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An Examination on the Dynamics of Edible Oil Sector in India

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Abstract: The article aims to understand the issues in the availability of edible oil in India. Based on the secondary data, empirical examinations were made for constructive arguments on the subject. Since the domestic oilseeds production could not meet the galloping per capita demand for edible oil consumption, 56 per cent of India's consumption demand was compensated by the import. Unfortunately, the liberalization in trade policy and poor support to the domestic oilseeds production contributed to shift. Now, the National Mission on Edible Oil–Oil Palm initiates oil palm cultivation in the dense forests on a large scale to revitalize the country's import dependency. However it is found thatthe import dependency for edible oil would not be addressed merely by promoting oil palm cultivation. Appropriate planning and implementation to conserve ecological diversity on the one hand and the other escalation in traditional oilseeds production needs attention. Therefore, an appropriate edible oil consumption policy to reduce per capita edible oil consumption is also warned as the per capita consumption of edible oil is almost doubled than the average need.

Keywords: Edible Oil, Oil-Palm, Environment, Indigenous Oilseeds,

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I. Introduction

In food self-sufficiency initiatives, the impressive grain production was achieved by the Green Revolution; however, the policy and schemes introduced to increase oilseed crops have not yielded the demand for domestic edible oil (Rao 2013) since the 1960s. Despite Compound Annual Growth Rate (CAGR) was 3.89 per cent in the production of the nine[1] domestic oilseeds in India; it could not meet the galloping per capita edible oil consumption of 6 per cent. It is due to changing consumption patterns, population growth, and enhanced per capita income (GoI, 2021). Consequently, India

[1] Nine oilseeds, groundnut, soybean, rapeseed and mustard, sesame, sunflower, safflower, niger, castor and linseed are the primary source of domestic edible oil in India.

imports edible oil next to crude oil and gold value to meet the consumption demand. The consumption of palm oil alone increased to 230 per cent in the last two decades (Rajendran and Sabarisakthi, 2021).

The Government of India allocated Rs.11040 crore under the National Mission on Edible Oil–Oil Palm (NMEO-OP) to promote palm cultivation to 6.5 lakh ha and increase production of 28 lakh tonnes by 2029-2030. For this, while the Central Government contributes 80 per cent (Rs. 8844 crore), the state governments share 20 per cent (Rs 2196 crore). The mission is considered as a flagship programme to reduce the import reliance of the country on edible oil. However, oil palm expansion has been criticised on the issues of environmental protection, health/nutritional security, corporate into oil palm economy, and the need for indigenous oilseeds from different quarters.

II. Review of Earlier Studies

This section reviews the reliable evidence on the issue from the earlier studies. Sagar (2019) observed that increasing palm oil could not be sustained merely by imports in India. However, the unsustainable expansion of oil palm cultivation in India with short-term economic goals will lead to biodiversity and social issues. The process of palm oil production tends to reduce freshwater and soil quality. It may adversely impact local communities dependent on ecosystem products and unviable for small farmers (CRB, 2014).

An empirical report by Balasubramanian and Samuel (2021) found that while the government is pushing oil palm in the Indian sub-continent, farmers from Tamil Nadu and Kerala were shifting from oil palm to coconut owing to high maintenance costs compared to coconut.

Rajendran and Sabarisakthi (2021) pointed out that the East Asian countries of Indonesia and Malaysia, which has 85 per cent palm oil trade of the world, fell native plants to plant oil palm in forests against the local ecosystem to attract fast-growing demand for edible-palm oil. Hurriedly, Indonesia has become the fifth-largest deforested country (36 per cent of the forest was cut down) and livelihoods of biodiversity are at stake due to frequent wildfires. Resultantly, Indonesia and Sri Lanka imposed restrictions on expanding palm oil cultivation.

Similarly, health concerns also rose with increasing per capita demand. Studies estimated (Paroda and Kumar, 2002; Chand et al., 2004) that annul edible market as 12 million tonnes in 2030 against 7.3 million tonnes consumed in 1995. However, the country surpassed the healthy projection in 2005-06 itself. India consumed 24.6 million tonnes in 2020, with a per capita consumption of 19 kg. It is estimated to increase more than 22 kg per capita consumption in 2022 in the NMEO-OP draft (GoI, 2021). Which was considerably more than the average need, consumption of fats in excess[2] is linked with the increased risks of obesity and cardiovascular diseases (CVDs) and also unequal-demand-shortages in the future (Hegde, 2003 and 2012).

Against this backdrop, this article critically examines the macro dynamics and issues in the edible oil economy with the following primary objectives.

III. Objectives

[2]The average need for fat for the Indian population is 29 grams per person/per day. It is equivalent to 10.585 kg per person per year (Hegde, 2012). Surprisingly, per capita consumption is almost doubled the level in 2020.

(i) To understand the growth and dynamics in the performance of domestic edible oil production, import and the turn of oil palm expansion in India, and
(ii) to offer solutions to address the backdrops of India's edible oil economy.

IV. Methodology

The research is descriptive. Comprehensive arguments were constructed with theoretical background based on the secondary data and with the empirical examination. The Secondary data are collected from the reports of Agricultural Statistics at a Glance released by the Ministry of Agriculture and Farmers' Welfare (Govt. of India), and the export-import data bank by the Ministry of Commerce and Industry (Govt. of India). The variables such as oilseeds area, production, productivity and procurement of edible oil, import of edible oil, trade policy and import duty, palm oil cultivation, eco-system, health impact, and post-harvest loss are focussed.

The structure of the article is presented majorly in two sections. Section one deals with the macro scenario in Indian edible oil production and consumption in India. Section two covers the issues on health cost and eco-system loss from oil palm cultivation and concerns from cultivators. It concludes with the way forward to obtain self-sufficient in edible oil with eco-friendly environment.

V. Macro Scenario in Indian Edible Oil

India's Green Revolution (the 1960s) and the subsequent procurement support with Minimum Support Price (MSP) made self-sufficiency in food grains (rice and wheat) and sugar. Other areas like horticulture also perform with 320 Million Tonnes (MTs) in 2020. The performance in allied sectors like dairying and fisheries also made a considerable dent in their respective areas. All these lead to meeting the domestic demand and exporting some farm-based products to earn foreign exchange.

However, the area, production and productivity of nine ingenious edible oilseeds (refer footnote no. 1) have been stagnant since 1950. Between 1950-51 and 2019-20, the area under oilseeds increased to 27.04 Million hectares (Mha) from 10.73 Mha, production increased to 33.42 MTs from 5.16 MTs, and productivity increased to 1236 kg per ha from 481 ha (table 1).

Table1: Growth Performance of Food Grains and Oilseeds in India

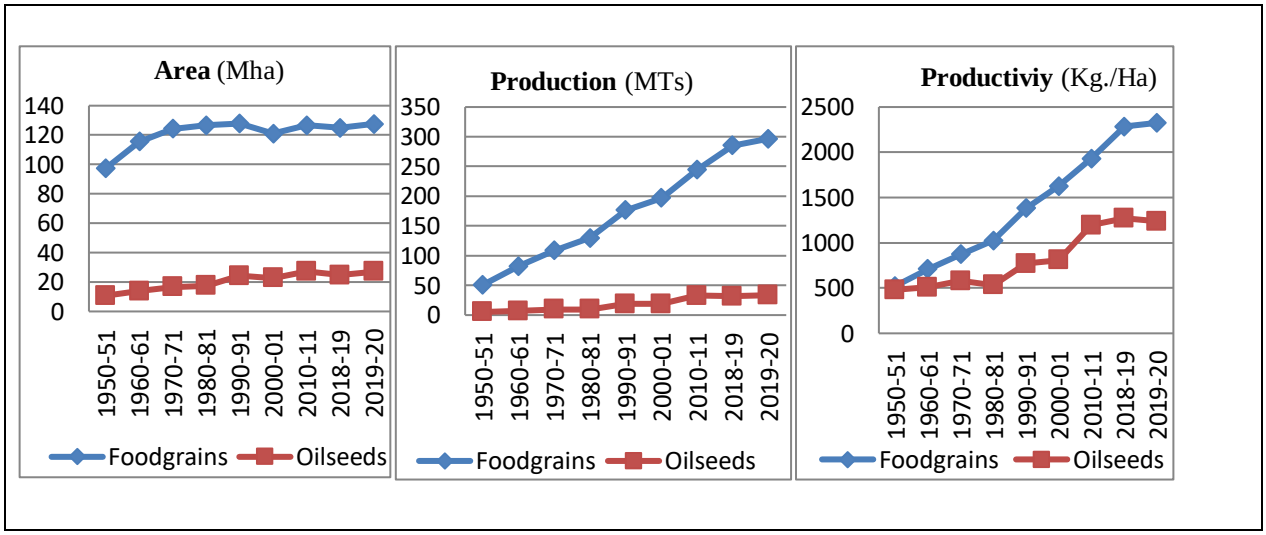
	Foodgrains			**Oilseeds**		
Year	Area	Production	Productivity	Area	Production	Productivity
1950-51	97.32	50.82	522	10.73	5.16	481
1960-61	115.58	82.02	710	13.77	6.98	507
1970-71	124.32	108.42	872	16.64	9.3	579
1980-81	126.67	129.59	1023	17.60	9.37	532
1990-91	127.84	176.39	1380	24.15	18.61	771
2000-01	121.05	196.81	1626	22.77	18.44	810
2010-11	126.67	244.50	1930	27.22	32.48	1193
2018-19	124.83	285.28	2285	24.79	31.52	1271
2019-20	127.59	296.65	2325	27.04	33.42	1236
CAGR	**03.05**	**21.66**	**18.05**	**10.82**	**23.07**	**11.06**

Source: Agriculture Statistics at A Glance (various years)
Notes: (i) Area in Mha, Production in MTs, Productivity in Kg./Ha

(ii) Compound Annual Growth Rate (CAGR)
(iii) Foodgrains includes rice, wheat, other cereals and all pulses.

Table 1 show that the performance of oilseed has been unimpressive even though the CAGR of area (10.82), production (23.07) and productivity (11.06) for oilseeds was higher than the foodgrains, 03.05, and 21.66 and 18.05 respectively. An estimation from table 1 shows that the area of oilseeds, total production and productivity was low, 88.97 per cent, 89.85 and 7.85 per cent, respectively, compared to the food grains in 1950-51. Unfortunately, it further increased, 78.81 per cent for the area under oilseeds, 88.73 per cent for total production, and 46 per cent for productivity in 2019-20.

It explored the wide gap, and the same data on trends in the area, production, and productivity of foodgrains and oilseeds has been shown in figure 1. It shows the low share of edible oil production when compared to foodgrains. The unimpressive trend in the area, production and productivity shown remains since 1950.



Source: Extracted from table 1.

Figure: 1 Growth of Foodgrains Oilseeds in India

Following the comparative macro dimension on oilseeds with foodgrains, table 2 presents the state-wise share of oilseeds from the latest report (2018-19). It shows that in Tamil Nadu and Haryana, the yield levels are better (2411 kg/ha and 2042 kg/ha, respectively) than in other states. States like Rajasthan (1581 kg/ha), Gujarat (1458 kg/ha), West Bengal (1255), and Madhya Pradesh (1247 kg/ha) shows yield levels as moderate.

Table 2:Contribution of Oilseeds by States in 2018-19

State	Area		Production		Productivity	
	Mha	P-share	MTs	P-share	Kg./Ha	Deviation*
Rajasthan	4.36	17.60	6.90	21.89	1581	24.39
Gurarat	2.56	10.33	3.73	11.84	1458	14.71
Madhya Pradesh	6.65	26.84	8.29	26.31	1247	-1.89
Maharashtra	4.46	17.84	4.89	15.50	1096	-13.77
Karnataka	0.95	3.83	0.78	2.48	824	-35.17
Haryana	0.63	2.52	1.28	4.05	2042	60.66

West Bengal	0.93	3.74	1.16	3.69	1255	-1.26
Uttar Pradesh	1.23	4.97	1.33	4.22	1079	-15.11
Tamil Nadu	0.39	1.57	0.94	2.98	2411	89.69
Others	2.63	10.62	2.22	7.03	841	-33.83
All India	**24.79**	**100.00**	**31.52**	**100.00**	**1271**	-

Source: Agriculture Statistics at A Glance (various years)

Note: * Percentage deviation from national average (1271 kg/ha)

It also shows a direct relationship between the area under cultivation and the production of oilseeds. It indicates that the states like Madhya Pradesh, Maharashtra and Rajasthan share high in the area under cultivation, 26.84 per cent, 17.84 per cent and 17.60 per cent, respectively. Nearly the same trend replicates in the total production of oilseeds by the states. Madhya Pradesh has been performing well in soybean cultivation and helped to augment India's total edible oil production (Narayanamoorthy, 2021) considerably.

While oilseeds are a primary source of domestic edible, it has been cultivated in specific regions in the diverse agro-climatic conditions of the Indian sub-continent. The indigenous groundnut oil shares around 27 per cent of total edible oil and is widely cultivated in Gujarat, Rajasthan and Tamil Nadu. Rapeseed and mustard contribute around 20 per cent of total edible oil and are commonly cultivated in Rajasthan, Haryana, and Uttar Pradesh. Followed by soybean (in Madhya Pradesh, Maharashtra, and Rajasthan) and sunflower (in Karnataka, Odisha and Bihar) share the highest, followed by other crops like sesamum, nigerseed, safflower, castor and linseed. Cottonseed and rice bran oil contribute high than coconut, palm oil[3], solvent extracted oils, and tree and forest origin oils in the secondary sources (table 3).

Table 3: Crop-Wise Oilseeds-Oils Production in India (1995-96 to 2018-19)

Sources	1995-96			2018-19			Growth rate
	Oilseeds	Oil	P-share	Oilseeds	Oil	P-Share	
Primary (Quantity in Lakh Tonnes)							
Groundnut	75.80	17.44	23.35	92.56	28.97	26.45	0.66
Rapeseed and Mustard	60.00	18.60	24.91	132.68	22.09	20.17	0.19
Soyabean	50.90	8.14	10.90	67.27	15.18	13.86	0.86
Sunflower	12.60	4.16	5.57	2.16	0.73	0.67	-0.82
Sesamum	5.30	1.64	2.20	6.89	2.36	2.15	0.44
Nigerseed	1.90	0.57	0.76	0.45	0.19	0.17	-0.67
Safflower	3.80	1.14	1.53	0.25	0.07	0.06	-0.94
Castor	7.80	3.12	4.18	11.97	4.27	3.90	0.37
Linseed			0.00	0.99	0.40	0.37	-
Sub-total	**221.00**	**55.68**	74.56	**315.22**	**74.26**	67.80	0.33
Secondary (Quantity in Lakh Tonnes)							
Coconut		4.20	5.62		5.90	5.39	0.40
Palm oil		-	-		**2.7**	2.47	-

[3]Palm entered India during the late 1980s from African Countries (Rajendran and Sabarisakthi, 2021).

Cottonseed	4.00	5.36	**11.23**	10.25	1.81
Ricebran	4.50	6.03	**10.68**	9.75	1.37
Solvent Extracted Oils	4.90	6.56	**3.25**	2.97	-0.34
Tree and & Forest Origin	1.40	1.87	**1.50**	1.37	0.07
Sub-total	**19.00**	25.44	**35.26**	32.20	0.86
Total Edible Oil Production	**74.68**	100.00	**109.52**		0.47

Source: Agriculture Statistics at A Glance

Note: Quantity in Lakh Tonnes

The share of edible oil from primary and secondary sources has increased (55.68 lakh tonnes to 74 lakh tonnes, and 19 lakh tonnes to 35.26 tonnes respectively) in the past two and half decades (1995-96 to 2018-19). However, the percentage share indicates that the secondary edible oil sources performed well (increased from 25 per cent to 32 per cent) than the primary sources (decreased from 75 per cent to 68 per cent) during the reference periods. The growth rate indicates that the secondary source edible oil production performance in a toned way (0.86 while the primary source was 0.33), particularly rice bran, cottonseed, and coconut, are emerging from 1995-96 to 2018-19. The much-acclaimed palm oil started showing its presence in a sounder way during 2018-19 only.

Subsequently, table 4 shows that India's domestic edible oil production increased from 74.68 lakh tonnes to 116.31 lakh tonnes (35.79 per cent) between 1995-96 and 2020-21 while the import increased from 11.61 lakh tonnes to 134.09 lakh tonnes (91.34 per cent) in the same period. Unfortunately, the share of imports in total edible oil availability rose to 56 per cent from 15.22 per cent. At the same time, the percentage of net domestic edible oil availability fell to 44 per cent from 85 per cent (Table 4). It clearly shows India heavily depends overseas for edible oil.

Table 4: Source-wise Edible Oil Availability in India

Year	Domestic			Export and Industrial Purpose	Net Domestic Edible Oils Availability	P-Share	Imports	P- Share	Total Edible Oil Availability
	Primary	Secondary	Total						
1995-96	55.68	19.00	74.68	10.00	64.68	84.78	11.61	15.22	76.29
2000-01	44.99	18.00	62.99	8.00	54.99	56.83	41.77	43.17	96.76
2005-06	69.06	22.30	91.36	8.20	83.16	65.98	42.88	34.02	126.04
2010-11	76.27	27.49	103.76	5.94	97.82	57.46	72.42	42.54	170.24
2015-16	60.55	31.25	91.80	5.50	86.30	36.75	148.50	63.25	234.80
2016-17	73.09	34.4	107.49	6.5	100.99	39.73	153.17	60.27	254.16
2017-18	73.56	36.54	110.10	6.30	103.08	41.28	145.92	58.43	249.72
2018-19	74.26	35.26	109.52	6.00	103.52	39.94	155.07	59.82	259.22
2019-20*	79.20	37.11	116.31	9.76	106.55	44.28	134.09	55.72	240.64

Source: Agricultural Statistical at a Glance, Government of India (various years)

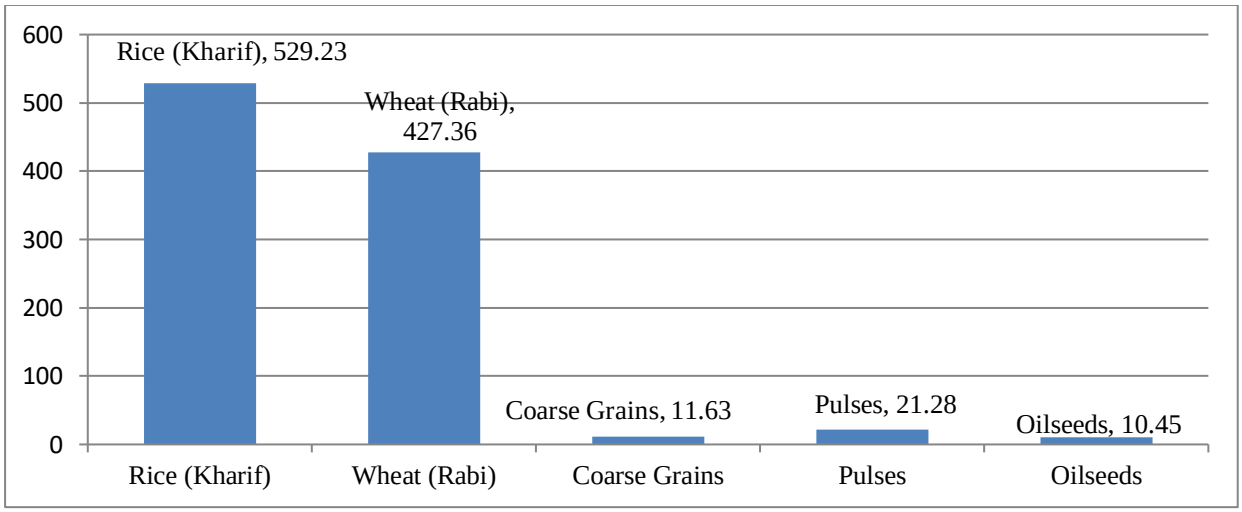
Notes:

(i) Oil year (November to October) and Quantity in Lakh Tonnes

(ii) Based on 4th Advance Estimates released by Ministry of Agriculture & Farmers Welfare on 19.08.2020

There are multiple issues (policy in production and trade) contributing to the stagnant production of primary oilseeds compared with secondary sources of food grains production[4]. The Technology Mission on Oilseeds (TMOS[5]) in 1986 and Yellow Revolution in 1990 have not demonstrated the expected result in the area under oilseed production, yield and processing sector (Narayanamoorthy, 2021). Besides, the New Economic Policy (NEP) of 1991 induced the commitments[6] with the World Trade Organisation (WTO) have led to increased edible oil imports (particularly the low-cost palm oil), and the gains of the yellow revolution frittered away (Sharma, 2021) from its primary focus. Empirical studies on the impact of WTO found that the growth performance of oilseeds production was higher during the pre-WTO period than the post-WTO period (Rao and Prasad, 2010, Rao 2013). Unlike research and development support by agricultural scientists to foodgrains, oilseeds are set back due to unattractive areas under cultivation and its scattered farming system (Reddy, 2009).

In addition, impressive MSP for oilseed crops were increased from 8 to 10 times in the past three decades become ineffective due to inadequacy of MSP concerning the cost of production and lower procurement by Government Agencies (Reddy and Kumar, 2020) in the respective regions. The government agencies' procurement figure elucidates the unimpressive and wide gap between the procurement of food grains (particularly rice and wheat) and oilseeds.



Source: Agriculture Statistics at a Glance 2020

Figure 2: Procurement by Government Agencies in 2019

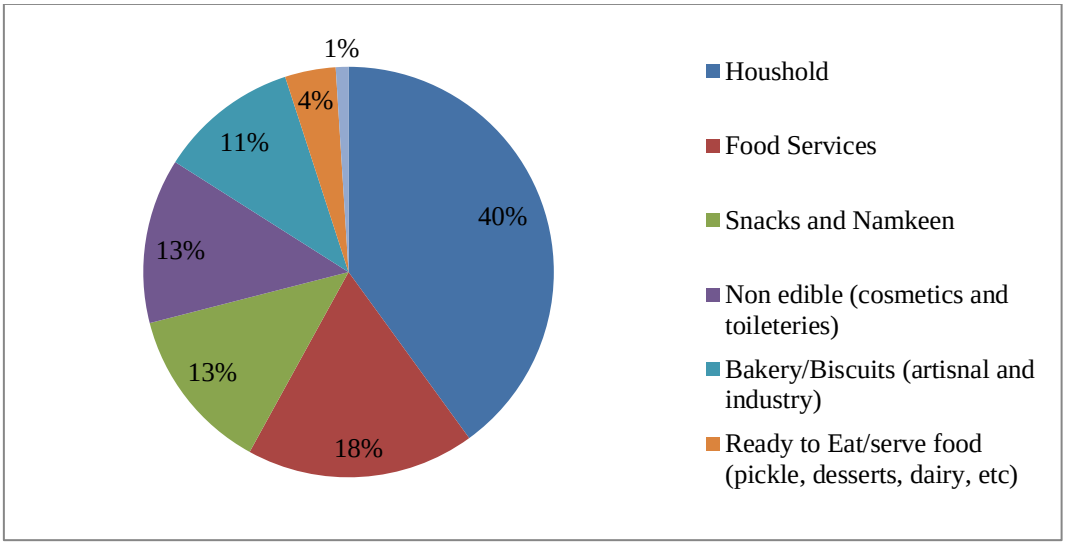
Notes: (i) Quantity: Rice, Wheat, Pulses and oilseeds in lakh tonnes, coarse grains in 000 tonnes.
(ii) The procurement of oilseeds excluding Copra(no procurement support).

Although impressive MSP is announced for oilseeds, poor procurement by state agencies is the main reason farmers are forced to sell in the private market even with lower price than the MSP (Narayanamoorthy, 2021) for long. It makes insignificant to the farmers for cultivating oilseeds.

[4]Since the green revolution launched, fine cereals (wheat and rice) got due attention compared with other crops, including oilseeds. Perhaps this is one of the reasons for the poor performance of oilseeds.
[5]Technology as a technique to achieve specific goals, five technology missions were initiated (under National Technology Mission) by the former Prime Minister ShriRajive Gandhi in 1986.
[6]To remove all quantitative restrictions on the import of edible oil.

Moreover, research by (ICAR) and the Ministry of Food Processing Industries (Jha et al., 2015) found that the post-harvest loss in oilseeds was 2.8 to 10.1 per cent, which is high[7] among food crops in India (Boss and Pradhan 2020; Nanda et al. 2012). The post-harvest operations include harvesting, threshing, winnowing/cleaning, drying, packing, transporting, handling and storage. The post-harvest loss was high in soybean (9.96 per cent) and 12.3 per cent in groundnut in some instances (Jha et al., 2015). While these policy and technical issues plummeted the country's oilseeds cultivation, edible oil consumption has been increasing subsequently.

During 2019-20 annual per capita edible consumption rose to 19.7 kg from 14.2 kg in 2010-11, 11.3 kg in 2008, 5 kg in the 1980s ((Jumarani and Meenakshi, 2020) and 3 kg in the 1950s. Edible oil consumption in India increased to around 125 per cent (from 10.13 million tonnes in 2001-02 to 22.75 million in 2018-19), while palm oil consumption rose 225 per cent, from 2.94 million tonnes to 9.59 million (Balasubramanian and Samuel, 2021). It is astounding that globally, India's average per capita palm oil consumption is estimated at least eight kg per year.



Source: Sustainable Palm Oil Coalition for India (2019)

Figure 3: Sector-wise Consumption of Palm Oil in India

The figure illustrates the sectoral consumption of palm oil in India. As oil palm is cheap, it is widely used in food products and non-food products in India. It shows that around 87 per cent of the palm oil was used for edible purposes, including household consumption (40 per cent); food serviced (18 per cent); snacks and namkeen (13 per cent); bakery/biscuits (11 per cent); ready to eat/serve food (4 per cent) and chocolates (1 per cent). Around 13 per cent of the palm oil is used for the non-edible purpose in the country. The majority of the households prefer palm oil due to its low price, and even the Government supplies the palm oil to below poverty line households through Public Distribution System (PDS).

It is (Jumarani and Meenakshi, 2020) evident that tax subsidy and PDS displaced market-sourced groundnut and coconut oils for palm oil. Due to a cut in duties on edible oil imports, the Indian domestic edible oil market and the indigenous oilseed production distorted(Jabaraj 2021). Import duties are considered a primary culprit behind the high edible oil prices (Perumal, 2021).

[7]These post-harvest losses were reported as 3.9-6.0 per cent cereals, 4.3-6.1 per cent pulses, 5.8-18.1 per cent fruits, and 6.9-13.0 per cent vegetables.

Against increasing consumption and demand for palm oil as a contingency need for domestically produced edible oil, the cultivation of oil palm has been raised health and environmental concerns in India and other oil palm cultivating countries.

VI. Health Cost and Ecosystem Loss from Oil Palm

Oil palm is the fastest expanding crop in tropical Asian countries, and it is tripled within a decade in South-East Asia. In India, oil palm cultivation has been restricted as an alarm was sounded on adverse environmental impact since the 1970s. Initially, oil palm cultivation was proposed at Andaman and Nicobar Islands (A and NIs) in 1979 on 2400 ha and planted only 1593 ha. Later, the Union Ministry of Environment and Forests banned the project in 1986, quoting environmental concerns. However, the government has formed various committees[8] to identify and extend the potential area to push oil palm cultivation in the country (GoI, 2021). Presently, oil palm has been cultivated in 331082 ha in fifteen states of India. Andhra Pradesh (162889 ha), Telangana (18312 ha), Karnataka (43517 ha) and Tamil Nadu (30900 ha) states share is high in the area and also production.

The NMEO-OP proposed expanding the oil palm area into 6.5 lakh ha from dense forests with rich flora and fauna and habitats for aboriginals in the North Eastern States and A and NIs. Experts warn that the tribal people living in the proposed areas and wildlife will lose their livelihood. It is noted in the parliament that the proposals for growing palm oil on a large scale were perused and rejected as part of the technology mission on edible oilseeds during the late eighties as it would bring environmental disaster.

The East Asian countries (Indonesia and Malaysia), which have 85 per cent word's palm oil trade, fell native plants to plant oil palm in forests against the local ecosystem to attract global market demand for edible-palm oil. Glamour started fading quickly; Indonesia became the world's fifth-largest deforested country (around 36 per cent of the forest was cut down), the livelihoods and biodiversity are at stake due to frequent wildfires.

According to research conducted at Stanford University and the University of Minnesota, water erosion is also on the list of risks associated with oil palm cultivation. It also threatens freshwater streams that the people depend on for drinking water, food, and livelihoods (Carlson, 2014). Palm is also considered as a water-intensive and causes heavy environmental damage as it is a mono-crop. ICAR Scientists report that 143 palms can be accommodated and need 230 litres of water per day per palm. On the other, ideally, comparable coconut tree needs 11.5 to 65 litres per day (TNAU, 2021). Even it was lower than the other water-guzzling crops like paddy and wheat; it is unreasonable unless compared with oilseeds.

Moreover, around 25 different dreaded pesticides are needed for palm cultivation (DTE, 2020). Furthermore, a Stanford University report shows, consumption of palm oil increases ischemic heart disease and stroke. Ironically palm oil is being used in detergents, plastics, cosmetics and bio-fuel in advanced countries, often resulting in spikes in prices from time to time. Resultantly, Indonesia and Sri Lanka imposed restrictions on palm oil cultivation – a warning bell. Further, the European Union, through Amsterdam Declaration, declared the ban on palm oil as biofuel.

[8]The estimated potential area for oil palm cultivation in various states of the country has been increasing in each report. The first committee report by Chadha in 1988 was estimated as 5.75 lakh ha and the same committee reassessed as 10.36 lakh ha in 2006. Later Rethinam committee estimated 19.33 lakh ha in 2012

On the other side, government encouraged the corporates and private entrepreneurs in the oil palm and unfortunately provided financial support for establishing 24 corporate-owned processing mills in the country (GoI, 2021). Further, various corporate companies are looking forward to extending the oil palm (CRB, 2014). If the corporate line would control India's global market for palm oil, which may lead to excessive export as the ban on edible oil export imposed in 2008 was relaxed gradually from 2017. There are allegations that by promoting palm cultivation on corporate lines, the local oilseed economy will wither. The local tribals will lose their land entitlement besides depleting biodiversity, thereby pushing them to further margins.

VII. Cultivators Concern

Oil palm is not economical for resource-poor small landholders and tenant farmers as palms fruiting after a gestation of 6 years and costs for replanting in 25 years. An empirical study estimated the cost of oil palm production in Andhra Pradesh (Prasad et al., 2015). The total cost of cultivation during the initial three years was Rs.330213 ha. Cost during stabilizing phase (4 to 8 years) was Rs.114892, and the cost of production per tonne was Rs.10268 to Rs.11451. During the stabilized phase (9 to 30 years), the total cost of cultivation was Rs.137416 ha, and the cost of production per tonne was from Rs.6936 to 7676. However, there was no fixed rate for FFBs procurement operational in the country, and farmers were paid (Rs.9000/ tonne of FFB) by the corporate-private companies based on the Commission on Agricultural Cost and Prices (CACP) formula in Andhra Pradesh (Vishandass, 2012; GoI, 2021).

The economic part of oil palm is a bunch of fruits which are commonly referred FFB. From this FFB, crude palm oil is extracted from mesocarp, and palm kernel (seed oil) oil is extracted from palm kernels (Prasad et al., 2015). One major problem in promoting palm oil plantations are that bunches has to be processed within 24 hours of harvesting. Low productivity, price fluctuations, insufficient processing facilities and lack of suitable technologies for harvesting cause the oil palm cultivation in Andhra Pradesh - the promising state in India's oil palm cultivation (Rao, 2013). Farmers have to sell the fruits only to the mills, while coconut has been sold to different traders (Balasubramanian and Samuel, 2021). Many farmers press coconut oil (and process other value-added products) in their own premises with local labour, which also generates self-employment (Neti et al., 2019). Oil palm would produce only palm oil; however, oil extraction facilities may be assured by incentivising long-term contractual settings for buy-back arrangements by mills (Reddy, 2021) and FPCs in the identified clusters like existence[9]

VIII. Way Ahead and Conclusion

The circumstance of import dependency is realistic from the empirical evidences, at the same time promoting oil palm alone would not be a solution. Therefore, India needs a long-term edible oil policy to improve competitiveness by bridging the existing technology and yield gaps and an appropriate edible consumption policy. Oil palm cultivation, processing, and marketing to be encouraged in farmers-friendly unlike corporates and MSP may avoid price fluctuations. Flagship institutional interventions like FPCs may make to rope up with local farmers in food processing technology to extract oil, mainly from frontier-newer areas like corn and rice bran, which will increase consumer rupee

[9]In India, around 4.3 million farmers-producers (most of them are small and marginal) connected with 7,374 FPCs in the agriculture and allied sector in India (Neti et al., 2019).

in farmers' income. Setting up farmers-owned processing units (by FPCs) can minimise post-harvest losses in oilseeds and generate farmers' income.

There main argued scientific evidence on the direct and indirect health and environmental effects of palm oil consumption and cultivation need to count (Kadanale et al., 2019). The nutrient content in the palm oil needs to be ensured during refining in a heated processing. In comparison, the long due self-sustain in edible oil may achieve by promoting traditional-native oilseeds, which are locally suitable and widely adaptable across rain-fed land (which consists of 60 per cent – 136.8 million ha) in India. Ensuring quality inputs, exclusive technology, technical back-up, and assured procurement support with remunerative price would encourage farmers in conventional oilseeds cultivation.

References

Balasubramanian,Sharada.,& Samuel,Jency. (2021). As Oil Palm Proves to be a let-down owing to High Maintenance Cost, South Indian Farmers shift to Coconut. *First Post*,https://www.firstpost.com/india/as-oil-palm-proves-to-be-a-let-down-owing-to-high-maintenance-cost-south-indian-farmers-shift-to-coconut-9628601.html accessed on May, 17.

Boss,Ruchira.,&Pradhan,Mamata.(2020). Post-harvest Management and Farm Outcomes Storage Facilities Matter. *Economic and Political Weekly*, 55(16), 24-27.

Chand,Ramesh.,Danyanatha,Jha., &Surabhi Mittal. (2004). WTO and Oilseeds Sector: Challenges of Trade Liberalization. *Economic and Political Weekly*, 39(6): 533-537.

Carlson M Kimberly., Lisa, M., Curran,Alexandra G.,Ponette-González., Dessy,Ratnasari., Ruspita., Neli,Lisnawati., Yadi,Purwanto., Kate, A,Brauman., Peter, A, Raymond.(2014). Influence of Watershed-Climate Interactions on Stream Temperature, Sediment Yield, and Metabolism along a Land Use Intensity Gradient in Indonesian Borneo.*Journal of Geophysical Research Biogeosciences*, 119(6), 1110-1128.

CRB. (2014). Mainstreaming Responsible Business Practices in the Palm Oil Sector in India. Centre for Responsible Business, https://www.isealalliance.org/sites/default/files/resource/2018-06/Responsible-Business-Practices-in-the-Indian-Palm-Oil-Sector-CRB-Feb-2014-PDF.pdf , Feb.

GoI. (2021). Present Status of Oilseed crops and vegetable oils in India, National Food Security Mission, https://www.nfsm.gov.in/StatusPaper/NMOOP2018.pdf, accessed on 08 October.

GhoshNilanjan. (2009). Effects of Tariff Liberalization on Oilseed and Edible Oil Sector in India: Who Wins and Who Loses?.*Takshashila Academia of Economic Research Limited*, Working Paper No. 2, February.

Hegde, D, M. (2012). Carrying capacity of Indian agriculture: Oilseeds.*Current Science*, 102(6), 867-873.

----------. (2003). Vegetable Oils Scenario in India: Past, Present and Future.*Renewable Energy Science Series*, 12, 1 - 17.

Kadandale,Sowmya., Marten, Robert., & Smith, Richard. (2019). The palm oil industry and noncommunicable diseases, Policy and Practice, World Health Organisation, http://dx.doi.org/10.2471/BLT.18.220434.

Jumrani,Jaya.,&Meenakshi, J, V. (2020). A Fat Subsidy and its Impact on Edible Oil Consumption: Evidence from India, Centre for Development Economics, Delhi School of Economics, Delhi, ISSN No. 2454 – 1427, July.

Jha, S,N., RK Vishwakarma.,T, Ahmad., A, Rai., & A,K, Dixit. (2015). Report on Assessment of Quantative Harvest and Post-Harvest Losses of Major Crops and Commodities in India. ICAR-All India Coordinated Research Project on Post-Harvest Technology, ICAR-CIPHET, P.O.-PAU, Ludhiana.

Narayanamoorthy, A. (2021). Why do Edible oil Woes Persists?.*Business Line*, 16 Aug.

Nanda, S, K., Vishwakarma, R, K., Bathla,HVL., A, Rai.,& Chandra P. (2012).Harvest and Post-Harvest Losses of Major Crops and Livestock Produce in India. All India Coordinated Research Project on Post-Harvest Technology, (ICAR), Ludhiana.

Neti, Annapurna.,Govil, Richa., &Rao, Madhushree, R. (2019). Farmer Producer Companies in India: Demystifying the Numbers.*Review of Agrarian Studies*, 9 (2), http://ras.org.in/fc5e6f86c86e8548e3eb17f4ec8fbc9f

Jebaraj, Priscilla.(2021). Oil palm plan for Northeast, Andamans a Recipe for Disaster, *The Hindu*, 29 Aug.

Prasad, M, V., Sairam, C, V., Arulraj, S,&Jameema, J. (2015).Estimation of Cost of Production of Oil Palm in Andhra Pradesh.*Journal of Plantation Crops*, 43(1), 83-87.

Paroda, R, S., &P, Kumar.(2000). Food Production and Demand Situation in South Asia.*Agricultural EconomicResearch Review*, 13(1).

Perumal,Prashanth. (2021). Why has the MSP for oilseeds been significantly increased?.*The Hindu*, September 16.

Rajendran, S.,&Sabarisakthi, M. (2021). Will New Oil Palm Project Efficient?,*The Hindu Tamil*, https://www.hindutamil.in/news/opinion/columns/719066-new-palm-oil-project.html, 22 Sep.

Reddy,Amarender, A. (2021).Sustainable Production of Palm Oil, *Economic and Political Weekly*, 56(36), 5.

~~~~~~~~~~~~~~~~~~.(2009). Policy Options for India's Edible Oil Complex, *Economic and Political Weekly*, 44(41-42), http://dx.doi.org/10.2139/ssrn.1652544.

Rao,Narasimha.(2013). Oil Palm Cultivation in Andhra Pradesh State – A Study of the Problems and Prospects.*Indian Journal of Applied Research*, 3(7), 399-401.
~~~~~~~~~~~~~~~~~~

Reddy, V, M., &Kumar,Udhaya. (2020). Status of Oil Palm Development in India, Indian Palm Oil Sustainability Framework, http://iposindia.in/wp-content/uploads/2021/02/Status-of-Oil-Palm-Development-in-India-1.pdf, accessed on 7 October.

Sagar, H, S,Sathya, Chandra.,Mabano,Amani.,Ramya,Roopa, Sengottuvel., &MahmudaSharmin. (2019). India in the Oil Palm Era: Describing India's Dependence on Palm Oil, Recommendations for Sustainable Production, and Opportunities to Become an Influential Consumer.*Tropical Conservation Science*, Sage Journals, 0: 1-9.

Sharma, D, P. (1992). Edible Oils No Imports for a Change.*Economic and Political Weekly*, 27 (42).

Srinivasan,Umesh. (2014). Oil Palm Expansion: Ecological Threat to North-east India.*Economic and Political Weekly,* 49 (36), 6 Sep.

TNAU. (2021) Expert System for Coconut: Irrigation Management.https://agritech.tnau.ac.in/expert_system/coconut/coconut_irrigation_management.html

Vishandass, Ashok. (2012).Oil Palm: Pricing for Growth, Efficiency & Equity.Commission for Agricultural Costs and Prices, Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India, January.