PROJECT REPORT

Of

PLASTIC WASTE RECYCLING

PURPOSE OF THE DOCUMENT

This particular pre-feasibility is regarding Plastic Waste Recycling

The objective of the pre-feasibility report is primarily to facilitate potential entrepreneurs in project identification for investment and in order to serve his objective; the document covers various aspects of the project concept development, start-up, marketing, finance and management.

[We can modify the project capacity and project cost as per your requirement. We can also prepare project report on any subject as per your requirement.]



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PLASTIC WASTE RECYCLING



INTRODUCTION

Recycling is the process of converting waste materials into new materials and objects. It is an alternative to "conventional" waste disposal that can save material and help lower greenhouse gas emissions. Recycling can prevent the waste of potentially useful materials and reduce the consumption of fresh raw materials, thereby reducing: energy usage, air pollution and water pollution.

Recycling is a key component of modern waste reduction and is the third component of the "Reduce, Reuse, and Recycle" hierarchy. Recyclable materials include many kinds of glass, paper, cardboard, metal, plastic, tires, textiles, batteries, and electronics.

In the strictest sense, recycling of a material would produce a fresh supply of the same material - for example, used office paper would be converted into new office paper or used polystyrene foam into new polystyrene. However, this is often difficult or too expensive (compared with producing the same product from raw materials or other sources), so "recycling" of many products or materials involve their *reuse* in producing different instead. Another form of recycling is the salvage of certain materials from complex products, either due to their intrinsic value, or due to their hazardous nature.

Benefits of Plastic Waste Recycling

- Conservation of Energy and Natural Resources: The recycling
 of plastic helps save a lot of energy and natural resources. Saving
 petroleum, water, and other natural resources help conserve the
 balance in nature.
- Clears Landfill Space: Waste is accumulated on land that should be used for other purposes. The only way this waste can be removed from these areas is by recycling it. Also, various experiments have proven that when plastic waste material is thrown on the ground, it decomposes faster and emits hazardous toxic fumes after a certain period. These fumes are extremely harmful to the surrounding area as they can cause different types of lung and skin diseases.

Description of plastic Waste Recycling Machine

Waste recycling Machines are used to produce new materials from the waste products. With the help of this machine the work of Grinding, Dust cleaning, washing and extruding completes in a very short span. This machine is mostly used in the waste recycling industries to make different types of new raw material from plastic waste material.

Plastic Waste Recycling Current Market Analysis

Innovative business models such as deposit return scheme, secondary storage of EV batteries and the retail take-back for hazardous waste management, followed by disruptive applications like composite plastic separation, etc., will drive the waste recycling market in 2019.

This global waste recycling and recovery market outlook study provides an overall update on the global waste recycling market in 2019, covering plastic waste. This research predicts that the global market revenue is set to increase from \$354.7 billion in 2018 to \$376.9 billion in 2019.

There are some ISO standards related to recycling such as ISO 15270:2008 for plastics waste.

Process of Plastic Waste Recycling

Before any plastic waste is recycled, it needs to go through five different stages so that it can be further used for making various types of products.

- Sorting: It is necessary that every item is separated according to its make and type so that it can be processed accordingly in the machine.
- **Shredding:** After sorting, the plastic waste is loaded into different conveyer belts that run the waste through the different shredders. These shredders tear up the plastic into small pellets, preparing them for recycling into other products.
- **Grinding:** Next step in the waste recycling process is grinding. Grinder is used to remove waste material from the small pellets plastic.
- **Dust Cleaning:** After grinding, the plastic waste is cleaned to remove the dust from the poly bags. This process is not required for hard plastic.
- Conveyer washing: In this process, the material is washed in clean water for few minutes.
- **Drum Washing:** Now the material is washed after conveyer washing. For this a round shape drum is used for washing the material in the plant.
- **Dryer:** In this process dryer/ Hydro is used to dry the material came from the washing drum.
- **Agglomeration process:** In this step mixing of the material is done for few minutes. For Hard plastic agglo-process machine is used (For example: Bucket, Mugs etc.) & for soft plastic normal machine is used (For example: Poly Bags etc.)
- Extruding/Recycling Machine: This involves melting the washed plastic so that it can be extruded into small pellets, which can be used as a raw material for different types of plastic products.

Production depends on material. If the material is hard then production is more and vice-versa (Range = 90-125 KG).

Now the product is ready to sell in the market.

Machinery & Equipments required:

Name	Description (Production kg PH)	Size(Area)	Motor Capacity	Cost
Grinder	Blade (30-50 kg)	8 Inch	20 HP	75,000
	Blade (300-400 kg)	18 Inch	25HP	3,00,000
	Blade (1 tonne)	40 Inch	80 HP	7,50,000
Dust cleaner	Drum (faddu)	24 Inch	20 HP	1,50,000
	Drum (zhadu)	8 feet breadth	20 HP	1,50,000
Conveyer	Boat type Plant	4.5 by 12 feet	3 HP	2,00,000
Round Washing	Drum	4 by 4.5 feet	30 HP	1,80,000
Dryer(Hydro)	Drum	24/28	3 HP	90,000
	Film Dryer	200 MM	20 HP	2,50,000
Mixer Machine	Drum	24by24by12mm	30 HP	1,50,000
Agglomerated plant	Drum	24by32by12mm	50 HP	2,50,000
Recycling	Recycling Material PP/HM/HDPE/LLD PE/PVC	100 by 80mm (screw size)	25 HP	8,50,000

Production of machines 100 – 150 Kg per/Hr. depend on material & filter.

Land & Building required:

Land required 700-800 Square Feet (approx.)

Approximate rent for the same is 15000-16000 per Month.

Labour Requirement:

12-15 Manpower are required for the waste recycling process.

Includes:

10-11 skilled Labour

4-5 Semiskilled Labour

Break Even Point:

Break-even point of the machine = 52,800 packets

Company should operate at minimum 22% of Production capacity to cover its costs (variable + Fixed)

Raw Material Requirement of waste recycling machine

Types of raw material

- 1. Cheap Quality
- 2. Good Quality

Cheap Plastic (cost per KG) =Rs.7-8

Good Quality plastic (cost per KG) = Rs.10-12

Waste recycling license & registration

For Company

- Obtain the GST registration.
- Additionally, apply for MSME Udyog Aadhaar online registration
- Fire/ Pollution Registration as required.
- Choice of a Brand Name of the product and secure the name with Trademark if required.

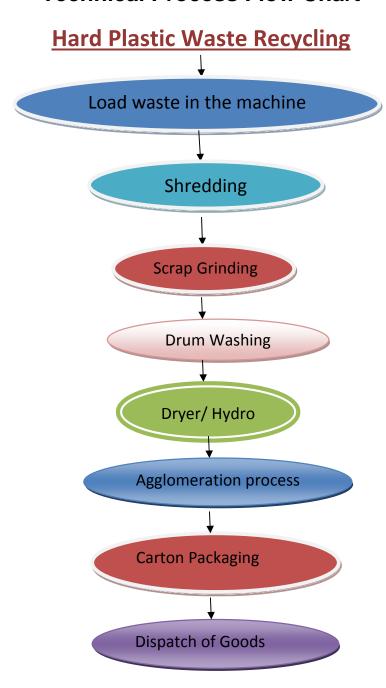
Implementation Schedule

S.N.	Activity	Time Required (in Months)
1	Acquisition Of premises	1
2	Construction (if Applicable)	1- 2 Months
3	Procurement & installation of Plant & Machinery	2
4	Arrangement of Finance	2
5	Requirement of required Manpower	1
	Total time Required (some activities shall run concurrently)	4-5 Months

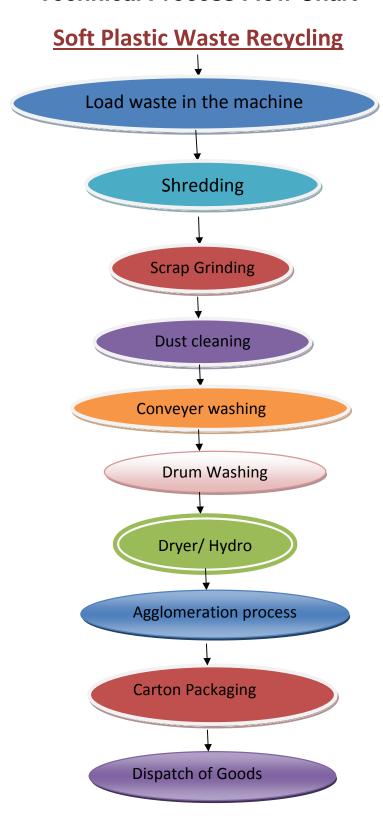
Conclusion:

After completion of manufacturing process, product in the form of Pellets/Granules is ready to sell in the market. Plastic waste recycling product has a very good market potential & this product is used as raw material by trader/whole-seller or manufacturing unites for the production of Buckets, Mugs, poly bags etc.

Technical Process Flow Chart



Technical Process Flow Chart



Project Economics

COMPUTATION OF PRODUCTION OF PLASTICWASTE RECYCLING		
Items to be Manufactured		
Manufacturing Capacity /Machine (Output)	100	kg Per hour
wastage	15%	of input
input	118	kg per hour
Output per day	800	
output per annum total raw material required per	240,000	
annum	282,353	kg

Year	Capacity Utilisation	Qty
1 st Year	50%	141,176
2 nd Year	55%	155,294
3 rd Year	60%	169,412
4 th Year	65%	183,529
5 th Year	70%	197,647
6 th Year	75%	211,765

CALULATION OF CONSUMPTION OF RAW MATERIAL						
Item Name	Quantity of					
		Raw Material				
	At Capacity					
Raw Material	100%	282,353				

Raw Material	Capacity	Rate per Kg	Amount
Consumed	Utilisation		(Rs. in lacs)
1 st Year	50%	10.00	14.12
2 nd Year	55%	10.30	16.00
3 rd Year	60%	10.61	17.97
4 th Year	65%	10.93	20.05
5 th Year	70%	11.26	22.25
6 th Year	75%	11.59	24.55

COMPUTATION OF	SALE					
Particulars	1 st year	2 nd year	3 rd year	4 th year	5 th year	6 th year
Input per annum	141,176	155,294	169,412	183,529	197,647	211,765
Output per annum	120,000	132,000	144,000	156,000	168,000	180,000
Op Stock	-	4,800	5,280	5,760	6,240	6,720
Production	120,000	132,000	144,000	156,000	168,000	180,000
Les: Closing Stock	4,800	5,280	5,760	6,240	6,720	7,200
Net Sale	115,200	131,520	143,520	155,520	167,520	179,520
Sale Price Per KG	70.00	72.00	74.00	76.00	78.00	80.00
Sale (in Lacs)	80.64	94.69	106.20	118.20	130.67	143.62

Cost of Project

PROJECT AT GLANCE

Term Loan of Rs. 21.45 Lacs and Working Capital limit of Rs. 3.00 Lacs

COST OF PROJECT	PARTICULARS	AMOUNT	AMOUNT	AMOUNT
	Land			
	Building Civil Work			
	Plant & Machinery	24.60	6.15	18.45
	Furniture & Fixtures and Other Assets	4.00	1.00	3.00
				3.00
	Margin for Working Capital	1.00	1.00	-
	Total	29.60	8.15	21.45

PARTICULARS	AMOUNT
Own Contribution	8.15
Bank Loan	21.45
Total	29.60

PROJECTED PROFITABILITY	STATEME	<u>NT</u>				
PARTICULARS	1 st year	2 nd year	3 rd year	4 th year	5 th year	6 th year
Capacity Utilisation % SALES	50%	55%	60%	65%	70%	75%
Gross Sale	80.64	94.69	106.20	118.20	130.67	143.62
Total	80.64	94.69	106.20	118.20	130.67	143.62
COST OF SALES						
Raw Material Consumed	14.12	16.00	17.97	20.05	22.25	24.55
Electricity Expenses	14.28	15.71	17.28	19.01	20.91	23.00
Repair & Maintenance	0.65	0.76	0.85	0.95	1.05	1.15
Labour & Wages	27.36	30.10	33.11	36.42	40.06	40.06
Depreciation	4.09	3.50	2.99	2.56	2.19	1.87
Consumables & others	0.81	0.95	1.06	1.18	1.31	1.44
Cost of Production	61.30	67.00	73.26	80.16	87.75	92.06
Add: Opening Stock /WIP	-	2.45	2.68	2.93	3.21	3.51
Less: Closing Stock /WIP	2.45	2.68	2.93	3.21	3.51	3.68
Cost of Sales	58.85	66.77	73.01	79.89	87.45	91.89
GROSS PROFIT	21.79 27%	27.92 29%	33.20 31%	38.31 32%	43.22 33%	51.72 36%
Salary to Staff	4.80	5.28	5.81	6.39	7.03	7.73
Interest on Term Loan	1.55	1.99	1.53	1.07	0.46	0.12
Interest on working Capital	0.33	0.33	0.33	0.33	0.33	0.33
rent	1.80	1.98	2.18	2.40	2.64	2.90
Selling &Adm Expenses Exp.	2.42	2.84	3.19	3.55	3.92	4.31
TOTAL	10.90	12.42	13.03	13.73	14.37	15.39
NET PROFIT	10.89	15.50	20.16	24.58	28.85	36.33
Taxation	3.27	4.65	6.05	7.37	8.65	10.90
PROFIT (After Tax)	7.62	10.85	14.11	17.20	20.19	25.43

PROJECTED BALANCE SHI	<u>EET</u>					
PARTICULARS	1 st year	2 nd year	3 rd year	4 th year	5 th year	6 th year
SOURCES OF FUND						
Own Capital	8.15	8.15	8.15	8.15	8.15	8.15
Retained Profit	7.62	18.47	32.58	49.79	69.98	95.42
Term Loan	20.05	15.85	11.65	7.45	3.25	-
Working Capital	3.00	3.00	3.00	3.00	3.00	3.00
Sundry Creditors	0.38	0.43	0.48	0.53	0.59	0.65
Provisions & Other Liab.	0.70	0.90	1.10	1.21	1.33	1.46
TOTAL:	39.90	46.80	56.96	70.13	86.31	108.69
APPLICATION OF FUND						
Fixed Assets (Gross)	28.60	28.60	28.60	28.60	28.60	28.60
Gross Dep.	4.09	7.59	10.58	13.13	15.32	17.20
Net Fixed Assets	24.51	21.01	18.02	15.47	13.28	11.40
Current Assets						
Sundry Debtors	3.23	5.68	7.08	7.88	10.89	11.97
Stock in Hand	3.02	3.32	3.65	4.01	4.40	4.66
Cash and Bank	9.15	16.78	28.21	42.78	57.74	80.65
TOTAL:	39.90	46.80	56.96	70.13	86.31	108.69

PROJECTED CASH FLOW STA	TEMENT					
PARTICULARS	1 st year	2 nd year	3 rd year	4 th year	5 th year	6 th year
SOURCES OF FUND						
Own Margin	8.15	-	-	-	-	-
Net Profit	10.89	15.50	20.16	24.58	28.85	36.33
Depreciation & Exp. W/off	4.09	3.50	2.99	2.56	2.19	1.87
Increase in Cash Credit	3.00	-	-	-	-	-
Increase in Term Loan	21.45	-	-	-	-	-
Increase in Creditors	0.38	0.05	0.05	0.06	0.06	0.06
Increase in Provisions & Oth lib	0.70	0.20	0.20	0.11	0.12	0.13
TOTAL:	48.66	19.24	23.41	27.30	31.22	38.40
APPLICATION OF FUND						
Increase in Fixed Assets	28.60	-	-	-	-	-
Increase in Stock	3.02	0.30	0.33	0.36	0.39	0.26
Increase in Debtors	3.23	2.46	1.40	0.80	3.01	1.08
Repayment of Term Loan	1.40	4.20	4.20	4.20	4.20	3.25
Taxation	3.27	4.65	6.05	7.37	8.65	10.90
TOTAL :	39.51	11.61	11.98	12.73	16.25	15.49
Opening Cash & Bank Balance	-	9.15	16.78	28.21	42.78	57.74
Add: Surplus	9.15	7.64	11.43	14.57	14.96	22.91
Closing Cash & Bank Balance	9.15	16.78	28.21	42.78	57.74	80.65

COMPUTATION OF CLOSING STOCK						
PARTICULARS	1 st year	2 nd year	3 rd year	4 th year	5 th year	6 th year
Finished Goods						
(12 Days requirement)	2.45	2.68	2.93	3.21	3.51	3.68
Raw Material						
(12 Days requirement)	0.56	0.64	0.72	0.80	0.89	0.98
Closing Stock	3.02	3.32	3.65	4.01	4.40	4.66

TRADITIONAL METHOD	<u> </u>				
Particulars	Amount		Own		Bank
			Margin		Finance
Finished Goods & Raw M	laterial 3.02				
Lasar One ditana	0.02				
Less: Creditors	0.38				
Paid stock	2.64	25%	0.66	75%	1.98
Sundry Debtors	3.23	25%	0.81	75%	2.42
Working capital	5.87		1.47		4.40

2nd Method				
PARTICULARS	1 st Year	2 nd year		
Total Current Assets	15.39	25.78		
Other Current Liabilities	1.08	1.33		
Working Capital Gap Min Working Capital	14.31	24.46		
25% of WCG	3.58	6.11		
Actual NWC	11.31	21.46		
item III – IV	10.73	18.34		
item III – V	3.00	3.00		
MPBF (Lower of VI & VII)	3.00	3.00		

3rd Method				
PARTICULARS	1 st Year	2 nd year		
Total Current Assets	15.39	25.78		
Other Current Liabilities	1.08	1.33		
Working Capital Gap Min Working Capital	14.31	24.46		
25% of Current Assets	3.85	6.45		
Actual NWC	11.31	21.46		
item III – IV	10.47	18.01		
item III – V	3.00	3.00		
MPBF (Lower of VI & VII)	3.00	3.00		

BREAK UP OF LABOUR CHARGES			
Particulars	Wages Per	No of	Total
	Month	Employees	Salary
skilled	18,000.00	10	180,000.00
unskilled	12,000.00	4	48,000.00
Total Salary Per Month			228,000.00
Total Annual Labour Charges	(in Lacs)		27.36

BREAK UP OF SALARY			
Particulars	Salary Per	No of	Total
	Month	Employees	Salary
Accountant	15,000.00	1	15,000.00
Helper	7,000.00	1	7,000.00
Supervisor	18,000.00	1	18,000.00
Total Salary Per Month			40,000.00
Total Annual Salary	(in Lacs)		4.80

COMPUTATION OF DEPRECIATION					
Description	Plant &	Furniture	TOTAL		
	Machinery				
Rate of Depreciation	15.00%	10.00%			
Opening Balance	-	-	-		
Addition	24.60	4.00	28.60		
Total	24.60	4.00	28.60		
Less: Depreciation	3.69	0.40	4.09		
WDV at end of Year	20.91	3.60	24.51		
Additions During the Year	-	-	-		
Total	20.91	3.60	24.51		
Less: Depreciation	3.14	0.36	3.50		
WDV at end of Year	17.77	3.24	21.01		
Additions During the Year	-	-	-		
Total	17.77	3.24	21.01		
Less: Depreciation	2.67	0.32	2.99		
WDV at end of Year	15.11	2.92	18.02		
Additions During the Year	-	-	-		
Total	15.11	2.92	18.02		
Less: Depreciation	2.27	0.29	2.56		
WDV at end of Year	12.84	2.62	15.47		
Additions During the Year	-	-	-		
Total	12.84	2.62	15.47		
Less: Depreciation	1.93	0.26	2.19		
WDV at end of Year	10.92	2.36	13.28		
Additions During the Year	-	-	-		
Total	10.92	2.36	13.28		
Less: Depreciation	1.64	0.24	1.87		
WDV at end of Year	9.28	2.13	11.40		
Less: Depreciation	1.39	0.21	1.60		
WDV at end of Year	7.89	1.91	9.80		
Less: Depreciation	1.18	0.19	1.37		
WDV at end of Year	6.70	1.72	8.43		



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