INPUTS & ASSUMPTIONS

PROJECT FOR A REFINED EDIBLE OIL MANUFACTURING UNIT

1. BRIEF PROFILE

1.1 Company Details

Company / Firm Name	SOME RANDOM COMPANY LTD.
Date of Incorporation	21/08/20
Commencement of business	Proposed from April 2022
Promoters	Ms. Granger Mr. Potter
CEO	Mr. Weasley
Registered Office	9-3/4, Kings Cross Station
Corporate Office	Same as above
Factory Locations: Proposed	Azkaban
Business Operations	Proposed: Setting up a new unit to manufacture Edible Oil and Allied Products
Installed Capacity	Palm Oil: 1,80,000 Tons per Annum Mustard Oil: 45,000 Tons per Annum Soft Oil: 90,000 Tons Per Annum

1.2 Manufacturing process

The Manufacturing process involves the following steps:

De-gumming

Removal of gum (phospholipids) present in the oil is the first important step in edible oil refining. It is done through micro mixing of the oil with phosphoric acid, caustic soda and water in the hydration tank, in which the gum get hydrated. Hydrated gums are then removed from the oil through centrifugal separation. In case of low phospholipids content oils (like CPO) hydration and separation are not at all needed and only after gum conditioning oil is subjected to bleaching process.

Bleaching

The process of removal of colour from the oil is called bleaching in this process activated bleaching clay (10 - 20 kg/ ton) is used as agent to adsorb colour physically on its surface from the oil. Calculated quantity of bleaching earth is mixed continuously in continuous bleaching process. The process is carried out at a temperature of 90 deg to 115 deg C under vacuum. Vacuum prevents oil from oxidation. The mixture is then filtered at pneumatically sealed vertical pressure leaf filter. Vertical pressure leaf filter eliminates the cost of filter cloths and labour that is required in conventional refinery. Continuous bleaching with improved design also reduces considerably activated clay consumption over conventional batch bleaching process and therefore reduces the environmental unfriendly spent bleaching earth production. The closed circuit operation also improves the quality of the final product.

Deodorization/ De-acidification

This is the final process of edible oil refining; removing odour from the oil. Oil is heated to high temperature 240 deg. to 260 deg. under high vacuum (1 torr to 2 torr) in SS vessel. The organic aldehides and Ketones responsible for the odour are steam distilled under this condition. The advance design of this process permits 80-85% heat recovery through heating incoming cold oil by hot outgoing oil. In fact, in the physical refining process, the removal of free fatty acid and the removal of odour and colour take place together.

Fractionation

Oil is the combination of tri-glycerides of fatty acids, Different types of fatty acids, saturated and unsaturated (mono, di-, tri- etc.) are found in edible oil. Oil characteristics mainly influenced by the percentage of individual type of fatty acid present in that oil. The oil containing higher proportion of saturated fatty acid solidifies easily e.g. Palm, Coconut etc. The oil containing higher percentage of unsaturated fatty acid remains liquid even at cold. Fractionation is the process used to separate solid portion from the liquid portion of the oil. This is done through careful cooling the oil and separating the solids through filtration. Fractionation of Palm oil produces two fractions; one is solid Palm Stearine and the other is liquid Palm Olein. The liquid portion is always considered as the healthy one.

Interesterification

Interesterification is the most recent development in edible oils and fats industry to produce healthy product of vanaspati like consistency without hydrogenation. Oil is a combination of triglycerides; the chemical composition of fatty acids and its position in the triglycerides determines the quality of oils and fats e.g. saturated fatty acid like stearic/palmitic rich triglyceride has higher m.p. and therefore be solid at normal temperature

whereas unsaturated fatty acid like oleic, linoleic or linoleic fatty acid rich triglyceride has lower m.p. and therefore liquid at normal temperature. Fatty acid present in any oils and fats is a combination of different fatty acid and the individual fatty acid's position in triglyceride also affects the m.p. of that fat.

Interesterfication is a process by which the fatty acid position in the triglyceride is changed by using a chemical or enzymatic catalyst to change its physical properties. The aim is to produce vanaspati like product, which is free from health hazard trans fatty acid that is produced during hydrogenation.

1.3 Utilities

The utilities like overhead water tank, water supply system and provision of security lights will be provided inside the factory campus. Also firefighting arrangement in form of fire hydrants will be provided as per norms.

Water: Extensive studies have been conducted in the proposed location to determine the availability of quantity water in and around the site.

Power: Power substation is very near from the proposed site. Company will apply to State Power Distribution Co for power connection. However for safety purpose standby diesel generating set of 2 X 1000 KVAis considered in the project.

Boiler: 24 MT per hour 1 Nos. steam-generation boiler is included in the project to supply steam for the processes involved in the oil refining. To take

fullest advantage of the lower priced fuel available in that area coal (imported or domestic) is considered as fuel. Efficient dust collecting system like bag filter is included in the boiler design Material Handling.

2. PROPOSAL

2.1 Proposal: The Companyis setting up a unit to manufacture Edible Oil with an installed capacity of 1,80,000 Tons per Annum of Palm Oil, 45,000 Tons per Annum of Mustard Oil and 90,000 Tons per Annum of Soft Oil.The total cost of the project is estimated at~Rs.210 - 225Crores to be funded by a term loan at a debt: equity of 1.86: 1.

2.2.1 Cost breakup of Site development:

The Company is in the process of acquiring land at the proposed site.The cost details of Site development is as given below.

Description	**Amount (Rs. in Crores)**
Cost of land and land filling	6.90
Boundary wall	0.53
Boundary side lights and self on Off system by Photo cell controls	0.57
Total	**8.00**

2.2.2 Cost breakup of civil work:

The civil work will consist of the following areas:

Description	**Area (sq. mtr)**	**Amt. (Rs in Lakhs)**
Admin Block + Guest House	360	39.60
Packing Section	5000	550.00
Dispatch Section	1950	214.50
Weigh Bridge Room	20	1.90
Time office	20	1.90
Laboratory	60	5.70
Electrical Room	80	8.00
D G Set Room	102	10.20
General Store (02 Nos.)	240	24.00
Chemical Store	180	17.10

Canteen	96	9.12
Toilet Blocks (02 - Nos.)		15.00
Workers Retiring Room	180	17.10
Water Treatment Section	102	9.69
Internal Roads (Mtrs)	800	57.60
Drainage (Mtrs)	1000	27.00
Drain Covers (Nos)	1000	7.20
Total		**1015.61**

2.2.3 Plant & Machineries:

The plant & machinery cost has been estimated based on the quotations and estimates received by the Company. The total cost comes to Rs. 149.03 Crores. A breakup of the plant and machinery is given below:

SL. No.	Description	Make	Capacity	Amount (Rs in Lakhs)
1	Oil Mill Section Mustard Oil Based:			
	a. Chillex 150 TPD complete with automation and attached with suitable expellers set & installations	H&G	150 TPD	750.00
	b. Silo and day tanks complete with conveyers and screen cleaning and installations	PDM	3000*2, 100*2	530.00
2	a. Continuous Physical refinery consisting Pre-treatment, Bleaching, deodorization fatty acid recovery system & installations etc.	Crompton	600 TPD/100 TPD	3257.63
3	Fractationation Plant		500/600 TPD	
4	Membrane Filtration system			
5	High Pressure thermosyphone Water Heating system for Deodorizer Heating		2 Mkcal, 1.5 Mkcal	
6	Chilling system or Vapour Absorbing system for Fract Plant as above with all accessories & Installations	Thermax	300 TR	90.00
7	Continuous refinery for soft Oil like Soya ,Sunflower, with continuous Pre-treatment bleaching and deodorization	Crompton	300 TPD	1606.44
8	Self-Cleaning Centrifuge for Pre-treatment and Neutralization ,washing		300 TPD	
9	Intermediate Tanks ,with level transmitters and temperature control Device		300 TPD	

SL. No.	Description	Make	Capacity	Amount (Rs in Lakhs)
10	Tin /JAR Filling & Packaging lines to pack from 2 litre to 15 litre	Fittiz	300 TPD	320.37
11	Pouch filling machines lines to pack 500 ml to 1 litre packs	Samarpan	150	150.00
12	Bottle filling line to pack 500 ml to 2 liter bottle/jar with complete Automation	Spanpack, others	50	154.69
13	Blow moulding machine ,Injection Moulding machine for jar and cap making of different size	Weldco	10000	231.13
13	Pet Bottle manufacturing Machine with die and compressor		50000 Nos.	200.00
14	Tin container Manufacturing Plant capacity to make 15000 Tin per day	Polytech	15000	388.41
15	Polish filter Vitamin dozing system and automation in Packaging lines			1.00
16	Bakery Fat &shortening Manufacturing Plant and Margarine plant with all blending Tanks &Accessories	Standard	100 TPD	599.97
17	ACID Oil Plant complete suitable for 250tpd refinery	GNA		119.98
18	Air Compressor Dryers & accessories	LG	1200 CFM	99.97
19	Fire Hydrant System all around the factory			23.97
20	storage Tanks ,MOC- MS , SS, Capacity 30000 MT With all pipe line, Valves , Automation for gauging system, steam PRS ETC		20000	1610.39
22	Effluent treatment Plant flow 150 M3	Greenzone		125.02
23	Pipe Lines /Valves /Instrumentation	Tata		254.00
24	Insulation for Tanks and others			140.30
25	D G SET 1000X2	Kirloskar		209.98
26	Lab Equipment etc	Various		79.25
27	Weigh bridge capacity 100 MT	EWS	2 NOS	80.00
28	Water treatment RO/DM /SOFTNING plant	Thermax	45 M3/hr	130.00
29	24 MT High pressure Steam convertible Power Boiler including Steam Turbine of 5 MW to produce the power	Cheema boiler	24 mt / 5MW	2523.96
30	Electrical Substation 2500 kva Transformer vacuum circuit Breakers .LT Panels, capacitor Banks all protection device etc			122.40

SL. No.	Description	Make	Capacity	Amount (Rs in Lakhs)
31	All HT /LT Cables , tray , fittings MCC all electrical	BAG		408.00
32	Coal Crushing and Coal Handling system	Bevcon		175.10
33	Low Pressure Boiler Comp with mountings			386.16
34	Ash Handling system and ash removal system Complete installation in all respect	Bevcon		134.73
	Total:			**14902.85**

2.2.4 Other Fixed Assets: The cost under Other Fixed Assets will consist of Misc. Fixed Assets (office equipments, furniture, etc.)amounting to Rs.0.50 Crores.

2.2.5 Contingencies: Provision for contingencies to been considered @ 3% over hard costs to provide safeguard against escalation of prices or any other unforeseen expenditure.

2.2.6 Pre-Operative Expenses: The pre-operative expenses of the company shall comprise of interest during construction, upfront fee, consultants' fees, etc., as under:

Description	Amount (Rs. in Crores)
Fees and Approvals	0.03
Travelling expenses	0.05
Misc. Expenses (Post / Mail / Legal)	0.01
Upfront fee	TBC
Interest during construction	TBC
Consultancy Fees	0.50
Trial Run Expenses	0.20
Total	**TBC**

*TBC=To be computed

Interest during construction and draw down: Interest during construction to be assumed upto March 2022at 12% p.a., with debt drawal at DE of 1.86: 1.

2.2.7 Working Capital Margin:

Working Capital margin has been calculated on the basis of bank finance for working capital, based on the calculations for the first year of operations for the project to the extent of 25% on inventory of raw materials, consumables and finished goods and 40% on receivables.

3. Means of Finance

The project is proposed to be funded from term loans from banks, financial institutions and Promoters' Contribution in the ratio of 1.86:1.

3.1 Equity

The total equity requirement for the project shall be totally funded by promoters.

3.2 Term Loan

The company proposes to raise Rupee Term Loan from Banks & Financial Institutions to part finance the project to the extent of 65% of total costs. The broad terms of the proposed loan is as given below:

Nature of borrowing	**Rupee Term Loan**
Loan Amount	TBC
Interest Rate	12.00 % p.a. (Linked to Banks' MCLR)
Upfront Fee / Processing Fee / Miscellaneous	0.50% of the loan amount

Construction period	To be completed by March 2022
Commercial Operations Date (COD)	April 2022
Moratorium on Principal	12 months from COD
Door-to-door tenor	10.5 years
Zero date	1st October 2020
Repayment frequency	Quarterly installments payable at the end of each quarter
Security	EM of land& building and civil structures at present and in future. Hypothecation of Plant & Machineries and Other Fixed Assets of the Company to be created out of the proposed term loan. Hypothecation of stock and receivables both present and future. Pledge of promoters' shares to the extent of holding of 20%. Collateral security: EM of property valuing ~INR 150 Crs (details to be provided by management)

3. IMPLEMENATION SCHEDULE AND CURRENT STATUS

4.1 Implementation Schedule

Item	Date / Expected date of commencement	Date / Expected date of completion
Land	September 2020	October 2020
Land Development	October 2020	December 2020
Civil Works	January 2021	December 2021
Plant & Machinery &MFA	February 2021	January 2022
Placement of Orders	November 2020	September 2021
Delivery at site	February 2021	January 2022
Erection & Installation	April 2021	February 2022
Trial Production	March 2022	
Commercial Production	April 2022	

The construction schedule has been prepared taking the delivery periods of major equipment as indicated by respective suppliers/contractors and volumes of civil, mechanical, constructional jobs involved.

4. ASSUMPTIONS FOR THE PROJECT

5.1 Installed Capacity

The installed Capacity will be 1.80 lakh MTPA of Palm Oil, 45,000 MTPA of Mustard Oil and 90,000 MTPA of Soft Oil considering 3 working shifts of 8hours each assuming 300 working days in a year.

5.2 Capacity utilization (%)

FY →	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8 & Onwards
	50%	60%	70%	75%	80%	85%	90%	95%

5.3 Selling prices

The selling prices have been assumed as under:

Description	Rs per MT
Palm Oil	52,750
Mustard Oil	72,750
Soft Oil	62,750

5.4 Raw materials

The Raw Material requirement and rates are to be taken as under:

Raw Material Reqd./MT of FG	
Crude Palm Oil	1.058
Mustard Seeds	2.500
Crude Oil	1.026
Phosphoric Acid	0.008
Bleaching Powder	0.006
Activated Carbon	0.001

Raw Material Price/MT	Rs.
Crude Palm Oil	50,000
Mustard Seeds	45,000
Crude Oil	62,000

Phosphoric Acid	90,000
Bleaching Powder	38,000
Activated Carbon	35,000

5.5 By-Products:

The selling prices have been assumed as under:

Description	% of RM consumed	Rs per MT
Fatty Acids(Crude Palm)	5%	47250
Residue(Mustard Seeds)	50%	41344
Fatty Acids(Crude Oil)	1.75%	44888

5.6 Consumables

900/- per MT of production of palm oil and mustard oil.

5.5 Increase in prices

Sale prices increase at 2% y-o-y whereas raw material costs at 1% p.a.

5.6 Power

Description	Power consumed p.u. (in kwh)
Palm Oil	13
Mustard Oil	12
Soft Oil	20

Rate per unit = 6.65/-

5.6 Depreciation

Depreciation to considered as per the method prescribed under the Companies Act, 2013.

5.7 Interest: Negotiations with the bank suggest interest rates as follows:

Nature of Loan	**CC>60%**	**CC>40%**
Term Loan	12.00%	13.00%
Cash Credit	10.90%	11.25%

*CC=Collateral Coverage

#Minimum acceptable CC = 40%

5.8 Income Tax: No income tax shall be payable as the unit shall be exempted from income tax under section 80 IE. However, MAT has to be considered.

5.9 Repairs & Maintenance: R&M costs can be considered at 0.20% on Civil structures and 0.35% on machinery.

5.9 Manpower:

Placement / Description	No. ofpersons	Pay / Month
		(Rs.)
<u>Factory Personnel</u>		
Plant In Charge	1	60,000
Maint. Engineer	2	25,000
Electric Engg.	2	18,000
Production clerk	1	20,000
Machine supervisor	2	18,000
Machine operators	4	12,000
Quality control supervisor	2	15,000
Mechanic & Foreman	2	12,000
Security	2	9,000

Office Personnel		
General Manager	1	70,000
Accountant	1	50,000
Store keeper	1	25,000
Lab Assistants	1	18,000
Clerks	2	10,000
Skilled Labour	30	10,000
Unskilled Labour	15	6,000
Casual Labour	15	5,000

Annual benefits@20%

5.9 Working Capital:

Description	**No. of days' holding**	**WC Margin**
Raw Material	4-5	25%
Finished Goods	6	25%
Consumables	7-8	25%
Receivables	15	40%
Creditors	9	-

5. INDUSTRIAL SCENARIO

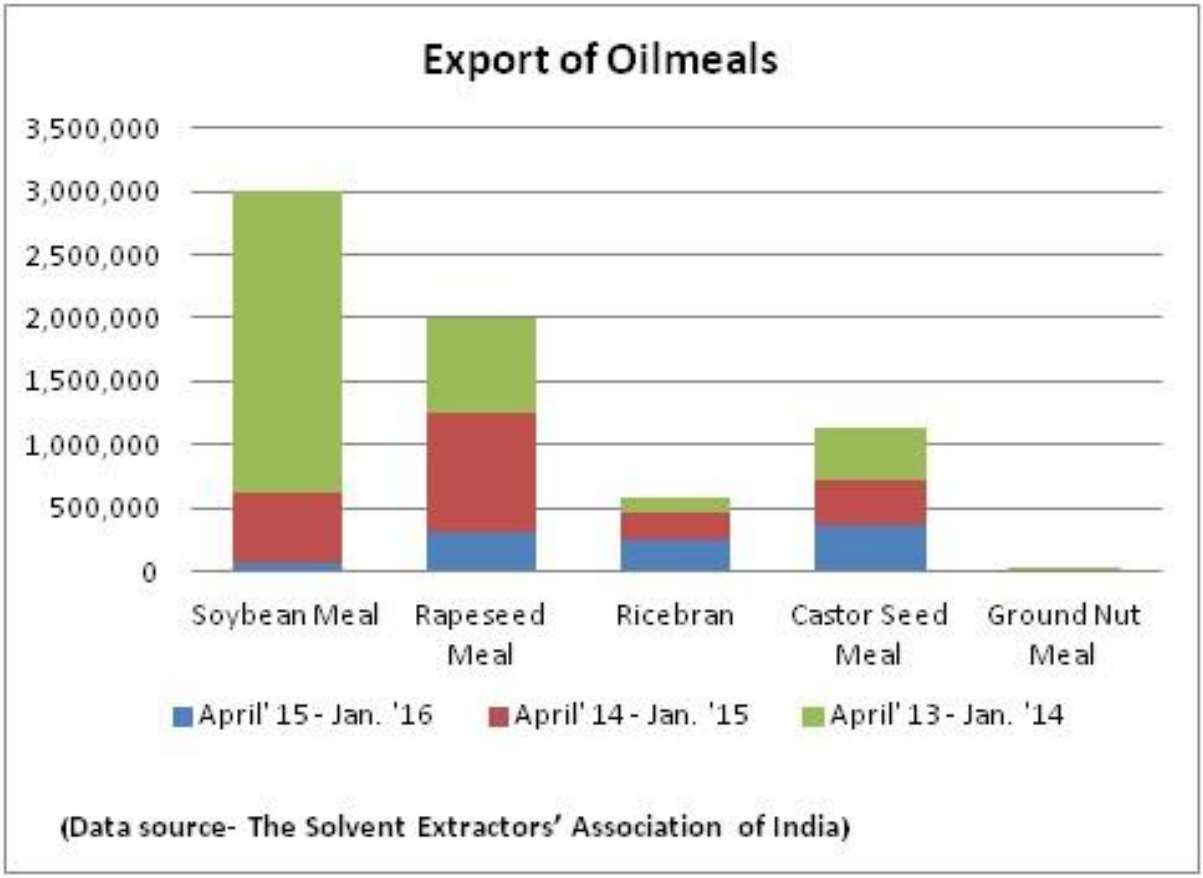
Indian edible oil industry is the world's fourth-largest industry after USA, China and Brazil and accounts for around 9% of the world's oil seed production. It is highly fragmented with extreme variation in the consumption pattern of Indian consumers of edible oil. The Indian edible oil industry continues to be underpenetrated and thereby holds immense business opportunities. Vegetable oil consumption has increased due to rise in overall household income, surging retail sector, increasing health awareness, growing population and increasing demand. In India, oilseeds are grown in nearly 26-27 million hectares. The productivity is however very low in comparison with the world average. The consumption growth is rising by nearly 5.5 to 6.0% per annum. Palm Oil is consumed the most by lower income category of Indian society. Consumption of Palm oil in India is now nearly 45% of the total oil consumption followed by Soybean oil and Rapeseed oil. Also the Indian edible oil demand is quiet elastic and does reduce or increase to an extent with change in prices. Import of edible oil has increased nearly 2.5 times in last 8 years. The central government allowed 100% FDI in oil palm plantations which is one of the important steps in helping fill the gap of edible oil deficit in India. The alarming declines of Indian oilseeds production and crushing are going along with booming import demand for vegetable oils, have brought oil meal exports from India almost to a standstill.

Export of Oil meals

The export of oil meals during January, 2020 is lowest ever reported export of 17,243 tons, down by 91%, compared to 185,654 tons in January, 2019. The overall export of oil meals during reduced to half (51%) compared to

last year at 1,005,085 tons against 2,047,937 tons during the same period of last year.

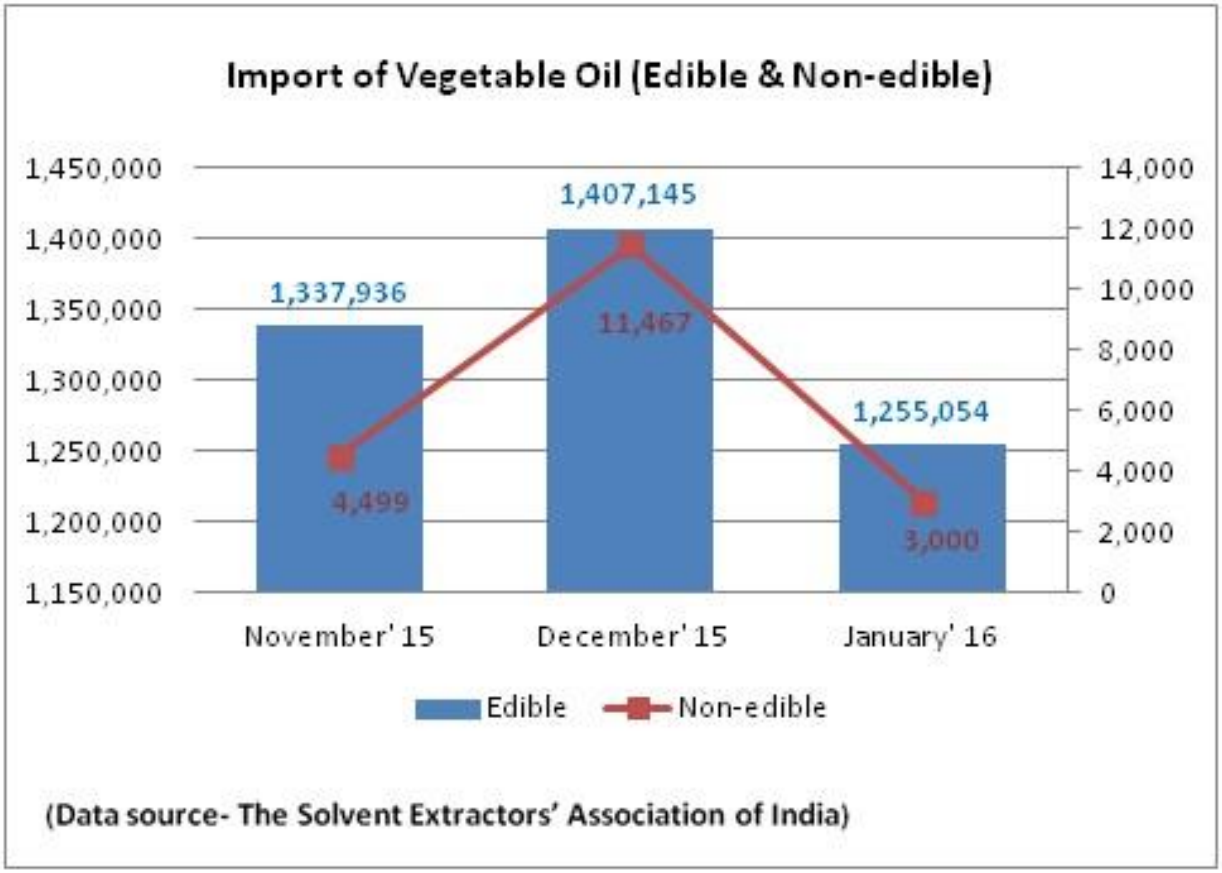
Soybean crushing declined due to continuous disparity and high price of domestic market affecting overall domestic availability of both oils and meals. The capacity utilization is at the lowest. Industry is passing through very tough time and many plants are close down or operating at very low capacity due to disparity in crushing and export. Rapeseed meal export is also reduced to 1/3rd of last year. The export of soybean meal is at a historical low during current year and reported just 69,263 tons during the first ten months of the financial year 2015-16 compared to 549,162 tons in the previous year 2014-15 and 2,375,231 tons during the same period of 2013-14.



Import of Vegetable Oil

The import of vegetable oils during January, 2016 stood at 1,258,054 tons compared to 1,095,466 tons in January, 2015, consisting of 1,255,054 tons of edible oils and 3,000 tons of non-edible oils i.e. up by 15%. The overall import of vegetable oils during first quarter of the current oil year 2015-16, November '15 - January '16 is reported at 4,014,101 tons compared to 3,427,276 tons i.e. up by 17%. During November '15 - January '16, import of refined oil (RBD Palmolein) jumped to 611,256 tons from 173,113 tons in the same period of last year, while Import of crude oil marginally increased to 3,383,879 tons from 3,182,568 tons during the same period of last year. During November' 15 - January'16, Palm Oil import has marginally increased to 2,350,063 tons from 2,293,994 tons during the same period of last year, however, Soft Oils import increased to 1,645,072 tons from 1,061,687 tons

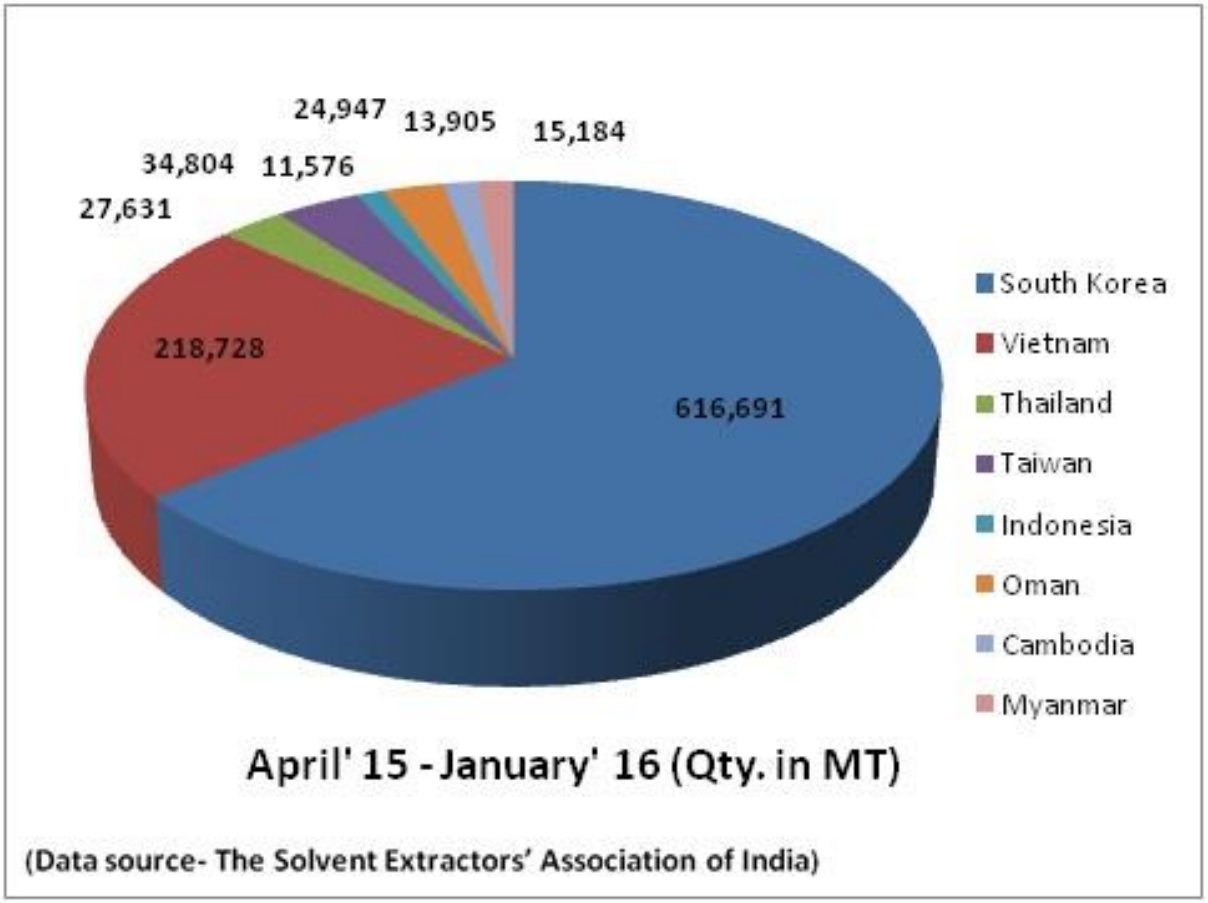
last year. The share of soft oils import increased to 41% from 32% last year, while share of palm oil products down to 59% from 68%. The import of Non-edible oils during November '15 - January '16 is reported at 18,966 tons only compared to 71,595 tons during the same period last year. i.e. down by 74%.



Major Importers of Oil meals

South Korea is a major importer from India. During April '15 - January '16, oilmeal export to South Korea is reported at 616,691 tons compared to 730,571 tons; consisting 264,180 tons of rapeseed meal , 351,606 tons of castor meal and 905 tons of soybean meal. Vietnam imported 218,728 tons compared to 269,935 tons last year; consisting of 2,587 tons of rapeseed meal, 480 tons of soybean meal and 215,661 tons of Deoiled rice bran extraction. Thailand imported 27,631 tons compared to 189,026 tons; consisting 11,646 tons of rapeseed meal, 10,581 tons of soybean meal and

5,404 tons of Deoiled rice bran extractions. Taiwan imported 34,804 tons compared to 61,978 tons last year; consisting of 18,469 tons of rapeseed meal, 15,098 tons of castor meal, 400 tons of groundnut meal and 837 tons of soybean meal. Oman imported 24,947 tons compared to 19,239 tons last year consisting of 12,463 tons of soybean meal, 11,984 tons of Deoiled Rice Bran and small quantity of 500 tons of castor meal.



Budget Expectations

- The industry body Solvent Extractors' Association of India has asked for increasing customs duty on edible oil imports in order to safeguard farmers' interest. To fulfill the domestic requirements of raw material, the association suggested that imports of oilseeds, oilcakes and rice bran should be encouraged by reducing the import duty to a reasonable level. It suggested some measures, such as importing oilseeds at lower duty, importing oilcakes and rice bran at nil duty, increasing overall availability of raw material and exporting all edible oils in bulk without MEP (Minimum Export Price).

- The association suggested that in order to encourage FDI in oil palm plantation, the government should declare oil palm as a plantation crop and exempt the 2 million hectares identified as suitable for oil palm plantation from the Land Ceiling Act.

- The Oil Palm Developers and Processors Association (OPDPA) have recommended a separate import policy for the palm oil industry. It wants the import duty on palm oil to be increased substantially from 12.5 percent now to boost domestic production.

- The association wants the government to allocate Rs 10,000 crore for the development of the palm oil industry to promote domestic cultivation. The association has also demanded efficient implementation of Market Intervention Scheme (MIS) to bail out the farmers when faced with crop losses incurred due to market fluctuations.

- The association is also advocating that in order to help increase the area of palm cultivation, the government should increase the input subsidy to Rs 40,000 for four years and raise the aid towards the planting material to Rs 20,000. If these incentives are extended, the crop acreage may increase by 20,000-40,000 hectares.

Outlook

India has been an importer of edible oil for last many years because of a mismatch between demand and domestic production. The palm cultivation

has not taken off in the country on expected lines. Though, the per-capita consumption of edible oils is still a lot below threshold level of consumption. High growth in income levels, increasing trend in spending & better living standards may push the growth. Of late, consumption of edible oil in the country has started growing at around five percent a year. It, coupled with the limited availability of oil seeds and shifting of acreage to other crops, has resulted in the widening of supply-demand gap in the domestic market. The domestic production of oilseeds has been declining in the last two years as farmers are no longer interested in growing the crop which has become un-remunerative. The shortage of raw material and capacity utilization have further devoid the industry of gaining production and productivity, thus making the industry less competitive in the global market. Provided the positive macro and demographic fundamentals, the edible oil market has a favorable demand growth outlook over the medium-to-long term. A lot will however depend upon the long-term actions of the government for the growth and development of the sector. The increase of import duty on edible oil and provisions for extra incentives in the coming budget will further provide impetus to the industry.