

Contribution of Energy to Food Security and Economic Analysis to Supply

Amose T^{1*}, Capt. Dr. Kr. Jeyakumar²

¹Ph. D Research Scholar, Research Department of Economics, Arumugam Pillai Seethai Ammal College, Tiruppattur – 630 211 Sivagangai District, Tamilnadu, India

²Associate Professor, Research Department of Economics Arumugam, Pillai Seethai Ammal College, Tiruppattur – 630 211 Sivagangai District, Tamilnadu, India

***Corresponding author**

Amose T

Email: amose212@gmail.com

Article History

Received: 08.01.2018

Accepted: 18.01.2018

Published: 30.01.2018



Abstract: 'Food' is a common agricultural commodity which fulfils temporary wants of mankind and making us to be live until our life span reached. But, the absence of food consumption among some groups of human beings is unacknowledged and necessary steps will be taken to fulfil their basic nutrition. Hence, the programme of food security has been introduced and emphasised in all aspects to be attained the aim and the contribution of energy for the purposes also brought out in this study. Secondary data for the period of eighteen years have been collected and presented with compound annual and average growth rate for assess the data value in present trending. Further, theoretical diagrams applied to analysis the theme of study to bring out facts that occurs in supply of and how the expected supply of food grains should be to attain the goal of the same also given with suggestions.

Keywords: Productivity, Supply, Commercial energy, Hungers, Distribution.

INTRODUCTION

' Food Security' is a prime component which empowers the human wealth and needs of country to be made available for all. Food crisis is leads to enrich the huge production for the same to utilise prolong without any lacks and problems which shall be associated with the matter of food.

As we know that the global is facing huge food crisis with limited food security system and challenges also put forth that they have to enrich the level of production and supply of food in sustainable manner for growing population which expects to be increased about 9 billion by 2050 ([www.bbsrc.ac.uk/research/briefings/...](http://www.bbsrc.ac.uk/research/briefings/)). In this scenario, modern economic trend and consumption pattern of consumers are being upward with the question of that how possible to feed ourselves in long time lifespan? Because, prevailing limited agricultural production is provokes to predict the trend of the same by 2050. Hence, food production needs to enrich more than 50 percent than the present level to reach the zero hunger. A report says that 600 million people will be in the condition of undernourished if the trend of

production prevailing without any additional efforts in pro-poor development, reduce inequalities and protect vulnerable people. And the current rate of agricultural production is not enough to eradicate hungers by 2050 (www.fao.org/./icode/). While we talk about food security, we are in the condition to be assessed the empowerment of agricultural productivity. Because, food is very closely relates with the agricultural commodities that gives hundred percent of food grains to living creatures. Hence, most of developing and developed countries are still doing agricultural activities as small or large scale performance. Though, many underdeveloped countries are giving priority to agricultural activities and to Food Security for export other unable countries to be enriched in this theme.

Table-1: Countries most dependent on Agriculture

Rank	Country name	Agriculture as percentage of GDP
1	Liberia	76.9
2	Somalia	60.2
3	Guinea-Bissau	55.8
4	Central African Republic	53.1
5	Chad	52.7
6	Comoros	51.6
7	Sierra Leone	51.5
8	Togo	46.0
9	Ethiopia	41.0
10	Niger	39.0
11	Mali	38.8
12	Burma (Myanmar)	38.2
13	Democratic Republic of the Congo	37.5
14	Benin	36.0
15	Nepal	34.9

Source: www.worldatlas.com/articles/countri... (Secondary data)

Table-2: Hunger Index Scores of most Agriculture Depended Countries

No.	Country name	1992 '90-94'	2000 '98-02'	2008 '06-10'	2017 '12-16'	Average growth rate
1	Liberia	51.2	48.2	38.9	35.3	43.4
2	Somalia	-	-	-	-	-
3	Guinea-Bissau	44.5	43.1	31.4	30.6	37.4
4	Central African Republic	52.2	50.9	47.0	50.9	50.25
5	Chad	62.5	51.9	50.9	43.5	52.2
6	Comoros	-	-	-	-	-
7	Sierra Leone	57.2	54.7	44.5	38.5	48.7
8	Togo	45.8	39.0	28.3	22.5	33.9
9	Ethiopia	-	56.0	40.2	32.3	32.1
10	Niger	66.2	52.6	37.0	34.5	47.5
11	Mali	51.4	44.2	35.1	28.6	39.8
12	Burma (Myanmar)	55.6	43.6	30.1	22.6	37.9
13	Democratic Republic of the Congo	-	-	-	-	-
14	Benin	44.5	37.5	31.7	24.4	34.5
15	Nepal	42.5	36.8	28.9	22.0	32.5

Source: Global Hunger Index 2017

Table 2 reveals the data about global hunger index that gives shape to world agricultural productivity in satisfying human wants on nutrition. Especially, table express the index of hungers from different countries which gets ranks that highly produces the agricultural productivity at global level. Moreover, agricultural GDP (Table:1) and hungers index in table:2 are complicated one another due to highlights of hungers index among the countries. And it also making question that even having high agricultural productivity, how

possible to be listed in global hunger index?. Chad is a leading country that highly resulted about 52.2 percent as average hunger growth rate and Ethiopia, Nepal are the countries that leading to reduce the hungers about 32.1 percent and 32.5 percent growth rate among other nations. There is a reason that even these countries often belonging to agricultural productivity, comes in global hunger index because of having less agricultural land which unable to fulfil basic nutrition of the hungers.

Table-3: Trend of Agricultural productivity in India (Data quintal per hectare)

Crops	1950-51	1964-65	2010-11
Rice	7.1	10.8	22.4
Wheat	6.6	9.1	29.4
Coarse cereals	4.3	5.1	14.18
Pluses	4.0	5.2	6.9
Total	22.0	30.2	72.88

Source: academy.gktoday.in/article/trends-i... (Secondary data)

Table: 3 expresses the agricultural productivity which is permanently consumes by the people of India. Rice and wheat are emphasised in productivity to distribute all that clearly found by given data because of increasing productivity level in each classified years. Especially, wheat production has been increased maximally compared to the results given in 2010-11. Rice and cereals are also at the same productive trend that enriched well. Thus, agricultural activities are prevailing greatly with the enforcement of various factors. Production alone cannot perform without any supports. Hence, to enrich the food security, the agricultural activities are considered that it is very important to enhance all performance itself has. But, it may not bring successful result in the absence of other

factors to be installed. So, energy and its security also prominent to undertake the job in agri-field prolong.

Energy is an important tool for the production of agricultural crops like food and further food security. As we know that sun was the prime energy for the production of agricultural crops before the innovation of machines for the use of agri-purposes. But, now days, agricultural performance has enhanced with alternative energy such as electricity, fuels and so on. This transition has promoting the standard of agriculture from natural depended to alternative dependents for hold food security system to long period (www.gracelinks.org/118/energy-and-a...). Infusion of energy in the agri-field is a latest trend to enrich high yield and achieve targets in production of the same.

Table-4: Energy for agri-process

Category	Commodities/Technologies	Energy sources
Low tech(<5 kWh/day)	Field packing of leafy, stem, or fruit vegetables, root, tuber and bulb crops, fruits and berries.	Electric grid; Solar power with battery back-up.
Basic tech(5 to 25kWh/day)	Packinghouse operations and pre-cooling for tropical and subtropical fruits and vegetables; Evaporative cool storage. (Temperature range 15°C to 20°C).	Solar water heater, Electric grid; Generator (diesel or gas); Hybrid PV/ Generator systems with battery back-up.
Intermediate tech(25 to 100 kWh/day)	Cooling and cold storage for temperate fruits and vegetables. (Temperature range 0°C to 7°C).	Electric grid; Generator (diesel or gas).
Modern tech(> 100 kWh/day)	Automated packinghouse operations, pre-cooling and cold storage for any kind of fruits and vegetables. (Temperature range down to 0°C).	Electric grid; diesel back-up generators.

Source: energypedia.info/wiki/Energy_for_Ag... (Secondary data)

Objectives

Major significant part of the research work is objective that highlights research gap which construct further study to be effective implication to society and policy makers. As an important part of the study, objectives have been enunciated for the theme of work which may lead to the appropriate policy.

- To examine the author thoughts on definition and meaning of ‘Food Security’.
- To identify the significance of Energy on the aim of ‘Food Security’.
- To assess the energy and aim of ‘Food Security’.

DATA SOURCES AND METHODOLOGY

Sources for data collection and Methods of track to analysis the collected are the significant part of research work which leads to produce expected impact to the world on the selected theme. Study on food security in supply of agricultural grains is very important even in advances of global trend because existence of hungers at worldwide with minimum increasing ratio due to natural and artificial unexpected incidents. Hence, as an interested work of the study, constructed with data and analysed towards effective recommendations. This study fully covered secondary data for eighteen years from 2001 to 2017-18 and Energy statistics 2017, Global Hunger Index 2017 were

the Important and supportive sources to be considered the worth of this work. Collected data has been advanced with compound annual and average growth rate that applied in required fields for give life to the study in global advances. Moreover, this research work has signified the economic theoretical diagram to analysis the study theme for provide truthful solution in the stumble of achieving the aim of food security.

What is Food Security?

Importance of food security has enunciated its wealth to be spread over the world through many scientists by undertaken significant research on this. Thereby, food security has been emphasised all over the world mostly, where agricultural activity prevails as prime job. And the progress and management itself consist is, availability, accessibility, utility and stability. Thus, food security deals all of these factors to be trends up to fulfil the needs of consumers and eradicate the number of hungers in the world. Moreover, some definition also given below that identifies the aim of ‘food security. “Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life”. – World Food Summit, 1996 [1].“Food security for a household means access by all members

at all times to enough food for an active, healthy life.”
 –United States Department of Agriculture (USDA)

(<https://www.disabled-world.com > nutrition>).



Source: www.foodfirstnl.ca > what-is-food-security

Fig-1: Image for Food Security

Author thoughts

There are conflicts between the meaning of food security and its real content to be managed prolong, it is making question that does the meaning and definition of food security is matching one another. Because, food security itself focusing the production, distribution, accessibility, consumption and sustainability or disposal. But, definition and meaning of food security strongly focuses the distribution of food that should be made to all for remove food crisis globally. On the other hand, there are two unstable factors emerging which are closely related to meaning and definition of food security. That it is, (A). Food, (B). Consumer.

1. What does the meaning and definition of ‘food security’ says that it secures?

- Is it secure the life and quality of food? Or
- Is it protect the consumers or maximise the level of food consumption?

Questions to be assessed for ‘Food security’

1 What factor is strongly focused in the meaning and definition of food security? (Either or both factors)

If it is focusing the significant of ‘Food’,

- Why the definition of ‘food security’ is hidden the importance of food?
- Why the significant of ‘warehouse’ in securing food is not mentioned?

If it is focuses only consumers,

- There is strong conflict in the title on ‘Food Security’.
- What is the need of progressive characters (production, distribution, accessibility, consumption and sustainability or disposal) of food security itself has.

Suppose, if the title ‘Food Security’ has the meaning of ‘Bond’(because the word ‘Security’ has another meaning ‘Bond’),

i. Why the word ‘Insecurity’ has been uses in the description of ‘Food Security’?

Thus, according to description of meaning and definition of food security, title shall be used ‘*Food Animation*’ instead of ‘Food security’ if the theme of food security is focusing ‘Food’ only.

Definition of ‘Food Animation’: “Living characters of food that gives life to purposes to use of the same”

Meaning

Non-living thing food becomes alive by enhancing production, distribution, accessibility, consumption and sustainability or disposal for various further purposes to satisfy the human wants.

‘Food Security’ can be transform as ‘*Food Lend*’ if food security is signifies ‘Consumers’ only.

Definition

“Swirl of food that engages its circulation to reach needy for temporary satisfaction”.

Meaning

Fluctuation in price, quality, quantity and supply of food, directly or indirectly motivates itself to offer the items for consumer to fulfil short time wants. ‘Food Security’ shall be called as ‘*Food Sustainance*’ if food security is focusing both food and consumers.

Definition of ‘Food Sustainance’

“Allegro in living characters of food that encourages its significance to be executed and utilised”

Meaning

Food as a non-living thing has consist several living characters such as production, distribution, accessibility, consumption and sustainability or disposal to be made its empower avail for further demand and consumption.

Role of Energy

Energy plays significantly for various production and distribution of agricultural commodities until reach the hand of consumers. Even though, primarily energy is emphasised to work as raw material for gain appropriate profit in selling of agricultural products like food and fertiliser. To empower agricultural performance in production and other, commercial energies like LPG, electricity and diesel are consumed much than non-Commercial energies which possibly given by nature with free of cost even it has more affection to the health of land. Crop cultivation in

agri-field fully driven by commercial energies that begins from sowing to reap for enriched the maximum productivity as year by year targets. Existing and elongation of ratio of food hunger at global level must be satisfied with food is a prime goal of food security. Hence, to increase the level of agricultural productivity, various plans and programmes are enacted as an economic target of a country with alternated factors as an input for production undertaking places like agri-field. Thus, energy used for agri-products to be produced to meet the aim of food security.

Table-5: Energy uses in agricultural purposes

No.	Energy	Uses
1.	Diesel	To operate machinery and large trucks: - field work (tractors, combines, mowers, balers, etc.) - input purchase and deliveries (large trucks)
2.	Gasoline	To operate small vehicles (cars and pickup trucks) in farm management activities.
3.	Diesel, Natural Gas (NG), LP Gas, Electricity	To operate small equipment such as Irrigation equipment, Drying of grain or fruit, Ginning cotton, Curing tobacco, Heating for frost protection in groves and orchards, Crop flammers, Heating/cooling of cattle barn, pig or poultry brooder, greenhouse, stock tanks, etc. Animal waste treatment and Standby generators.
4.	Diesel, Natural Gas (NG), LP Gas, Electricity, Gasoline	To engage custom operations such as Field work (e.g., combining), Drying, Other.
5.	Electricity	Lighting for houses, sheds, barns and for farm household appliances.
7.	Diesel Gasoline	Marketing: Transportation: elevator to terminal, processor, or port Elevating.

Source: CRS Report for Congress (2004) (Secondary data)

Table-6: Energy Consumption in Agri-field

Year	Energy and growth rate				
	Diesel ('000' tonnes)	Growth rate	LPG ('000' tonnes)	Electricity (Gwh)	Growth rate
2006-07	7914	-	0	99.023	-
2007-08	504	-93.63	0	104.182	5.20
2008-09	490	-2.77	1	109.610	5.21
2009-10	594	21.22	4	120.209	9.66
2010-11	616	3.70	2	131.967	9.78
2011-12	684	11.03	5	140.960	6.81
2012-13	617	-9.79	4	147.462	4.61
2013-14	429	-30.47	4	152.744	3.58
2014-15	575	34.03	6	168.913	10.58
Average growth rate	1380.3	-8.33	2.888	130.56	6.92

Source: Energy statistics 2017

Table: 6. Explains commercial energy consumption trend and its annual growth rate in Indian agri-field that covers from 2006 to 2015. Trend of diesel energy has been declines every year but 2009-10 data reflects that it attained huge growth rate as 21.22 percent among the declining results. Though, 2011-12 result says that it empowered growth rate from 3.70 percent in 2010-11 to 11.03 percent. But, actually, total

trend of diesel consumption in agri-field is slope down. LPG and electricity consumption trend have been resulted as upgrading statistics especially, LPG as an energy reflecting with minimum fluctuating data in trending up consumption level. Growth rate of electricity consumption has found greatly in 2014-15 at 10.58 percent from 3.58 percent resulted in 2013-14. Average growth rate of energy consumption in agri-

field pointing that the diesel consumption is being maximum about 1380.3 tonnes but growth rate has declined at -8.33 percent and LPG is minimum about 2.888 tonnes while electricity growth rate is 6.92 percent ratio.

Aim of food security will be fulfilled when agricultural products reach the hand of consumers. It meant, significance of energy not only emphasised in agri-field for productivity, but its importance extents up to the consumers satisfaction with food. Role of Energy is being great in agri-field for enhance various productive capabilities. Despite, production only not sufficient to satisfy the consumer's wants because, consumers can be satisfied when consumption take place. So, the agricultural productivity needs to send the

feasible place (market) to reach the hand of consumers. On the other hand, purchasing ability shall not make the consumer to be satisfied with food. Now, As we know, that the agricultural products must be prepared as esculent item to the purpose. Thus, the aim of food security implemented for consumers. Hence, further more significance energy takes place where cooking activity prevails. Thereby, poor hungers can satisfied with food when consumption takes place in households instead of other. Thus, contribution of Energy to food security has taken travel from agri-field to household to make satisfied the consumers. Commercial and Non-Commercial energies are the common applications among rural and urban households related availability of appliances.

Table-7: Commercial Energy Consumption in Households

Year	Energy and its growth rate					
	Kerosene	Growth rate	LPG ('000' tonnes)	Growth rate	Electricity (Gwh)	Growth rate
2006-07	9203	-	10427	-	111.002	-
2007-08	9163	-0.43	10299	-1.22	120.918	8.93
2008-09	9131	-0.34	10637	3.28	131.720	8.93
2009-10	9101	-0.32	11364	6.83	146.080	10.90
2010-11	8722	-4.16	12369	8.84	169.326	15.91
2011-12	8045	-7.76	13296	7.49	171.104	1.05
2012-13	7349	-8.65	13568	2.04	183.700	7.36
2013-14	7009	-4.62	14412	6.22	199.842	8.78
2014-15	6917	-1.31	16040	11.29	217.405	8.78
Average growth rate	8293.3	-3.44	12490.2	5.59	161.23	8.83

Source: Energy statistics 2017

Table: 7 expresses the trend of commercial energy consumption among households. Traditional and most preferable commercial energy kerosene has been still in consumption among many rural and villages of India and it's trend consumption falling down in upcoming years but great gap in the result of 2009-10 at -0.32 percent growth rate to 2010-11 at -4.16 percent of growth rate. On the other hand, consumption of kerosene has started to increase from 2012-13 at -8.65 percent of growth rate to 2014-15 at -1.31 growth rate. LPG and electricity consumption trend among households are upgrading gradually. But, result on 2009-10 has sharply points that there was great

consumption growth in LPG and electricity compared with past year. Subsequently, great falling in the consumption trend of electricity in 2011-12 at 15.91 percent of growth rate compared with 2010-11at 1.05 percent of growth rate. Further, both are taken move minimum growth rate on following years. Moreover, average growth rate of commercial energy consumption among households reveals that electricity is highlighted with 8.83 percent of average growth rate that increases around 163.23 Gwh while LPG consumption gets 5.59 percent of growth rate and kerosene declined as negative growth rate at -3.44 percent.

Table-8: Non-Commercial Energy Consumption among rural and urban Households

Year	Rural				Urban			
	Firewood & chips	Growth rate	Dung cake	Growth rate	Firewood & chips	Growth rate	Dung cake	Growth rate
2001-02	73.4	-	10.5	-	23.3	-	1.6	-
2003	74.9	2.04	9.3	-11.42	20.0	-14.16	1.8	12.5
2004-05	75.0	0.13	9.1	-2.15	21.7	8.5	1.7	-5.55
2005-06	74.0	-1.33	9.0	-1.09	20.9	-3.68	1.7	0.00
2006-07	75.4	1.89	9.1	1.11	22.1	5.74	1.7	0.00
2007-08	77.6	2.91	7.4	-2.91	20.1	-9.04	1.4	-17.64
Average growth rate	75.05	1.12	9.06	-3.29	21.35	-2.52	1.65	-2.13

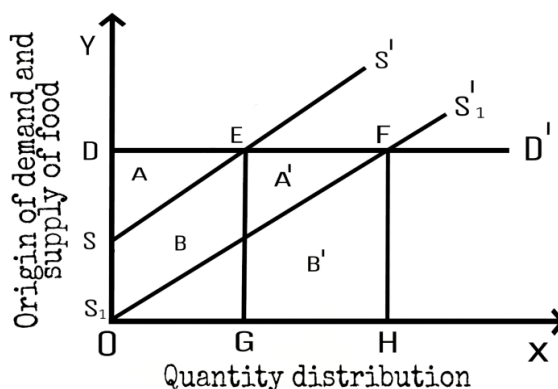
Source: assets.publishing.service.gov.uk/me... (Secondary data)

Table: 8 reveal the trend of Non-Commercial energy consumption among the rural and urban households of India. Data says that to achieve major aim of food security, contribution of Non-Commercial energies also significant. There are huge variations in all components between rural and urban. Despite, prime activity of all living creatures that consumption also varying by domestic factors. Though, for cooking as Non-Commercial energies firewood and cowdung are being utilised even it gets economic value also. It meant, firewood and cowdung are not non-commercial energies in urban but if consumers wants to pay, payment will be done for cheap and best energies. Firewood and cowdung in rural area has been consumed with minimum trending up status But, consumption of firewood fallen in 2005-06 as -1.33 percent of growth rate and it getup subsequent years. Minimum increasing trend of cowdung has been declined at -2.91 percent of growth rate. But, consumption trend of both energies in urban have declined greatly and reached negative percent of growth rate. Average growth rate as a significant contribution on knowing consumption trend of energy among households emphasised hereabove that focuses firewood consumption for cooking among rural has fluctuate growth rate among various years but finalised at 1.12 percent as an average growth rate while cowdung consumption trend declined at -3.29 percent. On the other hand, firewood and cowdung consumption trend among urban households is being less prioritised that shows in average growth rate declined as -2.52 percent for firewood and -2.13 percent for dung cake.

STUDY ANALYSIS

Analysis is an important part of research study which leads to effective recommendations by the assessment of data fluctuations. Hence, this study further empowered by the depth of analysis towards the facts of the study purposes. Therefore, this part has taken micro economic analysis to expose effective suggestions to make zero hungers at global level. Because, main aim of food security is to clear out hungry away from global food consumers. But, this aim is still further dream for all distributors and policy makes even efforts taken to increase the agricultural productivity all around the field. As we know the trend of technology that intensified in agri-field to get high yield, really the trend of productivity in the field has been fluctuates in some unexpected events but achieved minimum targets. *But, minimum agricultural productivity has not been utilised for remove hungers but it is utilised to prevent increasing hungers.*

Generally, theoretical diagrams presents, the theme and thoughts of authors that focusing to an innovative ideas which needs to world trend. But, here the study signified such economic theoretical diagrams which bring innovative image to identify the focuses of study theme towards impacting suggestion to the policy makers associated with food security. Each diagrams explains it's real trend and fluctuations related to food security for the proposes of the same and it also gives innovative image that, the expected food distribution how should be for the favour of aim of food security to be reached goals within short period.



Source: Computed by author
Fig-2: Current mode of food distribution

Figure: 2 express the real trend of supply of food to be covered maximum demand of the same. 'OX' horizontal axis explains quantity distribution of food and 'OY' vertical axis focuses the origin of demand and supply of food. Further, 'SS¹' is the supply curve and 'DD¹' is inclined to 'OX' axis due to the character of infinite because of programme of food security which trying to swallow demand is still holding that food is infinitely demanded commodity. While 'SS¹' supply curve intersect with demand curve at the point of 'E' says that the quantity of distribution determined as 'OG'

level on horizontal axis. Now, supply, demand and level of quantity distribution determine an area 'ODEG' and it separates by 'SS¹' supply curve. Here the study gives name for the two areas that appears in above and below the 'SE' part of supply curve. Above the line area 'A' is the volume of supply and below the line area 'B' is the reserve or stack of food grains. Now the figure says clearly, when the supply try to reach the targeted demand at point 'E' leads to be distributed 'OG' level of quantity of food grains. On the other hand, efforts in the supply of food grains considered with 'SDE' level which

appears in the 'A' ground. But, reserves of food grains emphasised greatly about 'SEOG' level which says in the 'B' ground. This result says that rather than supply reserve of food has been emphasised so there is no improvement in attaining demand for food.

To fulfil the aim of food security, agricultural productivity has been improved by advanced technology and used high yield varieties of seeds. Therefore, the programme of food security aimed to maximise its supply to cover huge number of hungers. So, with full efficiently the supply curve increased to 'S₁S₁¹' that intersects with demand curve at 'F' point so as the level of quantity distribution moved to 'OH'. Now the overall ground 'ODFH' separates by the 'S₁S₁¹' supply curve and gets name as 'A¹' volume of supply above the line 'S₁F' and 'B¹' stack of food grains below the line of the same. Now the result of increased supply, demand and quantity distribution says that the area 'ODFH' has separated equally as same amount of supply and reserve of food grains that explains in the figure as 'S₁DF' as supply and 'S₁FH' as stack of the same. Hence,

final result of the figure says that full volume of supply has not covered the demand for food. So *increasing supply is not an effective tool to remove hungers*. Now the question arising that, is there any other tool to achieve the aim of food security. Figure: 3 explain that there is a way to attain target of food security.

Talks about food security and its distribution for hungers to make their ratio zero is not a great task of the policy makers. But, the volume of efforts taking towards the purposes is an effective powers delivered from authority. Because, major aim of food security is still future vision of the programme but unable to achieve minimum target of the same due to partial focuses on production and supply of agricultural productivity and most of time reserves of the same has been hidden due to emphasising trade for economic purpose. Hence, such agricultural productivity improved and improving countries are still behind in tremendous supply of productivity for the vision of food security. So, here below the table contains the data of trade and stack of food at worldwide.

Table-9: Trend status of food

Year	Types of Food (million tonnes)								Total stack of food grains	Annual growth rate
	Cereals		Wheat		Coarse grain		Rice			
	Trade	Stack	Trade	Stack	Trade	Stack	Trade	Stack		
2013-14	363.8	592.8	158.0	186.5	160.3	240.3	45.5	166.0	1185.6	-
2014-15	378.7	654.0	156.4	204.4	177.3	281.5	45.0	168.1	1308.0	10.32
2015-16	392.9	664.8	166.7	222.4	184.7	275.9	41.5	166.5	1329.6	1.65
2016-17	404.2	702.9	177.4	245.2	181.9	289.1	45.0	168.5	1405.7	5.72
2017-18 previous (05 Oct)	402.8	720.5	174.7	261.2	182.8	289.8	45.2	169.5	1441.0	2.51
2017-18 Current (02 Nov)	404.3	718.7	175.2	258.2	183.7	291.3	45.4	169.2	1437.4	-0.24
Average growth rate	391.1	675.6	168.0	229.6	178.4	277.9	44.6	167.9	1351.2	3.99

Sources: www.fao.org>worldfoodsituation>csdb (Secondary data)

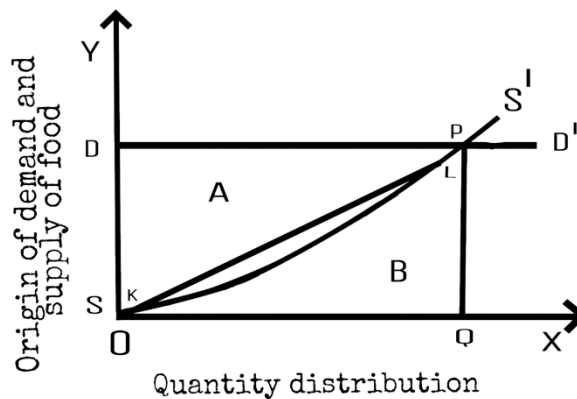
Table: 9 reveals the current status of food among world and for what purpose emphasised sharply rather than the supply of agricultural productivity. Cereals, wheat, coarse grain and rice are the major and basic nutrition contained food for consumers and those statuses are given on the matter of trade and stack. As the outlook of the table clearly says that the world agricultural productivity emphasised for stack rather than trade for economic purposes but not major significance of the aim of food security. If trade taken at the significant on hungers, now a days aim of food security may come to end if there is absence in the birth of new hungers around the world. Average trade growth rate of cereals 391.1 million tonnes while it's stack found 675.6 million tonnes and wheat also reflected as 168.0 million tonnes of trade growth rate during 229.6 million tonnes of stack avails. Average trade growth rate of coarse grain is about 178.4 million tonnes while it's stack at 277.9 million tonnes and very important food grain rice has very less of average

growth rate on trade as 44.6 million tonnes during the stack of the same around 167.9 it is threefold ratio. Finally, total stack of food grains found as average growth rate about 1351.2 million tonnes with 3.99 percent as an average annual growth rate.

However, most of countries are actively in export of food grains for whether economic purposes or aim of food security. Moreover, storage of food grains in developing and most agricultural depended countries having lack of advanced warehouses is makes great negative impact at global level including to the regular domestic consumers. For instance, India is a developing country and having great number of hungers so as it also listed in the global hunger index at 100 out of 119 countries. As we know India also a country exporting maximum volume of rice but due to lack of warehouse facilities and improper maintenance, around 9.4 to 16 million tonnes of food grains lost in 2008 [2]. Moreover, nearly 20 million tonnes of food grains were

considered as waste because of fungus and rotten [3] and Food Corporation of India (FCI) reported that 143.74 tonnes of food grains were stolen (m.timesofindia.com > India). Damage of food grains also a cause to absence of supply of food to hungers. A report says that since 2010, 3,338.01 of food grains in 2011-12, 3,148.44 tonnes in 2012-13 and 24,695.45 tonnes of the same in 2013-14 were damaged that

includes 27,000 tonnes of rice and 26,000 tonnes of wheat [4]. There are many poor countries in the world depending on agricultural activity and having lack of warehouse foundation. In this situation, rather than giving too much of importance to the stack of food grains, if supply of food grains extended as to attain maximum target of food security may bring possible end to the theme of food security shortly.



Source: Computed by author
Fig-3: Expected mode of food distribution

Figure: 3 explain that the supply of food grain should be thus to cover worldwide hungers in abolishing food scarcity to satisfy their nutrition wants. 'OY' vertical axis focuses the origin of demand and supply of food and 'OX' horizontal axis says quantity distribution of food. 'SS' is the supply curve and 'DD'^I is the infinite demand curve. Supply curve separates the area two namely 'A' above the line that says the volume of supply of and 'B' below the line that points stack of food grains. Flexible supply curve intersects with demand curve at point 'P' which determines the level of quantity distribution of food at 'OQ' level. Flexible supply curve is the highlights of the analysis says that if the supply curve been as temper or straight upgrading curve, there is no variations in the supply and reserves of food grains. When the distributor gives too importance to reserve, there will be negative efforts in sharpening the aim of food security. Hence, the figure emphasis the flexibility of supply curve it meant, the curve has been convex to the 'B' ground reserve part and concave to the 'A' ground supply part. Hence, it signifies that the *supply must be extend by limits the stack of food grains*. Thus, figure explain the additional source of supply of food 'KL' further, aim of food security can be reached shortly when possible reserve limits occurs.

CONCLUSION

Aim of food security is still future vision of the programme in executing enormous steps to enrich the standard of food distribution to hungers. Food is always related with production and supply for further purposes But, really it has a special character in distributing to the hungers to be received it in their hands. As a major

application of the study in relation with food security is 'Energy' because agricultural productivity which contains basic nutrition is not applicable to consume directly without any intermediate works like cooking. So, cooking process is the significant job that should be done before consume due to aim of food security is not contained only with fruits and vegetables But, also it emphasising cereals, rice and wheat which harden to consume easily. As we know the cooking process shall not be completed without the use of Energy which availing with cost and free of the same among rural and urban areas of underdeveloped and developing countries. Moreover, this study brought out the list of countries that entirely depends on agricultural productivity and their ranks in global hungers Index and theme of the study has been analysed for providing sufficient suggestions in further policy execution to the favour of aim of food security programme.

Suggestions

Worth of research work almost will be determined by the outcome of research towards feasible suggestions to be processed for the well of mankind. Because, recommendations for further work and for policy makers are makes the valued path to empower the strength and solutions of specific problems focused in the research study. Hence, the study has enunciated the matter of food security that it is still a major deficit to hungers at global level. So, the suggestions are brought out as the base of problems associated with food security to be standardised the level of contribution to global hungers.

- Necessary steps should be taken to prevent the factors affecting sources of energy.

- Lack of Energy sources should not be the causes to increase minimum ratio of hungers at worldwide.
- Steps should be taken to minimise the level of stack of food grains.
- Trade should be the favour of aim of food security not for economic purposes until reach the goal.
- Awareness must be proclaiming that the supply of food can be improved only by the liberal in the volume of reserves of the same.
- Supports the under developed and developing countries to be maintained quality warehouse.
- Emphasis the trade to abolish food decays.

REFERENCES

1. Policy brief. 'Food Security', FAO Agricultural and Development Economics Division; 2006. www.fao.org › forestry, (20/10/2017).
2. Shaikh Azizur Rahman, 'Indian farmer's group rebuked over tonnes of wasted grain'; 2013. <https://www.thenational.ae> › world › asia, (08/11/2017).
3. Suman sahai. 'Rs 60,000 crore is the cost of rotting food grain every year. Yet, millions go; 2010. www.tehelka.com › 2010/07 › rs-60000-... (08/11/2017).
4. Christin Mathew Philip. 'In 2 years, 40,000 tonnes of grain went down the drain', Times of India. 2015. m.timesofindia.com › india › articleshow, (08/11/2017).