# Recycling Business Handbook: Industrial and Agricultural Waste Processing

Author: - Ajay Kumar Gupta

Format: paperback

Code: NI371 Pages: 384

**Price: Rs.**1995**US\$** 200

Publisher: NIIR PROJECT CONSULTANCY

**SERVICES** 

Usually ships within 5 days

Industrial and agricultural waste refer to the by-products generated from industrial processes and agricultural activities respectively. Industrial waste often includes materials such as metals, chemicals, plastics, and other manufacturing residues. Each type of industrial waste requires specific handling and processing methods to ensure safe and effective recycling.

Industrial and agricultural both types of waste present unique challenges and opportunities for recycling. Effective management and processing of industrial and agricultural waste not only mitigate environmental impact but also offer potential economic benefits by turning waste into valuable resources. Understanding these distinct waste types and their processing requirements is crucial for any business looking to implement successful recycling operations.

The global industrial waste management market size was valued at USD 1.05 billion. The market is projected to grow from USD 1.10 billion to USD 1.79 billion, exhibiting a CAGR of 6.22%. The Industrial Waste Management market in the U.S. is projected to grow significantly, reaching an estimated value of USD 323.81 billion, driven by the stringent waste management solutions and emergence of advanced waste-to-energy plants.

Management of waste produced through industrial activities generally consists of separation, composting, landfill, and waste recycling. Industrial waste management through landfill includes waste burial which cannot be further composed or recycled. Subsequently, recycling of industrial waste is generally referred to reuse of waste materials and generally includes the utilization of multiple management of waste technologies.

The agricultural waste processing industry is witnessing significant growth, driven by advancements in recycling technologies and sustainable practices. The market size for this industry was valued at approximately USD 150 billion, with projections indicating a compound annual growth rate (CAGR) of 8-10%, reaching USD 450 billion.

Covering a wide range of recycling industries, the book delves into areas such as Effective Waste Management Planning, Automated Vehicle Scrapping Unit, Bio Coal Briquettes from Agricultural Waste, Caffeine Extraction from Tea Waste, Disposable Tableware from Sugarcane Bagasse, E-Waste Recycling, Lead Acid Battery Recycling, Lithium-Ion Battery Recycling, Lubricating Oils Recycling, Organic Fertilizer Manufacturing from Cow Dung, Particle Board from Rice Husk, Recycling of Pet Bottles, Waste Tyre Pyrolysis, Aluminium Recycling, Biomedical Waste Management, Biomass Charcoal, Activated Carbon from Coconut Shell, Pet

Flakes from Pet Bottles, Rice Bran Oil Extraction Process, Pathogen Reductions during Waste Treatment, Glossary, Factory Layout, Machinery, Equipment Details and Photographs with Suppliers Contact Details are also given.

The Recycling Business Handbook *Industrial and Agricultural Waste Processing* is a thorough guide crafted to give entrepreneurs and industry professionals a deep insight into recycling businesses across various sectors. This resourceful handbook serves as an essential tool for entrepreneurs, policymakers, and environmental advocates, presenting strategies for transforming waste materials into valuable products.

# **Recycling Business Handbook (Table of Content)**

#### 1. Introduction

1	.1	Types	of Waste

- 1.2 Advantages of Waste Management
- 1.3 The Waste Management Hierarchy and the 3r Concept
- 1.4 Strategies for Managing Waste
  - 1.4.1 Waste Prevention
  - 1.4.2 Waste Minimization
  - 1.4.3 Recycling and Reuse
  - 1.4.4 Biological Treatment
  - 1.4.5 Incineration
  - 1.4.6 Landfill Disposal
- 1.5 What Makes Waste Management such a Crucial Issue?
- 1.6 Indian Waste Management Scenario
- 1.7 Challenges in Waste Management
- 1.8 Solutions for Waste Management
- 1.9 Governmental Measures for Waste Management
  - 1.9.1 Legislative Response
  - 1.9.2 Role of Centre and State in Waste Management
  - 1.9.3 The Municipal Solid Waste (Management and Handling) Rules 2000
- 1.10 Why Waste Management is Important Nowadays?

2.	10 Step	ps for Effective Waste Management Planning		
	2.1	Identify t	he Waste Facility Creates	
	2.2	Identify Waste Streams		
	2.3	Establish a Waste Management Team		
	2.4	Assess Current Waste Disposal Methods		
	2.5	Consider Waste Hierarchy		
	2.6	Select W	/aste Management Partners	
	2.7	Set Targ	ets for Waste Reduction	
	2.8	Create a	Waste Management Action Plan	
	2.9	Train Em	nployees on New Procedures	
	2.10	Track Pro	ogress and Monitor for Adjustments	
3.	3. Automated Vehicle Scrapping Unit		cle Scrapping Unit	
	3.1	Benefits	of Recycling	
	3.2	Reducin	g Waste: The Problem of Junk Cars	
		3.2.1	The Solution: Automotive Recycling	
		3.2.2	Conservation of Resources	
		3.2.3	Environmental Footprint	
	3.3	Benefits of the Vehicle Scrapping		
	3.4	Automob	oile Recycling Process	
		3.4.1	Remove Engine Fluids	
		3.4.2	Remove Useable Parts	
		3.4.3	Shred the Vehicle Frame	
		3.4.4	Combine Metals	
		3.4.5	Deliver to Manufacturers	
	3.5	Future C	challenges to the Auto Recycling Industry	
	3.6	Equipme	ent and Machinery Required	
		3.6.1	Vehicle Depollution Equipment	

	3.6.2	Dismantling Equipment	
	3.6.3	Shearing and Cutting Machinery	
	3.6.4	Shredding Equipment	
	3.6.5	Separation Systems	
	3.6.6	Crushing and Baling Machines	
	3.6.7	Sorting and Grading Equipment	
	3.6.8	Waste Treatment and Recycling Systems	
	3.6.9	Material Handling Equipment	
	3.6.10	Safety and Environmental Control Systems	
	3.6.11	Data Management Systems	
Bio Co	al Brique	ttes from Agricultural Waste	
4.1	What is	Bio Coal?	
4.2	Briquette-Making Raw Material used in Bio-Coal Plants		
4.3	Advantages of Briquettes		
4.4	Types of Briquettes		
4.5	Importance of Bio Coal Briquettes		
4.6	Bio-Briquetting Process		
	4.6.1	Preparation	
	4.6.2	Size Reduction	
	4.6.3	Pyrolysis	
	4.6.4	Binder Addition	
	4.6.5	Densification	
	4.6.6	Shaping and Sizing	
4.7	Methods	s of Bio-Briquetting	
	4.7.1	Pyrolyzed Densification using Binder	
	4.7.2	Direct Densification with Binders	
	4.7.3	Binderless Briquetting	

4.8	Bio-Briquette Quality Testing				
Caffeir	Caffeine Extraction from Tea Waste				
5.1	What is	What is Caffeine?			
5.2	Benefit	s of Caffeine for Health			
5.3	Advers	e Effects of Caffeine			
5.4	Proces	s of Extraction of Caffeine from Tea Waste			
	5.4.1	Pre Treatment Section			
	5.4.2	Extraction Section			
	5.4.3	Post Treatment			
5.5	Plant a	nd Machinery used in Extracting Caffeine from Tea Waste			
	5.5.1	Tea Waste Preparation			
	5.5.2	Extraction Process			
	5.5.3	Separation			
	5.5.4	Purification			
	5.5.5	Supporting Equipment			
	5.5.6	Quality Control and Packaging			
Disposable Tableware from Sugarcane Bagasse					
6.1	What is	s Bagasse?			
6.2	Benefit	s of Sugarcane Bagasse Biodegradable Tableware			
6.3	Utilizin	g Sugarcane Bagasse for Biodegradable Tableware			
6.4	Steps o	of Manufacturing Sugarcane Bagasse Plates			
	6.4.1	Bagasse as a Raw Material			
	6.4.2	Bagasse Processing			
	6.4.3	Pulp Formation			
	6.4.4	Plate Molding			
	6.4.5	Drying and Pressing			

6.

6.4.6

Trimming and Finishing

6.5 Machinery and Systems Required for Disposable Tableware Man					
	6.5.1	Pulping System			
	6.5.2	Tableware Forming Machines			
	6.5.3	Machine for Trimming Tableware			
	6.5.4	Tableware Molds			
E-Was	ste Recycl	ing			
7.1	What is	an E-Waste?			
7.2	Classific	eation of E-Waste			
7.3	Compon	ents of E-Waste that can be Recycled			
7.4	An E-Wa	aste Recycling Plant: What is it?			
7.5	Scenario of E-Waste Production in India				
7.6	The Pro	cedure for Recycling E-Waste			
7.7	The Recycling Procedure for Cathode Ray Tubes (CRTS)				
7.8	Battery Recycling Process				
7.9	Why is E-Waste Control Necessary?				
7.10	0 Plant and Machinery Required in E-Waste Recycling Plant				
	7.10.1	Shredders and Granulators			
	7.10.2	Overband Magnets			
	7.10.3	Eddy Current Separators			
	7.10.4	Optical Sorters			
	7.10.5	Trommel Screens or Rotary Screens			
	7.10.6	Electrostatic Separators			
	7.10.7	Ball Mill			
	7.10.8	Air Density Separators			
	7.10.9	PCB (Printed Circuit Board) Recycling Line			
	7.10.10	Dust Collection System			

Packaging Bagasse Plates

6.4.7

8.	8. Lead Acid Battery Recycling		
	8.1	Aspects Technical	
	8.2	How Lead Acid Batteries differ from Lithium-Ion Batteries	

Requirements for Lead Acid Battery Recycling Plant

- 8.4 The Recycling Technology
  - 8.4.1 Battery Breaking
  - 8.4.2 Lead Reduction
  - 8.4.3 Lead Refining
- 8.5 Pollution Control Measures
- 8.6 Recycling

- 8.7 Recycling Process of Lead-Acid Batteries
  - 8.7.1 Collection
  - 8.7.2 Crushing
  - 8.7.3 Sorting
  - 8.7.4 Sieving
  - 8.7.5 Extraction
- 8.8 Machinery used in Lead Acid Battery Recycling Plant
  - 8.8.1 Battery Cutting Machine
  - 8.8.2 Battery Breaking and Separation System
  - 8.8.3 Acid Neutralization System
  - 8.8.4 Lead Smelting Furnace
  - 8.8.5 Refining Kettle
  - 8.8.6 Lead Ingot Casting Machine
  - 8.8.7 Plastic Washing and Granulating Machine
  - 8.8.8 Dust Collection System

		8.8.10	Safety Equipment
		8.8.11	Control and Monitoring Systems
	8.9	Plant La	yout Description
9.	Lithiun	n-Ion Batt	tery Recycling
	9.1	What is	Lithium Ion Battery Recycling Plant?
	9.2	Different	t Types of Batteries
	9.3	Methods	s of Recycling
	9.4	Benefits	of Lithium-Ion Battery Recycling Plant
	9.5	Equipme	ent for Lithium-Ion Battery Recycling Facility
	9.6	General	Recycling Procedures and Pre-Processing
		9.6.1	Cell Disruption
		9.6.2	Physical Separation
		9.6.3	Dissolution
		9.6.4	Thermal Treatment
	9.7	Recyclin	g Processes
	9.8	Li-Ion Ba	atteries Recycling
		9.8.1	Electrolyte Recovery
		9.8.2	Dry Sorting Methods
		9.8.3	Hydrometallurgical Treatment
	9.9	Lithium-	Ion Battery Recycling: Future Prospects
10.	Lubrica	ating Oils	Recycling
	10.1	Methods	of Recycling
	10.2	Types of	Lubricant Additives
	10.3	Physical	and Chemical Tests of used Lubricating Oil
	10.4	Comparis	son of Fresh Base Engine Oil and Used Oil
	10.5	Recycling Process	

Wastewater Treatment Plant

8.8.9

	10.5.1	Used Oil Pick-Up		
	10.5.2	Analytic Testing to Ensure Quality		
	10.5.3	Dehydration Removes Unwelcome Water		
	10.5.4	Light End Recovery		
	10.5.5	Fuel Stripping		
	10.5.6	Vacuum Distillation		
	10.5.7	Hydro Treating Removes Final Impurities		
10.6	Process	Details		
	10.6.1	Precipitation and Separation		
	10.6.2	Distillation		
	10.6.3	Acid Treatment		
	10.6.4	Alkali Settling		
	10.6.5	Alkali Wash		
	10.6.6	Neutralization Test		
	10.6.7	Filtration		
10.7	Plant and	d Machinery Required in Lubricating Oils Recycling Plant		
10.8	Plant Layout Description			
Organ	ic Fertiliz	er Manufacturing from Cow Dung		
11.1	Benefits			
11.2	Cow Dur	ng Composition		
11.3	Compos	ting Cow Manure		
11.4	Method of Manufacturing Organic Fertilizer using Cow Dung			
11.5	Machine	ry and Equipments Required		
11.6	Plant Layout Description			
Partic	le Board f	rom Rice Husk		
12.1	Benefits			

12.

12.2

Utilizations

	12.3	Production Process		
		12.3.1	Gathering and Getting Ready for Rice Husk	
		12.3.2	Pulverizing	
		12.3.3	Desiccating	
		12.3.4	Blending with Resin	
		12.3.5	Mat Forming	
		12.3.6	Pre-Pressing	
		12.3.7	Hot Pressing	
		12.3.8	Chilling and Trimming	
		12.3.9	Finalizing	
		12.3.10	Quality Control	
Mar	12.4 nufacturi		Machinery used in Particle Board	
		12.4.1	Rice Husk Preparation Equipment	
		12.4.2	Particle Formation and Sizing Equipment	
		12.4.3	Resin Application Equipment	
		12.4.4	Pressing Equipment	
		12.4.5	Finishing Equipment	
		12.4.6	Quality Control Equipment	
		12.4.7	Handling and Packaging Equipment	
	12.5	Plant Lay	out Description	
13.	Recycl	ing of PE	T Bottles	
	13.1	What is F	PET Plastic?	
	13.2	What is F	PET Bottle Recycling?	
	13.3	Why is P	ET Recycling Important?	
	13.4	Physical	Properties	
	13.5	Uses and	Applications of PET Plastic	

	13.5.1	Packaging
	13.5.2	Textiles
	13.5.3	Electronics
	13.5.4	Industrial Applications
	13.5.5	Construction
	13.5.6	3D Printing
	13.5.7	Medical
	13.5.8	Recycling
13.6	Chemica	al Recycling
	13.6.1	Partial Glycolysis
	13.6.2	Total Glycolysis
	13.6.3	Methanolysis
	13.6.4	Hydrolysis
13.7	PET Bot	tle Recycling Process
	13.7.1	Collecting
	13.7.2	Sorting
	13.7.3	Decontamination
	13.7.4	Shredding, Resizing, and Identifying
	13.7.5	Wet Separation
	13.7.6	Dry Separation
	13.7.7	Compounding
	13.7.8	A New Beginning
13.8	What Ha	appens to Bottles we cannot Recycle?
13.9 Specification		ant Machinery Required for PET Bottles Recycling Plant with etails
	13.9.1	Bottle Bale Breaker
	13.9.2	Conveyor Belt System

		13.9.3	Label Remover Machine
		13.9.4	Plastic Crusher / Shredder Machine
		13.9.5	Sink-Float Separator Tank
		13.9.6	Hot Washing System
		13.9.7	Friction Washer
		13.9.8	Centrifugal Dryer / Dewatering Machine
		13.9.9	Air Classifier / Zigzag Separator
		13.9.10	Pelletizing Machine / Extruder
		13.9.11	Cooling System (Water Tank and Air Dryer)
		13.9.12	Silo Storage System
		13.9.13	Packaging Machine
		13.9.14	Dust Collection and Filtration System
		13.9.15	Control Panel and Automation System
14.	Waste	Tyre Pyro	olysis
	14.1	The Pyro	lysis Process's Influencing Factors
	14.2	Benefits	
	14.3	Types of Tyre Pyrolysis Plant	
		14.3.1	Continuous Waste Tyre Pyrolysis Plant
		14.3.2	Batch Waste Tyre Pyrolysis Plant
	14.4	Main Pro	ducts Obtained
	14.5	Advantag	ges and Disadvantages
	14.6	Products	of Pyrolysis
	14.7	Tyre Pyro	olysis Process of Waste Tyres
	14.8	How does	s Pyrolysis Work?
	14.9	Tyre Pyro	olysis Oil
	14.10	Propertie	s of Pyrolysis Oil
	14.11	Tyre Pyro	olysis Oil Purification

	14.12	Tyre Pyrolysis Oil Uses		
	14.13	Tyre Pyrolysis Carbon Black		
	14.14	Tyre Pyrolysis Carbon Black Properties		
	14.15	Carbon Powder from Tyre Pyrolysis Uses		
	14.16	Tyre Pyrolysis Gas		
	14.17	Tyre Pyrolysis Waste		
	14.18	What is the Environmental Impact of Waste Tyre Pyrolysis Plants?		
		14.18.1	Incomplete Pyrolysis	
		14.18.2	No Gas Recycling	
		14.18.3	High Oxygen Entrance	
		14.18.4	Tyre Pyrolysis Explosion	
		14.18.5	Inappropriate Storage and Transport	
	14.19	Key Components of Waste Tyre Pyrolysis Plant		
15.	Alumin	nium Recycling		
	15.1	History		
	15.2	Properties of Aluminium		
	15.3	Procedure for Recycling Aluminum		
	15.4	Plant Machinery: Specifications and Details		
		15.4.1	Shredder Machine	
		15.4.2	Magnetic Separator	
		15.4.3	Eddy Current Separator	
		15.4.4	Rotary Furnace	
		15.4.5	Melting and Holding Furnace	
		15.4.6	Ingot Casting Machine	
		15.4.7	Scrap Baler/Compactor	
		15.4.8	Air Pollution Control System	
		15.4.9	Reverberatory Furnace	

	15.5	Advantages of Recycling Aluminum			
	15.6	Drawbacks of Recycling Aluminum			
16.	Biome	edical Waste Management			
	16.1	Principles	s of Biomedical Waste Management		
	16.2	Treatmer	nt of Biomedical Waste Management		
	16.3	What are the Types of Medical Waste?			
	16.4	Management of Biomedical Waste			
	16.5	The Best Methods for Managing Medical Waste			
	16.6	Medical Waste Treatment Methods			
	16.7	List of Pla	ant Machinery Required		
		16.7.1	Incinerator		
		16.7.2	Autoclave		
		16.7.3	Shredder		
		16.7.4	Microwave Disinfection System		
		16.7.5	Chemical Disinfection Unit		
		16.7.6	Waste Segregation System		
		16.7.7	Effluent Treatment Plant (ETP)		
		16.7.8	Air Pollution Control Device (APCD)		
		16.7.9	Boiler		
		16.7.10	Compactor		
		16.7.11	Waste Collection Vehicles		
		16.7.12	Personal Protective Equipment (PPE)		
17.	17. Biomass Charcoal				
	17.1	What is E	Biomass Charcoal?		
	17.2	Benefits of Briquettes made of Biomass Charcoal			
	173	How is Charcoal made from Biomass?			

15.4.10 Dross Processing System

	17.4	Production Principle of Charcoal Making Machine		
	17.5	Characteristics of an Entire Plant for Processing Charcoal		
	17.6	Equipment used in Biomass Charcoal Making		
	17.7	How are Charcoal Briquettes made with Sawdust?		
		17.7.1 Collect Sawdust		
		17.7.2	Drying	
		17.7.3	Carbonization	
		17.7.4	Crush and Sieve the Charcoal	
		17.7.5	Prepare the Binder	
		17.7.6	Mix the Charcoal with the Binder	
		17.7.7 Briquetting		
		17.7.8	Drying	
		17.7.9	Storage and Packaging	
18.	Activat	ted Carbon from Coconut Shell		
	18.1	Process of Activation		
	18.2	Benefits of Activation		
	18.3	Utilization of Activated Carbon from Coconut Shells		
	18.4	Manufacturing Process		
	18.5	Tips for Coconut Shell Activated Carbon Manufacturer		
	18.6	Why do Start Coconut Shell Activated Carbon Plant?		
	18.7	Machinery used in Coconut Shell Activated Carbon		
		18.7.1	Coconut Shell Crushing Machine	
		18.7.2	Carbonization Furnace (Kiln)	
		18.7.3	Activation Furnace (Rotary Kiln or Fluidized Bed)	
		18.7.4	Screening Machine (Vibrating Screen)	
		18.7.5	Cooling System	
		18.7.6 Grinding Machine		

	18.7.7	Conveyor System		
	18.7.8	Chemical Activation Equipment (Optional)		
	18.7.9	Bagging and Packaging Machine		
PET F	lakes from	n PET Bottles		
19.1	What are	nat are PET Flakes?		
19.2	Uses of F	Uses of PET Flakes		
19.3	PET Flakes Grades			
19.4	Types of PET Flakes			
19.5	Recycling Process of PET Flakes			
	19.5.1	Manual Sorting		
	19.5.2	Shredding		
	19.5.3	Belt Conveyor		
	19.5.4	Washing Tank		
19.6	Differenc	e between PET Flakes and PET Chips		
19.7	Advantages			
19.8	Disadvantages			
19.9	List of Machinery Required			
	19.9.1	Bale Breaker Machine		
	19.9.2	Belt Conveyor System		
	19.9.3	Label Removing Machine (Delabeler)		
	19.9.4	Trommel Separator / Dust Remover		
	19.9.5	PET Bottle Crusher / Shredder		
	19.9.6	Floating Tank (Sink-Float Separator)		
	19.9.7	Hot Washer System		
	19.9.8	Friction Washer		
	19.9.9	Centrifugal Dryer		
	19.9.10	Air Separator		

		19.9.11	Zig-Zag Separator		
		19.9.12	Pelletizing Machine (Optional)		
		19.9.13	Water Treatment Plant (WTP)		
		19.9.14	Automatic Bagging Machine		
		19.9.15	Control Panel and Automation System		
20.	Rice B	ran Oil Ex	traction Process		
	20.1	Manufact	nufacturing Process of Rice Bran Oil		
		20.1.1	Rice Bran Raw Material Preparation		
		20.1.2	Extraction		
		20.1.3	Rice Bran Oil Refining		
		20.1.4	Oil Extraction Process		
		20.1.5	Mechanical Pressing (Cold Pressing)		
		20.1.6	Solvent Extraction Process		
		20.1.7	Storage Rice Bran Oil		
	20.2	Advantag	ge of Rice Bran Oil Plant		
	20.3	What are	e the By-Products of Rice Bran Oil and Its Uses?		
	20.4	What are	e the Production Challenges in Rice Bran Oil Production?		
		20.4.1	Quality of Rice Bran		
		20.4.2	Extraction Process		
		20.4.3	Dealing with By-Products		
		20.4.4	Refining the Oil		
		20.4.5	Stabilizing the Oil		
	20.5	List of Pla	Plant Machinery Required		
		20.5.1	Pre-Treatment and Preparation Equipment		
		20.5.2	Oil Extraction Machinery		
		20.5.3	Oil Refining Machinery		
		20.5.4	Other Essential Machinery		

		20.5.5	Storage and Handling Equipment	
		20.5.6	Quality Control and Monitoring Eq	
		20.5.7	Packaging Equipment	
21.	Pathog	gen Reduc	ctions during Waste Treatment	
	21.1	Manure S	Solids Waste	
	21.2	Dry Tech	iniques: Composting	
	21.3	Manure Slurry Treatment Techniques		
	21.4	Physical Treatment Techniques		
	21.5	Biological Treatment Techniques		
	21.6	Anaerobi	ic Lagoon Treatment	
	21.7	Multiple Lagoon Systems		
	21.8	Aerated Lagoons and Oxidation Ponds		
	21.9	Anaerobic Digestion		
	21.10			
	21.11			
	21.12	Aerobic Digestion		
	21.13	Mesophilic Aerobic Digestion		
	21.14	Thermophilic Aerobic Digestion		
	21.15	Activated Sludge		
	21.16	Biofiltration	on	
	21.17	Construc	eted Wetlands	
	21.18	Overland	I Flow	
	21.19	Disinfect	ion and Chemical Treatments	
	21.20	Chlorine		
	21.21	Ozone		
	21.22	Chlorine	Dioxide	
	21.23	Ultraviole	et Light (UV) Irradiation	

Equipment

- 21.24 Lime Stabilization21.25 Pasteurization
- 21.26 Animal Waste Disposal or Recycling Options

21.26.1 Land Application

21.26.2 Spray Fields

## 22. Glossary

#### 23. BIS Standards

## 24. Plant Layout and Process Flow Chart & Diagram

# 25. Photographs of Plant and Machinery with Suppliers Contact Details

- Lithium-Ion Battery Recycling Plant
- Used Oil Recycling Plant
- Lead Battery Breaking and Separation Machine
- Rotary Drum Dryer
- Organic Waste Composting Machine (Bioreactor)
- Waste Tyre Recycling Machine
- Rubber Tire Crusher Machine
- Tyre Cutter
- Tyre Shredder Machine
- Hydraulic Briquette Press Machine
- Lithium Battery Recycling Plant
- Anode Sheet Recycling Machine
- Waste Tyre Pyrolysis Plant
- PET Bottle Washing Recycling Machine
- Plastic Bottle Granulation Line
- Extraction Machine
- Fermenter
- Compost Turner for Bio Organic Fertilizer Composting

- Biodegradable Sugarcane Bagasse Tableware making Machine
- Screw Extrusion Briquette Machine
- Waste Car Shell Crushing Line
- Lead Battery Recycling Machine
- · Biomedical Waste Shredder
- · Activated Carbon Rotary Kiln
- PET Bottle Crusher / Granulator

# **About NIIR**

**NIIR PROJECT CONSULTANCY SERVICES (NPCS)** is a reliable name in the industrial world for offering integrated technical consultancy services. NPCS is manned by engineers, planners, specialists, financial experts, economic analysts and design specialists with extensive experience in the related industries.

Our various services are: Detailed Project Report, Business Plan for Manufacturing Plant, Start-up Ideas, Business Ideas for Entrepreneurs, Start up Business Opportunities, entrepreneurship projects, Successful Business Plan, Industry Trends, Market Research, Manufacturing Process, Machinery, Raw Materials, project report, Cost and Revenue, Pre-feasibility study for Profitable Manufacturing Business, Project Identification, Project Feasibility and Market Study, Identification of Profitable Industrial Project Opportunities, Business Opportunities, Investment Opportunities for Most Profitable Business in India, Manufacturing Business Ideas, Preparation of Project Profile, Pre-Investment and Pre-Feasibility Study, Market Research Study, Preparation of Techno-Economic Feasibility Report, Identification and Section of Plant, Process, Equipment, General Guidance, Startup Help, Technical and Commercial Counseling for setting up new industrial project and Most Profitable Small Scale Business.

NPCS also publishes varies process technology, technical, reference, self employment and startup books, directory, business and industry database, bankable detailed project report, market research report on various industries, small scale industry and profit making business. Besides being used by manufacturers, industrialists and entrepreneurs, our publications are also used by professionals including project engineers, information services bureau, consultants and project consultancy firms as one of the input in their research.

Our Detailed Project report aims at providing all the critical data required by any entrepreneur vying to venture into Project. While expanding a current business or while venturing into new business, entrepreneurs are often faced with the dilemma of zeroing in on a suitable product/line.

NIIR PROJECT CONSULTANCY SERVICES, 106-E, Kamla Nagar, New Delhi-110007, India.

Email: npcs.india@gmail.com Website: NIIR.org

Thu, 01 May 2025 08:51:10 +0000