## Waste to Wealth-Value Recovery from

## **Agricultural and Industrial Biomass**

# **Residues**.

## **Furfural from Lignocellulosic Biomass.**

## **Production of Furfural from Sugarcane**

## **Bagasse and Corncobs.**



# Introduction

The concept of waste as a material "which has no use" is changing to that of seeing waste as a resource by converting into secondary material with modification. Wastes can thus be converted into useful resources used at home or even sold for wealth. Waste recycling involves the collection of discarded materials such as Sugarcane Bagasse, Corncobs etc and processing these materials, and turning them into new products. Furfural is a chemical made out of organic matter which is typically produced for industrial purposes. It is primarily composed of agricultural byproducts such as oat husks, bran, corncobs, and sawdust. Some of the products it is used in include weed killer, fungicide, and solvent.



It is also a familiar element in the production of transportation fuels and in the process of refining lubricating oils. The chemical is an element in the production of several other industrial agents as well.

Bagasse is a waste product from the sugar industry, which is usually used as energy source in factory at present. However, the amount of bagasse left is still high enough for more valueadded product for example furfural. Bagasse is a good source of pentosan and containing about 25 to 27%. The main objective of the research was to produce furfural from bagasse. The main raw material for the production furfural was bagasse and some chemicals/ingredients were used (H2SO4, water, NaCl).



Furfural is an important chemical because it is a selective solvent for separating saturated and unsaturated compounds in petroleum refining, gas, oil and diesel fuel, and for the high demand of its derivatives, especially furfuryl alcohol, used mainly in the production of furan resins for foundry sand binders, which is considered the major market for furfural





Furfural is used as a solvent in petrochemical refining to extract dienes from other hydrocarbons. Furfural, as well as its derivative furfuryl alcohol, can be used together with phenol, acetone, or urea to make solid resins.

It is commonly used as a solvent; it is soluble in ethanol and ether and somewhat soluble in water. Furfural is the aldehyde of pyromucic acid; it has properties similar to those of benzaldehyde. A derivative of furan, it is prepared commercially by dehydration of pentose sugars obtained from cornstalks and corncobs, husks of oat and peanut, and other waste products.



It is used in the manufacture of pesticides, phenol furfural resins, and tetrahydrofuran. Tetrahydrofuran is used as a commercial solvent and is converted in starting materials for the preparation of nylon. Furfural is used as a solvent in petrochemical refining to extract dienes (which are used to make synthetic rubber) from other hydrocarbons.



## **Market Outlook**

In terms of volume, the global furfural market was valued at 306.3 kilotons in 2015, and should increase to 488.3 kilotons in 2021, reflecting a five-year CAGR of 7.7%.

The Strong shift towards the development of bio-based chemicals on account of volatile petrochemical prices and growing environmental concerns is expected to remain a key driver for the growth of global furfural market. A strong push for sustainable chemistry on a political and regulatory level across key regions is expected to play a critical role in furfural market development.



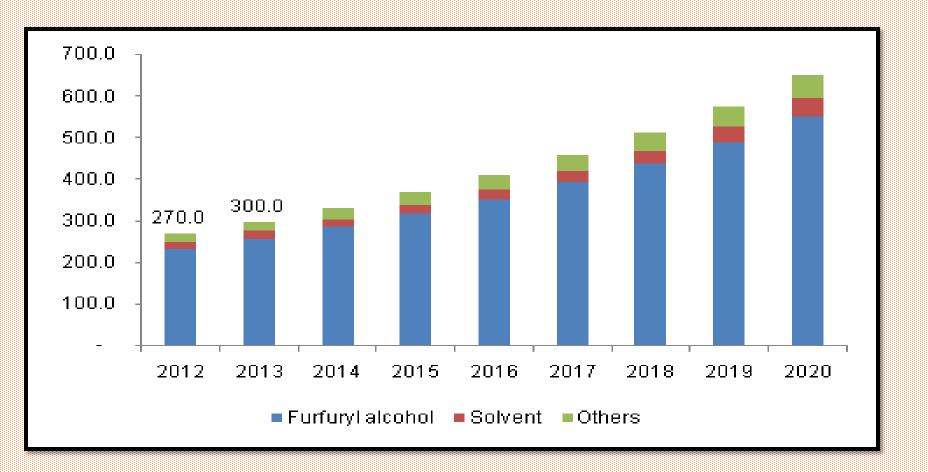
Furfural has gained acceptance as a substitute for petrochemicals as a building block for polymers and solid elastomers. In addition, furfural derivatives such as 5hydroxymethylfurfural (HMF), furan-2,5-dicarboxylic acid (FDCA) and polytetrahydrofuran (poly-THF) have also been gaining importance as potential secondary fuel sources. This trend is expected to drive further furfural demand over the next six years.





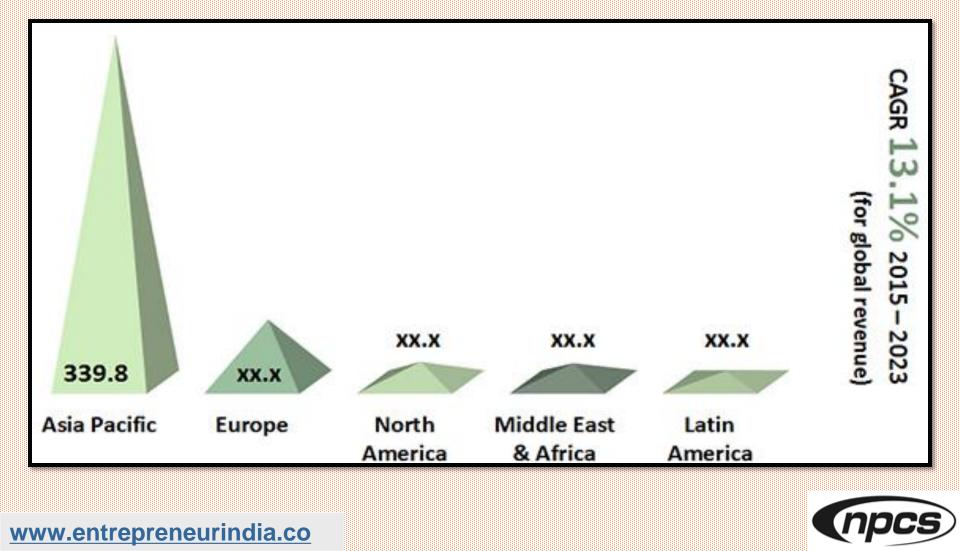
## **Global Furfural Market Volume by Application, 2012-**

## **2020 (Kilo Tons)**





## Global Furfural Market, By Region, 2014 (US\$ Mn)



The overall opportunity in furfural, worldwide, will increase from US\$450 mn in 2014 to US\$1.35 bn by 2023.

Growing global demand for environmentally sustainable biomassbased chemicals has fueled the overall growth of the furfural market, along with the growing application of furfural and its derivatives in the pharmaceutical industry. These factors have triggered demand-side growth of the furfural market.

Sugarcane bagasse raw material based furfural is expected to grow at a high CAGR of 12.6% during the forecast period.

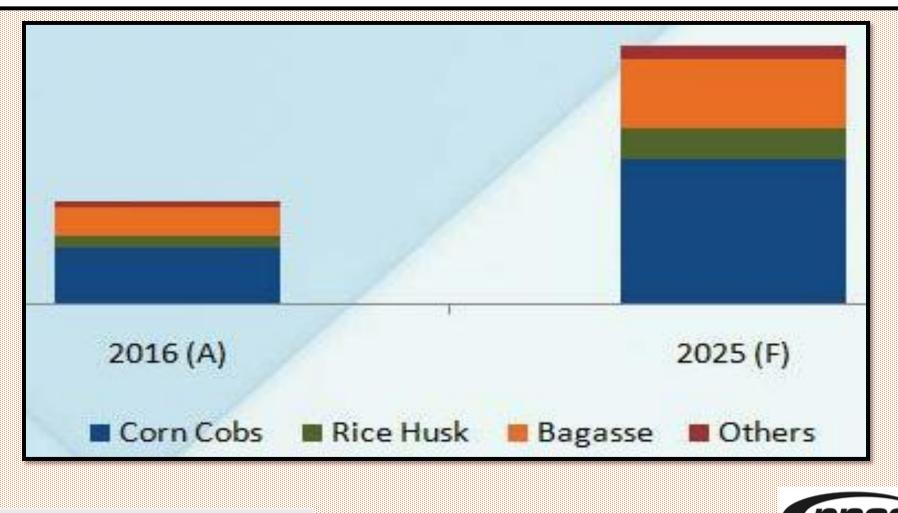


China is the dominant player in the world furfural market. With 85% of global capacity and 75% of world consumption, China will continue to drive the overall market. Strong annual growth of over 4% globally is expected in the next five years as China's consumption of furfural continues to grow as a result of strong demand for furfuryl alcohol to produce furan resins and increased furfuryl alcohol exports.



## **Global Revenue Forecast (USD Million): By**

## <u>Raw Material</u>



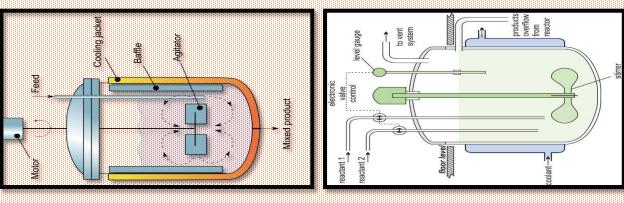
## Machinery Photographs



#### Storage Tank



#### **Mixing Tank with Agitator**









Crusher



## Air compressor

www.entrepreneurindia.co

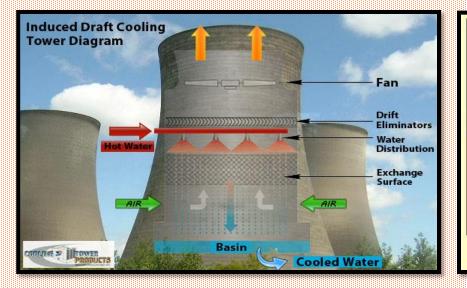


#### **Distillation Plant**

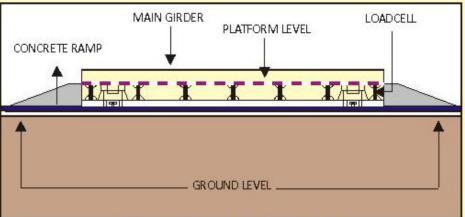








#### **Cooling Tower**



#### Pitless Type Weigh Bridge

### Weigh Bridge



## **Pump Set**



## **Piping & Fitting**

# Few Indian Major Players are as under

- MA CAgro Inds. Ltd.
- Mahavir Expochem Ltd.
- Southern Agrifurane Inds. Ltd.
- Southern Agrosynthese Ltd.
- Sri Kusuma Haranadha Agro Fural Ltd.



#### PROJECT AT A GLANCE

(`in lacs)

COST O	F PROJE	СТ		MEANS OF FINANCE						
						Propose				
Particulars	Existing	Proposed	Total	Particulars	Existing	d	Total			
Land & Site Development										
Exp.	0.00	60.00	60.00	Capital	0.00	110.98	110.98			
Buildings	0.00	90.50	90.50	Share Premium	0.00	0.00	0.00			
				Other Type Share						
Plant & Machineries	0.00	168.00	168.00	Capital	0.00	0.00	0.00			
Motor Vehicles	0.00	6.00	6.00	Reserves & Surplus	0.00	0.00	0.00			
Office Automation										
Equipments	0.00	52.25	52.25	Cash Subsidy	0.00	0.00	0.00			
Technical Knowhow Fees										
& Exp.	0.00	20.00	20.00	Internal Cash Accruals	0.00	0.00	0.00			
Franchise & Other				Long/Medium Term						
Deposits	0.00	0.00	0.00	Borrowings	0.00	332.93	332.93			
Preliminary& Pre-operative										
Ехр	0.00	2.50	2.50	Debentures / Bonds	0.00	0.00	0.00			
Provision for				Unsecured						
Contingencies	0.00	16.00	16.00	Loans/Deposits	0.00	0.00	0.00			
Margin Money - Working										
Capital	0.00	28.66	28.66							
TOTAL	0.00	443.91	443.91	TOTAL	0.00	443.91	443.91			



Year	Annu	alised	Book Value	Debt	Divide nd	Retained Earnings		Payou Probab t le Market Price			Yield Price/ Book Value
			Per Share		Per Shara Dar		)hore			No.of	
	ÈPS	CEPS `	Yer 3	Snare	Share	Per S %	snare `	%	``	Times	%
1-						100.0		70			70
2	4.48	8.50	14.48	24.00	0.00	0	4.48	0.00	4.48	1.00	0.00
						100.0					
2-3	5.71	9.21	20.19	18.00	0.00	0	5.71	0.00	5.71	1.00	0.00
						100.0					
3-4	6.96	10.02	27.16	12.00	0.00	0	6.96	0.00	6.96	1.00	0.00
						100.0					
4-5	8.20	10.88	35.36	6.00	0.00	0	8.20	0.00	8.20	1.00	0.00
E G	0.40	11 77	11 70	0.00	0.00	100.0	0.42	0.00	0.40	1 00	0.00
5-6	9.42	11.77	44.78	0.00	0.00	0	9.42	0.00	9.42	1.00	0.00



D	9. S. C. R	•	-	as-	Net Wort	n on	Profitability Ratio			Assets Turnov er Ratio	Curre nt Ratio		
							GPM	PBT	PAT				
(Number of times)		l l		%	%	%	%	%		%			
·			3.00	3.00									
1.27	1.27		1.66	1.66	2.25		16.71 %	8.35%	6.10%		52.29 %	1.62	0.94
1.37	1.32		0.89	0.89	1.34		18.01 %			438.0	50.52 %		1.15
1.51	1.38	1.52	0.44	0.44	0.80		19.03 %	12.93%	8.42%		50.52 %	1.74	1.41
1.68	1.44		0.17	0.17	0.46		19.83 %	14.71%	9.39%		50.51 %	1.73	1.70
1.89	1.52		0.00	0.00	0.24		20.45 %	16.20%		515.1 6	50.51 %	1.69	3.16
	Individ ual (Num 1.27 1.37 1.51 1.68	Individ Cumulat ual ive (Number of tir 1.27 1.27 1.37 1.32 1.51 1.38 1.68 1.44	ual ive II (Number of times) 1.27 1.27 1.37 1.32 1.51 1.38 1.52 1.68 1.44	Individ ualCumulat iveOvera IOvera its Debt(Number of times)(Num times)(Num times)1.271.271.661.371.320.891.511.381.521.681.440.17	- Depos its Debt    - as- Equity Equity      Individ ual    Cumulat Overa ive    -      (Number of times)    (Number of times)      (Number of times)    3.00      1.27    1.27      1.37    1.32      1.51    1.38      1.52    0.44      1.68    1.44	AsNet Wort hIndivid ualCumulat Overa iveIIIII(Number of times)I(Number of times)%3.003.00%1.271.27I1.661.662.253.003.001.371.320.890.891.343.001.341.511.381.520.440.440.801.681.44I0.170.170.46	- Depos its Debt $as-$ EquityNet Worthn on Net WorthIndivid ualCumulat Overa IP $   -$ Individ ualCumulat Overa IP $    -$ (Number of times) $     -$ (Number of times) $     -$ (Number of times) $    -$ 1.27 $     -$ 1.37 $     -$ 1.51 $     -$ 1.68 $     -$ 1.68 $     -$ 1.68 $     -$ 1.68 $     -$ 1.68 $     -$ 1.68 $     -$ 1.68 $     -$ 1.68 $     -$ 1.68 $     -$ 1.68 $     -$ 1.68 $     -$ 1.68 $ -$ <	$\cdot$	- Depos its Debt- 	Individ ualCumulat Overa iveIIINet Workn on Net WorkPBTPATIndivid ualCumulat Overa iveIII<	Individ ualCumulat Overa ual $\cdot$ $\cdot$ DebtNet Equity Net Debtn on Net WorthPBTPATNet ContributionIndivid ualCumulat Overa iveII <td>Individ ualCumulat Overa IveImage: Second S</td> <td>-    -    -    -    -    -    Net equity beb    n on Net Worth    n on Net Worth    -    -    -    -    -    -    -    -    -    -    -    Net Worth    n on Net Worth    -    <th< td=""></th<></td>	Individ ualCumulat Overa IveImage: Second S	-    -    -    -    -    -    Net equity beb    n on Net Worth    n on Net Worth    -    -    -    -    -    -    -    -    -    -    -    Net Worth    n on Net Worth    - <th< td=""></th<>



BEP	
BEP - Maximum Utilisation Year	5
Cash BEP (% of Installed Capacity)	62.68%
Total BEP (% of Installed Capacity)	67.75%
IRR, PAYBACK and FACR	
Internal Rate of Return (In %age)	16.33%
	3 Years 2
Payback Period of the Project is (In Years)	Months
Fixed Assets Coverage Ratio (No. of times)	4.180



## **Major Queries/Questions Answered in the Report?**

- 1. What is Furfural Manufacturing industry?
- 2. How has the Furfural Manufacturing industry performed so far and how will it perform in the coming years ?
- 3. What is the Project Feasibility of Furfural Manufacturing Plant ?
- 4. What are the requirements of Working Capital for setting up Furfural Manufacturing plant ?



**5.** What is the structure of the Furfural Manufacturing Business and who are the key/major players ?

- 6. What is the total project cost for setting up Furfural Manufacturing plant?
- 7. What are the operating costs for setting up Furfural Manufacturing plant ?
- 8. What are the machinery and equipment requirements for setting up Furfural Manufacturing plant ?



9. Who are the Suppliers and Manufacturers of Plant & Machinery for setting up Furfural Manufacturing plant ?

- **10.** What are the requirements of raw material for setting up Furfural Manufacturing plant ?
- 11. Who are the Suppliers and Manufacturers of Raw materials for setting up Furfural Manufacturing plant?
- **12.** What is the Manufacturing Process of Furfural?



13. What is the total size of land required for setting up Furfural Manufacturing plant ?

14. What will be the income and expenditures for Furfural Manufacturing plant?

15. What are the Projected Balance Sheets of Furfural Manufacturing plant?

16. What are the requirement of utilities and overheads for setting up Furfural Manufacturing plant?

17. What is the Built up Area Requirement and cost for setting up Furfural Manufacturing Business?



18. What are the Personnel (Manpower) Requirements for setting up Furfural Manufacturing Business?

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21.What is the Break-Even Analysis of Furfural Manufacturing plant?

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	Royalty and Other Charges
	Selling and Distribution Expenses

•	Salary and	Wages		)
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•	<b>Turnover</b> I	Per	Annum	1	0
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Share Capital.....11

Equity Capital Preference Share Capital





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## **Reasons for Buying our Report:**

• This report helps you to identify a profitable project for investing or diversifying into by throwing light to crucial areas like industry size, market potential of the product and reasons for investing in the product

- This report provides vital information on the product like it's characteristics and segmentation
- This report helps you market and place the product correctly by

identifying the target customer group of the product



- This report helps you understand the viability of the project by disclosing details like machinery required, project costs and snapshot of other project financials
- The report provides a glimpse of government regulations applicable on the industry
- The report provides forecasts of key parameters which

helps to anticipate the industry performance and make

sound business decisions





- Our research reports broadly cover Indian markets, present analysis, outlook and forecast for a period of five years.
- The market forecasts are developed on the basis of secondary research and are cross-validated through interactions with the industry players
- We use reliable sources of information and databases. And information from such sources is processed by us and included in the report





## Scope of the Report

The report titled "Market Survey cum Detailed Techno Economic Feasibility Report on Furfural from Bagasse and Corncobs " provides an insight into the Furfural market in India with focus on uses and applications, Manufacturing Process, Process Flow Sheets, Plant Layout and Project Financials of Furfural project. The report assesses the market sizing and growth of the Indian Furfural Industry. 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. And before diversifying/venturing into any product, they wish to study the following aspects of the identified product:



- Good Present/Future Demand
- Export-Import Market Potential
- Raw Material & Manpower Availability
- Project Costs and Payback Period

We at NPCS, through our reliable expertise in the project consultancy and market research field, have demystified the situation by putting forward the emerging business opportunity in the Furfural sector in India along with its business prospects. Through this report we have identified Furfural project as a lucrative investment avenue.



### Tags

Production of Furfural, Production of Furfural from Bagasse, Process for Producing Furfural, Production of Furfural from Corncobs, Furfural from Corncobs, Making Furfural from Corn Cobs, Furfural Production from Corn Cobs, Furfural from Sugarcane Bagasse, Sugarcane Bagasse for Production of Furfural, Production of Furfural from Sugarcane Bagasse, Production Process of Furfural, Furfural Production from Corncobs, Preparation of Furfural From Corncobs, Furfural Manufacturing Business, Furfural Manufacturing Project Report, Process for Producing Furfural from Corncobs, Process of Manufacturing Furfural, Furfural Production Process, Wealth from Waste, Waste Biomass as Raw Material for Furfural Production, Value Recovery from Agro Food Processing Wastes Using Biotechnology, Production of Furfural from Agricultural and Industrial Biomass Residues, Recycling Waste Biomass from the Sugar Industry, Lignocellulosic biomass, Lignocellulosic Agriculture Wastes as Biomass Feedstocks, Bio-Based Solvents, Commercial Uses, Cellulosic Ethanol Commercialization, Energy Content of Biofuel, Energy Crop, Energy Forestry, EROEI, Sustainable Biofuel, Furfural Manufacture in India, Manufacturing Furfural from Bagasse, Manufacture of Furfural from Corncobs, Furfural processing project ideas, Projects on Small Scale Industries, Small scale industries projects ideas, Furfural Based Small Scale Industries Projects, Project profile on small scale industries, How to Start Furfural Processing Industry in India, Furfural Processing Projects, New project profile on Furfural processing industries, Project Report on Furfural manufacturing Industry, Detailed Project Report on Furfural Production from Corncobs, Project Report on Furfural Production from Corncobs,



Pre-Investment Feasibility Study on Production of Furfural from Sugarcane Bagasse, Techno-Economic feasibility study on Furfural Production from Corncobs, Feasibility report on Production of Furfural from Sugarcane Bagasse, Free Project Profile on Production of Furfural from Sugarcane Bagasse, Project profile on Furfural Production from Corncobs, Download free project profile on Production of Furfural from Sugarcane Bagasse, Industrial Project Report, Project consultant, Project consultancy, NPCS, Niir, Process technology books, Business consultancy, Business consultant, Project identification and selection, Preparation of Project Profiles, Startup, Business guidance, Business guidance to clients, Startup Project for Furfural Production from Corncobs, Startup Project, Startup ideas, Project for startups, Startup project plan, Business start-up, Business Plan for a Startup Business, Great Opportunity for Startup, Small Start-up Business Project, Project report for bank loan, Project report for bank finance, Project report format for bank loan in excel, Excel Format of Project Report and CMA Data, Project Report Bank Loan Excel, Detailed Project Plan Report



Niir Project Consultancy Services (NPCS) can provide Detailed Project Report on Waste to Wealth-Value Recovery from Agricultural and Industrial Biomass Residues.

Furfural from Lignocellulosic Biomass. Production of Furfural from Sugarcane Bagasse and Corncobs.

# See more https://goo.gl/efaKS3







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#### **Identification and Selection Service**

Our Team has simplified the process for you by providing a "Free Instant Online Project Identification & Selection" search facility to identify projects based on multiple search parameters related to project costs namely: Plant & Machinery Cost, Total Capital Investment, Cost of the project, Rate of Return% (ROR) and Break Even Point % (BEP). You can sort the projects on the basis of mentioned pointers and identify a suitable project matching your investment requisites......<u>Read more</u>



### **Download Complete List of Project**

#### **Reports:**

#### Detailed Project Reports

NPCS is manned by engineers, planners, specialists, financial experts, economic analysts and design specialists with extensive experience in the related industries.

Our Market Survey cum Detailed Techno Economic Feasibility Report provides an insight of market in India. The report assesses the market sizing and growth of the Industry. 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.



And before diversifying/venturing into any product, they wish to study the following aspects of the identified product:

- Good Present/Future Demand
- Export-Import Market Potential
- Raw Material & Manpower Availability
- Project Costs and Payback Period

The detailed project report covers all aspect of business, from analyzing the market, confirming availability of various necessities such as Manufacturing Plant, Detailed Project Report, Profile, Business Plan, Industry Trends, Market Research, Survey, Manufacturing Process, Machinery, Raw Materials, Feasibility Study, Investment Opportunities, Cost and Revenue, Plant Economics, Production Schedule,



Working Capital Requirement, uses and applications, Plant Layout, Project Financials, Process Flow Sheet, Cost of Project, Projected Balance Sheets, Profitability Ratios, Break Even Analysis. The DPR (Detailed Project Report) is formulated by highly accomplished and experienced consultants and the market research and analysis are supported by a panel of experts and digitalized data bank.

We at NPCS, through our reliable expertise in the project consultancy and market research field, have demystified the situation by putting forward the emerging business opportunity in India along with its business prospects......<u>Read more</u>



# **Contact us**

### **NIIR PROJECT CONSULTANCY SERVICES**

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Website : <u>www.entrepreneurindia.co</u> , <u>www.niir.org</u>

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# An ISO 9001:2015 Company



## Who are we?

- One of the leading reliable names in industrial world for providing the most comprehensive technical consulting services
- We adopt a systematic approach to provide the strong fundamental support needed for the effective delivery of services to our Clients' in India & abroad



We at NPCS want to grow with you by providing solutions scale to suit your new operations and help you reduce risk and give a high return on application investments. We have successfully achieved top-notch quality standards with a high level of customer appreciation resulting in long lasting relation and large amount of referral work through technological breakthrough and innovative concepts. A large number of our Indian, Overseas and NRI Clients have appreciated our expertise for excellence which speaks volumes about our commitment and dedication to every client's success.



We bring deep, functional expertise, but are known for our holistic perspective: we capture value across boundaries and between the silos of any organization. We have proven a multiplier effect from optimizing the sum of the parts, not just the individual pieces. We actively encourage a culture of innovation, which facilitates the development of new technologies and ensures a high quality product.



#### What do we offer?

- Project Identification
- Detailed Project Reports/Pre-feasibility Reports
- Market Research Reports
- O Business Plan
- Technology Books and Directory
- Industry Trend
- Databases on CD-ROM
- Laboratory Testing Services
- Turnkey Project Consultancy/Solutions
- Entrepreneur India (An Industrial Monthly Journal)



#### How are we different ?

- We have two decades long experience in project consultancy and market research field
- We empower our customers with the prerequisite know-how to take sound business decisions
- We help catalyze business growth by providing distinctive and profound market analysis
- We serve a wide array of customers, from individual entrepreneurs to Corporations and Foreign Investors
- We use authentic & reliable sources to ensure business precision



# **Our Approach**

**Requirement collection** 

Thorough analysis of the project

Economic feasibility study of the Project

Market potential survey/research

**Report Compilation** 



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