



Maharashtra Agribusiness Network (MAGNET) Project

Toolkit for preparation of DPR Banana

Prepared by Grant Thornton Bharat LLP
Project Implementation Support Consultant (PISC)



Table of Contents

1. KEY NOTES	1
2. CROP PROFILE: BANANA	3
3. BANANA SNAPSHOT	3
4. BANANA CLUSTERS IDENTIFIED UNDER MAGNET	4
5. SOME USEFUL LINKS – MARKET INTELLIGENCE AND TECHNOLOGY	5
6. PREFERRED PROJECT PROMOTER PROFILE	6
7. MODEL I – PACKHOUSE OPERATIONS	7
8. MODEL II – PACKHOUSE OPERATIONS & BANANA CHIPS LINE	13
9. MODEL III - PACKHOUSE OPERATIONS & PULP PROCESSING LINE	20

1. KEY NOTES

1. These project plans are designed to assist as a ready sample for reference/ adoption by the applicants wishing to submit their DPRs for consideration of grant assistance under Output II of the MAGNET Project (GoM).
2. While these sample project plans are designed keeping a specific MAGNET crop as the target crop, users must understand that in majority cases most facilities are relevant for processing of other MAGNET crops as well. For instance:

- A Washing-Sorting-Grading Facility can be used for processing of all MAGNET crops (as per availability in the user's catchment zone). Facilities having round grader can ensure most of the round MAGNET fruits can be graded in the same facility.
- Similarly, a Pulping Unit or a Freeze-Drying Unit can be used for processing pulps of Banana, Custard Apple, Sapota, Guava, Strawberry, and Mango (as per availability in user's catchment zone).

Case to case basis, applicants may have to make certain variations or add specific machinery to enable processing of some crops. It is important that users understand that handling multiple MAGNET crops (based on availability in the catchment zone) is desirable to ensure year-round operations as well as technical and financial viability of the plants.

Users also need to ensure that at least 70% of the plant capacities must be utilized for MAGNET crops and the spare capacity can be utilized for non-MAGNET crops. [Only exception will be allowed in case of strawberries, wherein (in locations like Mahabaleshwar) applicants may not have abundant availability of other MAGNET crops].

3. **Users must understand that MAGNET does a profile screening and evaluates if the applicant's profile (in terms of recent year turnovers; experience in manufacturing and/or trading of same/ similar value-added products; technical and technology knowhow; backward and forward linkages, etc.) demonstrates applicant's abilities to handle proposed activities and final products marketing.**
4. Users may kindly note that **MAGNET's key focus is on Primary Processing and Preservation and some Secondary Processing in Integration** is also acceptable. MAGNET does not prefer/ promote high value adding tertiary processing, except on a case to case (merit) basis. In this context, a "PREFERRED PROJECT PROMOTER PROFILE" has been shared with each model.
5. The plans comprise major required technical civil works, key plant & machinery and utility equipment required for sound implementation and operation thereafter. Also, while designing the sample project plans, best efforts have been taken to include critical components; This does not restrict the user to add/reduce/modify the project components. While care has been taken to ensure ideal and optimum provision of all required civil areas/capacities and quantities of equipment's, **users must conduct their own research and, after thorough discussions with their prospective suppliers/ project consultants, design (i.e., capacities, quantities, etc.) their own projects accordingly.**
6. The project cost calculations are based on cost norms (of MIDH/MOFPI, wherever applicable). While preparing DPR, **users must necessarily seek quotations from key suppliers to arrive at their own project cost** accordingly. However, users must also note that grant, if the project is selected, shall be accorded as per prevailing cost norms.
7. This project plans herein are designed to handle banana (primarily) and other compatible MAGNET crops could also be handled in the same facility. While proposing multi-fruit handling (i.e., Banana and other MAGNET crops), users must take necessary care to incorporate changes in project components, if any.
8. "As per guidelines of Output II (Matching Grant Component, MAGNET Project, GoM), the promoter's contribution (equity) should be at least 20% of the total project cost. Thus, in the Means of Finance presented in each plan of this report, the Promoter Contribution is conservatively restricted to 20% of the Total Project Cost. While designing their own projects, project promoters may require infusing greater percentage of equity, based on term loan being sought from FI and grant being sought from MAGNET.







Exception: In case of CMRC applicants only, the equity contribution should be at least 5% of the total project cost. Thus, CMRC (applicant) users, may require restructuring their means of finance, also based on term loan being sought from FI and grant being sought from MAGNET. "

9. As per guidelines of Output II (Matching Grant Component, MAGNET Project, GoM), the limit of eligible Preliminary & Pre-operative expenses (for grant consideration) is maximum 5% of the eligible project cost or Rs. 20 Lakh, whichever is lower. Thus, P&P expenses in each of the plans presented in the project cost are conservatively restricted to same extent only. While designing their own projects, users may require provisioning for greater/ lesser amount of P&P, based on requirement of the project.
10. In the Project Cost of each of the plans presented herein this report, provision for components such as Working Capital Margin, Misc. Fixed Assets and Contingencies has not been made. As per guidelines of Output II (Matching Grant Component, MAGNET Project, GoM), these components are not eligible for grant. However, while designing their own projects, users may require provisioning for these components, based on requirement of the project.
11. The cost of utilities and material handling equipment will be considered under eligible project cost subject to restriction of eligible cost of same being maximum 25% of the total project cost.
12. Users may refer this report as reference/ guidance for developing their own project plans, however necessarily in conjunction with the EOI Guidelines.

Disclaimer: MAGNET Society/ Project and Grant Thornton (PISC) give no warranty and accepts no responsibility or liability for the accuracy, or the completeness of the information and materials contained in this report. Under no circumstances will the MAGNET Project and/or MAGNET Society or PISC be held responsible or liable in any way for any claims, damages, losses, expenses, costs or liabilities whatsoever (including without limitation, any direct or indirect damages for loss of profit, business interruption or loss of information) resulting or arising directly or indirectly from use of or from inability to use of this report, or from user's reliance on the information and material contained in this report.

2. CROP PROFILE: BANANA

Banana at Glance

-  India is the largest producer of Banana for production and area followed by China and Indonesia.
-  Indonesia has the highest productivity of Banana, followed by Ecuador
-  Andhra Pradesh, Gujarat, and Maharashtra are the 3 highest Banana producing states in India
-  Maharashtra produces 14% of the total production and is the largest exporter of fresh Banana in India
-  The average productivity of Banana in India is 34.0 MT/Ha while Maharashtra has the productivity of 56 MT/ha and ranks 4th in the country
-  Ecuador is the largest exporter and USA is the largest importer of Banana

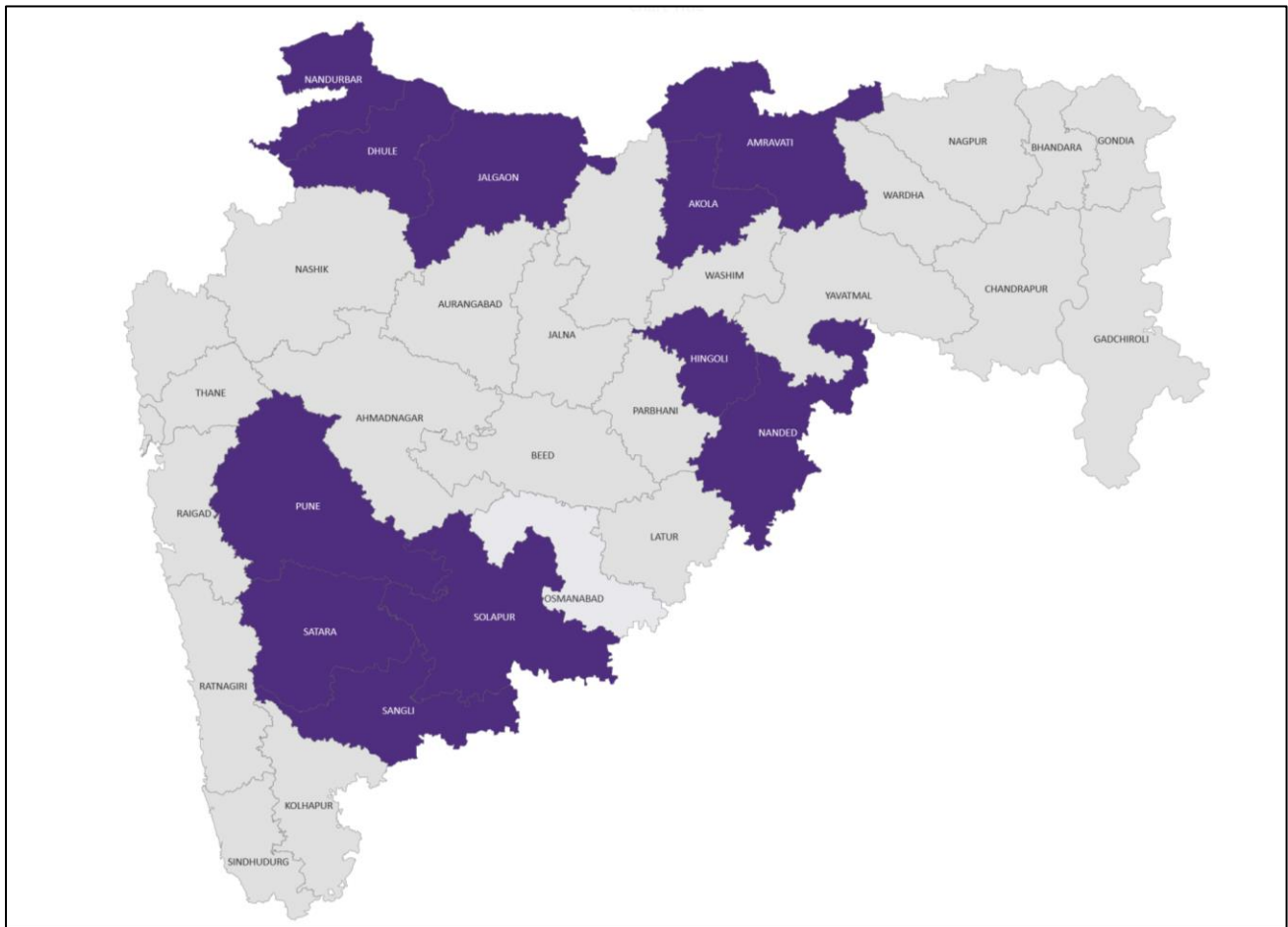
Banana is a tropical crop and grows well in a temperature range of 15°C – 35°C with relative humidity of 75-85%. It prefers tropical humid lowlands and is grown from the sea level to an elevation of 2000m above sea level. In India, this crop is being cultivated in climates ranging from humid tropical to dry mild subtropics through selection of appropriate varieties.

3. BANANA SNAPSHOT

India	Share of India Globally	25%
	Total Production in India	28.9 million MT
	Total Area under cultivation in India	0.73 million hectares
	Top 5 Banana producing States	Andhra Pradesh, Gujarat, Maharashtra, Tamil Nadu, Uttar Pradesh
	Agri Export zone of Banana	Maharashtra

Maharashtra	Total Production in Maharashtra	5.11 million MT
	Average yield in Maharashtra	56.33 MT/ha (2021-22)
	Top Banana producing Districts in MH	Jalgaon, Nanded, Solapur, Nandurbar, Akola
	Export Position of India	22 nd
	Seasonality of Banana in Maharashtra	Round the year

4. BANANA CLUSTERS IDENTIFIED UNDER MAGNET



District	Area in '000 ha	Quantity in '000 MT	Productivity (MT/ha)
Jalgaon	52.454	3409.510	65.00
Nanded	10.000	419.774	41.98
Solapur	7.710	424.084	55.00
Nandurbar	5.800	365.954	63.10
Akola	2.700	98.534	36.49
Pune	1.594	66.948	42.00
Dhule	1.384	70.584	51.00
Amravati	1.229	46.702	38.00
Sangli	0.661	17.848	27.00
Hingoli	0.600	2.100	3.50

Source: Area and Production Statistics, Ministry of Agriculture and Farmers Welfare: 2021-22

5. SOME USEFUL LINKS – MARKET INTELLIGENCE AND TECHNOLOGY

Market Intelligence		
Sr. No	Description	Web - Links
1	Economic analysis of marketing of banana in Solapur district of Maharashtra	Economic analysis of marketing of banana in Solapur district of Maharashtra (theopharmajournal.com)
2	Marketing of banana	Marketing of Banana Agriculture Marketing Agriculture Information IndiaAgronet
3	Expert system for banana	Banana Expert System (tnau.ac.in)
4	APEDA market intelligence report	Banana_Report.pdf (apeda.gov.in)

Project Components & Technology			
Sr. No	Components	Links	Document Page no
1	Sorting, Grading, Washing	http://www.nccd.gov.in/PDF/Cold-chain%20Awareness%20Booklet.pdf	8
2	Pre-cooling unit		8
3	Cold room (staging)		9
4	Cold storage units		9
5	Ripening Chamber		19
6	Refer van		9
7	Banana Chips Line	<ul style="list-style-type: none"> How Banana Chips Are Made In Factory? (bananasolution.com) Banana Chips Manufacturing Process (friermachinery.com) 	
8	Pulping Line	Fruit and vegetable processing - Ch08 Fruit specific preservation technologies (cont.) (fao.org)	
9	Blast Freeze	https://www.youtube.com/watch?v=WulyeVKN-lw	
10	Frozen Storage	<ul style="list-style-type: none"> Freezing of fruits and vegetables (fao.org) DE-11: Lesson 24. STORAGE OF FROZEN FOODS (iasri.res.in) 	

Disclaimer: The links herein are provided as a reference resource for research of applicants. MAGNET Project, MAGNET Society and Grant Thornton (PISC) give no warranty and accept no responsibility or liability for the accuracy, or the completeness of the content in these resources. The links herein may include research work of any institution or even technology overview by some technology supplier. MAGNET Project, MAGNET Society and PISC do not recommend or endorse works of any specific institution or any specific supplier or any specific make of technology or products. The links may contain information on certain processing activities (especially high value adding tertiary processing activities) which are not promoted by MAGNET for grant assistance. Users must refer to EOI Guidelines in this context or may contact MAGNET office for guidance.

6. PREFERRED PROJECT PROMOTER PROFILE

A. High Capital Investment & 'Tough to Compete' Businesses – which may be pursued by highly seasoned and experienced applicants

- VCO/FPO**, who is eligible as per eligibility *criteria* under Matching Grant (Output II) Guidelines of the MAGNET Project, **as well as** has been involved in manufacturing and/or trading of same/ similar value-added products of MAGNET/Non-MAGNET crops in recent years and has developed significant credentials in domestic and/or export markets. This should be supported by relevant documentation such as past **trade history, Contracts/ MoU/ Lol** with existing and potential buyers of project products.
- The promoter's experience and detailed project report exhibit considerable understanding of - technical and technology knowhow, market potential and market dynamics for the proposed products, risks and opportunities involved.
- Turnover & Net Worth**
 - **For VCO** – The audited turnover figures of recent 3 years and latest certified Net Worth (with supporting documents) of the company/firm demonstrate promoter's capabilities to invest in and operate the proposed project.
 - **For FPO** - The audited turnover figures of recent 3 years and the current Paid-up Capital (and reserves) of the company/co-operative demonstrate promoter's capabilities to invest in and operate the proposed project.

B. Moderate Capital Investment & Competitive Businesses – may be pursued by applicants having some relevant experience

- VCO/ FPO**, who is eligible as per eligibility criteria under Matching Grant (Output II) Guidelines of the MAGNET Project, **as well as** has been involved in manufacturing and/or trading of agri/food products of MAGNET/Non-MAGNET crops in recent years and has developed significant credentials in domestic and/or export markets.
- The promoter's experience and detailed project report exhibit considerable understanding of - technical and technology knowhow, market potential and market dynamics for the proposed products, risks and opportunities involved.
- Turnover & Net Worth**
 - **For VCO** – The audited turnover figures of recent 3 years and latest certified Net Worth (with supporting documents) of the company/firm demonstrate promoter's capabilities to invest in and operate the proposed project.
 - **For FPO** - The audited turnover figures of recent 3 years and the current Paid-up Capital (and reserves) of the company/co-operative demonstrate promoter's capabilities to invest in and operate the proposed project.

C. Low Capital Investment & Competitive Businesses – may be pursued by applicants having some relevant experience

- Any applicant (VCO/ FPO/ CMRC/ Other)** who eligible as per eligibility criteria under Matching Grant (Output II) Guidelines of the MAGNET Project.

7. MODEL I – PACKHOUSE OPERATIONS

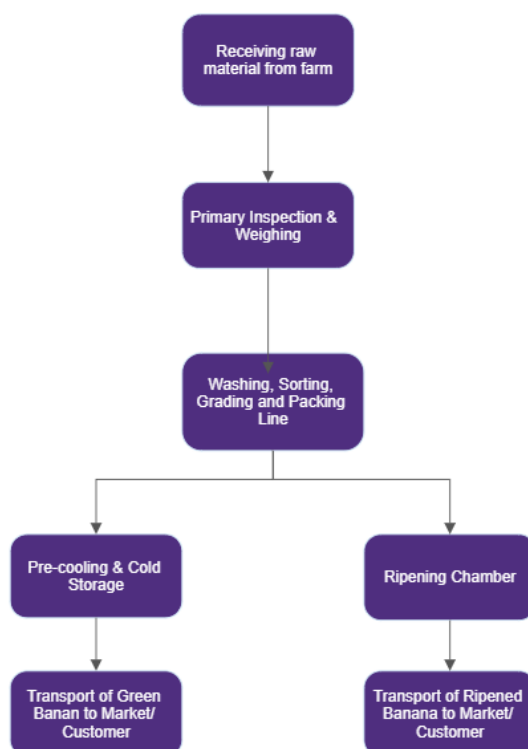
MODEL – I: PACKHOUSE OPERATIONS

Target MAGNET Crop	Primary Crop: Banana Secondary Crops: Any other MAGNET crops suitable for project.
Project Category	(Recommended as) Small Sized
Description	The proposed project primarily involves primary pack-house operations (integrated washing-sorting-grading-packing) and ripening system for banana crop. The facility shall enable trade of green banana as well as of ripened banana. For efficient operations of the facility, a suitable pre-cooling, staging cold room, cold storage as well as utilities that are required to support the main operations are incorporated.
Preferred Applicant Profile	Low Capital Investment & Competitive Businesses - Can be pursued by any applicant eligible as per Eligibility Criteria

i) Key Facilities:

S. No.	Type of facilities proposed to be created	Total Capacity	Total No. of Units
1	Packhouse (Washing, Sorting, Grading Line)	2 TPH	1
2	Pre-cooling	6 MT	1
3	Staging cold room	30 MT	1
4	Cold storage	80 MT	1
5	Ripening chamber	10 MT	2 chambers of 5 MT each
6	Utilities	Transformer, DG Set, APFC, Stabilizer, Crates and Pallets	1 Set

ii) Process Flow



iii) Project Cost:

S. No.	Components	Proposed Cost	*Eligible Cost	Grant on Eligible Cost (%)	Matching Grant (Rs. Lakhs)
1	Technical Civil Works		33.04	60%	19.82
2	Non-Technical Civil Works		-	0%	-
3a	Main P&M		97.94	60%	58.76
3b	Utilities		75.74	60%	32.56
4	Reefer Van		-	60%	-
5	Misc. Fixed Assets		-	0%	-
6	Contingencies		-	0%	-
7	Working Capital Margin		-	0%	-
	Subtotal		206.72		
8	Preliminary & Pre-operative Expenses		10.34	60%	6.20
	Total		217.05		117.35

iv) Means of Finance

Means of Finance	Proposed Amount (Rs. Lakhs)	Eligible Cost (Rs. Lakhs)	% of Total Cost
Promoter Equity		56.30	26%
Bank Term Loan		43.41	20%
Matching Grant		117.35	54%
Total		217.05	100%

*The project cost calculations are based on cost norms (of MIDH/MOFPI, wherever applicable). While preparing DPR, users must necessarily seek quotations from key suppliers to arrive at their own project cost accordingly. However, users must also note that grant, if the project is selected, shall be accorded as per prevailing cost norms.

Civil Works (Puff Panels/ Brick Wall)							
							Rupees in Lakh
Sr. No.	Description	Area (Sq. Meter)	Cost Norm Per sq.m.	Total Cost (As per Cost Norm)	Taxes	Total Eligible Cost	Remark
A	Technical Civil Work						
1	Washing, Sorting, Grading Area	200	0.1	20.00	3.60	23.60	As per cost norms
2	Pre-cooling Chamber	30		-	-	-	Consolidated cost norms applied in P&M
3	Staging Cold Room	50		-	-	-	
4	Cold storage	75		-	-	-	
5	Ripening Area (2 Chambers)	30		-	-	-	As per cost norms
6	Machine room	20	0.1	2.00	0.36	2.36	
7	Toilets (Separate for Male & Female)	20	0.1	2.00	0.36	2.36	
8	Water tank - UGT	LS		2.00	0.36	2.36	Actual requirement of water will vary as per applicant's end use
9	Water tank - OHT	LS		2.00	0.36	2.36	
	Sub Total (A)	425.00		28.00	5.04	33.04	
B	Non-Technical Civil Works						
1	Administrative Office	-	-	-	-	-	Ineligible
2	Canteen	-	-	-	-	-	
3	Internal Roads/ Compound Wall	-	-	-	-	-	
	Sub Total (B)			-	-	-	
	Grand Total (A+B)	425.00		28.00	5.04	33.04	

Plant & Machinery									
									Rupees in Lakh
Sr. No	Plant and Machinery	Capacity	Quantity	Critical/Optional	Cost Norm per unit	Total Cost (All Units)	Taxes	Total Eligible Cost	Remark
A	Main Plant & Machinery								
1	Pre-cooling Chamber	6 MT each	1	Critical	25.00	25.00	4.50	29.50	As per cost norms
2	Staging Cold Room	30 MT each	1	Critical	15.00	15.00	2.70	17.70	As per cost norms
3	Ripening Chamber	5 MT each	2	Critical	1.00	10.00	1.80	11.80	As per cost norms
4	Cold Storage	80 MT	1	Critical	0.10	8.00	1.44	9.44	As per cost norms
5	Washing, Sorting, Grading Line	2 TPH							
a	Fruit Washer		1	Critical	25.00	25.00	4.50	29.50	As per cost norms
b	Surface Dryer Fan Conveyor		1	Critical					
c	Conveyor Belt		1	Critical					
d	Sorting Tables		2	Critical					
e	Weighing Machines	1 unit x 50 KG, 1 Unit X 100 Kg	2	Critical					
f	SS Packing Tables		2	Critical					
g	Strapping Machine		1	Optional					
	Subtotal (A)					83.00	14.94	97.94	
B	Utilities								
1	Transformer	80 KVA	1	Critical	1.15	1.15	0.21	1.36	As per cost norms

Plant & Machinery									
Rupees in Lakh									
Sr. No	Plant and Machinery	Capacity	Quantity	Critical/Optional	Cost Norm per unit	Total Cost (All Units)	Taxes	Total Eligible Cost	Remark
2	Electrification	Misc.	1 Set	Critical	4.00	4.00	0.72	4.72	
3	Solar Power system (On grid/Off grid)	60 KW	1	Optional	32.73	32.73	5.89	38.62	As per cost norms
4	DG Set	60 KVA	1	Critical	6.00	6.00	1.08	7.08	As per cost norms
5	Automatic Power Factor Controller	80 KVA	1	Critical	0.72	0.72	0.13	0.85	
6	Servo Voltage Stabilizer	80 KVA	1	Critical	0.77	0.77	0.14	0.91	
7	RO Plant	1 KLPH	1	Optional	1.75	1.75	0.32	2.07	
8	ETP	10 KLD	1 Set	Optional	2.00	2.00	0.36	2.36	
9	STP	5 KLD	1 Set	Critical	6.67	6.67	1.20	7.87	
10	Fire Safety Equipment	Misc.	1 Set	Critical	4.25	4.25	0.77	5.02	1% of technical civil area
11	Plastic Crates	20 KG	400	Critical	0.00	1.10	0.20	1.30	As per cost norms
12	Plastic Pallets	1 MT	110	Critical	0.03	2.75	0.50	3.25	
13	Hand pallet truck	2 MT	1	Critical	0.30	0.30	0.05	0.35	Eligible cost as per market rate analysis
	Subtotal (B)					64.19	11.55	75.74	
	Grand Total (A+B)					147.19	26.49	173.68	

8. MODEL II – PACKHOUSE OPERATIONS & BANANA CHIPS LINE

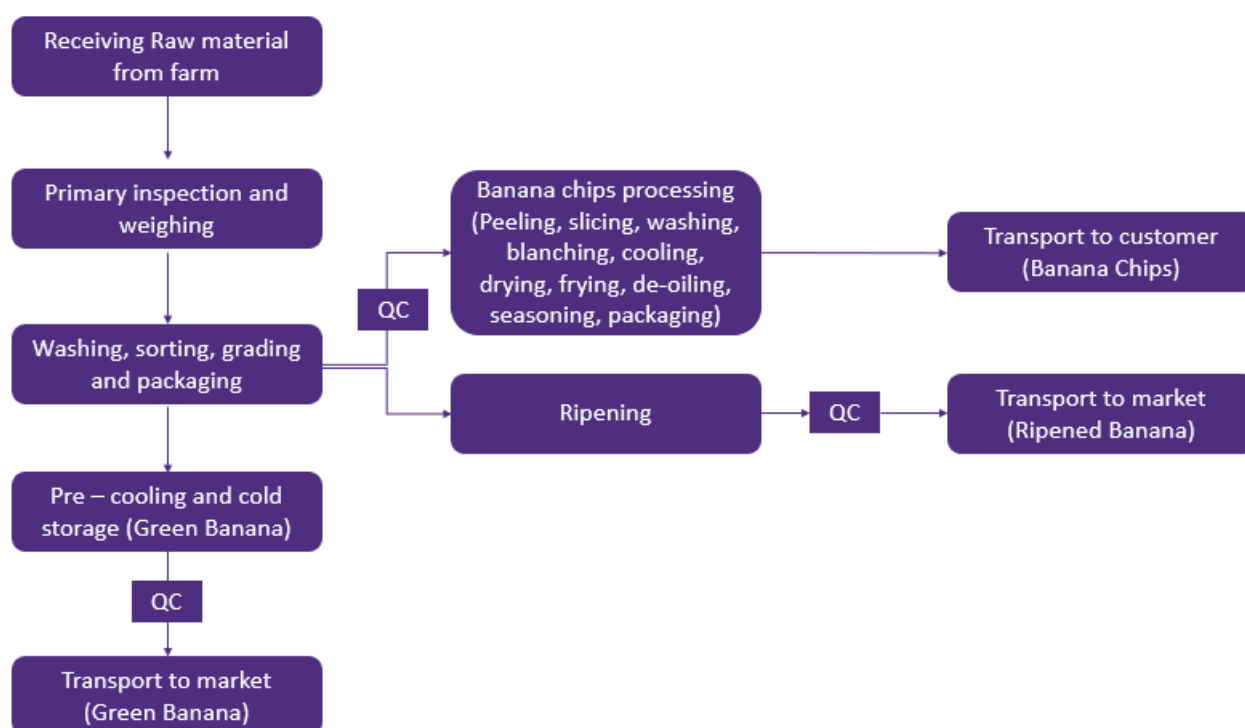
MODEL – II: PACKHOUSE OPERATIONS & BANANA CHIPS LINE

Target MAGNET Crop	Primary Crop: Banana Secondary Crops: Any other MAGNET crops suitable for project
Project Category	(Recommended as) Small Sized
Description	The proposed project primarily involves primary pack-house operations (integrated pack house) and ripening system for banana crop. The facility shall enable trade of green banana as well as of banana chips. For efficient operations of the facility, a suitable pre-cooling, staging cold room, cold storage, as well as utilities that are required to support the main operations are incorporated.
Preferred Applicant Profile	Low Capital Investment & Competitive Businesses – may be pursued by applicants having some relevant experience

i) Key Facilities:

S. No.	Type of facilities proposed to be created	Capacity	No. of Units
1	Packhouse (Washing, Sorting, Grading Line)	2 TPH	1
2	Pre-cooling	6 MT	1
3	Staging Cold Room	30MT	1
4	Cold storage	80 MT	1
5	Ripening Chamber	10 MT	2 units of 5 MT each
6	Banana Chips Line	500 kg/hr	1
7	Utilities	Transformer, DG Set, APFC, Stabilizer, Crates and Pallets	1 Set

ii) Process flow:



iii) Project Cost:

S. No.	Components	Proposed Cost	Eligible Cost*	Grant on Eligible Cost (%)	Matching Grant (Rs. Lakhs)
1	Technical Civil Works		48.97	60%	29.38
2	Non-Technical Civil Works		-	0%	-
3a	Main P&M		115.05	60%	69.03
3b	Utilities		82.69	60%	38.86
4	Reefer Van		-	60%	-
5	Misc. Fixed Assets		-	0%	-
6	Contingencies		-	0%	-
7	Working Capital Margin		-	0%	-
	Subtotal		246.71		
8	Preliminary & Pre-operative Expenses		12.34	60%	7.40
	Total		259.04		144.67

iv) Means of Finance

Means of Finance	Proposed Cost (Rs. Lakhs)	Eligible Amount (Rs. Lakhs)	% of Total Cost
Promoter Equity		62.57	24%
Bank Term Loan		51.81	20%
Matching Grant		144.67	56%
Total		259.04	100%

*The project cost calculations are based on cost norms (of MIDH/MOFPI, wherever applicable). While preparing DPR, users must necessarily seek quotations from key suppliers to arrive at their own project cost accordingly. However, users must also note that grant, if the project is selected, shall be accorded as per prevailing cost norms.

Civil Works							Rupees in Lakh
Sr. No.	Description	Area (Sq. Meter)	Cost Norm Per sq. m.	Total Cost (As per Cost Norm)	Taxes	Total Eligible Cost	Remark
A	Technical Civil Work						
1	Washing, Sorting, Grading Area	200	0.1	20.00	3.60	23.60	As per cost norms
2	Pre-cooling Chamber	30		-	-	-	Consolidated cost norms applied in P&M
3	Staging Cold Room	50		-	-	-	
4	Cold storage	75		-	-	-	
5	Ripening Area (2 Chambers)	30		-	-	-	
6	Chips Processing Area	120	0.1	12.00	2.16	14.16	As per cost norms
7	Testing Lab Area	15	0.1	1.50	0.27	1.77	
8	Machine room	20	0.1	2.00	0.36	2.36	
9	Toilets (Separate for Male & Female)	20	0.1	2.00	0.36	2.36	
10	Water tank - UGT	LS		2.00	0.36	2.36	Actual requirement of water will vary as per applicant's end use
11	Water tank - OHT	LS		2.00	0.36	2.36	
	Sub Total (A)	560.00		41.50	7.47	48.97	
B	Non-Technical Civil Works						
1	Administrative Office	-	-	-	-	-	Ineligible
2	Canteen	-	-	-	-	-	
3	Internal Roads/ Compound Wall	-	-	-	-	-	
	Sub Total (B)			-	-	-	
	Grand Total (A+B)	560.00		41.50	7.47	48.97	

Plant & Machinery									
									Rupees in Lakh
Sr. No	Plant and Machinery	Capacity	Quantity	Critical/Optional	Cost Norm per unit	Total Cost (All Units)	Taxes	Total Eligible Cost	Remark
A	Main Plant & Machinery								
1	Pre-cooling Chamber	6 MT each	1	Critical	25.00	25.00	4.50	29.50	As per cost norms
2	Staging Cold Room	30 MT each	1	Critical	15.00	15.00	2.70	17.70	As per cost norms
3	Ripening Chamber	5 MT	2	Critical	1.00	10.00	1.80	11.80	As per cost norms
4	Cold Storage	80 MT	1	Critical	0.10	8.00	1.44	9.44	As per cost norms
5	Washing, Sorting, Grading Line	2 TPH							
a	Fruit Washer		1	Critical	25.00	25.00	4.50	29.50	As per cost norms
b	Surface Dryer Fan Conveyor		1	Critical					
c	Conveyor Belt		1	Critical					
d	Sorting Tables		2	Critical					
e	Weighing Machines	1 unit x 50 KG, 1 Unit X 100 Kg	2	Critical					
f	SS Packing Tables		2	Critical					
g	Box Strapping Machine		1	Optional					
6	Banana Chips Line (Manual)								

Plant & Machinery									
Rupees in Lakh									
Sr. No	Plant and Machinery	Capacity	Quantity	Critical/Optional	Cost Norm per unit	Total Cost (All Units)	Taxes	Total Eligible Cost	Remark
a	Banana Chips Processing Facility (includes banana washing tank, peeling machine, slicing/ dicing, gas furnace with burners, frying pans, rotary mixer, SS utensils & crates, weighing scales, etc.)	500 KG/Hour (input)	1	Critical	10.00	10.00	1.80	11.80	Eligible cost as per market rate analysis
b	Form Fill Seal (FFS) Machine	10-20 PPM	1	Critical	1.50	1.50	0.27	1.77	As per cost norms
c	Metal Detector		1	Critical	2.00	2.00	0.36	2.36	Eligible cost as per market rate analysis
7	Lab equipment	Misc. (As required for plant operations)	1 Set	Optional	1.00	1.00	0.18	1.18	
	Subtotal (A)					97.50	17.55	115.05	
B	Utilities								
1	Transformer	80 KVA	1	Critical	1.15	1.15	0.21	1.36	As per cost norms
2	Electrification	Misc.	1 Set	Critical	4.00	4.00	0.72	4.72	
3	Solar Power system (On grid/Off grid)	60 KW	1	Optional	32.73	32.73	5.89	38.62	As per cost norms
4	DG Set	60 KVA	1	Critical	6.00	6.00	1.08	7.08	As per cost norms

Plant & Machinery									
									Rupees in Lakh
Sr. No	Plant and Machinery	Capacity	Quantity	Critical/Optional	Cost Norm per unit	Total Cost (All Units)	Taxes	Total Eligible Cost	Remark
4	Automatic Power Factor Controller	80 KVA	1	Critical	0.72	0.72	0.13	0.85	
5	Servo Voltage Stabilizer	80 KVA	1	Critical	0.77	0.77	0.14	0.91	
6	Air Compressor with Air Dryer (for packing machine)	54 CFM	1 Set	Critical	4.54	4.54	0.82	5.36	
7	RO Plant	1 KLPH	1	Optional	1.75	1.75	0.32	2.07	
8	ETP	10 KLD	1 Set	Optional	2.00	2.00	0.36	2.36	
9	STP	5 KLD	1 Set	Critical	6.67	6.67	1.20	7.87	
10	Fire Safety Equipment	Misc.	1 Set	Critical	5.60	5.60	1.01	6.61	1% of technical civil area
11	Plastic Crates	20 KG	400	Critical	0.00	1.10	0.20	1.30	As per cost norms
12	Plastic Pallets	1 MT	110	Critical	0.03	2.75	0.50	3.25	
13	Hand pallet truck	2 MT	1	Critical	0.30	0.30	0.05	0.35	Eligible cost as per market rate analysis
	Subtotal (B)					70.08	12.61	82.69	
	Grand Total (A+B)					167.58	30.16	197.74	

9. MODEL III - PACKHOUSE OPERATIONS & PULP PROCESSING LINE

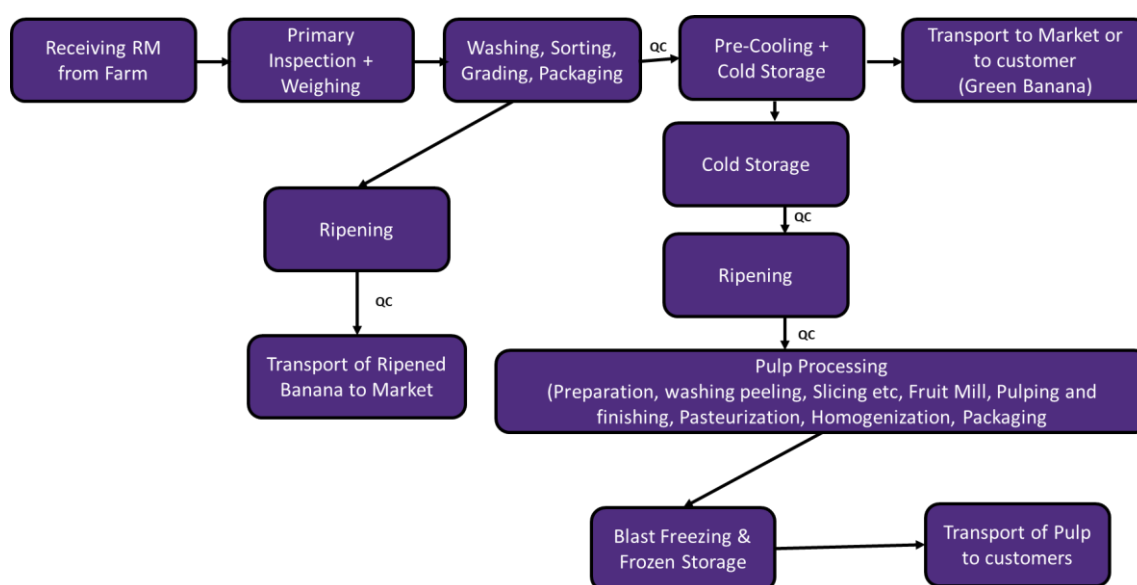
MODEL – III: PACKHOUSE OPERATIONS & PULP PROCESSING LINE

Target MAGNET Crop	Primary Crop: Banana Secondary Crops: Any other MAGNET crops suitable for the project
Project Category	(Recommended as) Large Sized
Description	The proposed project primarily involves primary pack-house operations (integrated washing-sorting-grading-packing), ripening chamber and secondary processing (pulping & freezing) for banana crop. For efficient operations of the facility, a suitable pre-cooling, staging cold room, cold storage, frozen storage, reefer vans (for transportation of finished products), as well as utilities that are required to support the main operations are incorporated.
Preferred Applicant Profile	Moderate Capital Investment & Competitive Businesses - Can be pursued by any applicant eligible as per Eligibility Criteria

i) Key Facilities:

S. No.	Type of facilities proposed to be created	Capacity	No. of Units
1	Packhouse (Washing, Sorting, Grading Line)	4 TPH	1
2	Pre-cooling Chamber	12 MT	2 units of 6 MT each
3	Ripening chamber	10 MT	2 units of 5 MT each
4	Staging Cold Room	30 MT	1
5	Cold Storage	100 MT	1
6	Pulp Processing Line	2 TPH (Input)	1
7	Blast Freezer	2 MT per batch	1
8	Frozen Storage	150 MT	1
9	Reefer Van	8 MT	2 units of 4 MT each
10	Utilities	Transformer, DG Set, APFC, Stabilizer, Crates and Pallets	1 Set

ii) Process Flow:



ii) Project Cost:

S. No.	Components	Proposed Cost	Eligible Cost*	Grant on Eligible Cost (%)	Matching Grant (Rs. Lakhs)
1	Technical Civil Works		81.13	60%	48.68
2	Non-Technical Civil Works		-	0%	-
3a	Main P&M		236.06	60%	141.64
3b	Utilities		185.37	60%	82.47
4	Reefer Van		27.27	60%	16.36
5	Misc. Fixed Assets		-	0%	-
6	Contingencies		-	0%	-
7	Working Capital Margin		-	0%	-
	Subtotal		529.82		
8	Preliminary & Pre-operative Expenses		20.00	60%	12.00
	Total		549.82		301.15

iii) Means of Finance

Means of Finance	Proposed Cost (Rs. Lakhs)	Eligible Amount (Rs. Lakhs)	% of Total Cost
Promoter Equity		138.71	25%
Bank Term Loan		109.96	20%
Matching Grant		301.15	55%
Total		549.82	100%

*The project cost calculations are based on cost norms (of MIDH/MOFPI, wherever applicable). While preparing DPR, users must necessarily seek quotations from key suppliers to arrive at their own project cost accordingly. However, users must also note that grant, if the project is selected, shall be accorded as per prevailing cost norms.

Civil Works (Puff Panels/ Brick Wall)							
							Rupees in Lakh
Sr. No.	Description	Area (Sq. Meter)	Cost Norm Per Sq.m	Total Cost (As per Cost Norm)	Taxes	Total Eligible Cost	Remark
A	Technical Civil Work						
1	Pre-cooling Chamber	60	-	-	-	-	Consolidated cost norms applied in P&M
2	Staging Cold Room	50	-	-	-	-	
3	Cold Storage	95	-	-	-	-	
4	Ripening Chambers	30	-	-	-	-	
5	Frozen storage area	140	-	-	-	-	
6	Blast Area	20	-	-	-	-	
7	Washing, Sorting, Grading Area	300	0.10	30.00	5.40	35.40	As per cost norms
8	Processing (Pulping) and Packaging Area	150	0.10	15.00	2.70	17.70	
9	Boiler area	50	0.10	5.00	0.90	5.90	
10	Machine room area	20	0.10	2.00	0.36	2.36	
11	Testing Lab area	15	0.10	1.50	0.27	1.77	
12	Toilets (Separate for Male & Female)	35	0.10	3.50	0.63	4.13	
13	Weighbridge Civil Works	LS		1.75	0.32	2.07	Eligible cost as per market rate analysis
14	Water tank - UGT	LS		6.00	1.08	7.08	Actual requirement of water will vary as per applicant's end use
15	Water tank - OHT	LS		4.00	0.72	4.72	
	Sub Total (A)	965.00		68.75	12.38	81.13	
B	Non-Technical Civil Works						
1	Administrative Office	-	-	-	-	-	Ineligible
2	Canteen	-	-	-	-	-	
3	Internal Roads/ Compound Wall	-	-	-	-	-	
	Sub Total (B)			-	-	-	
	Grand Total (A+B)	965.00		68.75	12.38	81.13	

Plant & Machinery									
									Rupees in Lakh
Sr. No	Plant and Machinery	Capacity	Quantity	Critical/Optional	Cost Norm per unit	Total Cost (All Units)	Taxes	Total Eligible Cost	Remark
A	Main Plant & Machinery								
1	Pre-cooling Chamber	6 MT	2	Critical	25.00	50.00	9.00	59.00	As per cost norms
2	Staging Cold Room	30 MT	1	Critical	15.00	15.00	2.70	17.70	As per cost norms
3	Cold Storage	100 MT	1	Critical	0.10	10.00	1.80	11.80	As per cost norms
4	Ripening Chamber	5 MT each	2	Critical	1.00	10.00	1.80	11.80	As per cost norms
5	Washing, Sorting, Grading Line	4 TPH							
a	Fruit Washer		1	Critical	40.00	40.00	7.20	47.20	As per cost norms
b	Surface Dryer Fan Conveyor		1	Critical					
c	Conveyor Belt		1	Critical					
d	Sorting Tables		4	Critical					
e	Weighing Machines	1 unit x 50 KG, 1 Unit X 100 Kg	2	Critical					
f	SS Packing Tables		4	Critical					
g	Box Strapping Machine		1	Optional					
6	Pulping Line (fruit mill, pulper, pasteurizer)	2 TPH Line (input basis)	1 Set	Critical	40.00	40.00	7.20	47.20	Eligible cost as per market rate analysis
7	Nitrogen Flushing			Critical	5.55	5.55	1.00	6.55	As per cost norms
8	Blast Freezer (Including refrigeration and PEB structure)	2 MT/ Batch	1	Critical	50.00	50.00	9.00	59.00	As per cost norms

Plant & Machinery									
Rupees in Lakh									
Sr. No	Plant and Machinery	Capacity	Quantity	Critical/Optional	Cost Norm per unit	Total Cost (All Units)	Taxes	Total Eligible Cost	Remark
9	Frozen Storage	150 MT	1	Critical	0.15	22.50	4.05	26.55	As per cost norms
10	Lab equipment	Misc. (As required for plant operations)	1 Set	Critical	2.00	2.00	0.36	2.36	
11	Metal detector (Conveyor belt)		1	Critical	5.00	5.00	0.90	5.90	Eligible cost as per market rate analysis
	Subtotal (A)					200.05	36.01	236.06	
B	Utilities								
1	Transformer	220 KVA	1	Critical	3.30	3.30	0.59	3.89	As per cost norms
2	Electrification	Misc.	1 Set	Critical	11.00	11.00	1.98	12.98	
3	Solar Power system (On grid/Off grid)	160 KW	1	Optional	35.00	35.00	6.30	41.30	As per cost norms; Grant on solar system capped at Rs. 35 lakhs
4	DG Set	160 KVA	1	Critical	11.36	11.36	2.04	13.40	As per cost norms
5	Automatic Power Factor Controller	220 KVA	1	Critical	1.98	1.98	0.36	2.34	
6	Servo Voltage Stabilizer	220 KVA	1	Critical	2.04	2.04	0.37	2.40	
7	Air compressor with air dryer	54 CFM	1	Critical	4.54	4.54	0.82	5.36	
8	Water Softening/ RO Plant	2 KLPH	1	Critical	3.50	3.50	0.63	4.13	
9	ETP	20 KLD	1 Set	Critical	6.00	6.00	1.08	7.08	
10	STP	10 KLD	1 Set	Critical	13.33	13.33	2.40	15.73	
11	Fire Safety equipment	Misc.	1 Set	Critical	9.65	9.65	1.74	11.39	1% of technical civil area
12	Plastic Crates	20 KG	800	Critical	0.00	2.20	0.40	2.60	As per cost norms
13	Plastic Pallets	1 MT	280	Critical	0.03	7.00	1.26	8.26	

Plant & Machinery									
Rupees in Lakh									
Sr. No	Plant and Machinery	Capacity	Quantity	Critical/Optional	Cost Norm per unit	Total Cost (All Units)	Taxes	Total Eligible Cost	Remark
14	Hand pallet truck	2 MT	2	Critical	0.30	0.60	0.11	0.42	Eligible cost as per market rate analysis
15	Battery Operated Forklift	1MT	1	Critical	10.00	10.00	1.80	7.08	
16	Dock Doors		1	Optional	7.00	7.00	1.26	8.26	As per cost norms
17	Dock Levelers		1	Optional					
18	Dock Shelter		1	Optional					
19	Weighbridge (Excluding Civil Works)	60 MT	1	Optional	7.00	7.00	1.26	8.26	
20	Steam boiler with accessories (Oil fired)	500 Kg	1	Critical	15.00	15.00	2.70	17.70	
21	Cooling Tower	150 TR	1	Critical	1.50	1.50	0.27	1.77	
22	Water Chiller	50 TR	1	Critical	9.33	9.33	1.68	11.01	
	Subtotal (B)					161.33	29.04	185.37	
C	Reefer Vans								
1	Reefer Van 1- Negative temperature	4 MT	1	Critical	11.56	11.56	2.08	13.64	As per cost norms
2	Reefer Van 2- Positive temperature	4 MT	1	Optional	11.56	11.56	2.08	13.64	As per cost norms
	Subtotal (C)					23.11	4.16	27.27	
	Grand Total (A+B+C)					384.49	69.21	448.70	

Annexure I: District wise Area and Production of Banana for Maharashtra: 2021- 22

S.No.	District	Banana		
		Area ('000 Ha)	Production ('000 MT)	Productivity (MT/Ha)
1	Ahmednagar	0.680	17.000	25.00
2	Akola	2.700	98.534	36.49
3	Amravati	1.229	46.702	37.99
4	Aurangabad	0.412	13.596	33.00
5	Beed	0.353	10.590	30.00
6	Bhandara	0.023	0.240	10.42
7	Buldhana	0.391	12.733	32.61
8	Chandrapur	-	-	-
9	Dhule	1.384	70.584	51.00
10	Gadchiroli	0.006	0.180	30.00
11	Gondia	0.067	2.087	31.06
12	Hingoli	0.600	2.100	3.50
13	Jalgaon	52.454	3409.510	65.00
14	Jalna	0.743	23.627	31.80
15	Kolhapur	0.343	7.632	22.25
16	Latur	0.050	1.790	35.80
17	Nagpur	0.029	0.966	33.31
18	Nanded	10.000	419.774	41.98
19	Nandurbar	5.800	365.954	63.10
20	Nashik	0.004	0.232	58.00
21	Osmanabad	0.570	14.100	24.74
22	Palghar	0.236	9.205	39.00
23	Parbhani	0.715	39.021	54.57
24	Pune	1.594	66.948	42.00
25	Raigad	0.060	1.768	29.71
26	Ratnagiri	0.132	1.378	10.44
27	Sangli	0.661	17.848	27.00
28	Satara	0.300	10.000	33.31
29	Sindhudurg	1.136	16.676	14.68
30	Solapur	7.710	424.084	55.00
31	Thane	0.016	0.021	1.33
32	Wardha	0.243	6.804	28.00
33	Washim	0.027	0.810	30.00
34	Yavatmal	0.186	5.450	29.30

Source: Area and Production Statistics, Ministry of Agriculture and Farmers Welfare: 2021-22

Web-link: <http://www.aps.dac.gov.in/Public/Report.aspx>

Contact Details



**Project Management Unit (PMU),
MAGNET Society**

**386/2, Sharada Chambers, 10th Floor,
Shankar Seth Road, Pune 411037**

Website: www.magnetadb.com

Email: mg@magnetadb.com



Grant Thornton

#GTBharat
SHAPING A VIBRANT INDIA

**Project Implementation Support
Consultant (PISC), MAGNET**

Grant Thornton Bharat LLP

Website: www.grantthornton.in

Email: magnet.pisc@in.gt.com