural Produce in the State

Food grains (cereals and pulses) production, with a share of more than 85 percent, continues to dominate in the total agricultural production. Food grain production has been witnessing an increasing trend in production since 2002-03, reaching 7.5 million MT in 2009-10.

Paddy accounts for nearly 79 percent of the total crop production. The table below shows the food grain production trends of crops in the State over the past five years.

Table 1: Food Grain Production in Odisha

(in '000 MT)	2005-06	2006-07	2007-08	2008-09	2009-10
Cereals					
Rice	**6,859**	**6,825**	**7,541**	**6,813**	**6,917**
Maize	102	103	147	135	175
Ragi	40	43	47	41	37
Others	22	22	26	23	24
Total Cereals	**7,023**	**6,993**	**7,761**	**7,012**	**7,153**
Pulses					
Gram	23	24	26	25	34
Tur	98	106	113	119	112
Other	216	221	245	237	252
Total Pulses	**337**	**351**	**384**	**381**	**398**
Total Food Grains	**7,360**	**7,344**	**8,145**	**7,393**	**7,551**

Source: Economic Survey of Odisha 2010-11

Chapter 3: Production of Perishable Horticulture and Other Produce in the State

3.1 Overview of Horticultural Produce in the State

The agro-climatic diversity of Odisha, with its high rainfall distributed over a 5-month monsoon and a reasonably long and moderate winter, allows for a variety of horticultural crops to be grown.

Currently, horticulture crops are grown in an area of over 1.2 million hectares (Ha) having a potential of increasing up to 2 million hectares. Out of the 1.2 million hectares in which horticultural crops are grown, fruits constitute 0.23 million hectares, vegetables 0.63 million hectares, coconut and cashew 0.17 million hectares and spices approximately 0.17 million hectares.

3.2 Vegetable Production in Odisha

The major vegetables grown in the State are Brinjal, Tomato, Cole crops, Pea, Okra and Potato. The productivity of vegetables in the State is 12.27 MT/Ha as against the national average of 13.92 MT/Ha. The table below shows the vegetable production in the state.

Table 2: Vegetable Production in Odisha

Vegetable	Area in Ha.	Production in MT
Brinjal	132408	2135217
Cabbage	35808	999939
Cauliflower	46484	675387
Okra	73930	651813
Pea	5082	45194
Tomato	102926	1394689
Onion	32085	297056
Potato	13137	178836.4231
Sweet Potato	50462	438821
Other Vegetables	194506	2006680
Watermelon	7301	137308.0185
Muskmelon	56	920
Total	**694188**	**8961861**

3.3 Fruit Production in Odisha

The major fruits grown in the State are Mango, Guava, Citrus, Sapota, Banana, Litchi, Papaya and Ber. While Mango is grown all over the State, prime growing areas are Keonjhar, Mayurbhanj, Angul, Sambalpur, Rayagada, Phulbani and Sundergarh. Banana is mainly grown in Khorda, Puri, Cuttack, Nayagarh, Rayagada, Koraput and

Balasore. Sapota is grown in Ganjam, Puri, Cuttack and Balasore. The table below shows the fruit production in the state.

Table 3: Fruits Production in Odisha

Fruit	Area in Ha.	Production in MT
Banana	24591	429156
Citrus	27412	258801
Guava	14155	100017
Litchi	4334	17138
Mango	177626	577476
Papaya	2087	45734
Pineapple	725	8390
Pomegranate	212	823
Sapota	3336	16577
Other Fruit Crops	47585	419817
Total	**302063**	**1873929**

3.4 Spices Production in Odisha

Odisha is one of the most important States in the country in the production of spices. Spices grown in the State are Ginger, Turmeric, Chilli, Coriander, Garlic and Onion.

Table 4: Spices Production in Odisha

Spices	Area in Ha.	Production in MT
Coriander	19063.36	9445
Ginger	16841	117715
Garlic	11050	35714
Turmeric	25315.0043	189348
Chilli	75530	64319
Total	**147798**	**416540**

3.5 Flower Production/Growth in Odisha

The climatic conditions in certain parts of the State are congenial for the production of flowers. Flowers grown in the State include Marigold, Gladiolus and Rose.

Table 5: Flowers Production in Odisha

Flower	Area in Ha.	Production
Rose	1750	3174 lakh stems
Gladioli	2245	2182 lakh spikes
Tuberose	491	12908 quintals
Marigold	2625	240031 quintals
Total	**7111**	

Chapter 4:
Feasibility for a Terminal Market in the State

4.1 Backward Linkages – Modern Terminal Market

The catchment area of terminal market has been assumed to be within a radius of 150 km (except in the cases of a few districts which are located further away). Districts proposed to be in the catchment are Sambalpur, Deogarh, Jharsuguda, Bargarh, Kalahandi, Sonepur, Bolangir, Angul, Bauda, Sundergarh and Naupada. The catchment along with the proposed terminal market is mapped below:

Exhibit 6: Terminal Market at Sambalpur-Mapping of Catchment Districts

The mapping of the Terminal market with its catchments has been done keeping in view the transportation time, accessibility and connectivity. It is estimated that the transit time of the produce from the farthest catchment district shall not take more than three hours once the aggregation is complete at the respective collection centers. Below is the distance matrix of TM with its catchments. It may also be noted that the distances have been mapped from the district headquarters. Since the catchments are in the periphery of the TM, most of collection centers are envisaged to be en- route towards the proposed TM. Despite Kalahandi, Angul and Nuapada being more than 150 km away from the proposed TM, they have been considered due to unavailability of any formal market system in the districts. Further, some of the producing areas in these districts are within a 100 km distance from the proposed TM.

Table 6: Distance Matrix- Terminal market Vs. Catchment Districts (in km)

District	Bargarh	Deogarh	Jharsuguda	Kalahandi	Sonepur
Distance From Sambalpur	53	91	50	208	80
District	Bolangir	Angul	Bauda	Sundergarh	Naupada
Distance From Sambalpur	129	161	100	83	195

Table 7: Distance Matrix- Terminal market Vs. Catchment Mandis (in km)

District	Market	Distance from the Proposed Site in Kms.
Sambalpur	Kochinda	105
	Redhakol	90
	Padiabahal	40
Deogarh	Deogarh	110
Jharsuguda	Jharsuguda	70
Bargarh	Bargarh	53
	Barpalli	65
	Padampur	120
	Prakashpur	90
Kalahandi	Bhawanipatna	240
Sonepur	Sonepur	110
Bolangir	Titlagarh	290
	Patnagarh	160
	Bolangir	120
Angul	Boinda	137
Bauda	Bauda	100
Sundergarh	Sundergarh	102
	Baneigarh	262
Naupada	Khariar	230

A brief introduction of the districts in the catchment area of the proposed Terminal Market in respect of raw material availability, major mandis with catchment villages and connectivity is given below:

4.1.1 Sundergarh

Profile of Sundergarh

Sundergarh district of Odisha is spread over an area of 9712 sq. km. with a population of approximately 2 million. The district comprises of 3 sub-divisions and 17 Blocks. The district has a total forest area of 4232 Sq. km. which is 43% of the total area of the district. Total land under cultivation in the district is 336000 hectares. Sundargarh district have big industries at Rourkela, Rajgangpur and Kansbahal. Sundergarh is well connected to most parts of the country by rail through Raurkela station. Nearest Airport is Ranchi (Jharkhand). NH 23 and state highways connect this district to other parts of the country.

Availability of Horticultural Produce

Sundergarh district produces about 3.8 lakh MT of vegetables annually. The major vegetables grown in the district are Cabbage, Tomato, Brinjal, and Cauliflower. Cabbage constitutes around 18 percent of total vegetables production, cauliflower constitutes around 14 percent. Brinjal, Okra and Tomato contribute around 12 percent. Fruits production in district is around 97 thousand MT. Major fruits produced are Mango, Banana and Citrus.

Table 8: Production of major fruits and vegetables in Sundergarh

Vegetable	Production	Fruit	Production	Spices	Production
Brinjal	49660	Banana	20618	Coriander	217
Cabbage	71847	Citrus	13322	Ginger	1028
C. Flower	54606	Guava	5446	Garlic	1410
Okra	45786	Litchi	3089	Turmeric	596
Pea	2457	Mango	27360	Chilly	2849
Tomato	44076	Papaya	1342		
Onion	12129	Pineapple	95		
Sweet Potato	29684	Pomegranate	28		
Watermelon	3701	Sapota	115		
Other Vegetables	67619	Other Fruit Crop	25784		
Total	**381564**	**Total**	**97199**	**Total**	**6100**

Profile of the Major Mandis in the District

The major mandi in the district is situtated in Sundergarh named Krushak Bazar. Located in Sundargarh block, Krushak Bazar is spread in an area of 2 acres and around 200 retailers are working for the market. Around 16500 MT of produce arrives annually in the Krushak Bazar consisting mainly of Brinjal, Cauliflower, Cabbage, French Beans, Pumpkin, Green chili and Sweet Potato. The catchment area of the market consists of 89 villages and 1 block.

Market	District	Vegetables	Fruits	Potato & Onion	Spices	Total
Sundergarh	Sundergarh	11495	3782	690	589	16556
Baneigarh	Sundergarh	5780	1667	259	95	7801

Apart from above mandi, there is one more mandi in Baneigarh. Arrival in Baneigarh mandi is approximately 8000 MT mainly consist of Brinjal, Cabbage and Cauliflower.

4.1.2 Bargarh

Profile of Bargarh

The district is spread over 5837 Sq. Km and constitutes of 12 development blocks having total population of about 1.48 million. All-season irrigation from Hirakud dam on the Mahanadi River makes the northern half of Bargarh District rich in agriculture. Bargarh is at a distance of 50 Kilometers from Sambalpur city, 370 Kilometers from the state capital Bhubaneswar and 230 Kilometers away from Raipur city (Chhatisgarh). Bargarh is well connected by road (National Highway – 6, Kolkata-Mumbai) and (National Highway – 201, Bargarh-Boriguma NH towards Visakhapattnam of Andhra Pradesh).

Availability of Horticultural Produce

Bargarh district produces about 4.5 lakh MT of vegetables annually. The major vegetables grown in the district are Brinjal, Tomato, Cabbage, Cauliflower and Okra. Brinjal and Cabbage constitute the major share of the vegetable production of the district contributing around 26 % and 11% of the total vegetable production respectively. Other vegetables like beans, cowpea, pumpkin, radish, ridge gourd, yam and watermelon etc. constitute 20 percent. Bargarh District produces around 35 thousand MT of fruits annually. The major fruits grown in Bargarh District are Banana and Mango.

Table 9: Production of Major Fruits and Vegetables in Bargarh

Vegetable	Production	Fruit	Production	Spices	Production
Brinjal	144917	Banana	7322	Coriander	264
Cabbage	52376	Citrus	1706	Ginger	1359
C. Flower	51932	Guava	1147	Garlic	1144
Okra	24120	Litchi	135	Turmeric	384
Pea	302	Mango	6116	Chilly	2125
Tomato	44620	Papaya	396		
Onion	19178	Pineapple	65		
Sweet Potato	16024	Pomegranate	16		
Watermelon	3400	Sapota	965		
Other Vegetables	89820	Other Fruit Crop	17612		
Total	**446689**	**Total**	**35480**	**Total**	**5275**

Profiles of the Major Mandis in the district

Major Mandis in the districts are Sarandapalli, Padampur, Prakashpur and Bargarh. Below are a few images of the mandi at Bargarh.

The table below gives a brief description of the major mandis and their characteristics.

Market	District	Vegetables	Fruits	Potato & Onion	Spices	Total
Barpalli	Bargarh	5854	144	260	772	7030
Padampur	Bargarh	16231	99	60	492	16882
Bargarh	Bargarh	15762	419	1404	1,388	18973
Prakashpur	Bargarh	3388	445	310	642	4785

Located in Barapalli block, Sarandapalli market is spread over 4 Acres and around 60 retailers work for the market. Around 7000 MT of produce arrives annually in the Sarandapalli market consisting of mainly Brinjal, Cauliflower, Chilli, Pumpkin,

Cucumber, Bitter Gourd, Cabbage and Tomato. The catchment area of the market consists of 74 villages and 1 block. Operating time of the market is between 6 am to 2 pm.

Located in Padmapur block, Padmapur market is spread in an area of 4 Acres and around 10 commission agents, 2 wholesellers and 450 retailers. Around 17000 MT of produce arrives annually in the Padmapur market consisting of mainly Tomato, Cauliflower, Cabbage, Brinjal and Radish. The catchment area of the market consists of 278 villages and 2 blocks (Padmapur & Paikmal). Operating time of market is 5 am – 2 pm.

Apart from above mentioned mandis, there are two more mandis in Bargarh, one is local F&V market and other is Prakashpur. Arrival in Bargarh mandi is approximately 19000 MT mainly consist of Brinjal, Tomato and Cauliflower. Total Arrival in Prakashpur is approximately 5000 MT per annum.

4.1.2 Deogarh

Profile of Deogarh

The district is spread over 2781 Sq. Km and constitutes of 3 development blocks. Total population of the district is approximately 3 Lakh. As there is no industry present in the district major profession of local inhabitant is agriculture. Town is 90 K.Ms. to the east of Sambalpur on N.H.-6. National Highway No.6 passes through the district acts as the main artery of inter-regional trade and other links. The nearest rail heads for Deogarh are at Sambalpur (90 KMs.), Bamra on the Nagpur-Hawrah Section of South Eastern Railway (103 KM), Jharsuguda (98 Kms.) and Rourkela (115 Kms.). The nearest airports for Deogarh District are at Bhubaneswar (280 Kms.) and Raipur (376 Kms.).

Availability of Horticultural Produce

Deogarh district produces about 1 lakh MT of fruits & vegetables annually. The major Vegetables grown in the district are Brinjal, Cabbage, Cauliflower and Watermelon. Brinjal contributes 20 percent while cabbage & cauliflower contributes 5 per cent towards the total Production of vegetables. Watermelon is produced in large quantities and contributes 5 per cent. Other vegetables like beans, cowpea, pumpkin, ridge gourd, pointed gourd, colocasia, coccinia, green vegetables etc. constitute 35 percent. Deogarh District produces around 24 thousand MT of fruits annually. The major fruits grown in Deogarh District are Banana, Mango and Citrus.

Table 10: Production of Major Fruits and Vegetables in Deogarh

Vegetable	Production	Fruit	Production	Spices	Production
Brinjal	20093	Banana	2441	Coriander	141
Cabbage	2912	Citrus	3852	Ginger	261
C.Flower	2615	Guava	728	Garlic	655
Okra	2338	Litchi	2063	Turmeric	443
Pea	494	Mango	8613	Chilly	1450
Tomato	2828	Papaya	462		
Onion	5722	Pineapple	138		
Sweet Potato	6241	Pomegranate	24		
Watermelon	5464	Sapota	120		
Other Vegetables	34370	Other Fruit Crop	5967		
Total	**83077**	**Total**	**24408**	**Total**	**2950**

Profile of Major Mandis in District

There are no major mandis in the district apart from a local market in Deogarh. Located in Tileibani block, Deogarh market is spread in an area of 2 Acres and around 50 retailers are present there. Around 15000 MT of produce arrives annually in the market consisting of mainly Tomato, Brinjal, Cabbage, Cauliflower and Garlic. The catchment area of the market consists of 240 villages and 1 block. Operating time of market is 6Am - 1Pm & 3 pm - 7 Pm. Below is the brief description of the arrival of Deogarh mandi:

Market	District	Vegetables	Fruits	Potato & Onion	Spices	Total
Debgarh	Debgarh	9330	3796	1014	767	14907

4.1.4 Jharsuguda

Profile of Jharsuguda

The district is spread over an area of 2081 Sq. Km. and constitutes of 1 sub-division and 5 blocks. The population of the district as per 2011 census is estimated to be 5.8 Lakh. Total cultivated area in the district is approximately 90000 hectares. This region is rich in coal and other mineral reserves. Many small and medium scale iron and steel units have been set up in the vicinity of Jharsuguda town, fueling industrial growth of the district. Jharsuguda town is situated at the western border of Odisha

on the State High way No. 10. It is situated at a distance of 515 K.M. from Calcutta and 616 Km. from Nagpur.

Availability of Horticultural Produce

The district produces about 64 thousand MT of vegetables annually. The major vegetables grown in the district are Brinjal and cauliflower. Brinjal constitutes the major share of the vegetable production of the district contributing around 30 % of the total vegetable production. Other vegetables like Beans, Cowpea, Pumpkin, Ridge gourd, Pointed gourd, Colocasia, Coccinia, green vegetables, Yam and Watermelon etc. constitute around 40 percent. Jharsuguda produces around 28 thousand MT of fruits annually with major fruits grown being Mango, Banana, citrus and Guava.

Table 11: Production of Major Fruits and Vegetables in Jharsuguda

Vegetable	Production	Fruit	Production	Spices	Production
Brinjal	20191	Banana	4219	Corriander	45
Cabbage	2369	Citrus	3974	Ginger	1165
C. Flower	5352	Guava	1968	Garlic	440
Okra	1569	Litchi	65	Turmeric	193
Pea	34	Mango	8451	Chilly	851
Tomato	3379	Papaya	396		
Onion	2826	Pineapple	137		
Sweet Potato	130	Pomegranate	8		
Watermelon	3674	Sapota	227		
Other Vegetables	24291	Other Fruit Crop	8555		
Total	**63816**	**Total**	**27999**	**Total**	**2694**

Profile of Major Mandis in the District

There are no major mandis in the districts apart from local market Sukar Bazar in district headquarter. Located in Jharsuguda block, Sukar Bazaar is spread in an area of 2 Acres. This is a Haat type of market. Around 5000 MT of produce arrives annually in the Sukar Bazaar consisting mainly of Tomato, Cabbage, Cauliflower, Okra, Brinjal, Carrot and Pointed Gourd. The catchment area of the market consists of 74 villages and 1 block. Below is the brief description of the arrival of Jharsuguda mandi:

Market	District	Vegetables	Fruits	Potato & Onion	Spices	Total
Jharsugdha	Jharsugdha	3852	1815	613	231	6511

4.1.5 Kalahandi

Profile of Kalahandi

The district headquarter is at Bhawanipatna which stands almost in the central location of the district. The district is spread over an area of 7920 Sq. Km. and constitutes of 2 sub-divisions and 13 blocks. The district has a population of 1.34 million. Kalahandi is largely an agriculture based economy. Since 2000s the Indravati Water Project, second biggest in the state has changed the landscape of southern Kalahandi, leading to two crops in a year. Forest based products like Mahua, Tendu leaf, wood, timber and bamboos are also contributing local economy largely. Kalahandi supplied substantial raw materials to paper mills in neighboring Rayagada and Jeypore. National Highway 201 and 217 pass through Kalahandi. Kesinga is the gateway of Kalahandi for rail connectivity, a major railway station in the district. It is directly linked with most of the major cities in India. The nearest airport is located in Raipur (200–250 km). Vishakhapatnam airport is located in 300 km and Bhubaneswar airport in 450 km.

Availability of Horticultural Produce

Kalahandi district produces around 3 lakh MT of vegetables annually. The major vegetables grown in the district are Brinjal, Okra and Tomato. Brinjal contributes around 40 percent of vegetables production, Okra contributes around 4 percent and Tomato contributes around 7 percent towards the total production of vegetables. Kalahandi District produces around 1.7 lakh MT of fruits annually. The major fruits grown in Kalahandi District are Citrus, Banana and Mango.

Table 12: Production of Major Fruits and Vegetables in Kalahandi

Vegetable	Production	Fruit	Production	Spices	Production
Brinjal	122360	Banana	13695	Coriander	361
Cabbage	10629	Citrus	103456	Ginger	134
C.Flower	6298	Guava	10492	Garlic	1565
Okra	13485	Litchi	321	Turmeric	2168
Pea	1194	Mango	25598	Chilly	1552
Tomato	93801	Papaya	1188		
Onion	22928	Pineapple	277		
Sweet Potato	2430	Pomegranate	24		
Watermelon	4416	Sapota	246		
Other Vegetables	18777	Other Fruit Crop	18957		
Total	**296318**	**Total**	**174253**	**Total**	**5779**

Profile of Major Mandis in the District

There is one major mandi in the district known as Bhabanipatna. Located in Bhabanipatna block, Bhabanipatna market is spread in an area of 2 Acres and around 50 retailers work for the market. This is Municipality Haat type of market. Around 19000 MT of produce arrives annually in the Bhabanipatna market consisting of mainly Cabbage, Tomato, Pumpkin and Radish. The catchment area of the market consists of 253 villages and 1 block. Operating time of market is 6 Am-2 Pm. The arrival data of the mandi is given below:

Market	District	Vegetables	Fruits	Potato & Onion	Spices	Total
Bhawanipatna	Kalahandi	9492	5337	1267	3,098	19194

4.1.6 Sonepur

Profile of Sonepur

The district is spread over an area of 2284 Sq. Km. and constitutes of 2 sub-divisions and 6 blocks. The district has a population of approximately 5.4 lakh. Sonepur is situated on the confluence of river "The Mahanadi" and "The Tel". It is famous for Silk Handloom and known as second Benaras(Uttar Pradesh). The nearest airport is at Raipur and Bhubaneswar. It is connected to rail with major Indian cities via Sambalpur station. It is well connected via road with Sambalpur.

Availability of Horticultural Produce

Sonpur district produces about 2 lakh MT of vegetables annually. The major vegetables grown in the district are Brinjal, Tomato and Okra. Brinjal and Tomato contribute 19 and 14 percent respectively, while okra contributes 7 per cent towards the total production of vegetables. Sonpur District produces around 35 thousand MT of fruits annually. The major fruits grown in Sonpur District are Banana, Mango, Citrus and Guava.

Table 13: Production of Major Fruits and Vegetables in Sonepur

Vegetable	Production	Fruit	Production	Spices	Production
Brinjal	38122	Banana	8480	Coriander	140
Cabbage	13206	Citrus	3563	Ginger	37
C.Flower	12827	Guava	2783	Garlic	769
Okra	14408	Litchi	33	Turmeric	32
Pea	370	Mango	9290	Chilly	767
Tomato	28954	Papaya	771		
Onion	9187	Pineapple	52		
Sweet Potato	2446	Pomegranate	20		
Watermelon	9462	Sapota	37		
Other Vegetables	73109	Other Fruit Crop	10235		
Total	**202091**	**Total**	**35265**	**Total**	**1744**

Profile of Major Mandis in the District

There is one major mandi in the district known as Sonepur. Located in Sonepur block, Sonepur market is spread in an area of 0.5 acre and around 30 retailers work for the market. Around 15000 MT of produce arrives annually in the Sonepur Market consisting mainly of Tomato, Cauliflower, Cabbage, Radish and Brinjal. The catchment area of the market consists of 157 villages and 1 block. Operating time of market is 6 am- 2 pm. Given below is the brief description of this mandi:

Market	District	Vegetables	Fruits	Potato & Onion	Spices	Total
Sonepur	Sonepur	12416	2322	680	120	15538

4.1.7 Bolangir

Profile of Bolangir

The district is spread over an area of 6575 Sq. Km. and constitutes of 3 sub-divisions and 14 blocks. The district has a population of approximately 13.4 lakh. It has 332000 hectare of cultivated land. Mahanadi and Tel rivers are flowing through the district. The nearest airport is at Raipur and Bhubaneswar. It is connected to rail with major Indian cities. It is well connected via road with Sambalpur.

Availability of Horticultural Produce

Bolangir district produces about 3.6 lakh MT of vegetables annually. The major vegetables grown in the district are Brinjal, Cabbage and Tomato. Brinjal and Cabbage contribute around 20 percent of vegetables production and tomato contributes around 17 percent of vegetables production. Bolangir District produces around 73 thousand MT of fruits annually. The major fruits grown in Bolangir District are Banana and Mango.

Table 14: Production of Major Fruits and Vegetables in Bolangir

Vegetable	Production	Fruit	Production	Spices	Production
Brinjal	71012	Banana	18705	Coriander	153
Cabbage	70883	Citrus	3509	Ginger	75
C.Flower	19917	Guava	1808	Garlic	683
Okra	21073	Litchi	101	Turmeric	42
Pea	1992	Mango	12094	Chilly	2717
Tomato	63785	Papaya	1490		
Onion	43110	Pineapple	110		
Sweet Potato	35867	Pomegranate	24		
Watermelon	23430	Sapota	1397		
Other Vegetables	13531	Other Fruit Crop	33784		
Total	**364599**	**Total**	**73022**	**Total**	**3670**

Profile of Major Mandis in the District

There are three major mandis in the district known as Patnagarh, Titlagarh and Bolangir. Below is a brief description of these mandis and their features:

Market	District	Vegetables	Fruits	Potato & Onion	Spices	Total
Patnagarh	Bolangir	7559	4021	708	30	12318
Titlagarh	Bolangir	10209	4562	1923	30	16724
Bolangir	Bolangir	7070	2172	432	15	9689

Located in Patnagarh block, this market is spread on an area of 1 Acres. The number of traders linked with the market is 40. The market is Haat type of market. Around 12000 MT of produce arrives annually in the market consisting mainly of Tomato,

Brinjal, Cabbage, Radish and Chillies. The catchment area of the market consists of 164 villages and 1 block. Operating time of market is 9 am-6 pm.

Located in Titlagarh block, this market is spread on an area of 2 acres. The number of traders associated with this market is 100. Around 17000 MT of produce arrives annually in the market consisting mainly of Tomato, Potato, Onion, Cabbage, Cauliflower and Okra. The catchment area of the market consists of 133 villages and 1 block. Operating time of market is 6 am-2 pm.

Located in Bolangir block, the market is spread over 2 Acres and consist of 70 retailers. The market is Municipality Haat type of market. Around 10000 MT of produce arrives annually in the Bolangir market consisting of mainly Cauliflower, Cabbage, Tomato, Chilli and Brinjal. The catchment area of the market consists of 125 villages and 1 block. Operating time of market is 9 am-8 pm.

4.1.8 Angul

Profile of Angul

The district is spread over an area of 6232 Sq. Km. and constitutes of 4 sub-divisions and 8 blocks. The district has a population of approximately 11.4 lakh. The river Mahanadi passes through the district. It has cultivable area of 216403 hectares. Many industrial players in mining, steel and power like NTPC, NALCO, Jindal Steel, Bhushan Steel etc. are operating in the district. Angul is connected with NH 6, 23 and 42. The Talcher line and Sambalpur line of the south-eastern railway runs in the district. The nearest airport is at Bhubaneswar.

Availability of Horticultural Produce

Angul district produces about 3.7 lakh MT of vegetables annually. The major vegetables grown in the district are Brinjal, Cabbage and Tomato. Brinjal and Cabbage contribute 20 and 10 per cent respectively, while tomato contributes 16 per cent towards the total production of vegetables. Angul District produces around 1.1 lakh MT of fruits annually. The major fruits grown in Angul District are Banana, Mango and Citrus.

Table 15: Production of Major Fruits and Vegetables in Angul

Vegetable	Production	Fruit	Production	Spices	Production
Brinjal	74590	Banana	22055	Coriander	795
Cabbage	38063	Citrus	14191	Ginger	703
C.Flower	27644	Guava	3919	Garlic	4300
Okra	25412	Litchi	1924	Turmeric	784
Pea	1926	Mango	41252	Chilly	3974
Tomato	60842	Papaya	720		
Onion	28522	Pineapple	353		
Sweet Potato	15876	Pomegranate	28		
Watermelon	4269	Sapota	271		
Other Vegetables	96174	Other Fruit Crop	28658		
Total	**373316**	**Total**	**113370**	**Total**	**10555**

Profile of Major Mandis in the district

In Angul catchment mandi will be Angul itself. There are also other mandis present there but they are mainly supplying directly to Cuttack and Bhubaneswar:

Market	District	Vegetables	Fruits	Potato & Onion	Spices	Total
Angul	Angul	2969	6037	679	550	10235

Approximately 10000 MT of produce comes to the market annually consisting of various fruits. Catchment of the market is spread in around 2 blocks of the district. Operating time of market is 9 am-6 pm.

4.1.9 Bauda

Profile of Bauda

The district lies in central Odisha, to the south of the Mahanadi River, which forms the western and northern boundary of the district. The district is spread over an area of 3098 Sq. Km. The district has a population of approximately 4.4 lakh. Total cultivated area is 85500 hectare in the district. Bouda is well connected with road and rail with other district headquarter and the state capital Bhubaneswar. The distance of Bouda from Bhubaneswar is 240 km. Bouda is connected to road

network via State Highway No. 1 & 14 and by National Highway No. 42. Regular train services are available from Bhubaneswar. The nearest airport is Bhubaneswar.

Availability of Horticultural Produce

Bouda district produces about 2.1 lakh MT of vegetables annually. The major vegetables grown in the district are Brinjal, Cabbage and Tomato. Brinjal contributes around 30 percent of vegetables production, Cabbage contributes around 18 percent and Tomato contributes around 13 percent. Bauda district produce around 22 thousand MT of fruits annually. Major fruits produced are Mango, Banana and Citrus.

Table 16: Production of Major Fruits and Vegetables in Bauda

Vegetable	Production	Fruit	Production	Spices	Production
Brinjal	63668	Banana	2818	Coriander	266
Cabbage	39622	Citrus	2332	Ginger	278
C.Flower	15051	Guava	1521	Garlic	636
Okra	17367	Litchi	68	Turmeric	331
Pea	671	Mango	5591	Chilly	817
Tomato	28217	Papaya	454		
Onion	3792	Pineapple	66		
Sweet Potato	3374	Pomegranate	20		
Watermelon	2637	Sapota	29		
Other Vegetables	40942	Other Fruit Crop	10019		
Total	**215339**	**Total**	**22918**	**Total**	**2328**

Profile of Major Mandis in the District

There is one major mandi in the district known as Bouda market (Ganesh market). Located in Bouda block, ganesh market is spread in an area of 3 Acres. There are around 280 retailers trading in the market. Around 16000 MT of produce arrives annually in the Ganesh Market consisting of mainly Brinjal, Cauliflower, Cabbage, Pumpkin, Yam and Water Melon. The catchment area of the market consists of 401 villages and 1 block. Operating time of market is 9 am-6 pm. Arrival figure of this mandi is as follows:

Market	District	Vegetables	Fruits	Potato & Onion	Spices	Total
Bauda	Bauda	13350	896	1548	181	15975

4.1.10 Nuapada

Profile of Nuapada

The district is spread over an area of 3408 Sq. Km. and constitutes of 1 sub-division and 5 blocks. The district has a population of approximately 5.4 lakh. Jonk is the principal river of the district. District has cultivable land of approximately 190000 hectares. There is no large-scale and medium scale industry in the district. The nearest airports are at Raipur and Bhubaneswar. A railway line from Vizianagaram on the South-Eastern Railways passes through the district on its way to Raipur (Chhattisgarh). State Highway No.3 passes through this district and it maintains direct communication with the adjoining districts apart from all the important places within the district.

Availability of Horticultural Produce

Nuapada district produces around 1.8 lakh MT of vegetables annually. The major vegetables grown in the district are Brinjal, Okra and Tomato. Brinjal contributes around 30 percent of vegetables production, Okra constitutes around 7 percent and Tomato constitutes around 6 percent. Total fruits production in the district is around 53 thousand MT. Major fruits produced are Mango, Guava and Banana.

Table 17: Production of Major Fruits and Vegetables in Nuapada

Vegetable	Production	Fruit	Production	Spices	Production
Brinjal	56597	Banana	6938	Coriander	138
Cabbage	9991	Citrus	3992	Ginger	239
C.Flower	9534	Guava	6392	Garlic	266
Okra	12157	Litchi	110	Turmeric	205
Pea	784	Mango	20800	Chilly	1574
Tomato	10403	Papaya	959		
Onion	9520	Pineapple	172		
Sweet Potato	1398	Pomegranate	20		
Watermelon	1129	Sapota	300		
Other Vegetables	65686	Other Fruit Crop	13735		
Total	**177198**	**Total**	**53417**	**Total**	**2423**

Profile of Major Mandis in the district

There is one major mandi in the district known as Khariar in Nuapada. Below is the arrival of this mandi and:

Market	District	Vegetables	Fruits	Potato & Onion	Spices	Total
Khariar	Naupada	16419	-	1666	1,822	19907

Approximately 20000 MT of produce comes to the market annually consisting of Cauliflower, Okra and Radish. Catchment of the market is spread in 3 to 4 blocks of the district. Operating time of market is 9 am-6 pm.

4.1.11 Sambalpur

Profile of Sambalpur

Sambalpur district of Odisha is spread over an area of 6702 sq. km. with a population of approximately 1 million. The district comprises of 9 Blocks. It has a total forest area of 3986.27 Sq. km which is 59.46% of the total area of the district. Total land under cultivation in the district is 173540 hectares.

Located in Sambalpur, Gol Bazar is one of the largest mandis in the district. Gol Bazaar is spread in an area of 4 acres. Around 88000 MT of produce arrives annually in the Gol Bazaar including arrivals from outside the district and state. Main commodities traded include Tomato, Brinjal, Cabbage, Pumpkin, Carrot and Banana.

The market, apart from arrivals from its catchment spread in radius of 100 KM, also witnesses large quantities of arrivals of fruits and vegetables from other parts of the country, which are not locally produced. Such products include Orange, Grape, and Apple among fruits and Onion and Potato among vegetables.

The estimated daily arrival in this mandi is around 200-300 MT with the peak arrival even crossing 400 MT during the season.

Connectivity

As Sambalpur is considered the commercial capital of Western Odisha, it has a well-established road and rail transportation network. National Highway 6, which connects Surat to Kolkata, passes through this town. It is connected to Bhubaneswar through National Highway 42. Sambalpur is the Divisional Headquarter of East Coast Railway. The nearest Airports are Mana Airport, Raipur and Biju Patnaik

Airport, Bhubaneswar, both approximately 300 km from the Sambalpur town. A new airport is being constructed at Jharsuguda (50 km away from the town). The district has the advantage of being surrounded by major horticultural producing areas comprising of districts Bargarh, Jharsugda, Deogarh, Angul and Sonapur.

Availability of Horticultural Produce

Sambalpur district produces about 2 lakh MT of vegetables annually. The major vegetables grown in the district are Brinjal, Tomato, Cole crops and Okra. Brinjal and cauliflower constitute the major share of the vegetable production of the district contributing around 15 % and 11 % of the total vegetable production respectively. Other vegetables like Pea, Cowpea, Knolkhol, Ridge gourd, Yam and Watermelon etc. constitute 25 percent. Sambalpur District produces around 21 thousand MT of fruits annually. The major fruits grown in Sambalpur District are Mango, Banana and Citrus.

Table 18: Fruits and Vegetable Production in Sambalpur

Vegetable	Production	Fruit	Production	Spices	Production
Brinjal	29618	Banana	6568	Coriander	468
Cabbage	14739	Citrus	7808	Ginger	1315
C.Flower	22358	Guava	2379	Garlic	1174
Okra	14497	Litchi	3138	Turmeric	374
Pea	613	Mango	18323	Chilly	3708
Tomato	17171	Papaya	858		
Onion	16692	Pineapple	79		
Sweet Potato	15917	Pomegranate	32		
Watermelon	12010	Sapota	156		
Other Vegetables	50404	Other Fruit Crop	16704		
Total	**194018**	**Total**	**56045**	**Total**	**7039**

Total Availability in Catchment Areas

The total production of fruits and vegetables in the identified catchment of Sambalpur TM is estimated to be approximately 35 lakh MT.

Table 19: Fruits and Vegetable Production Catchment Districts of TM

Vegetable	Total	Fruit	Total	Spices	Total
Brinjal	690828	Banana	113859	Coriander	2986
Cabbage	326637	Citrus	161705	Ginger	6593
C. Flower	228133	Guava	38583	Garlic	13042
Okra	192210	Litchi	11046	Turmeric	5550
Pea	10836	Mango	183488	Chilly	22385
Tomato	398075	Papaya	9036		
Onion	173606	Pineapple	1542		
Sweet Potato	129386	Pomegranate	244		
Watermelon	73593	Sapota	3863		
Other	574721	Other Fruit	190010		
Total	**2798026**	**Total**	**713376**	**Total**	**50557**

Table 20: District wise Production Figure in Catchment

Name of the District	Production		
	Vegetables	Fruits	Spices
Bolangir	364599	73022	3670
Sonepur	202091	35265	1744
Angul	373316	113370	10555
Kalahandi	296318	174253	5779
N. W. Pur	177198	53417	2423
Boudh	215339	22918	2328
Sambalpur	194018	56045	7039
Deogarh	83077	24408	2950
Bargarh	446689	35480	5275
Jharsuguda	63816	27999	2694
Sundargarh	381564	97199	6100
Total	**2798026**	**713376**	**50557**

Table 21: Fruits and Vegetable Arrival in Catchment Mandis of TM

Particular	Vegetables	Fruits	Potato & Onion	Spices	Total
Total	172030	39070	15588	12,511	239199

Existing Marketing Mechanism in Sambalpur

The existing marketing system is largely unorganized and manual. As a prevailing practice in F&V trade, it is mostly middlemen driven. Fruits and vegetables are collected by the aggregators/ consolidators and brought to the nearest commission agent to whom the aggregator is attached and then the commission agent sells the produce to the wholesalers. The retailers subsequently purchase from the wholesalers. Since there are no regulated markets for fruits and vegetables in the entire state, they are mainly sold as per the above mentioned existing chain except onions and potato which are sold through the Regulated Market System. On an average, the retailer sells 60-70% of his produce at market rate and rest 30-40 % below the market rate. Since he has the compulsion to sell the produce the same day, this selling pattern is common in fruit and vegetable retail.

In the value chain, the flow of information is restricted to certain levels only. The producers do not have proper information about the demand and supply situation in the consumption market and hence are not able to accurately capture the price arbitrage in the distant market.

Since there is no organized marketing system for F&V, the farmer sells his produce on prices decided by middlemen and not on prices that may actually be prevalent in the market. During the field study and through focused group discussions with various stakeholders, the lack of an organized and formal mechanism of marketing horticultural produce emerged as a major issue/constraint. Most farmers engage in distress selling of some proportion of their produce. Middlemen have formed cartels and decide the prices at which they would procure the produce. In some cases, in order to deflate price trends in the local market, they even resort to dumping of produce from other states in the local market.

In view of the above facts, the proposed TM would be able to provide an alternate market mechanism to the farmers for selling their produce. While the above mentioned facts point out the existing inefficiency in the value chain, they also offer an opportunity for a prospective private entrepreneur to create value by setting up a Terminal Market. The images below are of the Gol Market mandi, one of the prominent mandis in the Sambalpur district.

Chapter 5
Forward Linkages – Terminal Market

5.1 Forward Linkages- Modern Terminal Market

Out of the total production of more than 35 Lakh MT of fruits and vegetables in the major catchment districts of Sambalpur Terminal Market, it is estimated that around 50% is marketable surplus and traded in local markets. Such markets are located in Jharkhand, West Bengal, Chhattisgarh and Andhra Pradesh. Also, since Odisha has potential to produce manifold of F&V distant market can also be linked to Sambalpur TM. It can be linked with major metros like New Delhi, Mumbai, Bangalore, and Nagpur for supply of Vegetables.

It is estimated that 15% of marketable surplus will come to TM, which is estimated to be around 2.5 lakh MT. At present, there is a only a small market in Sambalpur. But with the establishment of a terminal market in Sambalpur, huge quantities are expected to be traded due to following reasons-

1. No existing formal market in catchment.
2. Sambalpur is the most developed area in the catchment and is distribution centre for the catchment area. There is deficit of potato and onion in catchment area. Approximately 30000 MT of potato comes from outside and distributed in catchment area. This can be traded through Sambalpur TM.
3. Brinjal, Cabbage, Cauliflower and ginger are in surplus in region alongwith some other vegetables. Also farmers are not cultivating total landholding for vegetables due to inaccessibility to the market. Though some of the produce is going to other states but with the TM higher produce will go out. This will lead to higher demand and production of vegetables.
4. Constant effort from Horticulture Department in last decade, Mango and Banana production has increased sharply in the area.
5. Odisha is big producer of organic crops due to lesser reliance on fertilizers. This provides a unique opportunity for catchment area to supply organic produce to various parts in India.

For the proposed Terminal Market, the annual handling capacity in the beginning shall be pegged at 2.5 lakh MT while keeping the provision of capacity enhancement over a period of time. During our field study and analysis of the existing supply chain, it was highlighted by various stakeholders that the proposed Terminal Market shall be catering to markets like Bhubaneswar, Ranchi, Raipur, Hyderabad, and Kolkata. The field study also brought to light the fact that various catchment districts of Terminal Market were already feeding some of the above mentioned geographies.

The distance matrix to various consumption markets from the catchment of terminal market is shown below:

Table 22: Distance Matrix to Various Consumption Markets from the Catchment of Terminal Market

Distance Matrix - Production Areas to Major Consumption Markets (In KM)									
	Bhubaneswar	**Jamshedpur**	**Ranchi**	**Raipur**	**Hyderabad**	**Kolkata**	**Bilaspur**	**Nagpur**	**Delhi**
Sambalpur	300	407	355	262	1054	589	258	564	1370

Major consumption markets like Bhubaneswar, Cuttack, Raipur, Ranchi, Bilaspur etc are located within a radius of 250-300 kilometers from the proposed site and can be reached by road and rail within a time span of 4-5 hours. Even distant markets like Kolkata, Hyderabad, Nagpur etc are well connected by both rail and road networks thus ensuring smooth and timely supply of materials to these markets. Therefore, the private enterprise (PE) can target such markets for supplying fresh fruits and vegetables.

5.1.1 Mapping of Major Markets for TM

Twin Cities of Bhubaneswar and Cuttack

The urban agglomeration formed by Bhubaneswar and Cuttack is the largest town and capital of the state. The metropolitan area formed by the twin cities has a population of 1.4 million. Total population including rural population is 4.4 million.

The city has strong connectivity network with other states. The East Coast Railway has its headquarters in Bhubaneswar. It is connected to major cities of the country such as New Delhi, Mumbai, Kolkata, Chennai, Bangalore, Jamshedpur, Raipur, Ranchi, Guwahati, Ahmedabad, Hyderabad, Lucknow, Bokaro etc. by daily express and passenger trains.

Bhubaneswar is connected to the rest of the country by NH 5, NH 203, which ensure strong connectivity of the city with other parts of the country via road network. Apart from rail and road connectivity, the city has good air connectivity also. Daily directs flights from Bhubaneswar to cities like Delhi, Kolkata, and Mumbai provides good air connectivity.

Market size for fresh fruits and vegetables in Bhuvaneshwar

Bhubaneswar, being the capital of the state and the largest town, offers a big market for fresh vegetable and fruits. Below is the monthly expenditure pattern of both rural and urban consumer:

The share of vegetables and fruits in the total food expenditure of urban consumer is estimated at around 15% while the same for a rural consumer is 14%. In view of the ongoing developments and emerging opportunities in the capital and state as well, the overall lifestyle and income is expected to improve and these figures are likely to go up. The estimated annual consumption of fresh vegetables and fruits in Bhubaneswar & Cuttack (Urban) is estimated to be 5.25 Lakh MT approximately.

Kolkata

It is estimated that approximately 4 Lakh MT of fruits and vegetable annually are sent to Kolkata from various outside markets. Further, if other cities of West Bengal like Durgapur, Burdwan and Asansol are also considered, annual inflow from outside is more than 5 Lakh MT. As Kolkata is well connected by rail and road this can be huge potential market for supplying of F&V from TM.

Ranchi

Though Jharkhand is a surplus state in vegetable production, it still depends on Odisha for vegetables like Cabbage, Cauliflower etc. The estimated inflow from outside to major consumption markets of Jharkhand like Ranchi, Dhanbad, Jamshedpur and Bokaro is approximately 3-4 Lakh MT which mainly constitutes of fruits from Bihar. As production of fruits is continuously increasing and it is going to be manifold in future Jharkhand can be major place of consumption of fruits from TM.

Raipur

Raipur is the capital of Chhattisgarh and it is a major distribution centre to various markets in Chhattisgarh along with Bilaspur. Large quantities of vegetables are supplied to Raipur and Bilaspur from catchment areas. Approximately 10000 MT of Brinjal, Cabbage and Cauliflower is being supplied to Chhattisgarh. It is a very well connected market and fresh produce can be supplied within 5-6 hours to Raipur and Bilaspur.

Therefore, it will be a significant opportunity for the terminal market to explore such markets and meet their demand. Apart from markets mentioned above, the TM can also tap opportunities in various other markets especially for supply of Brinjal, Cabbage and Cauliflower. This becomes even more important in the current context

where major corporate entities are now looking at Odisha both in terms of sourcing of various produce as a retail market opportunity. A big corporate has already commenced its operations in Odisha and is procuring F&V from the catchment area.

Exhibit 7: Mapping of Consumption Markets Linked to TM

*The linkages to distant markets like Hyderabad, Delhi and Mumbai are seasonal and produce specific.

Chapter 6:
Terminal Market Complex Sambalpur

Location Details

The Directorate of Horticulture, Odisha has under its possession 60 acres of land in Nildunguri, District Sambalpur to set up a Terminal Market Complex. The location connectivity details are as follows:

- The Site is situated on National Highway 6. Access proposed through under construction 150' and 300' roads from NH-6.
- 16 kms from Sambalpur town towards Deogarh, Pallahara, Baripada, Kolkata.
- Surrounding villages: In Jujumura block, Khaliapali, Pudapada, Kabarapal etc
- RMC yard is 400 meters away from the site.
- Nearest Railway Station is 7-8 kms away

Water Source Availability Details

- Shasan canal of Hirakud Canal System (North) is 500 meters away from the site but water use is not permitted for industrial use. The water available is soft water.
- Ground water availability is low as per hydrological report of the area. It fluctuates between 10-20 meters depending on season.
- Nearest bore well available in the location was bored 90 meters having free surface level at 20 meters discharge. Open wells available ½ a km from MTM site.
- Nearest water body (canal) is approximately 7 kilometers away from the Site

Power Source Details

- 11 KVA line is passing through the Site and a 33 KVA line is 7 kms. From the Site
- Nearest transformer is at Kudapali, 7 kms. From the Site

Other Details

- Slope gradient of the proposed Site is approximately 2% on an average
- The Site will require negligible to moderate filling
- At present, the Site is covered by trees and shrubs
- Nature of soil: rocky and morrum soil
- Two petrol pumps within 1 km of the Site
- Rice Mill located opposite the Site (other side of NH 6)

Source: Office of the Deputy Director, Horticulture, Sambalpur and site visit carried out by IL&FS Clusters team.

Exhibit 8: The Site

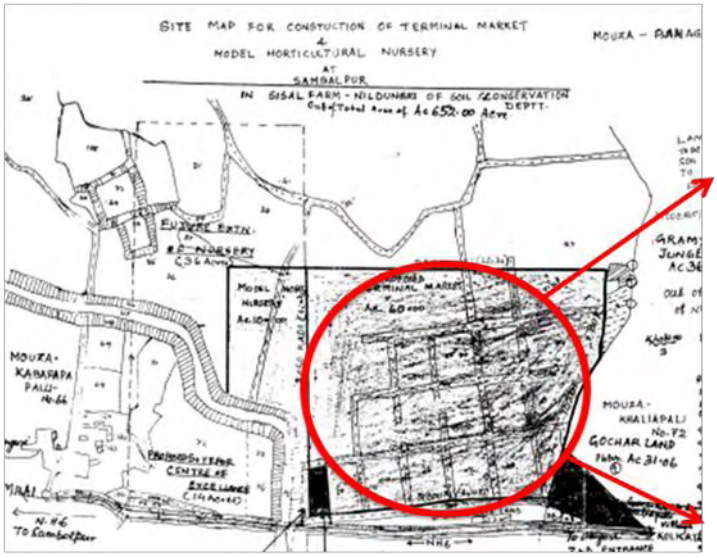


Exhibit 9: Proposed Entrances

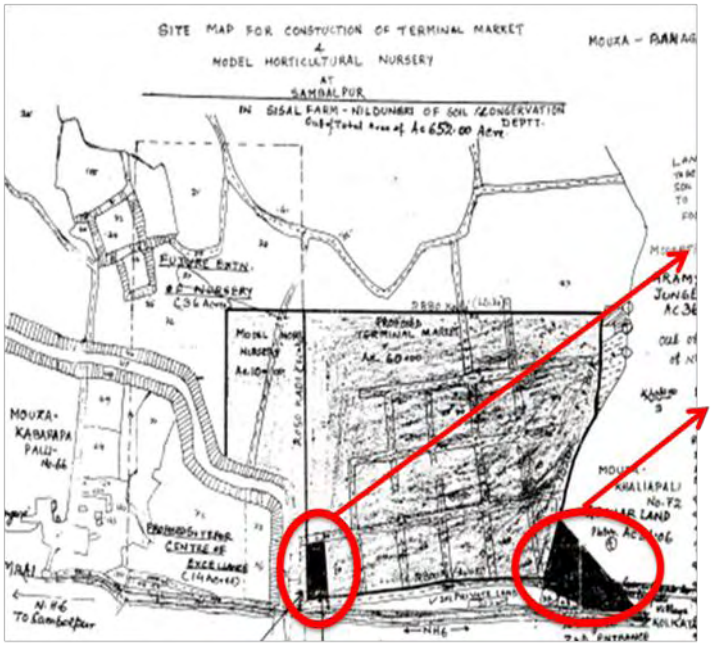
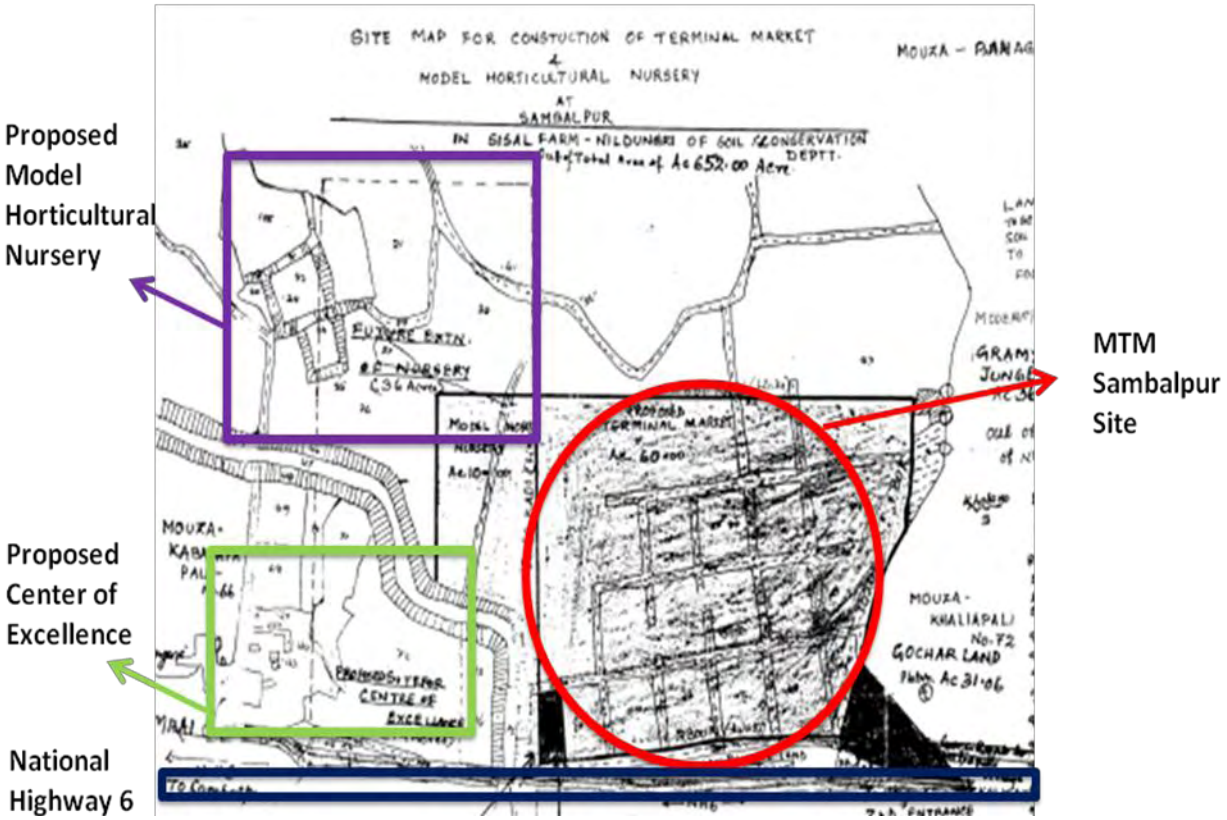


Exhibit 10: The Sitemap



Chapter 7:
Project Structure

7.1 Broad Mandatory Infrastructure at TM

The major activity of this market will be handling of large-scale produce of horticultural produce. This will involve providing various facilities for receiving the produce, their movement within the TM, display, auction, packaging, storage, dispatch etc.

Systems like automatic weighing platforms, price discovery mechanisms, cold & dry storages, cleaning sorting and grading facilities etc have to be provided in the TM. In addition, proper information capturing system is to be maintained for monitoring the entry and exit of trucks, and record their contents and movement within the market complex.

A Service Core has to be provided in each building for internal movement of the produce. Each service core shall have staircases, ramps, lifts, toilets etc.

Also, in the layout, provisioning shall be done for future expansion. The layout enables phase-wise execution of the market facilities. Following are the minimum infrastructure requirements for the Modern Terminal Market.

Table 23: Basic-Minimum Infrastructure Facilities to be provided at the TMC & CC

Core Facilities	Support Infrastructure	Service Infrastructure
Automatic weighing platforms	Water Supply	Rest Rooms
Auction Platforms	Power	Parking Facility
Loading, Unloading & Dispatch section and Logistics hub	Drainage	Sanitary Facilities
Cleaning, Sorting & Grading facilities	Room for Posts & Telephones	Agri Mall
Price Display Mechanism	Room for Banking Facilities	
Office Rooms	Input/Daily Necessity outlets	
Information Centers	Price on-line facility	
Packaging & labeling unit	Computerized systems	
Drying yards	Rain proofing	
Storage/Cold rooms		
Ripening Chambers		
Conference Rooms/Public Address		

Details of the facilities are given below. Area has been calculated based on area occupied for auctioning in various mandis in India. As these mandis are facing problem of congestion and functioning above capacity, greater space for core facilities in comparison to other mandis have been proposed.

7.1.1 Auction Platforms

Auction hall with an area of 1500 sq mt. has been proposed. The auction halls should have receiving areas, display areas, electronic auction areas and distribution areas. The halls should have fairly large spaces and flexibility for their division into smaller areas, which could be used for fruits, vegetables, as per requirements so that the activities can be divided easily without disturbing other areas. It will be connected to the loading-unloading area, sorting-grading area, drying yard and packaging facility.

7.1.2 Large Halls for Loading, Unloading, Grading and Packing

For loading, unloading, cleaning, grading and sorting, 5500 sq mt area has been apportioned. This area has to be provided near the Auction and Display areas. From the auction and display areas, the goods will be brought to the Grading and Packing Zone where modern machines will be installed for the same. These are connected to freight lifts whereby through mechanical means like conveyor belts, goods will be transported to dispatch areas or cold storage. The consignments will be graded and packed for immediate dispatch to the local markets, distribution to distant wholesale markets and repacked for export.

7.1.3 Packaging & Labeling Unit and Drying Yard

For packing, grading and drying facilities, a total space of 3750 MT has been proposed. These facilities are required for better price realization of horticulture produce.

7.1.4 Cold Storage & Warehousing Units

5000 MT of cold storage has been proposed for the proposed TM. This cold storage will be operated on CA technology. Total area required for the cold chambers will be 5000 sq mt. These units have to be provided at the rear end of the complex. Goods will be received and stored. The cold storages can also be hired out to the wholesalers, buyers and sellers for storage of goods.

5000 MT of dry storage space has been proposed for TM. Area required for the facility will be 2500 sq mt. This facility will be used by traders, wholesalers and farmers.

7.1.5 Parking Space for Containers, Trucks, Small Vehicles etc

Designated parking areas have been provided on Leased out/rent basis for Long term parking, short-term parking and docking areas for trucks, light motor vehicles, two – wheelers. Total area allocated for parking is 5000 sq mt., out of which 3750 sq mt are will be assigned for trucks and the remaining area for other vehicles. Truck parking has been planned based on peak arrival of trucks per day.

7.1.6 Traditional Shops for Traders

A total of 50 shops have been planned for the TM. Twenty five big shops of 50 sq mt each and 25 small shops of 25 sq mt each have been proposed. These shops will have two levels, one for storage and one for office. It will be possible to have a display area in the front. Corridors have to be provided in front of the shops for buyers to visit, discuss and negotiate.

7.1.7 Display Areas

Provision of display areas has to be made outside the Auction areas as the wholesalers, retailers and exporters will mainly require access to these areas for inspection of goods.

7.1.8 Viewing Galleries

These have to be provided at the mezzanine floor level of the auction hall for getting a complete view of the process. It should be equipped with all kinds of electronic gadgets like cameras etc. This will control and monitor the various activities like loading / unloading, packaging, distribution etc being carried out.

7.1.9 Office Areas/Quarters

Administrative buildings of 500 sq mt each have been proposed for the facility. Apart from this, it will have 800 sq mt of conference rooms and halls for organizing meetings, seminar etc. Besides these, other supplementary facilities like bank counters, ATM centers, etc could be housed.

7.1.10 Logistics Hub

A logistics hub has been planned inside TM. It will provide solutions for logistics services at single place. Area of 500 sq mt has been proposed for the same.

7.1.11 Circulation Pattern of the Market Facility

This market facility will generate heavy traffic movement of vehicles like trucks, containers, etc. Easy vehicular access has to be provided for all the activities being carried out within the complex. Roads, approaches and entry exit points of vehicles have to be designed in such a manner that the various movements of vehicles are segregated. Docking areas for trucks is to be provided in each zone wherever required.

7.1.12 Allied Shops and Food Court

Shops for various agri inputs like fertilizer, seed and pesticides has been proposed along with other agriculture extension facilities. Lodging facility of farmers along with food court is also proposed. Total area proposed for the facilities is 2500 sq mt.

7.1.13 Non Marketing Infrastructure

Non marketing facilities like guest houses, motel, auto repairing and parts shop etc. have been planned for the proposed TM. Total area planned for the facility is 3200 sq mt.

7.1.14 Other Service Areas

Administrative areas are to be provided which will have cash desk, service providers, public conveniences such as cafeterias, toilets, etc. Public Conveniences such as rest rooms, washrooms, toilets, cafeterias etc. also are to be provided for large number of truck drivers coming to these areas.

7.1.15 Additional Facilities

A Central Library and information center is to be provided which will give information regarding produce, cost, etc. Information sharing channels need to be created to connect to nodal centers in catchment areas to ensure connectivity with farmers, to establish forward linkages. Ten nodal centers are already present.

7.2 Collection Centers

Concept of modern terminal market revolves around the hub and spoke model. TM will act as hub and collection centers will act as spokes for the TM. Initially, only five collection centres have been proposed to be set up. These will be located in following districts-

1. Bargarh
2. Kalahandi
3. Sundergarh
4. Nuapada
5. Bauda

These collection centers have been proposed based on production of fruits and vegetables and geographical presence in the district. Basic facilities like grading, sorting and pre-cooling will be carried out at these collection centers. Though specific locations have not yet been identified for collection centers, it is assumed that the PE will identify the suitable location for collection centers.

Collection centers have not been proposed at Deogarh, Jhasuguda, Bolangir, Angul and Sonapur as these locations will directly supply to proposed TM. However, in the future, if PE finds it suitable, it can establish collection centers in these districts.

Chapter 8:
Project Cost and Major Assumptions

8.1 Project Cost

Project cost has been calculated taking **land cost at circle rate of Rs. 2.0 lakh per acre.** The Project is estimated to cost Rs. 7321 lakh. The cost estimates are based on industry standard. The detailed breakup of the cost of the Project is given below:

Table 24: Project Cost of MTM, Sambalpur

Particulars	Amount in Rs. Lakh
Land	145.00
Land Development	917.50
Buildings	2787.45
Plant Machinery & Equipments	2,193.25
Utilities & other fixed assets	528.50
Preliminary and Pre-Operative	373.63
Contingencies	340.02
Margin Money for Working Capital	35.86
Total Project Cost	**7,321**

Note: The project cost considered for grant does not include Margin Money for Working Capital and Non Marketing Infrastructure cost of Rs.384 lakh.

8.2 Means of Finance

The cost of the project is proposed to be financed through a mix of equity, grant from National Horticulture Mission (NHM) and term loans from banks/ FIs.

Table 25: Means of Finance for MTM, Sambalpur

Particulars	Amount in Rs. Lakh	Share
Equity	1,464	20.0%
Grant-NHM	2,761	37.7%
Debt	3,096	42.3%
Total	**7,321**	**100.0%**

For the purpose of financial projections, grant component has been considered as 40% of the eligible project cost. Further, various scenarios have been presented in following section by considering grant at various levels from 25 to 40 percent.

8.3 Details of Project Cost

8.3.1 Land

Cost of land (60 Acres) is taken at Rs 2 lakh per acre based on circle rates provided by Directorate of Horticulture. Currently, land is under the possession of the Directorate of Horticulture and same will be transferred to the PE. For Collection centers, land cost has been assumed as Rs. 10.0 lakh per acre as these centers will be situated in interior areas.

8.3.2 Land Development

Cost of land development has been estimated at Rs. 15.0 lakh/acre. Land development includes activities such as land filling, leveling, boundary wall, sewerage lines, storm water drainage, internal roads etc.

8.3.3 Buildings

Cost of buildings have been estimated at Rs1687.60 lakh and includes major components such as

- Civil construction for cold storage (5000 sqm @ Rs 12000/ sqm, including puff panels)
- Ripening chambers-8 chambers of 10 MT each (200 sqm @ Rs 14000/sqm)
- Warehouse-5000 MT (2500 sqm @ Rs 10000/sqm)
- Office building and traders shop (5050 sqm @ Rs 9200/sqm)
- Loading/ unloading and auction halls (5000 sqm @ Rs 5750/sqm)
- Sorting, grading area (2000 sqm @ Rs 5750/sqm)
- Packaging facilities (750 sqm @ Rs 5750/sqm) etc.

8.3.4 Equipment

The break-up of the estimated cost of major machinery is provided below:

Table 26: Cost Break up of Machinery and Equipments

Plant, Machinery & Equipments	Unit	No of units	Rate/ Unit (Rs)	Amount (Rs. Lakh)
Cold Store-2000 MT	MT	5	5000000	250.00
Ripening Chambers (8 chambers of 10 MT each)	TPD	20	640000	128.00
Sorting, grading, packaging facility-5 MT/Hr	Nos.	6	4500000	270.00
Conveyer based handling system	Nos.	5	3500000	175.00

Electronics Auction System	Ls			150.00
Weigh Bridge (30 MT)	Nos.	2	3000000	60.00
Loading Unloading facilities-Dock	Nos.	10	800000	80.00
Crate	Nos.	200000	270	540.00
Pallates	Nos.	6000	3300	198.00
Fork Lifts	Nos.	3	1200000	36.00
Weighing Machines	Nos.	30	30000	9.00
Testing & Certification Lab	Ls			75.00
Vehicles (Refer (2) and Normal (4))	Ls			88.00
Total-Main Market Complex				**2059.00**

8.3.5 Miscellaneous Fixed Assets / Utilities

The breakup of the estimated cost of the miscellaneous fixed assets and utilities is provided below:

Table 27: Utilities and Misc Assets

Utilities and Misc Assets	Amount (Rs. Lakh)
DG Sets (320 KVA x 3)	105.00
Power Supply system & control panels	150.00
Water supply treatment and distribution system	150.00
ETP/STP	50.00
Others	60.00
Total Utilities & other Assets	**515.00**

8.3.6 Preliminary & Pre-operative Expenses

The provision towards preliminary & pre-operative expenses includes expenses like salaries & administrative expenses, travel expenses, market development expenses, interest during construction period (interest for three quarters) etc. It is also assumed that the project will be completed over a period of one and half year. The interest during construction period is capitalized in the project cost. The detailed breakup is given below:

Table 28: Preliminary and Pre-operative Expenses

Particulars	Amount in Rs. Lakh
Interest on term loan during Construction	301.90
Administration related expenses	71.73
Total	**373.63**

8.3.7 Working Capital Requirement

The major revenue stream for the MTM (Modern Terminal Market) will be from market fee (user charges), rentals from shops, rentals of cold storage, sorting-grading-packaging facilities, income from crates, ripening chambers and other facilities like agri-mall, parking space etc. As the Terminal Market is mainly a service provider for its users, the firm will not be involved in trading of raw material for its business operations. Hence, the major component of working capital will be contributed to debtor due to current trade practices. At present, the credit cycle ranges from 15-30 days. The other major component will be short term liabilities like salary, wages, monthly electricity bills, debt component due within one year and other recurring expenses. The firm's working capital requirements for the first year are calculated as described below:

Table 29: Working Capital Requirement

Particulars	Holding Period (Days)	Amount in Rs. Lakh
Business expenses	30	66.26
Debtors	30	77.19
Total		**143.45**
Margin Money	25%	35.86

8.3.8 Contingencies

The amount is calculated at 5% of cost of site development, civil work, plant & machinery, other fixed assets and pre-op expenses.

8.4 Operating Cost Assumptions

8.4.1 Arrival Assumptions

Arrivals have been estimated at 250000 MT per annum at peak capacity. This figure has been arrived keeping in mind the annual production, annual arrivals in nearby mandis and arrivals in similar type of mandis. Total annual production in the catchment area is approximately 35 lakh MT. This will grow in future when there will be established market linkage of horticulture produce and better price realization.

8.4.2 Power Cost

The total connected load of the project is estimated at about 1200 KVA. The power tariff has been assumed at the currently prevalent tariff of Rs 5 per unit for industries with HT connection. Average Daily requirement of power is estimated to be about 11000 KWH at 70% average power factor.

8.4.3 Fuel Cost

Fuel cost for DG set is assumed as consumption of diesel 40 liters/ hr and average running of DG set for 10 hrs/ day. The cost of diesel is assumed at Rs 42/ liter.

8.4.4 Raw Material for packaging

The average cost of raw material for packaging facility is taken as Rs 100/ MT. It will be simple poly packaging/ shrink wrapping.

8.4.5 Employee Cost

The employee cost has been assessed based on an organization structure required for this type of facility. The managerial and the support staff and estimated cost for the proposed level of operations are tabulated below:

Table 30: Employee details

Grade/ Employee	Number	Salary/ pm (RS)	Total Monthly Cost (Rs)
General Manager	1	40000	40000
Manager Operations	2	15000	30000
Business Development	2	15000	30000
Operators (For cold storage plant etc.)	5	10000	50000
Maintenance (Electricians etc.)	3	8000	24000
Account & Admin	2	8000	16000
Security & Support Staff	6	4500	27000
Total Employee Cost (Per Month)	**21**		**217000**
Labour	**50**	**4000**	**24**

8.4.6 Maintenance Cost

Maintenance cost is assumed at 2% of cost of fixed assets, with 2.5% annual increment.

8.4.7 Cost of insurance

The cost of insurance has been assumed as 1.0% of WDV (Written down Value) of plant & machinery, miscellaneous fixed assets and other assets.

8.4.8 Admin & Selling Overheads

Admin & Selling overhead Cost has been assumed @ 2.0% of revenues

8.5 Financial Assumptions

8.5.1 Taxes

The Income Tax rate is assumed as flat 33.22%.

8.5.2 Depreciation Rates

Depreciation has been provided on straight-line method, as per the Companies Act, 1956, for book purposes, whereas for tax purposes, written down value method is employed. The rate of depreciation for plant & machinery and miscellaneous fixed assets is taken as 10% for book purposes by straight line method and 15% for tax purposes by WDV method. The assumed depreciation rates for various assets are given as below:

Table 31: Depreciation Rates

Assets Category	Book Depreciation	Tax Depreciation
Plant & Machinery	10.34%	15.00%
Miscellaneous Fixed Assets	10.34%	15.00%
Buildings-Plant	3.34%	5.00%
Buildings-Non Marketing	1.63%	5.00%

8.5.3 Interest

Interest would be charged to the Project at 13.00% p.a. for Term Loan and at 13.50% for working capital loan. Duration of the term loan will be 40 quarters including the moratorium period for initial six quarters.

8.6 Revenue Assumptions

Revenue assumptions of the Project are detailed in following sections-

8.6.1 User Charges

2% of value of arrivals will be taken as user charges for auction and market fees. Average value of produce has been considered at Rs.8000 per MT. From 4th years onwards user charges will be 4% of value of produce.

8.6.2 Rental from Traders Shop

Rental of Rs.200 per sq mt has been proposed for traditional mandi shops. Rental will be collected monthly.

8.6.3 Income from Agri Mall, Parking, Etc.

The revenue from these facilities includes rent from buildings such as agri-mall, canteen, lodging for farmers, parking space etc. The rental for commercial space (agri-mall) is taken as Rs 300/ sqm/month (for constructed area of 4000 sqm), parking as Rs 150/ truck (assuming about 21000 vehicles will visit the facility per

annum), weigh bridge rental is considered at Rs 250/ vehicle and for testing lab 1000 sample per month will be tested by charging an average price of Rs 500/ sample.

8.6.4 Crates User Charges

200000 crates have been proposed to be bought for the facility. User charges of Re. 1/day/crate have been proposed. Approximately 60% of crates have to be replaced every year. So we have deducted crate replenishment cost from crates user charges earned.

8.6.5 Cold Store

The charges assumed for cold storage facility are comparable to prevailing market rates in most part of the country. The average rental is taken as Rs 700/ MT per month.

8.6.6 Ripening

The ripening charges are assumed as Rs 1400/MT of ripened banana. The ripening quantity is taken as 20 MT per day throughout the year.

8.6.7 Sorting, grading, packaging facility

The charges are assumed at Rs 400/MT. It is also assumed that only 40% of peak arrival will go through these processes.

8.6.8 Warehouse

The rental assumed for storage of grains and other suitable commodities is Rs 100/ MT/Month.

8.6.9 Non Marketing Activities

Area of 3200 sq mt has been proposed for non marketing infrastructure. Guest house, motel, auto parts shop, restaurants etc. have been planned for the facility. The rental for space is taken as Rs 300/ sqm/month.

8.6.10 Capacity Utilization

The project has assumed 40% capacity utilization in the first year, which may be regarded as conservative considering the established road network, production in the area and vicinity to major consumption market of the state. Capacity utilization may be higher than the projected one.

Table 32: Estimated Capacity Utilization

Year	Capacity Utilization
Year I	40%
Year II	55%
Year III	70%
Year IV onwards	80%

8.7 Projected Financial Performance

The projected profitability statement, cash flows and balance sheet of Modern Terminal Market are given below.

Table 33: Projected Profitability Statement (Rs. Lakh)

Amount in Rs. Lakh (Land Cost as 2 Lakh per acre)							
Year	1	2	3	4	5	6	7
Revenues	926.29	1273.65	1621.00	2172.58	2172.58	2172.58	2172.58
Total Expenditure	389.12	450.92	513.81	557.75	552.83	548.29	541.18
EBIDTA	537.16	822.72	1107.19	1614.83	1619.75	1624.28	1631.40
Total Interest Cost	417.06	417.55	382.23	339.54	291.74	243.95	196.14
Depreciation	323.63	323.63	323.63	323.63	323.63	323.63	323.63
PBT	-203.53	81.54	401.33	951.66	1004.38	1056.70	1111.63
Tax	0.00	0.00	0.00	282.38	320.83	356.02	389.41
Net Profit (PAT)	-203.53	81.54	401.33	669.28	683.55	700.68	722.22
PAT Margin	-21.97%	6.40%	24.76%	30.81%	31.46%	32.25%	33.24%

The detailed projected income statement is attached as Annexure-1

The above table indicates that the project will be able to generate profit from 2nd year of operation at Rs. 2 lakh as land cost. The net profit is showing increasing trend, which indicates commercial sustainability of the proposed project. Though, there is loss (which is just an accounting number) in 1st year of operation, but the project will generate positive cash from 1st year of operations.

Table 34: Financial Performance indicators

Amount in Rs. Lakh (Land Cost as 2 Lakh per acre)							
Year	1	2	3	4	5	6	7
EBITDA Margin	57.99%	64.60%	68.30%	74.33%	74.55%	74.76%	75.09%
PAT margin	-21.97%	6.40%	24.76%	30.81%	31.46%	32.25%	33.24%
Debt-Equity Ratio	0.77	0.71	0.57	0.42	0.31	0.22	0.15
Debt to EBITDA ratio	5.96	3.70	2.44	1.47	1.24	1.01	0.78
Interest Coverage Ratio	1.29	1.97	2.90	4.76	5.55	6.66	8.32
DSCR	1.29	1.37	1.48	2.29	2.47	2.67	2.91
Average DSCR	2.09						
Project IRR	15.24%						

The DSCR for the proposed project is more than 1.50 throughout the term of loan and is regarded as at respectable level. It indicated the ability of project to re-pay its

debt liabilities. Moreover, the time series analysis of debt-equity ratio shows that project will be easily able to reduce debt burden from its capital structure. The IRR of project is estimated at 15.24 at Rs.2 lakh as land cost (Considering the grant component @ 40% of eligible cost of project for calculation of grant. As, all the project cost components are not eligible for grant, the effectively the grant component is 37% of project cost) and makes the project attractive to the investors.

Table 35: Projected Cash Flow Statement (Rs. Lakh)

Amount in Rs. Lakh (Land Cost as 2 Lakh per acre)								
Year	0	1	2	3	4	5	6	7
Sources								
Total Cash inflow	7321.21	227.69	430.72	748.37	1027.46	1003.93	1021.09	1042.46
Uses								
Total Uses	7285.34	143.45	216.21	395.50	410.35	359.95	359.98	359.77
Opening Cash Balance	0.00	35.86	120.10	334.62	687.49	1304.59	1948.57	2609.67
Surplus/ Deficit	35.86	84.24	214.51	352.87	617.10	643.98	661.10	682.69
Closing Cash Balance	**35.86**	**120.10**	**334.62**	**687.49**	**1304.59**	**1948.57**	**2609.67**	**3292.36**

The closing cash balance is always positive for the project and showing steady increasing trend. The detailed cash flow statement is attached as annexure-2**.**

The sensitivity analysis of major financial performance indicators IRR and DSCR is performed w. r. t. Grant component due to the fact that bidders will be submitting their proposals for various level of grants. The range for grant component is 25% to 40% of eligible cost of project. The table below shows the variation in IRR and DSCR with change in Grant component.

Table 36*:* Sensitivity Analysis

Land Cost	Grant (%)	25%	30%	35%	40%
Rs. 2 Lakh Land Cost	IRR (%)	8.70%	11.01%	12.75%	15.24%
	DSCR	1.5	1.7	1.9	2.1

The analysis shows that even if the grant component is at lower end (25%) the IRR and DSCR seems attractive from investor and lender's point of view if land cost is Rs 2 lakh per acre.

Annexure

Annexure 1: Projected Income Statement (Amount in Lakh Rs)

Amount in Rs. Lakh										
Year	1	2	3	4	5	6	7	8	9	10
Capacity Utilization	40%	55%	70%	80%	80%	80%	80%	80%	80%	80%
User Charges (Market fees)	160.00	220.00	280.00	640.00	640.00	640.00	640.00	640.00	640.00	640.00
Rental of Traders Shop	36.00	49.50	63.00	72.00	72.00	72.00	72.00	72.00	72.00	72.00
Income from agri mall, parking testing lab etc.	115.20	158.40	201.60	230.40	230.40	230.40	230.40	230.40	230.40	230.40
Crates User Charges	134.40	184.80	235.20	268.80	268.80	268.80	268.80	268.80	268.80	268.80
Revenue from Cold Store	154.00	211.75	269.50	308.00	308.00	308.00	308.00	308.00	308.00	308.00
Rental- Ripening Chambers	36.96	50.82	64.68	73.92	73.92	73.92	73.92	73.92	73.92	73.92
Sorting/ Grading Packaging facility	219.65	302.02	384.38	439.30	439.30	439.30	439.30	439.30	439.30	439.30
Rental-Warehouse	24.00	33.00	42.00	48.00	48.00	48.00	48.00	48.00	48.00	48.00
Non Marketing Income	46.08	63.36	80.64	92.16	92.16	92.16	92.16	92.16	92.16	92.16
Total Revenue	926.29	1273.65	1621.00	2172.58	2172.58	2172.58	2172.58	2172.58	2172.58	2172.58
Total Expenses	389.12	450.92	513.81	557.75	552.83	548.29	541.18	534.16	527.15	522.15
EBITDA	537.16	822.72	1107.19	1614.83	1619.75	1624.28	1631.40	1638.42	1645.43	1650.43
Interest on term loan	402.54	399.58	361.10	313.74	266.38	219.03	171.67	124.31	76.96	29.60
Interest on working capital borrowings	14.52	17.97	21.13	25.80	25.36	24.92	24.47	24.01	23.55	23.12
Depreciation	323.63	323.63	323.63	323.63	323.63	323.63	323.63	323.63	323.63	241.40
PBT	-203.53	81.54	401.33	951.66	1004.38	1056.70	1111.63	1166.47	1221.29	1356.32
Tax	0.00	0.00	0.00	282.38	320.83	356.02	389.41	420.51	449.69	476.56
Net Profit (PAT)	-203.53	81.54	401.33	669.28	683.55	700.68	722.22	745.95	771.60	879.76

Annexure 2: Projected Cash Flow Statement (Amount in Lakh Rs.)

Amount in Rs. Lakh											
Year	0	1	2	3	4	5	6	7	8	9	10
Sources											
Cash from Operations											
PAT		-203.53	81.54	401.33	669.28	683.55	700.68	722.22	745.95	771.60	879.76
Add Depreciation		323.63	323.63	323.63	323.63	323.63	323.63	323.63	323.63	323.63	241.40
Net Cash from Operations		120.10	405.17	724.96	992.91	1007.18	1024.31	1045.85	1069.58	1095.23	1121.15
Cash From Financing											
Equity	1464.24										
Grant	2760.54										
Term Loan	3096.43										
Increase in Working Capital	0.00	107.59	25.55	23.41	34.55	-3.25	-3.23	-3.39	-3.38	-3.38	-3.25
Total Cash inflow	7321.21	227.69	430.72	748.37	1027.46	1003.93	1021.09	1042.46	1066.20	1091.85	1117.90
Uses											
Capital expenditure	7285.34										
Increase in Working capital	0.00	143.45	34.07	31.21	46.07	-4.33	-4.30	-4.51	-4.51	-4.51	-4.34
Repayment of principal	0.00	0.00	182.14	364.29	364.29	364.29	364.29	364.29	364.29	364.29	364.29
Total Uses	7285.34	143.45	216.21	395.50	410.35	359.95	359.98	359.77	359.78	359.78	359.95
Opening Cash Balance	0.00	35.86	120.10	334.62	687.49	1304.59	1948.57	2609.67	3292.36	3998.79	4730.86
Surplus/ Deficit	35.86	84.24	214.51	352.87	617.10	643.98	661.10	682.69	706.42	732.07	757.95
Closing Cash Balance	35.86	120.10	334.62	687.49	1304.59	1948.57	2609.67	3292.36	3998.79	4730.86	5488.81

Annexure 3: Projected Balance Sheet (Amount in Lakh Rs)

Amount in Rs. Lakh											
Years	0	1	2	3	4	5	6	7	8	9	10
Liabilities											
Equity Capital	1,464.24	1,464.24	1,464.24	1,464.24	1,464.24	1,464.24	1,464.24	1,464.24	1,464.24	1,464.24	1,464.24
Reserve & Surplus	0.00	-203.53	-121.98	279.35	948.62	1,632.17	2,332.85	3,055.07	3,801.02	4,572.62	5,452.38
Grant/ Subsidy	2,760.54	2,760.54	2,760.54	2,760.54	2,760.54	2,760.54	2,760.54	2,760.54	2,760.54	2,760.54	2,760.54
Net Worth	4,224.78	4,021.25	4,102.80	4,504.12	5,173.40	5,856.95	6,557.63	7,279.85	8,025.80	8,797.40	9,677.16
Term Loan	3,096.43	3,096.43	2,914.29	2,550.00	2,185.71	1,821.43	1,457.14	1,092.86	728.57	364.29	0.00
Working Capital Loan	0.00	107.59	133.14	156.55	191.10	187.85	184.62	181.24	177.86	174.48	171.22
Total Liabilities	7,321.21	7,225.27	7,150.22	7,210.67	7,550.21	7,866.23	8,199.40	8,553.95	8,932.23	9,336.16	9,848.38
Assets											
Gross Fixed Assets	7,285.34	7,285.34	7,285.34	7,285.34	7,285.34	7,285.34	7,285.34	7,285.34	7,285.34	7,285.34	7,285.34
Less Accumulated Dep.	0.00	323.63	647.26	970.89	1,294.52	1,618.15	1,941.78	2,265.41	2,589.04	2,912.67	3,154.07
Net Fixed Assets	7,285.34	6,961.71	6,638.08	6,314.45	5,990.82	5,667.19	5,343.56	5,019.93	4,696.30	4,372.67	4,131.28
Working Capital	0.00	143.45	177.52	208.73	254.80	250.46	246.16	241.65	237.14	232.64	228.30
Cash Bal	35.86	120.10	334.62	687.49	1,304.59	1,948.57	2,609.67	3,292.36	3,998.79	4,730.86	5,488.81
Total Assets	7,321.21	7,225.27	7,150.22	7,210.67	7,550.21	7,866.23	8,199.40	8,553.95	8,932.23	9,336.16	9,848.38