Agriculture Under Globalization

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Knowledge is Our Business

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By D. Kumar, Shakuli Saxena

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e-mail: dominantbooks@gmail.com
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CONTENTS

CHAPTER 1

GLOBALIZATION: THE ROLE OF MULTINATIONAL CORPORATIONS AND THEIR IMPACT ON INDIA

Shakuli Saxena, Assistant Professor
College of Agriculture Sciences, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India,
Email Id- shakuli2803@gmail.com

ABSTRACT:

This chapter explores the broad idea of globalisation with an emphasis on the role multinational companies (MNCs) play in bridging international trade and investments. It talks about the causes why and methods MNCs use to grow their manufacturing operations overseas. The chapter uses a variety of examples, especially from the Indian setting, to highlight important ideas. The integration of many countries' production and market systems is central to the process of globalisation as it is discussed in this chapter. MNCs have been demonstrated to play a key role in advancing this integration. The chapter emphasises the need of having a firm grasp on these ideas before moving on to guarantee comprehension. Rapid technical development, the liberalisation of trade and investment, and international pressure from groups like the WTO are a few reasons that have aided globalisation. The chapter emphasises how important technology is in particular, enticing students to investigate this subject on their own. The chapter notes that today's students may not be aware with India's pre-liberalization past in order to offer background for talks on liberalisation. To assist students, comprehend the effects of liberalisation on the Indian economy, it advises employing role-playing games and interactive teaching techniques. The chapter's analysis of how globalisation affects development draws on topics from preceding chapters. Students are encouraged to investigate how globalisation impacts many facets of their life by using local examples and activities, such as the effect that imports have on regional farmers.

KEYWORDS:

Cultural, Economic, Globalization, Liberalization, Regions.

INTRODUCTION

The majority of the world's regions are becoming more linked. While there are various aspects to this connection across nations—cultural, political, social, and economic—this chapter examines globalisation in a more constrained sense. The integration of nations via commerce and overseas investments made by multinational companies (MNCs) is referred to as globalisation. You'll see that the more complicated aspects of portfolio investing have been omitted. If we consider the last thirty years or so, MNCs have played a significant role in the globalisation process that has linked remote parts of the globe. What are the reasons for and methods used by MNCs to expand their manufacturing into other nations? This is covered in the chapter's opening section. The quick development and impact of MNCs have been shown via a number of instances, many of which are based on the Indian context, as opposed to quantitative assessments. The examples are meant to help clarify a more general principle, so keep that in mind. When instructing, the focus should be on the concepts, with instances serving as illustrations. Comprehension passages, like the one provided following Section II, may also be imaginatively used to assess and reaffirm new ideas. Understanding the process of globalisation and its effects relies heavily on the concepts of production and market integration. This has been covered in detail in this chapter, emphasizing the role that MNCs

played in the process. Before going on to the next subject, you must make sure that the pupils have a clear understanding of this concept.

Several things have made globalisation easier. Rapid technological advancements, the deregulation of trade and investment regulations, and pressure from international agencies like the WTO are the three that have been emphasized. Students find the advancement of technology to be a fascinating topic, and with little guidance, you can inspire them to do their own research. You must bear in mind while talking about liberalisation that the kids have no idea what life was like in India before it became liberalised. To compare and contrast the pre- and post-liberalization eras, a role-play might be created. Similar to how international negotiations under the WTO and unequal power distribution are fascinating topics that may be discussed rather than lectured on.

The effects of globalisation are discussed in the last section. How much has globalisation aided in the process of development? You may refer to Chapters 1 and 2's discussion of subjects like what constitutes a reasonable development objective in this section. Additionally, while presenting this part, local activities and examples must be included. This can incorporate situations that weren't addressed in the chapter, such how imports affect regional farmers, etc. Analysis of such issues may be done via group brainstorming sessions [1], [2].

Informational Resources

The International Labour Organization, among others, has called for a more equitable globalisation. It provides access to the many agreements that the WTO is currently negotiating. Most MNCs have their own websites where you may learn about the business. Corporatewatch.org.uk is a website that is suggested if you wish to examine MNCs seriously. Some of us have a large selection of products and services to choose from as consumers in the modern world. We have access to the most recent versions of digital cameras, mobile phones, and TVs produced by the top global manufacturers. New car models may be seen on Indian roads every season. The days when the sole vehicles on Indian roads were Ambassador and Fiat are long gone. Indians are now purchasing automobiles made by almost all of the world's leading manufacturers. For a variety of other products, including processed fruit juices, TVs, and clothes, there has been a comparable proliferation of brands. Our marketplaces' diverse selection of products is a relatively new development. Even twenty years ago, there would not have been such a large array of things available in Indian marketplaces. Our markets have changed dramatically during the last several years.

Production was generally coordinated inside nations up to the middle of the 20th century. These nations' borders were crossed by raw resources, food, and completed goods. Colonies like India imported finished commodities while exporting raw resources and food. The primary means of communication between far-off nations was trade. This was prior to the emergence of multinational corporations (MNCs), which are big businesses. A MNC is a business that owns or manages production in many countries. MNCs establish their production facilities, including headquarters and factories, in areas with access to inexpensive labour and other resources. This is done to keep manufacturing costs down and increase revenues for MNCs. Consider the case below.

In this case, the multinational corporation (MNC) produces the goods and services internationally in addition to selling them on a global scale. As a consequence, the organisation of manufacturing is becoming more complicated. The manufacturing process is broken up into smaller steps and dispersed all around the world. China offers the benefit of being a low-cost manufacturing site in the case above. Because of their proximity to the US

and European markets, Mexico and Eastern Europe are advantageous. India is home to highly qualified engineers who are knowledgeable about the technical elements of manufacturing. Additionally, it employs educated English-speaking teenagers who can provide customer assistance. And the MNC might save between 50% and 60% on costs as a result of all this! The benefits of outsourcing manufacturing to international corporations may be enormous.

MNCs often locate their manufacturing facilities near to markets, where skilled and unskilled labour is cheaply accessible, and where the supply of other production inputs is guaranteed. MNCs may also search for government policies that protect their interests. Later in the chapter, you will learn more about the policies. MNCs erected factories and offices for manufacturing after ensuring these circumstances. Investments are sums of money used to purchase assets like real estate, buildings, machinery, and other equipment. Foreign investment is defined as investment made by MNCs. Any investment is made with the anticipation that the underlying assets will be profitable.

MNCs sometimes set up manufacturing in conjunction with some of the local businesses in these nations. Such cooperative manufacturing has two advantages for the local business. First, MNCs may contribute funds for new investments, such as the purchase of machinery for accelerated production. Second, MNCs could bring the newest industrial technology with them. However, the most typical MNC investment strategy involves acquiring local businesses in order to later increase output. MNCs with enormous money can easily achieve this. As an example, the extremely large American multinational corporation Cargill Foods has acquired smaller Indian businesses like Parakh Foods. Having established a sizable marketing network across India, where its brand was well-known, Parakh Foods. Four oil refineries owned by Parakh Foods are currently under Cargill's management. Having the ability to create 5 million pouches per day, Cargill is now India's biggest producer of edible oil [3], [4].

In reality, several of the largest MNCs have more money than the combined budgets of the governments of developing nations. Imagine the impact and power that these MNCs would have with such immense riches. MNCs also have alternative means of regulating output. Large MNCs in developed nations place manufacturing orders with small manufacturers. Clothing, footwear, and sporting goods are a few examples of sectors where a huge number of small manufacturers operate all over the globe.

DISCUSSION

Globalisation has also resulted in the integration of markets throughout the globe in addition to changing how products and services are produced and supplied. Due to the broad variety of goods available to consumers today from several international companies, the market is more competitive and offers more options. Globalisation has been fueled in large part by technology, particularly information technology. It has made cross-border company operations easier, lowered the cost of transportation, and simplified communication. The outsourcing of services has also been made possible by this technological development, further integrating economies.

Trade liberalisation, promoted by international organisations like the World commerce Organisation (WTO), has been instrumental in removing trade restrictions and fostering international commerce. However, it's critical to recognise that the effects of globalisation on various industries and people have varied. certain have profited from increasing competition and economic development, while others, notably small-scale industries and certain employees, have struggled and lost their jobs. Globalisation has both possibilities and difficulties for India. Economic expansion, international investment, and the rise of Indian

multinational firms have all resulted from it. It has, however, also sparked worries about the fragility of particular industries and the stability of employment for other employees.

Making footballs at home in Ludhiana for major MNCs by women

The MNCs get the items, which they subsequently resell to the clients under their own brand names. The pricing, quality, delivery, and working conditions for these far-off manufacturers are entirely at the control of these powerful MNCs. As a result, it is clear that MNCs engage in a range of interactions with local producers in many nations throughout the world in order to expand their output. MNCs have a significant impact on the output at these far-off sites via the formation of alliances with local businesses, the use of those businesses as suppliers, tight competition with those businesses, or the acquisition of those businesses. Production in these widely separated sites is thereby becoming connected.

One of the biggest automakers in the world, Ford Motors is an American corporation that produces vehicles in 26 different nations. Ford Motors arrived in India in 1995 and invested Rs. 1700 crore to build a sizable facility close to Chennai. This was accomplished in association with Mahindra & Mahindra, a significant Indian truck and jeep company. Ford Motors sold 27,000 vehicles in the Indian market by the year 2004, while 24,000 vehicles were shipped from India to South Africa, Mexico, and Brazil. Ford India is intended to grow into a basis for supplying the company's other factories throughout the world.

Foreign commerce has historically been the primary means of communication between nations. You would have read about the trade routes linking India and South Asia to markets in the East and the West, as well as the significant commerce that occurred along these channels, in historical accounts. You may also recall that the East India Company and other commercial firms were drawn to India by trade interests. Simply said, overseas commerce gives manufacturers a chance to expand outside the local markets, or markets in their own nations. Producers have access to marketplaces throughout the globe as well as markets inside their own nation where they may sell their goods. In a similar vein, for consumers, importing items made abroad is one approach to increase their selection of products beyond those made locally.

The chance to sell toys to India, where they may be purchased for a premium price, is discovered by Chinese producers. They began sending toys made of plastic to India. Now, Indian and Chinese toys are both available to Indian consumers in India. Chinese toys are becoming increasingly well-liked in the Indian marketplaces as a result of the lower pricing and fresh designs. In a year, 70 to 80 percent of the toy stores would have switched from selling Indian to Chinese toys. The price of toys has decreased in Indian marketplaces.

What's going on here? Trade allows Chinese toys to enter the Indian market. Chinese toys outperform Indian toys in a match between the two. Indian consumers may choose from a wider variety of toys at reduced costs. This is a chance for the Chinese toy manufacturers to grow their company. For Indian toy manufacturers, the reverse is true. They are losing money because fewer people are buying their toys.

Generally speaking, when commerce is opened, products go from one market to another. Markets now provide a wider variety of commodities. Similar items' prices in the two marketplaces sometimes wind up being equivalent. And despite being thousands of kilometres apart, manufacturers in the two nations now fiercely compete with one another! As a consequence of international commerce, markets in many nations are connected or integrated. Small retailers of ready-to-wear are up against tough competition from imports and MNC brands [5], [6].

More and more multinational corporations (MNCs) have been searching for low-cost manufacturing areas across the globe during the last two to three decades. MNCs have increased their foreign investment in these nations. Additionally, international commerce between nations has been fast expanding. MNCs are also in charge of a significant portion of international commerce. For instance, Ford Motors' vehicle manufacturing facility in India not only creates automobiles for the Indian market, but it also exports automobiles to other developing nations and automobile parts for its many factories across the globe. Similar to this, the majority of MNCs deal significantly in both products and services.

The production and marketplaces across nations have become more integrated as a consequence of increased international investment and trade. Globalisation is the process of quickly integrating or connecting several nations. MNCs are actively contributing to the process of globalisation. Technology, investments, and the movement of products and services across nations is increasing. Compared to a few decades before, most parts of the globe are in closer touch with one another.

There is another way that the nations might be linked, in addition to the exchange of commodities, services, capital, and technological advancements. This is accomplished via international migration. People often emigrate in quest of higher wages, better employment opportunities, or better educational opportunities. However, owing to different constraints, there hasn't been much of a growth in international travel in recent decades.

Technology

One important aspect that has accelerated the trend of globalisation is the quickening pace of technological advancement. For instance, there have been several advancements in transportation technology during the last 50 years. Due to this, it is now able to distribute things across great distances considerably more quickly and affordably. The advancements in information and communication technologies are even more impressive. Technology in the fields of telecommunications, computers, and the Internet has been evolving quickly recently. Tele-graph, telephone, including mobile phones, and fax are examples of telecommunication devices that are used to connect people globally, access information instantaneously, and interact from distant locations. The use of satellite communication tools has made this possible. As you are probably aware, computers are now present in practically every industry. You may have also explored the wonderful world of the internet, where you may learn and exchange knowledge about nearly anything. We can converse (voicemail) and send quick electronic mail (e-mail) for very little money using the internet.

IT's Role in Globalisation

The design and printing of a news magazine aimed at London readers will take place in Delhi. The Delhi office receives the magazine's text over the Internet. Using technology, the designers at the Delhi office get instructions on how to design the magazine from the headquarters in London. On a computer, the designing is carried out. The publications are airmailed to London after printing. Through the Internet (e-banking), payments for designing and printing may even be made instantaneously from a bank in London to a bank in Delhi!

Foreign trade and investment policy liberalisation

Let's go back to the Chinese toy imports into India as an example. Let's say the Indian government levies a tax on toys imported. What would take place? The importation of these toys would be subject to tax. Buyers will pay more for imported toys as a result of the levy. Toys from China won't be as affordable in Indian marketplaces, and imports from China

would inevitably fall. Indian toy manufacturers will succeed. Import taxes are one kind of trade restriction. The reason it is termed a barrier is because a limitation has been placed there. Governments may select what types of commodities and how much of each should enter the nation by using trade barriers to either boost or limit (control) foreign commerce.

Following Independence, the Indian government erected obstacles to international investment and commerce. To shield domestic manufacturers from international competition, this was deemed essential. In the 1950s and 1960s, industries were only starting to emerge, and at that time, import competition would not have permitted these sectors to do so. India only permitted the import of necessities like equipment, fertilizers, fuel, etc. It should be noted that all developed nations have provided domestic producers with protection via a variety of measures throughout the early phases of growth. In India, significant policy reforms began to be implemented about 1991. The government determined that it was time for Indian manufacturers to face up against those from other countries. It was believed that competition would boost domestic manufacturers' output since they would be forced to raise their standards. Strong international bodies endorsed this choice [7], [8].

As a result, many restrictions on international commerce and investment were lifted. It also allowed international businesses to establish factories and offices here, making it easier to import and export commodities. Liberalisation is the process of removing constraints imposed by the state.

Businesses are free to decide what they want to import or export thanks to trade liberalisation. Since there are much less limitations now than there formerly were, the government is considered to be more liberal. We have seen that a number of very powerful international bodies backed India's deregulation of foreign trade and investment. These groups believe that any obstacles to foreign investment and commerce are detrimental. There shouldn't be any obstacles. Trade between nations need to be "free." The policies of any nation should be liberalised.

One such group is the World commerce Organisation (WTO), whose goal is to liberalise global commerce. The WTO, which was founded at the initiative of the industrialised nations, develops regulations for international commerce and ensures that they are followed. As of June 2014, the WTO has members from about 160 different nations. Although the WTO is designed to promote free trade for all parties, it is evident that wealthier nations have unjustly kept trade barriers in place in practise. However, WTO regulations have compelled developing nations to lower trade barriers. The ongoing discussion over trading in agricultural goods serves as an illustration of this.

The majority of jobs and a significant amount of India's GDP are held by the agricultural sector. Compare this to a developed nation like the US where agriculture only accounts for 0.5% of all jobs and has a GDP proportion of 1%! However, this very tiny proportion of persons.

Therefore, developing nations are asking governments of affluent countries, "We have eliminated trade barriers in accordance with WTO regulations. However, you have continued to pay your farmers enormous amounts of money while violating WTO regulations. Although you have requested our governments to cease helping our farmers, you still are.

The US government provides enormous quantities of money to those who work in agriculture in order to support domestic production and exports to other nations. US farmers are able to sell their agricultural goods for very cheap rates because to the enormous amount of money they get. Farmers in these nations suffer as a result of the excess agricultural goods being sold

at cheap prices in foreign markets. A typical American cotton plantation covers hundreds of acres and is controlled by a large business that will sell the cotton to foreign markets at a discount.

Globalization's Impact On India

Indian economic globalisation has advanced significantly during the last twenty years. What impact has it had on people's lives? Let's examine some of the proof. Consumers, especially the wealthy parts in metropolitan areas, have benefited from globalisation and increased rivalry among producers, both domestic and international companies. These customers, who now enjoy superior quality and reduced pricing for a number of items, have more options available to them. These folks now live considerably more comfortably than was previously feasible as a consequence.

The effects of globalisation on producers and employees have been uneven. First off, during the last 20 years, MNCs have boosted their investments in India, indicating that doing business there has been profitable for them. MNCs have shown interest in urban-based businesses including banking as well as those in the automotive, electronics, soft drink, and fast food sectors. Numerous wealthy people purchase these goods. New employment have been added in these sectors of the economy and services. Local businesses that provide these industries with raw materials and other necessities have also flourished.

The national and state governments of India have been making particular efforts lately to get foreign businesses to invest there. Special Economic Zones (SEZs), which are industrial zones, are being created. SEZs are required to have top-notch infrastructure, including roads, water, energy, storage, and facilities for transportation, leisure, and education. For the first five years after setting up manufacturing units in SEZs, businesses are exempt from paying taxes. The government has also made employment regulations more lenient in an effort to draw in foreign investment. As you read in Chapter 2, businesses operating in the organised sector are subject to regulations aimed at defending the rights of employees. The government has recently permitted businesses to disregard several of these. Companies employ people "flexibly" for brief periods of time when there is high work pressure rather than on a regular basis. To lower the company's employment expense, this is done. Foreign businesses, who are still unsatisfied, are calling for greater latitude in the employment rules.

Second, the heightened rivalry has allowed a few of the leading Indian businesses to prosper. They have upgraded their manufacturing standards, invested in more modern equipment, and used new production techniques. Some people have benefited from productive partnerships with foreign businesses. Additionally, globalisation has made it possible for several sizable Indian enterprises to become multinationals in their own right! Some Indian businesses that are expanding internationally include Tata Motors (automobiles), Infosys (IT), Ranbaxy (medicines), Asian Paints (paints), and Sundaram Fasteners (nuts and bolts). Additionally, the globalisation of business has opened up new prospects for service providers, notably those in the IT industry. Examples include contact centers and the Indian firm creating a magazine for the London-based corporation. In addition, a variety of services, including data entry, accounting, administrative work, and engineering, are now performed inexpensively in nations like India and exported to the industrialised ones [9], [10].

Compete or die, small manufacturers

Globalisation has presented significant hurdles for many small producers and employees. Industries where small businesses have been severely impacted by competition include those that produce batteries, capacitors, plastics, toys, tyres, dairy goods, and vegetable oil. Many

of the facilities have closed, leaving many people without jobs. Next to agriculture, India's small industries employ 20 million people, which is the second-highest number in the nation.

CONCLUSION

This chapter has given a thorough review of globalisation and the contribution of multinational companies (MNCs) to this process of global integration. It has emphasised a number of the globalization's facets, such as its economic, technical, and policy-driven components. One important conclusion is that MNCs have contributed significantly to globalisation by extending their industrial activities internationally. They have built factories all around the globe by taking advantage of things like easy access to resources, affordable labour, and helpful government regulations. They have been able to significantly improve earnings while reducing expenses thanks to this method. Globalisation is, in general, a complicated and diverse phenomena having far-reaching effects on economies, industries, and people all over the globe. For navigation of the ever-changing global terrain, it is essential to comprehend its different aspects and implications.

REFERENCES:

[1] R. Ofori-Asenso and D. Garcia, "Cardiovascular diseases in Ghana within the context of globalization," *Cardiovascular Diagnosis and Therapy*. 2016.

[2] I. Overland, "Energy: The missing link in globalization," *Energy Res. Soc. Sci.*, 2016.

[3] A. Mikalauskiene, D. Štreimikiene, and K. Mulagalejeva, "Assess the impact of globalisation processes by indices," *Econ. Sociol.*, 2016.

[4] W. Liu and M. Dunford, "Inclusive globalization: unpacking China's Belt and Road Initiative," *Area Dev. Policy*, 2016.

[5] T. O. Randhir, "Globalization impacts on local commons: Multiscale strategies for socioeconomic and ecological resilience," *Int. J. Commons*, 2016.

[6] L. Colen and J. Swinnen, "Economic Growth, Globalisation and Beer Consumption," *J. Agric. Econ.*, 2016.

[7] S. Chatterjee, "Articulating Globalization: Exploring the Bottom of the Pyramid (BOP) Terrain," *Organ. Stud.*, 2016.

[8] P. R. Saunders-Hastings and D. Krewski, "Reviewing the history of pandemic influenza: Understanding patterns of emergence and transmission," *Pathogens*. 2016.

[9] M. Shahbaz, S. A. Solarin, and I. Ozturk, "Environmental Kuznets Curve hypothesis and the role of globalization in selected African countries," *Ecol. Indic.*, 2016.

[10] G. Bekaert, C. R. Harvey, A. Kiguel, and X. Wang, "Globalization and Asset Returns," *Annual Review of Financial Economics*. 2016.

CHAPTER 2

A COMPREHENSIVE OVERVIEW OF AGRICULTURE IN INDIA

Praveen Kumar Singh, Assistant Professor
College of Agriculture Sciences, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India,
Email Id- dr.pksnd@gmail.com

ABSTRACT:

Two-thirds of India's workforce, which is made up mostly of farmers, makes the country a notable agricultural power. In addition to providing the bulk of the country's food, agriculture also exports goods like tea, coffee, and spices and provides the raw materials for several businesses. Due to variables including the physical environment, technical improvements, and socio-cultural practises, Indian agriculture has seen considerable changes throughout time, leading to a variety of agricultural systems ranging from subsistence to commercial agriculture. This essay examines the diverse terrain of Indian agriculture, focusing on important crops and rotating planting strategies in basic subsistence farming, enhanced subsistence farming, and commercial agriculture. It also covers steps for ensuring food safety, institutional and technical improvements, and the difficulties the industry faces.

KEYWORDS:

Agriculture, Crops, Farming, Food Security, India.

INTRODUCTION

India is a significant agricultural nation. Its population is comprised mostly of farmers, at two thirds. The majority of the food we eat is produced via the main industry of agriculture. It also generates raw materials for many industries in addition to food grains. Additionally, exports of agricultural goods including tea, coffee, spices, etc. are common. In our nation, agriculture has always been an important economic sector. Depending on the qualities of the physical environment, technical advancements, and sociocultural practises, cultivation techniques have varied dramatically throughout the years. The types of farming range from subsistence to commercial. These agricultural practises are now used in various regions of India.

Primary Subsistence Agriculture

There are still certain areas of India where this kind of farming is performed. Small plots of land are used for basic subsistence agriculture, which is carried out with the use of family/community labour and implements like the hoe, dao, and digging sticks. This style of farming is reliant on the monsoon, the soil's inherent fertility, and the compatibility of other environmental factors for the crops being farmed.

'Slash and burn' agriculture is practised there. To feed their families, farmers clear a plot of land and grow grains and other food crops. Farmers relocate their operations and prepare a new area of land for agriculture as the soil fertility declines. Land productivity in this style of agriculture is poor since the farmer does not utilisefertilizers or other contemporary inputs, but this sort of shifting enables Nature to restore the fertility of the soil via natural processes. various regions of the nation have various names for it.

In the northeastern states of Assam, Meghalaya, Mizoram, and Nagaland, as well as in the Andaman and Nicobar Islands, Pamlou in Manipur, and Dipa in the Bastar region of Chhattisgarh, it is jhumming. The'slash and burn' farming method is known as 'Milpa' in

Mexico and Central America, 'Conuco' in Venezuela, 'Roca' in Brazil, 'Masole' in Central Africa, 'Ladang' in Indonesia, and 'Ray' in Vietnam.

It is known as "Bewar" or "Dahiya" in Madhya Pradesh, "Podu" or "Penda" in Andhra Pradesh, "PamaDabi" or "Koman" or "Bringa" in Odisha, "Kumari" in the Western Ghats, "Valre" or "Waltre" in South-Eastern Rajasthan, "Khil" in the Himalayan belt, "Kuruwa" In Assam,

Intensified Subsistence Agriculture

This kind of farming is done when there is a lot of population strain on the land. High dosages of biochemical inputs and irrigation are employed in labor-intensive farming in order to increase yield. Despite the fact that the 'right of inheritance' that results in the partition of land among succeeding generations has made land-holding size uneconomical, farmers nonetheless extract the greatest amount of produce from the restricted land in the lack of other sources of income. Agriculture land is under a great deal of strain as a result.

Commercial Agriculture

In order to increase production, this form of farming uses larger quantities of contemporary inputs, such as high yielding variety (HYV) seeds, chemical fertilisers, insecticides, and pesticides. From one place to another, agriculture has been commercialized to varying degrees. For instance, whereas rice is a commercial crop in Punjab and Haryana, it is a subsistence crop in Odisha. Another kind of industrial farming is plantation farming. A single crop is cultivated across a huge region in this kind of farming. On the plantation, agriculture and industry coexist. With the aid of migrant employees, plantations use capital-intensive inputs to cover enormous areas of land. In each industry, the output is employed as the raw material. Bananas, sugarcane, rubber, tea, coffee, and other plantation crops are significant in India. Among the significant plantation crops farmed in these states are the North Bengal coffee in Karnataka and the Assamese tea. A well-developed network of transportation and communication linking the plantation lands, processing companies, and marketplaces plays a crucial role in the growth of plantations since the output is primarily for the market.

Rotational Pattern

You have researched India's physical diversity and cultural diversity. These are also seen in the nation's planting patterns and agricultural practises. Some of the key crops farmed in the nation include different kinds of food and fibre crops, vegetables and fruits, spices and sauces, etc. Rabi, kharif, and zaid are the three agricultural seasons of India.

Crops known as rabi are planted in winter between October and December and harvested in summer between April and June. Weeds like wheat, barley, peas, gramme, and mustard are among the significant rabi crops. Despite the fact that these crops are cultivated across most of India, the north and north-western states of Punjab, Haryana, Himachal Pradesh, Jammu and Kashmir, Uttarakhand, and Uttar Pradesh are crucial for the production of wheat and other rabi crops. The success of these crops is aided by the precipitation that falls throughout the winter months as a result of western temperate cyclones. However, the development of the aforementioned rabi crops has also been significantly influenced by the success of the green revolution in Punjab, Haryana, western Uttar Pradesh, and certain areas of Rajasthan [3], [4].

In various regions of the nation, kharif crops are planted when the monsoon season begins, and they are harvested between September and October. Paddy, maize, jowar, bajra, tur (arhar), moong, urad, cotton, jute, groundnut, and soya bean are significant crops farmed

during this time. Assam, West Bengal, coastal areas of Odisha, Andhra Pradesh, Telangana, Tamil Nadu, Kerala, and Maharashtra, notably the (Konkan coast), together with Uttar Pradesh and Bihar, are some of the most significant rice-growing regions. Paddy has recently also grown in importance as a crop in Punjab and Haryana. Three paddy harvests are farmed each year in areas like Assam, West Bengal, and Odisha. Aus, Aman, and Boro are these. A brief period known as the Zaid season occurs throughout the summer months between the rabi and kharif seasons. During "zaid," crops include watermelons, muskmelon, cucumbers, vegetables, and fodder crops are among those that are grown. The growth of sugarcane takes about a year.

DISCUSSION

Various food and non-food crops are cultivated in various regions of the nation based on the changes in the soil, climate, and farming techniques. Rice, wheat, millets, lentils, tea, coffee, sugarcane, oil seeds, cotton, jute, and other crops are some of the main ones farmed in India. In India, the majority of people eat rice as their main crop of food. After China, our nation is the second-largest rice producer in the world. It is a kharif crop that needs high temperatures (over 25°C), high levels of humidity, and an average annual rainfall of at least 100 cm. It flourishes with the aid of irrigation in locations with lower rainfall. India's northern and northern-eastern plains, coastal regions, and deltaic areas are all where rice is farmed. Rice can now be grown in places with lower rainfall, such Punjab, Haryana, western Uttar Pradesh, and some of Rajasthan, thanks to the development of a complex network of canal irrigation and tube wells.

The second-most significant grain crop is wheat. In the country's north and north-western regions, it serves as the primary food crop. For this rabi crop to mature properly, it needs a cold growing season and plenty of sunlight. It needs 50 to 75 cm of yearly rainfall evenly-spread across the growth season. The Ganga-Satluj plains in the north-west and the black soil area of the Deccan are the two major wheat-growing regions in the nation. Punjab, Haryana, Uttar Pradesh, Bihar, Rajasthan, and a portion of Madhya Pradesh are the states that produce the most wheat.

Millets: The three main millets farmed in India are jowar, bajra, and ragi. Despite being referred to as coarse grains; they are incredibly nutritious. For instance, ragi is highly high in roughage, iron, calcium, and other micronutrients. According to area and productivity, jowar is the third-most significant food crop. It is a rain-fed crop that is mostly cultivated in wet locations and requires little irrigation. Maharashtra, Karnataka, Andhra Pradesh, and Madhya Pradesh were the major Jowar-producing States in 2011–12. Sandalled and shallow black soil are both favorable for bajra growth. In 2011–12, the states that produced the most bajra were Rajasthan, Uttar Pradesh, Maharashtra, Gujarat, and Haryana. The dry-area crop ragi thrives in red, black, sandy, loamy, and shallow black soils. Karnataka, Tamil Nadu, Himachal Pradesh, Uttarakhand, Sikkim, Jharkhand, and Arunachal Pradesh are the major ragi-producing states.

Maize: This plant is grown for both food and fodder. It is a kharif crop that grows well on ancient alluvial soil and needs temperatures between 21°C and 27°C. In other places, like as Bihar, maize is also planted during the rabi season. Utilising contemporary inputs like HYV seeds, fertilisers, and irrigation has helped to increase maize yield. Karnataka, Uttar Pradesh, Bihar, Andhra Pradesh, Telangana, and Madhya Pradesh are major states for maize production.

Pulses: Both the world's top producer and consumer of pulses is India. These provide the main protein source in a vegetarian diet. Tur (also known as arhar), urad, moong, masur,

peas, and gramme are the main pulses farmed in India. Which of these pulses is cultivated during the kharif season and which during the rabi season? Pulses may thrive in arid environments and need less moisture. All of these crops, with the exception of arhar, are leguminous and assist to restore soil fertility by fixing nitrogen from the air. As a result, they are often cultivated with other crops in rotation. Madhya Pradesh, Uttar Pradesh, Rajasthan, Maharashtra, and Karnataka are major states in India that produce pulses [5], [6].

Other Food Crops Besides Grains Sugarcane: It grows in both tropical and subtropical climates. It thrives in a hot, humid area with annual rainfall ranging from 75 cm to 100 cm and temperatures between 21 and 27 degrees Celsius. In areas where there is little rainfall, irrigation is necessary. From planting through harvesting, it requires considerable effort and may be cultivated on a range of soils. Only after Brazil, India is the world's second-largest producer of sugarcane. It is the primary source of gur (jaggery), khandsari, molasses, and sugar. Uttar Pradesh, Maharashtra, Karnataka, Tamil Nadu, Andhra Pradesh, Telangana, Bihar, Punjab, and Haryana are the major sugarcane-producing states.

After China, India was the world's second-largest producer of groundnuts in 2008. After Canada and China, India was the third-largest producer of rapeseed in the world in 2008. About 12% of the country's total cultivated area is dedicated to the cultivation of various oil seeds. Groundnut, mustard, coconut, sesame (til), soybean, castor seeds, cotton seeds, linseed, and sunflower are the main oil-seeds produced in India. The majority of them are used in cooking and are edible. But some of them are also used as basic materials to make ointments, soap, and cosmetics.

About half of the main oilseeds produced in the nation are groundnuts, a kharif crop. In 2011–12, Gujarat produced the most groundnuts, followed by Andhra Pradesh and Tamil Nadu. Rabi crops include mustard and linseed. In India, sesamum is grown throughout the kharif and rabi seasons.

Both rabi and kharif crops of castor seed are planted. Plantation agriculture is exemplified by the growing of tea. It is a significant beverage crop that the British first brought to India. Indians now hold the majority of the tea estates. In tropical and subtropical areas with deep, fertile, well-drained soil that is abundant in humus and organic matter, the tea plant thrives. Tea bushes need a year-round environment that is warm, humid, and frost-free. Over the course of the year, regular rains ensure that fragile leaves continue to develop. It takes a lot of effort to produce tea. States like Tripura, which produce tea as well, are numerous. After China and Turkey, India was the third-largest tea producer in 2008.

Coffee production accounted for 3.2% of global output in 2008 in India. The high quality of Indian coffee is well-known around the globe. It is made in the nation using the Arabica type that was first imported from Yemen. Worldwide, there is a high demand for this cultivar. Its cultivation was first practised on the Baba Budan Hills, and it continues to be limited to the Nilgiri in Tamil Nadu, Kerala, and Karnataka. Fruits from tropical and temperate regions. Mangoes of Maharashtra, Andhra Pradesh, Telangana, Uttar Pradesh and West Bengal, oranges of Nagpur and Cherrapunjee (Meghalaya), bananas of Kerala, Mizoram, Maharashtra and Tamil Nadu, lichi and guava of Uttar Pradesh and Bihar, pineapples of Meghalaya, grapes of Andhra Pradesh, Telangana and Maharashtra, apples, pears, apricots and walnuts of Jammu and Kashmir and Himachal Pradesh are in great demand the world over.

Horticulture Crops: After China, India was the world's second-largest producer of fruits and vegetables in 2008. India is a producer of around 13% of the veggies consumed worldwide. It is a significant producer of peas, potatoes, cauliflower, onions, cabbage, tomatoes, and brinjal.

Non-Food Plants

Rubber is an equatorial crop that may also be cultivated in tropical and subtropical regions under certain circumstances. It needs a wet, humid environment with more than 200 cm of rainfall and temperatures over 25 °C. Rubber is a crucial raw material for industry. The Andaman and Nicobar Islands, Kerala, Tamil Nadu, Karnataka, and the Garo Hills of Meghalaya are where it is mostly farmed. India was the fourth-largest producer of natural rubber in the world in 2010–11.

Fibre Crops: The four main fibre crops farmed in India are cotton, jute, hemp, and natural silk. The last is formed from the cocoons of the silkworms fed on green leaves, particularly mulberry, whereas the first three are acquired from crops cultivated in the soil. Sericulture is the practise of raising silk worms to produce silk fabric.

Cotton: The cotton plant is said to have originated in India. One of the primary raw materials used in the cotton textile business is cotton. After China, India was the second-largest cotton producer in 2008. The black cotton soil of the Deccan plateau's drier regions is ideal for cotton cultivation. Its development is aided by high temperatures, little irrigation or rainfall, 210 days without frost, and strong sunlight. It takes a kharif crop 6 to 8 months to reach maturity. Maharashtra, Gujarat, Madhya Pradesh, Karnataka, Andhra Pradesh, Telangana, Tamil Nadu, Punjab, Haryana, and Uttar Pradesh are the principal cotton-producing states.

Jute: Also referred to as the "golden fibre." Jute thrives on the flood plains' lush, well-drained soils, where the soil is continually replenished. During the period of development, a high temperature is necessary. Most jute is produced in West Bengal, Bihar, Assam, Odisha, and Meghalaya. It is used to create many objects, including gunny bags, mats, ropes, yarn, and carpets. It is losing market share to synthetic packaging materials and fibers, especially nylon, because of its expensive price.

Institutional and technological reforms

Agriculture has been practised in India for thousands of years, as was indicated in the preceding pages. The speed of agricultural growth has been slowed down by continued land usage absent suitable technological and institutional improvements.

Despite the development of irrigation resources, the majority of farmers in many regions of the nation still rely on the monsoon and natural fertility to sustain their agricultural. This provides a significant problem for a populace that is expanding. More than 60% of the population depends on agriculture for a living, hence it requires significant technological and administrative changes. In order to implement institutional changes in the nation following Independence, collectivization, holdings consolidation, collaboration, and the elimination of zamindari, among other things, were given priority.

The fundamental objective of our First Five Year Plan was "land reform." Land holdings had already been dispersed due to the inheritance right, forcing consolidation.

Laws governing land reform were passed, however they were either weak or nonexistent when it came to execution. In the 1960s and 1970s, the Indian government started implementing agricultural reforms to enhance Indian agriculture.

Several initiatives were made to improve the state of Indian agriculture, including the White Revolution (Operation Flood) and the Green Revolution, which used packaging technology [7], [8]. However, this also caused growth to concentrate in a small number of key places. As a result, a thorough land development initiative was started in the 1980s and 1990s that

encompassed both institutional and technical changes. The development of Grameen banks, cooperative organisations, and banks to provide credit facilities to the farmers at cheaper rates of interest were some significant advances in this regard. Crop insurance against drought, flood, cyclone, fire, and disease was also provided.

Other programmes launched by the Indian government for the benefit of farmers include the Kissan Credit Card (KCC) and the Personal Accident Insurance Scheme (PAIS). Agricultural broadcasts and specific weather updates for farmers were also launched on radio and television. For major crops, the government additionally establishes minimum support prices, remunerative prices, and procurement prices to prevent intermediaries and speculators from taking advantage of farmers.

Gramdan - Bhoodan

VinobaBhave was designated as Mahatma Gandhi's spiritual successor. As one of the most prominent Satyarthi's, he took part in Satyagraha as well. He was a supporter of Gandhi's grammeswarajya philosophy. VinobaBhave launched a padyatra to disseminate Gandhiji's message after his martyrdom, covering practically the whole nation. A group of impoverished, landless peasants once approached him at a speech he was giving in Pochampalli, Andhra Pradesh, and requested some land for their livelihood. Although VinobaBhave was unable to make them a commitment right away, she promised to go to the Indian government on their behalf to request land if they engaged in cooperative farming. Shri Ram Chandra Reddy abruptly rose to his feet and proposed to divide 80 acres of land among 80 landless peasants.

This behaviour was called "Bhoodan." Later, he toured and extensively disseminated his beliefs across India. A few zamindars, who are the proprietors of several villages, proposed to divide up their holdings among the landless. Gramdan was its name.

Although its contribution to the Gross Domestic Product (GDP) has been declining since 1951, agriculture has been the foundation of the Indian economy. In 2010–11, the farm sector employed about 52% of the total labour force, making more than half of the Indian population dependent on agriculture for survival. Because any fall or stagnation in agriculture would result in a reduction in other economic sectors, which will have broader effects on society, the diminishing percentage of agriculture in the GDP is a severe worry. Given the significance of agriculture to India, the Indian government has undertaken a concentrated effort to upgrade the sector. Priority was given to the establishment of the Indian Council of Agricultural Research (ICAR), agricultural universities, veterinary clinics and animal breeding facilities, horticulture development, meteorological research and development, and other initiatives aimed at enhancing Indian agriculture. In addition, it was thought that upgrading rural infrastructure was crucial for the same.

Although the GDP growth rate has been rising over time, it is evident from Table 4.1 that the economy is not creating enough job possibilities. Agriculture's growth rate is slowing down, which is a worrying development. International competition is now posing a significant challenge to Indian farmers, thus our government is moving forward with reducing public investment in the agricultural industry, notably in irrigation, electricity, rural roads, market, and production. Furthermore, the country's agriculture has suffered as a result of the drop in import taxes on agricultural goods. Farmers are decreasing their investments in agriculture, which is generating a decline in employment in the sector.

Food safety

You are aware that having access to food that meets the country's minimal nutritional standards is a fundamental right. If any portion of our population lacks this access, that portion experiences food insecurity. In certain areas of our nation, especially in states with greater rates of poverty and less economic development, a disproportionately high number of people lack access to food.

The country's outlying regions are more vulnerable to natural calamities and have erratic food supplies. Our government meticulously planned a national food security system to guarantee food supply to all societal segments. It has two parts: the public distribution system (PDS) and the buffer stock (a). The fundamental goal of India's food security strategy is to guarantee that food grains are accessible to the general public at reasonable prices. It has made it possible for the hungry to get food. The strategy focuses on increasing agricultural output and setting the support price for the purchase of wheat and rice in order to sustain their reserves. Public distribution system (PDS) is in charge of ensuring distribution, while Food Corporation of India (FCI) is in charge of acquiring and warehousing food grains.

The minimum support price (MSP), set by the government, is what the FCI pays farmers for their food grains. Previously, the government offered subsidies for agricultural inputs including fertilizer, electricity, and water. These subsidies have now grown to untenable levels and have significantly reduced the efficiency with which these limited resources are used. Waterlogging, salinity, and the loss of vital micronutrients in the soil have all been caused by the excessive and careless use of fertilisers and water. The committed FCI purchases, high MSP, and input subsidies have all altered the cropping pattern. More rice and wheat is planted because of the MSP it receives.

The two best examples are Punjab and Haryana. Inter-crop parities have become seriously out of balance as a result of this. You already know that there are two groups of consumers: those who are below the poverty line (BPL) and those who are above the poverty line (APL), and that the issue price varies for each group. However, this classification is not flawless, and a few worthy poor people have been left out of the BPL group. In addition, some people who are considered APL may return to BPL if even one crop fails, and it can be difficult to adjust administratively.

If the government provides appropriate agricultural infrastructure, finance connections, and also promotes the adoption of cutting-edge technology, each district and block may become self-sufficient in the production of food grains. The food crop with a stronger development potential in that location has to be fostered rather than focusing just on rice or wheat. Construction of essential infrastructure, such as irrigation systems and energy accessibility, may also draw private investment in agriculture. Increased food grain production, which should be done sustainably, together with free grain commerce, will lead to a huge increase in employment and a decrease in rural poverty [9], [10].

Fruits, vegetables, oil seeds, and industrial crops have gradually replaced the production of food crops. This has caused the net planted area for grains and pulses to decrease. Future food security in India is seriously in doubt given the country's expanding population and falling food supply. The net planted area has decreased as a consequence of competition for land between agriculture and non-agricultural uses like housing etc. A downward trend in land productivity has been detected. Insecticides, pesticides, and fertilisers that formerly produced impressive results are now blamed for the soil degradation. The area irrigated has decreased as a result of periodic water shortages. Salinity and water logging are the results of ineffective water management. Land deterioration is one of the key factors. A portion of farmers who get

free electricity are urged to pump groundwater to cultivate water-intensive crops in regions with little rainfall (rice in Punjab, sugarcane in Maharashtra). Aquifer storage capacity has decreased as a result of this excessive pumping. As a result, several wells and tube wells have dried up. Due to this, marginal and small farmers are no longer cultivating their land.

While many others are facing a water shortage, the large farmers with deeper tube wells still have access to water. Insufficient marketing and storage options are another factor that discourages farmers. As a result, the production and market uncertainties have a significant impact on farmers. They are at a twofold disadvantage since they cannot set prices to their benefit and must pay high rates for inputs like HYV seeds, fertilisers, etc. Immediately after manufacture, the market is reached. The demand decreases as supply increases. This also results in a distress sale. Without the safety of small farmers, there cannot be food security.

CONCLUSION

In conclusion, India is unquestionably a big agricultural country, with agriculture acting as the foundation of its economy and a key source of subsistence for a sizeable section of its people. The agricultural landscape of the country is tremendously varied, reflecting changes in climatic, soil, and farming practises throughout various areas. India's agricultural industry is characterised by a broad variety of practises, from traditional subsistence farming in rural areas to modern commercial agriculture in more industrialised areas. Grain, pulse, oilseed, fruit, vegetable, and fibre crops like cotton and jute are all included in the farming patterns in India. A number of agricultural products, including rice, wheat, millets, sugarcane, and tea, are produced in the nation in enormous quantities. The many agro-climatic zones of India enable the growth of a broad variety of crops, serving both local and international markets.

REFERENCES:

[1] R. VIJAYAN, “Dryland agriculture in India – problems and solutions,” *ASIAN J. Environ. Sci.*, 2016.

[2] A. Patel, “CLIMATE CHANGE & AGRICULTURE IN INDIA- EFFECTIVE IMPLEMENTATION OF NATIONAL MISSION FOR SUSTAINABLE AGRICULTURE,” *Int. J. Res. -GRANTHAALAYAH*, 2016.

[3] M. Dinakaran, “A review on requirement of self sustainable natural farming and application of information and communication technology (Agro informatics) for agriculture in India,” *International Journal of Pharmacy and Technology*. 2016.

[4] S. Pramanik and G. Pramanik, “Nanotechnology for Sustainable Agriculture in India,” 2016.

[5] M. S. Bhullar, M. Pandey, S. Kumar, and G. Gill, “Weed management in conservation agriculture in India,” *Indian J. Weed Sci.*, 2016.

[6] G. Tomer, G. S. Chauhan, and P. K. Panigrahi, “Feasibility of m-governance in agriculture: insights from a multimodal study in rural India,” *Transform. Gov. People, Process Policy*, 2016.

[7] W. Amtul, N. B, and A. K. S, “Gender gap and female workforce participation in agriculture in Andhra Pradesh, India,” *African J. Agric. Res.*, 2016.

[8] A. Pradhan, T. Idol, and P. K. Roul, “Conservation agriculture practices in rainfed uplands of india improve maize-based system productivity and profitability,” *Front. Plant Sci.*, 2016.

[9] S. Varshney, "Plant Disease Prediction using Image Processing Techniques-A Review," *Int. J. Comput. Sci. Mob. Comput.*, 2016.

[10] N. S. October and undefined 2016, "Application of data warehouse and big data technology in agriculture in India," *istat.it*, 2016.

CHAPTER 3

SUSTAINABLE AGRICULTURAL DEVELOPMENT IN A GLOBALIZED ECONOMIC ORDER

M. Maheshnath, Ph.D. Research Scholar
Department of Agricultural Economics, College of Agriculture,
Professor Jayashankar Telangana State Agricultural University, Hyderabad, Telangana. 500 030

ABSTRACT:

There is an ongoing debate on what constitutes sustainable intensification of agriculture (SIA). In this chapter, we propose that a paradigm for sustainable intensification can be defined and translated into an operational framework for agricultural development. We argue that this paradigm must now be defined—at all scales—in the context of rapidly rising global environmental changes in the Anthropocene, while focusing on eradicating poverty and hunger and contributing to human wellbeing. The criteria and approach we propose, for a paradigm shift towards sustainable intensification of agriculture, integrates the dual and interdependent goals of using sustainable practices to meet rising human needs while contributing to resilience and sustainability of landscapes, the biosphere, and the Earth system. Both of these, in turn, are required to sustain the future viability of agriculture. This paradigm shift aims at repositioning world agriculture from its current role as the world's single largest driver of global environmental change, to becoming a key contributor of a global transition to a sustainable world within a safe operating space on Earth.

KEYWORDS:

Agriculture development, Anthropocene, Globalized economic, Global sustainability, Livelihoods, Resilience, Sustainable intensification.

INTRODUCTION

A global food revolution based on a new paradigm for agricultural development is urgently required. Without this shift, we are unlikely to attain the twin objectives of feeding humanity and living within boundaries of biophysical processes that define the safe operating space of a stable and resilient Earth system. Global sustainability is increasingly understood as a prerequisite to attain human development at all scales, from local farming communities to cities, nations, and the world. The reason is that we have entered a new geological epoch, the Anthropocene, where human pressures are causing rising global environmental risks and for the first time constitute the largest driver of planetary change. Agriculture is at the heart of this challenge. It is the world's single largest driver of global environmental change and, at the same time, is most affected by these changes. Agriculture is the key to attaining the UN Sustainable Development Goals of eradicating hunger and securing food for a growing world population of 9–10 billion by 2050, which may require an increase in global food production of between 60 and 110 % in a world of rising global environmental risks. Agriculture is also the direct livelihood of 2.5 billion smallholder farmers, and the resilience of these livelihoods to rising shocks and stresses is currently gravely under-addressed.

Together, these insights provide a strong scientific justification for a shift from our current paradigm for agriculture of focusing on productivity first and sustainability as a question of reducing environmental impacts, to a paradigm where sustainability constitutes the core

strategy for agricultural development. The planetary boundary definition of a safe operating space for a stable and resilient Earth system provides an operational framework for defining what constitutes sustainable agriculture. It has been proposed that the "safe operating space" exploration of food security, based on these principles, analytically frames the problem and describes the interconnected forces of population growth, consumption growth, environmental change, and food security.

The definition of a biophysical safe operating space of the Earth system, within which it has a high likelihood of remaining in a stable inter-glacial state, emerges from the advancements in Earth system science over the past decades, providing evidence of interactions, feedbacks, and thresholds among environmental processes that regulate the Earth system, and the conclusion that humanity has entered a new geological Epoch, the Anthropocene, where the world constitutes the largest driver of change on Earth.

Therefore, in the Anthropocene, humanity faces the imperative question of how to transform agriculture that feeds the world, contributes to eradicate poverty, and contributes to a stable planet. Given the decisive role of world agriculture on human development and on Earth system processes, we argue in this study that sustainable agriculture is the only strategy that can deliver productivity enhancements to meet rising food needs and enable an Earth system operating within planetary boundaries.

There is a well-documented debate on what constitutes sustainable intensification of agriculture (*SIA*), its evolution, and its role in addressing global food security.

Here, *SIA* is largely on how to enhance agricultural productivity while reducing its environmental impacts. The task is how to produce more food with fewer resources. Sustainable intensification, in this context, seeks to increase agricultural output while keeping the ecological footprint as small as possible. This is, in no doubt, a useful and relatively important feature of sustainable agriculture, particularly as mainstream agriculture development still concentrates on productivity and places limited focus on sustainability. It remains focused though on avenues for resource efficiency, e.g., based on assumptions that efficiency in water and fertilizer use represents the avenues towards sustainable agriculture. Particularly in agricultural development in poverty-stricken regions, this "productivity first" paradigm, while potentially reducing environmental impacts, prevails.

There is an urgent need to shift this around and instead use sustainable principles as the entry point for generating productivity enhancements, which fundamentally requires real progress in increasing agricultural output by capitalizing on ecological processes in agro-ecosystems. This can be achieved by managing farmers' fields, watersheds, landscapes, and regions using strategies and practices that maintain biophysical stability and uphold critical feedbacks, such as moisture feedback from forests generating downwind rainfall and carbon sinks in soils and biomass.

Incorporating ecological landscape approaches that make smart use of the natural functionalities that ecosystems offer is now an important part of the development of sustainable intensification of agriculture. The aim is to design multi-functional agro-ecosystems that are both sustained *by* nature and sustainable *in* their nature.

In this study, we propose that a new paradigm for *SIA* can be quantitatively defined from scientific advancements of the Anthropocene and biosphere resilience and translated into an

operational framework for agricultural development. At its foundation, the new paradigm recognizes that the biophysical boundaries of Planet Earth impose a hierarchy of criteria on the definition of sustainability: sustainability is not a relative concept or an act of balancing competing claims; it sets absolute biophysical limits. It is only within such biophysically defined boundaries, such as operating within a 1.5 °C global carbon budget or within environmental water flows for river basins, which—as far as our current scientific knowledge shows—we stand a high probability of avoiding irreversible shifts in environmental conditions. The planetary boundary analysis sets the boundary for a stable climate system at 350 ppm of CO_2 (uncertainty range of 350–450 ppm) or maximum 1 W/m^2 of climate forcing (uncertainty range 1–1.5 W/m^2), which translates to an average global temperature rise of approximately 1.5 °C. As has been suggested, only by defining development within such technically defined criteria or boundaries, social and economic trade-offs can be assessed. Recent works signal mechanisms and demonstrate principles that suggest that such a transformative approach to *SIA* is possible and this study presents examples of ways forward.

We suggest adding a new dimension to sustainable agricultural development, namely managing natural capital for long-term productivity and social–ecological resilience at field, watershed, and regional scales, in agricultural systems that operate within planetary boundaries to safeguard Earth system.

Our approach builds on existing research and the current evolution of the frameworks for *SIA* giving further emphasis to land-use planning and management of natural capital in both agro-ecosystems and natural ecosystems across scales. A resilience (capacity to deal with shocks and stress) and Earth system (in the Anthropocene) focus is key to deal with a rising frequency of multiple shocks triggered by regional and global changes unprecedented in human history.

Furthermore, such a comprehensive sustainability paradigm, which not only minimizes environmental impacts but also uses sustainability as the strategy to raise productivity, improve livelihoods, and build resilience and Earth system stability, must meet the dramatic rise in food requirements from a world population of nearly 10 billion by 2050, which most likely will reach 11 billion by the end of the century. Together, these challenges—the social dimension of meeting rapidly rising food requirements and the ecological dimension of building agricultural resilience and Earth system stability—form a social–ecological framework for sustainable intensification of world agriculture.

The criteria and approach we propose, for a paradigm shift towards *SIA*, integrates the dual and interdependent goals of using sustainable practices to meet rising human needs while contributing to resilience and sustainability across scales. Both of these, in turn, are required to sustain the future viability of agriculture. This paradigm shift aims at repositioning world agriculture from its current role as the world's single largest driver of global environmental change, to becoming a critical agent of a world transition to global sustainability within the biophysical safe operating space on Earth.

A transformation to sustainable intensification is thus justified both by necessity (to safeguard global sustainability, a precondition for long-term agricultural viability) and by opportunity (to use sustainable practices as a vehicle for a second green revolution).

DISCUSSION

The necessity of a transformation of sustainable intensification of agriculture

The case for intensification has been well articulated in the literature, both from a perspective of increased production, through high-yielding crops, increased irrigation, mechanization, and the role of chemicals that increase production levels, and from a conservation perspective, in terms of the millions of hectares of forests which otherwise would be converted into farm land, unquantifiable amount of ecosystem services saved, and of some 590 billion tons of CO_2 prevented from being released into the atmosphere. We however underline the fact that much of such intensification has taken place with production increases being the primary, if not the sole, objective, whose negative consequences were understood after-the-fact and are now well documented.

Convincing evidence has emerged that humanity has entered the Anthropocene, where human pressures have reached a planetary scale in terms of ecosystem and resource constraints and rising risks of environmental shocks and large-scale tipping points. A rapid world transformation to global sustainability is increasingly acknowledged as necessary to enable human development within a functioning and healthy environment.

Agriculture is a primary driver of global change and is the single largest contributor to the rising environmental risks of the Anthropocene. It is also in the Anthropocene that the challenge of feeding humanity needs to be resolved. The number of hungry people in the world remains at approximately 900 million. At the same time, with rising living standards of the growing middle class, diets are shifting towards more livestock products that require more land and water resources than vegetarian sources of nutrition. In order to feed the world in 2050, global food production may have to increase by 60–110 %. The challenge is further complicated by the need not only to produce more, but also to manage the entire food supply chain much more efficiently, reducing waste which has reached unacceptable proportions (estimated at 30%) along with promoting better distribution, access, and nutrition. This requires nothing less than a planetary food revolution which, for the foreseeable future, will

largely be driven by the 2.5 billion smallholders that control 500 million small farms and which provide up to 80 % of the food supply in Asia and sub-Saharan Africa while residing in some of the world's most social–ecologically vulnerable regions.

Today, approximately 40 % of the world's terrestrial surface has been transformed to agriculture (crop, fiber, biofuel, and livestock production systems). Appropriate land for food production, however, is a finite resource and hence further expansion could compromise development within Earth's safe operating space (approximately 25% of anthropogenic emissions of greenhouse gases are sequestered on land, of which all occurs in terrestrial non-cultivated ecosystems). If business-as-usual prevails, the expected range of cropland expansion (123–495 Mha per annum) would overshoot the preliminary estimate of the "safe operating space" of 1640 Mha well before 2050.

Sustainable intensification of agriculture, in our proposed paradigm, aims at hunger reduction through biodiversity conservation that secures ecological functions in agricultural landscapes. It will require well-informed regional and targeted solutions drawing upon the strengths of both land-sparing and land-sharing approaches underpinned by strategic land-use planning and allocation across local, regional, and basin scales. Fischer et al. (2008) conclude that land sparing is readily compatible with optimization methods that attempt to allocate land uses in the most efficient way, while sustainable agro-ecological systems emphasize heterogeneity, resilience, and ecological interactions between farmed and unfarmed areas. Both social and biophysical factors influence which approach is feasible or appropriate in a given landscape. Our approach in this study seeks to draw upon the strengths of each approach, although the focus of this study is on transforming agricultural systems into sustainable agro-ecological systems. As mentioned above, however, conservation measures including protected area habitats, areas co-managed with local communities, and indigenous reserves are all potentially viable sustainable intensification strategies.

Our current agricultural inputs are also a challenge. Agriculture is the single largest user of freshwater in the world, with 70 % of the totally withdrawn water of almost 6000 km^3 $year^{-1}$ being diverted for agriculture, which has resulted in approximately 25 % of the world's major river basins no longer reaching the ocean. Agriculture is the world's largest contributor to altering the global nitrogen and phosphorus cycles. Anthropogenic uptake of N from the atmosphere (for industrial and intentional biological fixation of N) today exceeds the natural global uptake of N for biomass growth and currently at approximately 150 Tg N $year^{-1}$ the global uptake far exceeds the boundary value of 62–82 Tg N $year^{-1}$.

Although the focus of this study is on sustainability as the strategy for productive agriculture, it is recognized that a case for sustainable intensification must also tackle the challenge of improving the health and livelihoods of the 2.5 billion smallholder farmers who are the primary stewards of our natural resources. As highlighted in the Global Nutrition Report, improving nutrition status reduces disease burdens, increases income, improves life expectancies, and provides a host of additional socioeconomic benefits to families and communities. These benefits are essential drivers of sustainable development. A key strategy is investing in food that is healthy for people and planet, where nutritional food, low in refined sugars, fats, and meat, can help combat malnourishment and obesity and reduce emissions of greenhouse gases and resource footprints.

Together, these social–ecological pressures pose an unprecedented challenge for the global food system, and we can see no other pathway to resolve it other than adopting a paradigm of sustainable intensification, with a dual purpose of (i) enabling a step-change in productivity and resilience and (ii) averting unacceptable global environmental risks.

Transforming sustainable intensification of agriculture

Recent efforts in defining *SIA* provide an emerging framework built around the simple principle whereby 'yields are increased without adverse environmental impact and without the cultivation of more land'. Our conclusion is that these definitions are either not concrete enough or only partial. World agriculture must now meet social needs and fulfill sustainability criteria that enables food and all other agricultural ecosystem services (i.e., climate stabilization, flood control, support of mental health, nutrition, etc.) to be generated within a safe operating space of a stable and resilient Earth system, which in turn can be defined from Earth system science applying the planetary boundary framework. This is a comprehensive definition of sustainable intensification of agriculture in the Anthropocene.

Recognizing the central role agriculture plays in determining and regulating Earth's resilience, and the sustainability criteria for agriculture, there is a strong case for adopting sustainable intensification of agriculture as the strategy to meet twin objectives for people and the planet. The "human goal," adopted by the UN Sustainable Development Goals (SDGs) in 2015, is to eradicate hunger and poverty by 2030 (which will require >50 % increase in food production). The global sustainability goal is supported by the SDG goals and targets 2-*Healthy food for all*, 6-*Sustainable freshwater*, 12-*Sustainable Consumption and Production*, 13-*Decarbonising climate system under* 1.5–2 °C, 14-*Sustainable oceans*, and 15-*Halt biodiversity loss*) and can only be translated as the UN SDGs setting out to feed humanity this within a safe operating space of a stable and resilient Earth system. Together, these integrated goals will require a doubly green revolution within ambitious and absolute targets for sustainability: in principle (1) net zero emissions of greenhouse gases, (2) very low or zero expansion of agriculture into remaining natural ecosystems, while restoring others providing vital ecosystem services, (3) zero loss of biodiversity, (4) drastic reduction in excessive use of N and P (recycling nutrient flows), and (5) major improvement in water productivity and safeguarding of environmental water flows. These will require, among others, conducive legal and institutional frameworks, incentives, rights, infrastructure, and support services that farmers will need for implementation.

From these social–ecological criteria emerges a clear definition of sustainable intensification: adopting practices along the entire value chain of the global food system that meet rising needs for nutritious and healthy food through practices that build social–ecological resilience and enhance natural capital within the safe operating space of the Earth system.

Nature-based solutions for sustainable intensification of agriculture to build prosperity and resilience:

Evidence increasingly shows that sustainable agricultural practices can raise productivity and meet sustainability criteria. A recent WRI report (2013) documents a worldwide range of sustainable management practices of land, water, and biodiversity in agro-ecosystems that increase productivity. A key part of the journey to long-term *SIA* requires safeguarding not only local (on-farm) productivity through sustainable practices, but also ecological functions

across scales, from watershed, to basin, region, and Earth system scales, to avoid, e.g., loss of rainfall during future growing seasons. It furthermore requires building the capacity to deal with rising frequency and amplitude of shocks and stresses as a result of global changes (e.g., droughts and floods exacerbated by climate change; disease outbreaks promoted by globalization).

For example, with rising risks of water shocks at the local scale—droughts, floods, and dry spells, it is increasingly important to manage water across scales—from local farm fields to watersheds and river basins. Spatial planning strategies are required to safeguard multi-functional landscapes, with a diverse set of ecosystems that are able to dampen the effects of storm-floods and maximize sub-surface flows of water rather than erosive surface runoff. Wetlands, meandering rivers, forests, and landscape mosaics are important natural capital assets that build resilience. Moreover, watershed and river basin management is required to safeguard rainfall. In many parts of the world, a large portion of rainfall (often >50 %) is convective, originating from local scale to meso-scale vapor flows, in particular from upwind evaporating forests contributing moisture flows that generate rainfall downwind. This so-called moisture feedback is common to the Sahel region where moisture from the West African rainforests in the south provides rainfall on the semi-arid savannah in the north. These examples demonstrate the importance of managing water at the watershed and regional scale in order to secure rainfall and therefore future food production at the local scale. This landscape approach needs to be nurtured and facilitated by a social–ecological framework for policy design and on-ground implementation.

SIA requires a radical refocusing of food production that encapsulates the twofold aims of increasing yields and the ecosystem services provided by agriculture. In some areas, increases in yield will be compatible with environmental improvements. In others, yield reductions or land reallocation will be needed to ensure sustainability and deliver benefits such as biodiversity conservation, carbon storage, flood protection, and recreation. An overall increase in production does not mean that yields should increase everywhere or at any cost: the challenge is context and location specific. Hence, *SIA* is about strategic land-use planning to maintain and improve the interacting stocks and flows involving water, nutrients, energy, carbon, and biodiversity across landscape mosaics of natural, semi-natural, and agricultural land uses, so that multi-functionality of the whole landscape is manageable across scales from local to basin to national levels.

From a production perspective, *SIA* should now entail a three-step approach: (1) at the basis be as resource efficient as possible combining locally relevant crop and animal genetic improvement and practices that minimize inputs and close nutrient, carbon, and water cycles, (2) adopt practices that build landscape-scale resilience by sustaining ecosystem functions and services, such as water flows and biodiversity, and (3) connect thinking, planning, and practice across scales to fully grasp field to biome and global interactions in the Anthropocene. This must go with improved and more equitable access to knowledge and resources including land tenure, common property, markets, and social relations. Building on the work of Pretty et al. (2011) and others, a paradigm shift towards *SIA* translates to some key operational strategies:

- Plan and implement farm-level practices in the context of cross-scale interactions with catchments, biomes, and the landscape as a whole. Maximize farm-level

productivity by maximizing ecological functions, from moisture feedback to disease abatement, across scales.

- Integrate ecosystem-based strategies with practical farm practices, where natural capital (soil, biodiversity, nutrients, water) and multi-functional ecosystems are used as tools to develop productive and resilient farming systems.
- Develop system-based farming practices that integrate land, water, nutrient, livestock, and crop management.
- Utilize crop varieties and livestock breeds with a high ratio of productivity to use of externally and internally derived inputs.
- Adopt circular approaches to managing natural resources (e.g., nutrient recycling) and mixing organic and inorganic sources of nutrients.
- Harness agro-ecological processes such as nutrient cycling, biological nitrogen fixation, allelopathy, predation, and parasitism.
- Assist farmers in overcoming immediate SIA adoption barriers and build incentives for their sustained adoption, rendering the ecological approach profitable in the long run.
- Build robust institutions of small farmers, led especially by women, which enable an equitable interface with both markets and government.

Sustainable intensification can deliver more food, better ecosystems, and improved livelihoods:

Scientific and practical evidence clearly indicates that agriculture can shift from "foe," in terms of being the single large contributing sector to global environmental risks, to "friend," thereby contributing to global sustainability, and, in so doing, build natural capital and resilience, while increasing productivity and improving livelihoods. The sources of sustainable practices range across all areas of agricultural development, in soil tillage systems, water resource management, crop and nutrient management, livestock practices, integrated landscape management, pest management, and management of ecosystem services are already evident and what is required is a scaling up. For example:

- The Comprehensive Assessment of Water Management in Agriculture (2007) showed that there is a large untapped potential in upgrading rainfed agriculture in savannah regions (covering 40 % of the Earth's surface) by enhancing rainwater harvesting. As an example, in semi-arid areas of Niger and Burkina Faso, small-scale farmers use planting pits to harvest rain water and rehabilitate degraded land for the cultivation of millet and sorghum. In Burkina Faso alone, these practices have helped rehabilitate up to 300 000 hectares of land and produce an additional 80 000 tons of food per year. In addition, in southern Niger, farmers are innovatively regenerating and multiplying valuable trees on their lands, and this has improved about 5 million hectares while producing more than 500 000 additional tons of food per year resulting in improved food security for about 3 million people. Other ecosystem benefits registered included reduced wind speed and evaporation, and incomes for women from different products of baobab up to $210 per household per year.

- In Ethiopia, farmers capture flood water and runoff from ephemeral rivers, roadsides, and hillsides using temporary stone and earth embankments, to irrigate crops and pasture. In the central and western part of the country, total irrigated land is approximately 65 500 ha, and some 344 000 (approximately 90 %) of the households have benefited from doubling of sorghum yields as well as 75 % sustainable expansion production of pepper, onions, and tomatoes. Other ecosystem benefits have included improved moisture and fertility in the cultivated fields and reduction of downstream flooding.
- In Brazil, conservation agriculture (CA) which is practiced on over 25 million ha (accounting for over 25.5 % of arable land) is defeating erosion and drought. For example, severe drought in 2008–2009 caused an average yield loss of 50 % among conventional maize producers; producers who applied CA, however, experienced smaller losses of around 20 %, demonstrating greater resilience of the latter system.
- Too often, agro-ecosystems have been considered as separate from other natural ecosystems and insufficient attention has been paid to the way in which services can flow to and from the agro-ecosystem to surrounding ecosystems. Recent research illustrates that an ecosystem services approach to food security using a case study from the Zomba district of Malawi allows key issues in food security/environmental stability to be addressed, including scale, the identity of beneficiaries, trade-offs, and the winners and losers from management and mitigation strategies. The study illustrates the power of an ecosystem services approach to strategic land-use planning and implementation.
- Science and innovation that strengthens sustainability, while improving productivity and on-farm profits, is possible. Such systems have been developed in Australia and elsewhere and have been adopted by grain growers who are moving increasingly to conservation farming techniques, such as no-till farming—improved agronomy through more sophisticated crop rotations to minimize nutrient leakage and maximize nutrient cycling, interfaced with integrated weed and pest management options that rely less on chemicals.
- In the southern Indian state of Andhra Pradesh, a million farmers have come together, in an FAO-supported project, to restore depleted groundwater tables, adopting an approach to governing the commons delineated by Nobel Laureate Elinor Ostrom. Food security is increased, utilizing ecosystem services, without exhausting the endangered resource.
- Rehabilitating degraded landscapes in the Highlands is a high-priority of the Ethiopian government and its partners. Research by CGIAR Centers and programs working with national partners has helped lay the groundwork. An ICRISAT-led activity is promoting integrated watershed management in the Yewol watershed in the Amhara Regional State, Ethiopia. By strengthening local capacity, facilitating collective action, using research to identify niches for integration of technologies at farm and landscape scales, and introducing system compatible technologies, the project has led to improved productivity, crop diversification, improved downstream water availability, and strengthened livelihoods for an estimated 15 000 beneficiaries.

CONCLUSION

Adopting a livelihood-centered paradigm for sustainable intensification within planetary boundaries is a major challenge for research and development that will require new approaches to how research for development is formulated, managed, and executed.

Pursuing *SIA* will entail approaches that integrate social and natural sciences, in solution-oriented knowledge generation that couples academic and practical knowledge through co-design and co-development of research. The implementation of *SIA* will require an understanding of the political economy in which food is traded and prices are determined and the business economy along the value chain from field to consumer. A major reason why farmers persist in growing water-intensive crops even in water-scarce regions is that State support for prices and procurement is limited to such crops and is not available for more ecologically appropriate crops such as pulses and millets. The result has been the emergence, for example of the "Punjab Water Syndrome," where falling water tables combine dangerously with waterlogging in other parts of the state in India. However, the aforementioned could be addressed through innovative incentive-based approaches that result in distinct behavior changes.

A lasting paradigm shift will require the ability to place research into policy and enable large-scale change. Influencing policy requires an understanding of the power dynamics and political systems that both enable and undermine the shift to *SIA*, associated improvements in livelihoods, and protection of the environment. Institutional trust will need to be built among the many stakeholders in the food system, all of whom will be required to make compromises. While *SIA* needs to be central to the way we produce food in the future, it also needs to be integrated within a nexus of strategies aimed at achieving food system sustainability, in the broadest sense of the phrase.

It should be recognized that *SIA* is a new, evolving concept, and its meaning and objectives subject to debate and contest. Sustainable intensification is only part of what is needed to improve food system viability and sustainability and is not synonymous with food security. Both sustainability and food security have multiple social, ethical, and environmental dimensions. Achieving a sustainable, health-enhancing food system for all will require more than just changes in agricultural production, essential though these are. Equally radical agendas will need to be pursued to reduce resource-intensive consumption and waste and to improve governance, e.g., on trade, incentives and equity. Much hope has been generated by India's 12th Five Year Plan, which adopts a paradigm shift in water resource management, exactly along the lines proposed in this study. A promising development is the emphasis in the strategic plan of the CGIAR until 2030, which places reduced poverty, improved food and nutrition security for health, and improved natural resources and ecosystem services, as its three highest level system outcomes. As the CGIAR played a pivotal role in the 1st Green Revolution, this creates the potential framework for a 2nd Green Revolution based on *SIA* principles.

Similarly, FAO pursues a strategic transformation, which endorses an ecosystem approach in agricultural management for sustainable crop production intensification, provides associated policy advice, and envisages a vision of sustainable food and agriculture that merges access by all to nutritious food with ecosystem-focused natural resources management.

The shift outlined in this study demands a new framework for research and development. Major productivity enhancements are required, and the strategy is through sustainable intensification of agricultural practices for livelihoods that build farm, community, and biosphere resilience. New research and development is required to advance fresh integrated whole-of-systems approaches for sustainable intensification, which can inspire and influence all domains involved in agricultural development, from economics to biotechnology.

We believe one strategy forward is the investment in spatially concentrated major "grand experiments" where knowledge from different domains, ranging from irrigated to rainfed agriculture, ecology and agronomy, equity to business development, work together to pilot sustainable intensification at scale (e.g., in a region or basin), to pool experience, explore synergies and trade-offs, testing the hypothesis that sustainable intensification can deliver food, livelihoods, and resilience, while contributing to development within Earth's safe operating space. These would be large R&D investments. They would deviate from the normal business-as-usual approaches of discipline by discipline, sector-by-sector, scale-by-scale approaches to agricultural development. They would be system-integrating and innovative ventures, and thus challenging but, as argued in this study, necessary. Evidence strongly suggests that sustainable transformations of agricultural systems are direly and urgently required to meet World and Earth needs.

REFERENCES

[1] Altieri MA, Funes-Monzote FR, Petersen P. Agroecologically efficient agricultural systems for smallholder farmers: contributions to food sovereignty. *Agronomy for Sustainable Development*. 2012;32:1–13. doi: 10.1007/s13593-011-0065-6.

[2] Awulachew, S.B. 2010. *Irrigation potential in Ethiopia: constraints and opportunities for enhancing the system*. Colombo: International Water Management Institute (IWMI).

[3] Beddington, J., M. Asaduzzaman, M. Clark, A. Fernández, M. Guillou, M. Jahn, L. Erda, and T. Mamo, et al. 2012. *Achieving food security in the face of climate change: Final report from the commission on sustainable agriculture and climate change*. Copenhagen: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS).

[4] Binyam AY, Desale KA. Rain water harvesting: An option for dry land agriculture in arid and semi-arid Ethiopia. *International Journal of Water Resources and Environmental Engineering*. 2015;7:17–28. doi: 10.5897/IJWREE2014.0539.

[5] Burney JA, Davis SJ, Lobell DB. Greenhouse gas mitigation by agricultural intensification. *Proceedings of the National Academy of Sciences of the United States of America*. 2010;107:12052–12057. doi: 10.1073/pnas.0914216107.

[6] Carpenter SR. Eutrophication of aquatic ecosystems: bistability and soil phosphorus. *Proceedings of the National Academy of Sciences of the United States of America*. 2005;102:10002–10005. doi: 10.1073/pnas.0503959102.

[7] CCICED (China Council for International Cooperation on Environment and Development). 2014. *Institutional Innovation of Eco-Environmental Redlining, CCICED Special Policy Study Report*. CCICED 2014 Annual General Meeting 2014.12.1.

[8] CGIAR. 2015. *CGIAR strategy and results framework 2016–2030. Redefining How CGIAR does business until 2030*. CGIAR Consortium Office.

[9] Comprehensive Assessment of Water Management in Agriculture. 2007. In *Water for food, water for life: A comprehensive assessment of water management in agriculture*, ed. D. Molden. London: Earthscan, and Colombo: International Water Management Institute.

[10] Conway G. *The doubly green revolution: Food for all in the twenty-first century*. Ithaca, NY: Comstock Publishing Associates; 1997.

[11] Conway G, Waage J, Delaney S. *Science and innovation for development*. London: UK Collaborative on Development Sciences; 2010.

[12] Daily GC, Zhiyun O, Hua Z, Shuzhuo L, Yukuan W, Feldman M, Kareiva P, Polasky S. Securing natural capital and human well-being: Innovation and impact in China. *Ecology*. 2013;33:677–685.

CHAPTER 4

AGRICULTURE AND FOOD IN THE AGE OF GLOBALIZATION

Sunil Kumar, Assistant Professor
College of Agriculture Sciences, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India,
Email Id- sunilagro.chaudhary@gmail.com

ABSTRACT:

This chapter explores the complex subject of globalisation as it pertains to food and agriculture. It examines the historical background and offers a thorough definition of globalisation, highlighting the significance of declining transaction costs and improvements in communication and transportation technology. The chapter also looks at how different countries have incorporated their agricultural economies into the world market, taking into account things like infrastructure, geography, infrastructure, and technology adoption. As rising countries traverse the world of agriculture and food, it also looks at the possibilities, potentials, and constraints they encounter. Decreased transaction costs and the elimination of trade and investment restrictions are driving factors in the continuous process of globalisation. Increased economic interconnectedness, fast trade and capital flow growth, and worldwide production integration inside multinational businesses are the results of this. Even though these developments have increased participants' income significantly, there are some worries about potential marginalisation of nations or social groups, difficulties managing agricultural diseases and pests, threats to cultural heritage, and increased dependence on a small number of strong entities. As a whole, this chapter offers an in-depth analysis of the intricate processes of globalisation in agriculture and food. It emphasises the historical background, significant forces, and varied effects on various countries and social groupings. Policymakers, academics, and stakeholders must negotiate the possibilities and problems brought about by globalisation in the area of agriculture and food if they are to succeed.

KEYWORDS:

Agriculture, Food, Globalization, Managing Agricultural.

INTRODUCTION

The prior chapter concentrated on how trade and trade policy function as key drivers of growing market integration. In order to further the research, this chapter on globalisation will identify other important elements that fuel economic integration on a global scale and assess those factors' primary impacts on food and agriculture. Three main components are used to present this. The definition of globalisation is given in the first section, along with a description of its historical background. The significance of elements that lower transaction costs is emphasised, particularly the effects of new transportation and communication technologies. The second part outlines the key aspects of agricultural globalisation and explains why some nations have been able to successfully integrate their food and agricultural economies into the fast expanding global markets, while others have mostly failed to do so. This covers things like a country's capacity to accept foreign knowledge and technology, openness to commerce and financial flows, and physical location-related things like infrastructural endowment. The third section discusses the possibilities, potential, and restrictions that emerging nations may encounter as they become more integrated into the world of food and agriculture.

The process of globalisation is continuous. The continuous process of quick global economic integration made possible by decreased transaction costs and lowered restrictions on the flow of capital and products is referred to as globalisation. The world's economies are becoming more interdependent, trade flows are expanding quickly, money flows are increasing, and production is becoming more globally integrated, often organised inside and across multinational businesses. Globalisation has been largely fueled by a dramatic decrease in transaction costs, which has been made possible by improved communication and transportation infrastructure as well as innovations in the management of intricate logistical operations. The systematic removal of trade and investment obstacles has also increased trade and money flows. Those who took part in this procedure have seen enormous income increases. In general, producers' returns on investment have grown as a result of their integration into a bigger and more competitive market, while consumers now have access to a wider range of goods at cheaper costs [1], [2].

Numerous worries have also been raised as a result of the international economy's increasing integration. The main worry is the increasing marginalisation of whole nations or social groupings inside nations. In spite of serious attempts to open up to international commerce and financial flows, many nations have, in certain circumstances, been excluded from the process of global economic integration and progress. Over the 1990s, quickly integrating economies had a per capita income growth rate of more than 4% p.a., whilst less integrated nations saw a 1% annual decline in per capita income (World Bank, 2001e). There are worries that illnesses and pests may be difficult to manage locally due to the agricultural trade's fast expansion. Furthermore, there are sociocultural worries that globalisation might obliterate the traditional societal and social ties that have developed over generations, as well as cultural legacy (including food practises). Last but not least, there is widespread worry over a rise in economic, social, and cultural dependency on a small number of powerful nations or businesses, which is considered as having the potential to destabilise whole communities.

Although the word "globalisation" has just lately been used, its primary drivers and effects have been around for a while. Global economic growth in the past has been characterised by similar processes, but on a smaller scale. Better transport and communication technology in particular have always had a significant acceleration effect on global integration. The development of economic integration is not constant, according to a look back. When new technologies are broadly accepted globally, it often happens in waves. The liberalisation of trade and investment is also being discussed and carried out in stages. Technological progress and liberalisation may reinforce one another and produce especially observable waves of globalisation. Major advances in communication and transportation technologies, most notably the Internet, mobile phone technology, and just-in-time systems, as well as a number of initiatives to liberalise international trade and investment flows, are what are driving the current wave of globalisation.

During the second part of the nineteenth century, there was the first wave of globalisation. A combination of advances in communication and transportation technology led to the first wave of fast global integration, which started in the second part of the nineteenth century. The switch from sail to steamships, which led to a significant decrease in transatlantic transportation costs as well as speedier and more dependable links, enhanced trade between continents. Agriculture-related trade, which is often characterised by bulky, perishable, or both, saw a significant uptick. Grain and oilseed commerce over the Atlantic, which had previously been constrained by high transaction costs, increased dramatically. This resulted in the creation of new land, especially in the Midwest of the United States and in certain

regions of Australia. Lower transaction costs heightened competition, brought about a significant downward pressure on prices, and led to both a growing convergence of commodity prices across continents. The advent of the railways further accelerated agricultural trade and caused a further and sharp reduction in transportation costs within continents. For instance, a bushel of wheat cost 60 cents in Chicago in 1870 but cost twice as much in London. The main cause of the disparity was the expensive travel from Chicago to London. Between 1865 and 1900, transport costs between Chicago and London through railways and steamships1 decreased to 10 cents per bushel, and as a result, wheat price differentials also decreased [3], [4].

The amount of international commerce as a whole, market shares, and revenue were all significantly impacted by the drop in transaction costs. For example, American exports of grain and meat to Europe rose from US$68 million in 1870 to US$226 million in 1880, increasing both the welfare of European customers and the earnings of American farmers. Together with less expensive food imports, the upgraded transportation infrastructure decreased costs for domestic shipments and improved local and regional food security. This resulted in years of "lower agricultural production without famine" in Europe for the first time in history. The capacity of international transportation expanded by more than 500 percent between 1850 and 1913. The variety of goods moved between and between nations and continents was also greatly increased by tankers and ships with refrigeration facilities.

DISCUSSION

Labour expenses and labour mobility were also impacted by lower transportation costs. To cultivate the newly accessible land, sixty million people travelled from Europe to North America and Australia. Due to the abundance of land, many immigrants were able to earn incomes that were far higher than those they had been accustomed to in Europe. It thus led to a relative workforce scarcity and an increase in salaries both in absolute terms and relative to land costs inside Europe. All globalising areas saw a reduction in wage disparities as a result of immigration. "Irish wages are said to have increased by 32%, Italian wages by 28%, and Norwegian wages by 10% as a result of emigration. According to Lindert and Williamson (2001), "Argentine wages are thought to have fallen by 22%, Australian wages by 15%, Canadian wages by 16%, and American wages by 8% as a result of immigration. Indeed, trade and financial flows were probably less significant than migration.

The reaction after 1914. After the First World War, several countries tightened their border controls and changed their trade policies. The idea behind the tariff hike was that stronger protection would aid in the recovery of domestic businesses damaged or destroyed by the war. Europe was the origin of the process. Yugoslavia, Hungary, Czechoslovakia, Bulgaria, Romania, Belgium, the Netherlands, France, Germany, Spain, and Italy all increased their import duties to levels similar to those before to the conflict. Even a free trade country like the United Kingdom acknowledged that "new industries since 1915 would need careful nurturing and protection if foreign competition were not to again reduce Britain to a technological colony."

When the Hawley-Smoot Tariff Act was enacted by the US Congress in June 1930, the US joined the new protectionist trend. A significant rise in agricultural tariffs was made, both in absolute terms and in comparison to industrial ones. Other nations passed retaliatory trade regulations in response to the sudden rise in US tariffs. Global commerce was slowed down by the soaring tariff hikes, which also largely undid the liberalisation brought about by the first wave of globalisation. Between 1929 and 1933, imports into the United States decreased by 30%, while exports decreased by approximately 40%. The abrupt decrease in commerce

made the domestic economic situation worse, and the American depression became worse and eventually swallowed a large portion of the rest of the then-economically connected globe.

1945–1980: the second phase of globalisation. After the Second World War, a new wave of internationalism was sparked by the knowledge gained during the interwar period's return to protectionist measures. However, the next wave of trade liberalisation was more selective in terms of the nations and items it covered. By 1980, the obstacles to trade in manufactured goods between developed and developing nations had mostly been eliminated, but only for those basic commodities that did not compete with agriculture in the developed countries had the trade barriers for agricultural products from developing countries been decreased. In contrast, the majority of emerging nations had put up trade barriers to prevent imports from both other developing nations and from wealthy nations.

The impact on trade flows that followed was quite unequal. The second wave of globalisation was a resounding success for wealthy nations. The interchange of products was considerably increased by more open commerce between them. Scale economies were made possible for the first time by the importance of global specialisation in manufacturing. As a result, the developed nations' earnings increased in comparison to the rest of the globe. It prevented emerging nations from taking use of their comparative advantage in labor-intensive manufacturing because it continued the North-South pattern of trade, which involves the exchange of manufactured goods for basic commodities that need a lot of land. Furthermore, as will be covered further below, many emerging nations established a policy framework that did not encourage deeper integration into the globalising world economy.

The work of Raul Prebish had a major impact on the economic policy approach used in many developing nations in the 1950s and 1960s. Prebish established the following relationship between the relative growth rates of an economy in comparison to its trading partners and the income elasticities for its exports and imports: gi / gw = ex / em, where gi and gw are the trend growth rates of the economy and the rest of the world, and ex and em are the export and import income elasticities. This relationship was established under the assumptions of balanced trade and price stability.

This connection has a clear policy message: for a nation to expand faster than the rest of the world, its export elasticity must be greater than its import elasticity. However, the reality in emerging nations was the exact opposite. They typically imported manufactured items with high income elasticities and exported primary goods with low income elasticities. Because of this, it was considered that expansion without a balance-of-payment restriction was impossible without a persistent decline in the real exchange rate or a sustained buildup of foreign debt. This so-called "elasticity pessimism" served as the major justification for the import substitution policies of the time.

Industrialization that replaced imports was seen for the most of the 1950s and 1960s as a route out of this impasse. ISI was founded on the principle that defending native manufacturers against imports might encourage domestic investment and technical advancement. It is debatable if and how much ISI aided or impeded progress. The so-called "consensus view," on the other hand, emphasises that ISI policies were at the root of the issues that many of its adopters encountered in the decades after they opened up their economy. However, there are reports that ISI was somewhat successful, particularly in increasing domestic investment and productivity. Numerous economies in Latin America and the Near East had strong development under ISI policy regimes, it has been emphasised.

However, there is general agreement that ISI was a poor solution to the economic turmoil of the 1970s, which saw the Bretton Woods system of fixed exchange rates abandoned, two significant oil shocks, and other commodities boom-and-bust cycles. ISI policies caused greater input costs for agriculture, which resulted in less effective protection, or implicit taxation. In addition to explicitly taxing production and exports, ISI tactics significantly hampered the expansion of agricultural exports and impeded developing nations' inclusion into the world's agricultural markets. In general, from 1960 to 1984, there was a bias against agriculture 30 percent less favorable domestic terms of trade for agriculture. The average bias against agriculture reached percentages of 52, 49, and 60 in the extreme examples of Côte d'Ivoire, Ghana, and Zambia, respectively [5], [6].

the present globalisation wave. A fresh wave of globalisation began throughout the latter two decades of the 20th century. Similar to the first wave, which occurred approximately a century earlier, it was caused by a combination of decreasing trade barriers and various technology advancements that significantly decreased transaction costs for movements of people, money, and products. The significant growth in international migration and capital flows, which were less significant during the second wave of globalisation, makes this especially clear. Contrary to its predecessors, this wave of globalisation included a lot more developing nations, even if not all of them were successful in using it for their own advantage. Sub-Saharan African nations in particular did not engage, which caused their wealth disparity with both integrating Asian economies and, much more so, the fully globalised economies of the North, to expand.

By taking use of their comparative advantage of cheap and plentiful labour, the majority of East Asian nations were able to realise significant gains. Some nations in the Near East/North Africa area and Latin America were also able to integrate quickly. An above-average move towards manufacturing exports is a characteristic of successful integrators. China, Bangladesh, and Sri Lanka, for example, already have manufacturing export percentages that are higher than the global average of 81 percent. Others are quickly catching up to the global norm, including India, Turkey, Morocco, and Indonesia. Successfully globalising emerging nations have seen significant increases in their exports of services, which is another significant trend. Early in the 1980s, commercial services represented 17% of rich countries' exports but just 9% of those of developing nations. In the former group, the export proportion of services climbed marginally during the third wave of globalisation to 20 percent, while in emerging nations, the percentage almost doubled to 17 percent.

Freer trade and policies that are proactive

The key advancements in international commerce in agriculture, its significance to all trade, and the structural changes that have occurred over the last 40 years. Additionally, it included an outline of the trade challenges that are anticipated to occur as a result of the anticipated changes in trade flows during the next 30 years. The potential contribution of commerce to the reduction of poverty and the advancement of development is highlighted in this section.

There has been a lengthy and contentious discussion over the connections between commerce, development, and poverty. While both supporters and opponents agree that freer trade is crucial for boosting global wellbeing, there is significant dispute on whether and how much freer trade can be used by particular nations to advance development and combat poverty. There is also a great deal of dispute on how the transition to freer trade should go, including the timing, order, and pace of liberalisation measures. The section that follows will touch on some of these concerns.

the prevailing opinion. For a very long time, economists have argued that trade liberalisation is beneficial for economic growth, especially in emerging nations. The advantages of openness are thought to result from efficiency improvements brought about by better resource allocation in more open marketplaces. A boost in economic growth is the outcome. More recently, a large number of empirical studies have also shown that increased trade and investment openness has been beneficial for both economic development and the battle against poverty. Edwards and the World Bank's empirical investigations are among the most important ones. The majority of this material is summarized by Wolf. The key findings of the World Bank research are outlined below in light of how significant they are for the current policy discussion. The first is on the connection between development and openness. Dollar and Kraay use an econometric analysis using a sample of 72 developing nations to investigate this link. By focusing on only one openness metric and avoiding some of the problems with past research, the authors reach many significant results.

When population growth was weighted, the per capita income of the "globalizers" group increased by 5% annually in the 1990s, compared to 1.4% for the "non-globalizer" group. Since the middle of the 1970s, growth rates for globalizers have been continuously rising, whereas for non-globalizers they plummeted precipitously in the 1980s and hardly recovered in the 1990s. The globalizers' per capita income is increasing more than twice as quickly as that of industrialised nations, while that of non-globalizers is lagging farther behind. Countries that are open are expanding 3.6 percent per year quicker than others, population-weighted. Accordingly, the average income in a globalising economy would double every 14 years, as opposed to every 50 years in a non-globalizing economy. This growth difference would have significant effects on reducing poverty.

The relationship between economic expansion and the reduction of poverty is the subject of the second conclusion. The argument that the income of the poor grows on a one-to-one ratio with general development is based on an econometric exercise that examined economic growth in 80 nations over the course of four decades. In other words, the poor get a portion of any income increase that corresponds to their current share of the income distribution. "It is almost always the case," the authors write, "that the income of the poor rises during periods of significant growth."

However, some of the figures seem less striking upon closer examination. Averages, particularly when samples are weighted for population, have the tendency to hide significant disparities across nations, which is one explanation for this. The per capita growth rate for the 1990s globalizers drops to 1.5% when using an unweighted average. Additionally, eight of the 24 nations in the group have growth rates that are 1% or below. One-third of the "globalising" nations had lower average growth rates during the 1990s than the "non-globalizing" group, according to further breakdown.

the argument against the prevalent opinion. The fundamental criticism of the majority opinion is that there is a connection between openness and development but not always, or at least not often, a causal relationship. The consensus view, according to its detractors, appears to be an upside-down version of reality when focusing on the causal relationship between trade policy, growth, and poverty reduction. To put it simply, openness is essentially an economic outcome, captured by the ratio of trade to GDP, but not an input, i.e. a policy tool to arrive at higher growth. In reality, they emphasise that many of the most extreme liberalizers have in fact accomplished very little in terms of economic development and poverty reduction, while some of the most successful globalizers are everything but radical liberalizers. They contend that no nation has ever thrived just by allowing foreign investment

and trade, and that almost all of today's developed nations started off with protective tariff barriers in place before lowering them later.

A full and rapid decrease in border protection has shown to be less crucial than adequate domestic policy settings, timing, and sequencing of liberalisation measures in agriculture, according to a number of cases. Some of the most successful agricultural exporters of today began with "policy reforms" after establishing their global competitiveness via import substitution and protection regimes. Success was often based on encouraging export-led development while also focusing on domestic investment and institution-building efforts to encourage risk-taking and entrepreneurship. Another significant role has been the establishment of procedures to guarantee the reduction of surplus capacity, the creation of departure opportunities for underperforming sectors or players, and the progressive opening-up process to international competition [7], [8].

Despite the value of short-term trade protection measures, proponents of rapid and complete liberalisation emphasise that no nation has ever progressed effectively by rejecting international commerce and steady capital inflows. Very few nations have had sustained growth without seeing the percentage of international commerce in their national output rise. In reality, it is difficult to envision how a nation might generate and maintain prosperity if it were cut off from the forces of competition that spur innovation and productivity increase. Furthermore, it is difficult to think that emerging nations would not profit from imported capital goods that are likely to be far less expensive than those produced domestically. Policies that limit capital equipment imports drive up the cost of capital goods domestically and lower actual investment levels. Additionally, exports are crucial since they make it possible to buy capital goods that are imported.

The inward-looking industrial growth strategies of the 1950s and 1960s had a particularly negative impact on the agriculture sector in many emerging nations. Throughout the 1970s and 1980s, the anti-agriculture bias persisted as a policy element in various nations. Imports of capital goods for agriculture were prohibited by import substitution policies, which also increased input prices and often produced sizable negative effective rates of protection. This slowed down real agricultural investment levels and export growth in many emerging nations. Direct taxes on agricultural exports, along with industrial protection, import limitations on capital goods for agriculture, and other policies in certain developing nations have made agriculture less competitive than other industries and compared to rivals in rich nations.

Agriculture development and openness in several nations. The 1990s saw the rapid economic and agricultural growth of Viet Nam, which is now widely considered as one of the decade's most successful development stories. The average annual GDP growth rate throughout the 1990s was 7.6%, which has been continuously high. Agriculture's production has increased at a rate of over 5% annually throughout the same time period, greatly beyond local market need. Three million fewer individuals are undernourished, and poverty has significantly decreased. An key source of demand to support expansion came from export markets. Over the course of the 1990s, the value of agricultural exports increased by a ratio of 3.5, and for a number of commodities including rice and coffee, Viet Nam became a major exporter on the global scene. By the end of the 1990s, the exports of rice and coffee earned around US$2 billion in foreign currency revenues, or roughly 20% of the overall exports of goods from the nation.

With the launch of DoiMoi, Viet Nam's economic reconstruction project, the groundwork was established for the country's quick integration into the global market. The

decollectivization procedure, through which farming families gained the majority of the land, was the centrepiece of the reform. Farmers were permitted to boost market sales at the same time as agricultural levies were decreased. Other fiscal changes, such as the establishment of a Treasury system and the reform of the banking system, which established a safe deposit base and permitted fiscal activities across the majority of the country's rural regions, also benefitted agriculture. These measurements have a significant impact on society, boosting risk-taking and entrepreneurship. Last but not least, DoiMoi provided "return" possibilities to employees in the new enterprises, lowering the danger for internal migrants and hastening the development of rural regions [9], [10].

CONCLUSION

The globalisation phenomenon has had a significant and wide-ranging influence on agricultural and food systems all across the globe. The numerous aspects of globalisation and its effects on the world's food and agricultural industries have been covered in this chapter. The huge reduction in transaction costs has been one of the main forces behind this globalisation. The Internet and mobile phones, two examples of cutting-edge communication and transportation technology, have been instrumental in promoting international commerce. Trade and money movements have also been enhanced by the systematic dismantling of trade and investment obstacles. For individuals that took part in the process, this has led to a significant increase in revenue. Consumers now have access to a greater variety of items at more reasonable rates, while producers have witnessed a rise in their return on investment. In conclusion, globalisation has altered the world's agricultural and food systems. It has expanded commerce, economic interconnectedness, and growth potential, but it has also sparked worries about reliance, inequality, illness prevention, and cultural preservation. As the effects of globalisation on agriculture and food continue to change, it will be important to carefully weigh the advantages and disadvantages of this process when developing new policies and strategies for this crucial industry.

REFERENCES:

[1] C. J. Stevens, C. Murphy, R. Roberts, L. Lucas, F. Silva, and D. Q. Fuller, “Between China and South Asia: A Middle Asian corridor of crop dispersal and agricultural innovation in the Bronze Age,” *Holocene*, 2016.

[2] M. N. N. A. A’liah, “The Functional Food Industry in Malaysia,” *FFTC Agric. Policy Platf.*, 2016.

[3] L. Amaral, A. Coimbra, A. Raposo, and Z. Morais, “Is jellyfish ingestion safe in allergic patients? Preliminary results,” *Allergy Eur. J. Allergy Clin. Immunol.*, 2016.

[4] H. L. Lin, “The resilient landscape: Fijian village gardens in the age of commercial agriculture,” *Taiwan J. Anthropol.*, 2016.

[5] K. Guaman, “Prevalencia del cromosoma filadelfia en leucemia mieloide crónica en pacientes de SOLCA Guayaquil periodo 2006-2016,” *Univ. Espec. Espíritu St.*, 2016.

[6] C. I. Cañón Salazar, *Distributional Policy Effects with Many Treatment Outcomes*. 2016.

[7] X. Zhu *et al.*, “Building the new international science of the agriculture–food–water–environment nexus in china and the world,” *Ecosyst. Heal. Sustain.*, 2016.

[8] M. Noruzi, “Electrospun nanofibres in agriculture and the food industry: a review,” *Journal of the science of food and agriculture*. 2016.

[9] M. M. Haby, E. Chapman, R. Clark, and L. A. C. Galvão, "Agriculture, food, and nutrition interventions that facilitate sustainable food production and impact health: An overview of systematic reviews," *Revista Panamericana de Salud Publica/Pan American Journal of Public Health*. 2016.

[10] D. Bryngelsson, S. Wirsenius, F. Hedenus, and U. Sonesson, "How can the EU climate targets be met? A combined analysis of technological and demand-side changes in food and agriculture," *Food Policy*, 2016.

CHAPTER 5

GLOBALIZATION'S IMPRESSION ON TRADE, AGRICULTURE, AND MIGRATION

Devendra Pal Singh, Assistant Professor
College of Agriculture Sciences, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India,
Email Id- dpsinghevs@gmail.com

ABSTRACT:

With an emphasis on trade liberalisation, foreign direct investment (FDI) in agriculture and food, and the transfer of knowledge via migration, this abstract explores the complex effects of globalisation on numerous facets of economic growth. To highlight the many effects of globalisation on economic growth, it uses examples from Vietnam, China, Sub-Saharan Africa, and other places. The conflicting consequences of trade liberalisation on Vietnam's economy in the 1990s are highlighted in the first part.

While export performance benefitted from free trade conditions and declining tariffs, the nation failed to phase out its own border protection policies and trade-damaging subsidies. Using the coffee crisis of 2000–2002 as a case study, it is shown how policies and subsidies were crucial to the agriculture sector's recovery. The significance of early advancements in the agricultural sector, the incorporation of foreign technology, and support for effective producers are highlighted by comparisons to China's prosperous economic expansion in the late 1970s. The abstract examines the possible advantages and disadvantages of foreign direct investment (FDI) for rural development, with special emphasis on the role of governments in properly channeling FDI and resolving concerns about market domination and unjust contractual arrangements. The interconnectivity of trade, technology transfer, and migration within the framework of globalisation, the abstract emphasises the importance of institutions and policies in maximising the advantages of these processes for economic growth. It recognises that having access to markets and technology is inadequate on its own, and that strong institutions and policies are necessary to harness the full potential of globalisation for wealth redistribution and economic progress.

KEYWORDS:

Agriculture, Economic Progress, Globalization, Migration, Trade.

INTRODUCTION

There is little question that a more open trade environment in the 1990s, when Viet Nam's export performance benefitted from falling tariffs and non-tariff obstacles, also contributed to the success of the decade. Like many other nations, Viet Nam's economy benefited from all other aspects of globalisation, including less expensive and quicker communications and transportation. Although Viet Nam benefited from better market access overseas, it took the country a long to end its own border protection measures and trade-damaging subsidies. In particular, subsidies and increases in agricultural import tariffs have been made during the course of the 1990s 5 in an effort to boost agricultural exports and output. Forde even contends that the first, rapid liberalization process in the early 1990s slowed down overall development by preventing the nation from amassing sufficient knowledge and competitiveness.

In addressing the coffee crisis of 2000–2002, which badly impacted a big portion of Viet Nam's flourishing agricultural economy, policies were also crucial. For instance, a sizable assistance programme was started to aid coffee producers in regaining their competitiveness on the global stage. Subsidies are part of the effort to improve coffee quality and lower production costs. It encourages the construction of more regionally appropriate, smaller warehouses and processing facilities that are suited for the many various coffee-producing areas. It also supports the improvement of coffee varieties. However, the new policy package also started a rationalisation process inside the coffee industry in Vietnam. The most significant initiatives in this regard are undoubtedly changes to the qualifying requirements for the current soft loan scheme. Credit subsidies will only be given to farmers who might be financially successful, not to low-yield growers or inefficient businesses, under the new plan. Parallel to this, growers who are taking part have been granted specific privileges to transition to arabica coffee or to increase the efficiency of their business [1], [2].

Overall, the success of the coffee strategy has likely been attributed to three key elements. To start, governments actively encourage manufacturing, especially production for exports. Second, the government's commitment to providing assistance is restricted to launching the process and assisting the industry in identifying its key competitive advantages. Third, after competition has been established, policies concentrate on supporting competitive producers while cutting down on assistance for those who lack it. Thus, non-competitive producers are urged to leave the market while competitive producers are supported via price troughs.6

Similar changes were implemented in China in the late 1970s, which helped to pave the way for the country's spectacular economic growth that has since made underdeveloped nations envious. The value of exports climbed by a factor of 10, while per capita GDP increased by a factor of nine. Agriculture's production increased, as did agricultural exports, but 76 million fewer people were undernourished. In reality, China was responsible for two-thirds of the gains in the battle against hunger throughout the 1990s, making it the single biggest contribution to the decline in undernourishment.

Simple early improvements in the agriculture sector served as the beginning of this speedy growth process. The so-called home responsibility system, which allowed farmers to sell their produce on the open market after they had met their quota commitments to the state, was implemented and the communal farming system was loosened. The government continued to have a significant role in developing and carrying out agricultural policies. The whole process is best characterised as active experimentation, in which output increased quickly in response to administrative pressure to meet production targets and incentivize production with input subsidies.7 In addition, rules were implemented that encouraged the adaption of new technology from overseas to the local manufacturing environment, eventually allowing domestic researchers to take the lead in creating new applications. In Section 10.2.3 below, the significance of incorporating outside information and technologies is highlighted. Finally, domestic measures supported the eviction of ineffective farmers from the agricultural sector. In order to reduce transaction costs and boost the competitiveness of farmers and food processors in China's hinterland, numerous investments have recently been made in rural infrastructure. These measures include the creation and promotion of township and village enterprises that assisted in absorbing the surplus labour of rural areas.

Sub-Saharan Africa, in contrast to Vietnam and China, mostly failed to seize the expanding trade prospects in international markets. For instance, its percentage of world exports decreased from 3.1 percent in the middle of the 1950s to 1.2 percent in 1990. This translated into a loss of export revenue of around US$65 billion annually. A World Bank research that sought to pinpoint the causes of this drop found that foreign trade restrictions had no impact.

Tariffs, on the other hand, provided considerable competitive advantages over commodities imported from certain other areas if preferences were taken into consideration. They were even a benefit for the site of commodity processing in Africa as compared to some other foreign locales.9 Similarly, the weak export performance of Africa was not explained by non-tariff market restrictions. In actuality, fewer than half of Africa's exports are subject to NTBs compared to the average for the group of developing nations.

It is challenging to infer broad lessons from a few examples of achievement. However, there are a few traits that effective globalizers have in common. To begin with, they all support domestic production via incentives and outward-focused policies. Furthermore, freer trade policies are implemented concurrently with or after domestic policy changes. The nation examples also imply that openness in and of itself is not likely to be a necessary condition for effective integration into the global economy. The ability of farmers to operate in the proper domestic incentive system, the reduction of incentives where unproductive excess capacity is created and exit policies are in place, and the minimization of adjustment and reallocation costs, for example through appropriate timing, sequencing, and pacing of policy measures, appear to be more crucial [3], [4].

Greater capital mobility and the growth of multinational corporations

Another aspect of globalisation has been the quick increase in global money movements, which have accompanied the development of trade flows. Foreign direct investment is the primary tool used by TNCs to extend their reach beyond national boundaries and has been the driving factor behind this fast expansion. TNCs have an impact on trade and consumption patterns as well as output levels and composition, production technology, labour markets, and standards via FDI. TNCs have the capacity to integrate nations into international markets thanks to their control over resources, access to markets, and creation of new technologies. The distribution, amount, and flows of foreign direct investment. Annual worldwide FDI inflows surged by more than six times, from US$200 billion to US$1 270 billion, between 1989/94 and 2000. By a wide margin, FDI growth outpaced trade flow increase. The average annual growth rate of FDI between 1991 and 1995 was 21% compared to 9% for exports of products and non-factor services. Between 1996 and 1999, the gap widened, with FDI increasing on average by 41% while exports only grew by 2%. In contrast to the US$7 trillion in global exports of products and non-factor services in 2000, total sales of overseas affiliates were US$16 trillion. The majority of FDI inflows and outflows were accounted for by developed nations, who also absorbed a significant amount of the inflows.

TNCs and FDI in agriculture and food. The market concentration process in industrialised nations set the groundwork for the huge TNCs that control today's global food sector. In the United States, for example, four meat-packing companies have historically controlled roughly two-thirds of the beef supply, and by the mid-1990s, four companies had control over more than 80% of the beef supply. Other OECD nations' retail food distribution systems similarly exhibit high levels of business concentration. For instance, three companies control more than 75% of the retail food delivery system in Australia.

DISCUSSION

These huge food processors expanded their activities in two main areas as the domestic markets for their goods grew ever more constrained. They began by expanding "vertically" by assuming control of the key activities in the food chain. A completely vertically integrated business with activities that span the whole food chain from "farm gate to the dinner plate" is often the end result of this procedure. The second way they grew was horizontally, or by spreading out into international markets. The typical TNC in food and agriculture was

developed via a process of vertical integration inside the corporation and horizontal development across national boundaries. The terms "food chain complexes" and "food chain clusters" are commonly used to describe these TNCs.

Cargill/Monsanto, ConAgra, and Novartis/ADM are the three food chain clusters with the most sophisticated technology.10 For instance, ConAgra, one of the top three flour millers in North America, comes in fourth place for maize milling. It ranks third in cow feeding, second in slaughter, third in pork processing, and fourth in grill production. It also manufactures its own animal feed. ConAgra subsidiary United AgriProducts distributes biotechnology and agrochemical products globally. Additionally, the firm operates a grain trading business. It is the second-largest food processor behind Philip Morris in terms of retail distribution of processed foods thanks to such brands as Armour, Swift, and Hunt's. The Novartis/ADM cluster also links the many phases of food production, from genetic material and seeds through grain gathering and processing, all over the world, including Mexico, the Netherlands, France, China, and the United Kingdom. Alliances with IBP, the biggest beef and second-largest pork packer in the United States, increase its power farther down the food chain.

The food chain complexes have expanded ownership and control beyond the agricultural downstream sector into key upstream system components, which is a more recent development in the process of vertical integration. For instance, it is believed that just four corporations control 60% of domestic grain processing and 25% of the manufacture of compound feed, while only three firms control over 80% of US maize exports and 65% of US soybean exports. Although market concentration in certain areas of a nation's food system is a well-known phenomenon in many nations, these complexes have expanded their influence beyond national boundaries and have developed vertically integrated or coordinated production chains worldwide.

The establishment of agro food TNC subsidiaries from various parent company home areas organised by host region of the subsidiary, i.e., the extent to which TNCs have dispersed their operations. It demonstrates that the majority of TNCs in the food sector have their headquarters in Western Europe or the United States. Together, they make up around 84 percent of TNCs with international investments. While there are sizable populations in the EU and North America, those from Asia are mostly found there, while those from Latin America are mostly found in neighbouring Latin American nations. The great majority of TNC subsidiaries are located in and operate out of Europe and North America, with the stages of growth serving as both push and pull factors. Significant numbers of TNCs from the EU and the US have also formed international affiliates in developing nations. Asia and Latin America are the most significant regions in both scenarios. For instance, TNCs from western Europe have almost as many international affiliates in Asia or Latin America as they have in North America. Contrarily, Africa has a relatively small number of subsidiaries, and those that it does have are mostly found in neighbouring African nations.

TNCs in agriculture and food: a boon or a hindrance to rural development? Experts from both industrialised and developing nations generally hold the opinion that FDI is a potent accelerator for overall economic growth. The advantages that FDI may bring about for development have been well-documented in a number of recent publications. The World Investment Report's 1999 edition lists five significant benefits that the host nation receives in addition to FDI inflows: access to resources including capital,11technologies, markets, improved managerial skills, and environmental protection. The UN study emphasises that developing countries, notably via increased productivity development, have greatly benefitted from the fast rise in FDI inflows throughout the 1990s. The potential for productivity

increases that TNCs have are highlighted and measured in a number of other sources.12 The potential for productivity gains, according to Baily and Gersbach, is particularly high where TNCs reinvest profits in the host countries, establish forward and backward links with local businesses, improve the performance of a country's firms by supplying it with superior expertise and technologies, and thereby spur economic growth. It should be kept in mind that TNCs are the main source of information and skills that are economically relevant, and that technology flows are becoming more and more significant parts of FDI.

Despite the enormous potential of FDI for rural development, there are a number of arguments against the idea that merely opening a nation's borders to FDI would be the most effective method to reap the rewards. Governments may need to become involved in the process of channelling FDI since there are significant variances in the "quality" of FDI flows. Additionally, because of the FDI package's complexity, governments must choose between a variety of goals and advantages. They could have to decide between investments that bring long-term advantages vs those that do not; the former may result in static returns but not necessarily dynamic ones. Moreover, it is simple to overestimate the amount of FDI that enters developing nations. The majority of the earnings that TNCs make from their investments in developing nations may be returned home. For instance, between 1991 and 1997, an average of 75% of revenues were returned to sub-Saharan Africa each year. Additionally, there may be significant13 costs associated with attracting FDI due to lost tax revenues in the host nation, which must be weighed against the advantages these inflows provide [5], [6].

Additionally, there are worries that TNCs would misuse their market dominance and put more strain on rural areas pay and deprive farmers of their authority via unjust contractual agreements. These worries frequently stem from the idea that the relationships between farmers and TNCs are founded on agreements between unequal parties, with one party being a group of disorganized small-scale farmers with little bargaining power and few resources needed to increase productivity and compete commercially, and the other party being a strong agribusiness that offers production and supply agreements in exchange for inputs and technical advice that allow it to exploit farmers. Smallholder farmers serve as the origin of "buyer-driven supply chains" in the international markets for cocoa and coffee. This disparity in negotiating strength has been widely discussed in these markets. The distribution of advantages throughout the food chain may change as a result of such a disparity in bargaining strength. For instance, the percentage of revenue kept by coffee growers decreased from 20% in the 1970s to 13% in the 1990s, and it is likely to have decreased much more as a result of the sharp collapse in green coffee prices in 2001/02.

But it's also vital to keep in mind that there have been significant domestic variables that have reduced companies' profit margins. Through export tariffs, export regulations, and mandated sales, several emerging nations have sucked the earnings out of the hands of farmers. For instance, cocoa growers in Ghana were forced to sell their produce to the government for as low as a twentieth of the market price during most of the 1970s and the beginning of the 1980s. Likely due to the lack of TNC operations, profit margins for Ecuador's banana producers have also been reduced. The local price of bananas in Ecuador is now set at US$2.90 per box, whereas the export price may reach US$17 per box. The low farm gate price "has squeezed farmers' profits to almost nothing" (source). Contrary to Central America, where TNCs hold practically all banana plantations, over 6 000 small family farm producers dominate Ecuador's banana industry.

Some knowledge about fruitful FDI in agriculture and food. The relationships formed between TNCs and native companies are key determinants of whether and how much a host

nation benefits from FDI. These connections are made between the TNC and the farmers or the local procurement firm in the food business. In the food and agricultural industries, there is a significant opportunity for linkage-intensive FDI. Processing perishable inputs like milk or fresh produce leads to linkage-intensive FDI rather often. It may also be compelled by tariff barriers that reduce the competitiveness of imported products or by logistical impediments. Additionally, TNCs may be subject to land ownership limitations in many developing nations, which may force international affiliates to depend on local producers and make efforts to create new and improve current suppliers. These connections between the national agricultural sector and the overseas affiliate may be quite advantageous for farmers and their cooperatives, and as a result, they have a great deal of potential to promote rural development. Indian field research offers a variety of intriguing insights into how these advantages are produced. It demonstrates that, on average, 93 percent of the raw materials and 74 percent of the other inputs used by the four largest TNCs were obtained locally. The TNCs fostered global development by using the following strategies via these links.

Collaboration in the creation of a product. All four TNCs are working with regional research centres or universities to create new agricultural tools, hybrid crops and vegetables, and cropping patterns that will increase yield. For instance, Pepsi Foods has probably conducted the greatest scientific examination of chiles anywhere, testing more than 215 different types and hybrids of chilli. The production of chilies grown by Pepsi has increased thrice. Pepsi has also created 15 new agricultural tools to make planting and harvesting easier in India. Training and technology transfer.

Through farmer training camps, new hybrid varieties, tools, and techniques have been transferred to suppliers. Pepsi gives its contract farmers full access to a variety of farming tools, hybrid seeds, and plantlets, as well as process knowledge. Through technical bulletins, video demonstrations, slides and charts, and live demonstrations on the use of various agricultural implements, Cadbury India's procurement and extension services team trains potential and current suppliers in new techniques in planting, harvesting, quality control, and post-transplantation care of cocoa crops.

The beginning of contract farming. Farmers are hired to cultivate the crops of the processors on their lands and to provide the processors with the crops at pre-determined pricing and output amounts based on expected yields and contractual area. To this goal, a processor often offers the farmers a variety of inputs, including seeds and seedlings, knowledge of agricultural techniques, routine crop inspections, and crop advice services. Farmers might decide to release a portion of their product from the contractual obligations and sell it on the open market. Farmers get financial support thanks to the engagement of agricultural development banks. As an instance, GlaxoSmithKlineBeecham serves as a surety to allow its suppliers to get bank loans. The productivity of local farms has increased as a result of technology transfer. For instance, local producers in Punjab increased their tomato yields from 16 tonnes per hectare in 1989 to 52 tonnes per hectare by 1999. In general, foreign affiliates could have helped with improved agricultural methods that led to higher earnings and yields [7], [8].

Knowledge exchange and technical innovation on a global scale

The green revolution saw perhaps the greatest significant transfer of outside technology to agricultural practises in underdeveloped nations. The literature provides information on where, how much, and how quickly new technologies have been adopted. This section will explain why certain nations were able to absorb, use, and improve new technology while others were unable to do so. It will attempt to pinpoint the policies that enabled certain

nations to accept technology advancements on a worldwide scale while also outlining why other nations are still having difficulty implementing the improvements that farmers in rich nations have been employing for decades.

The significance of creative adaptation is emphasised in one of the research that has had the biggest impact in this area. Griliches demonstrates that although farmers outside the Corn Belt continued to produce inferior conventional varieties, farmers in Iowa and Illinois had long already chosen high-yielding hybrid maize types suitable for the Corn Belt states. The ability of the farmers has nothing to do with this. Instead, the lack of acceptance and the ongoing technical gap between these maize-growing regions were caused by variations in the agro-ecological circumstances between the Corn Belt and Alabama, together with the sensitivity of hybrid maize to these variations. According to Griliches, "farmers outside the Corn Belt could not reap the benefits of the new technologies until the adaptive research had taken place to make the technologies available to the new environment".

The same often applies when transferring new technology to underdeveloped nations. The many years of American hybrid maize research that tripled American maize yields did not directly assist farmers in the Philippines. Only until the research capability was established to modify the hybrid types to local circumstances in the Philippines did they indirectly benefit from earlier hybrid research in the United States. Farmers in many African nations are still unable to take use of hybrid maize varieties, not because they are opposed to importing the technology but rather because it has not been adjusted for the local growing conditions. Perhaps even more crucially, the success of the green revolution was not or was not largely dependent on the introduction of new technology into developing nations.

There is much of evidence that the superiority of these new varieties was mainly restricted to the places to which these new "foreign" technologies were adapted, even if the new "foreign" technologies, i.e. high-yielding varieties, played a key role. High-yielding rice cultivars outside of their native subtropical regions have been shown by Evenson and Westphal to be successful via the process of adaptation to tropical conditions.14 "The new technologies were made accessible where they were required in the 1950s, after an Indica-Japonica crossing effort financed by the FAO and IRRI that significantly accelerated rice development for tropical environments. Numerous national rice breeding programmes have been set up in tropical settings by 1965. India, for instance, offered 23 programmes around the country. By 1970, there were over 200 rice breeding programmes operating in 40 different countries. Most of them had, and still have, a strong relationship with IRRI, which has acted as a hub for the exchange of novel genetic material.

The contribution of adaptive research to the proliferation of high-yielding rice cultivars during the green revolution was measured by Evenson and Gollin. They demonstrate the critical role national research institutions played in the uptake and dissemination of the novel "technology". Only 17 percent of all new varietal releases since 1965 have come from the International Rice Research Institute, the main external source of the new technology. However, IRRI was crucial in developing the fundamental technology; it was responsible for 65 percent of all new parental variety releases. Even though the issue is complicated by the fact that many of the new technologies are proprietary, the very same factors will likely determine how much the new agro biotechnologies will be adapted and diffused to the economic and agro-ecological environments of developing countries. The majority of benefits are probably going to go to nations who put in place the fundamental infrastructure that encourages adaptation to local conditions. African nations run the risk of falling behind Latin American and Asian nations once again, with Latin America likely to finish in second.

The same variables that allow nations to gain from free markets also play a significant role in determining how well new technology are adopted. The green revolution's experience demonstrates that the mere existence of new productivity-enhancing technologies does not guarantee that these innovations will be successfully adapted. Similarly, lowering border restrictions and opening up to global markets alone won't guarantee that the benefits of increased trade freedom can be fully realised. Both trade and technological transformation need openness, but the institutions and policies that enable nations to take advantage of these possibilities seem to be more crucial. These elements may aid in acquiring the often unspoken information that helps nations to adopt new technologies to the context of home markets, aid them in maximising the demand potential of significant international markets, and help them take advantage of trade regulations. Access to markets by itself is unlikely to result in an exportable surplus. New technologies will not significantly boost production if they are not locally adopted.

Greater inter- and intra-national movement of people due to migration and urbanisation

All three rounds of globalisation have been characterised by significant workforce migration. From 1870 to 1910, the first major wave of contemporary globalisation, roughly 10% of the world's population moved permanently. During the second wave, global migration was far more moderate and geographically constrained. The fundamental reason was that the second wave of globalisation only affected a small number of nations, and where there were significant constraints on migration, tough immigration laws helped to slow down worker flows. The third wave of globalisation saw some relaxation of these restrictions, which had a significant impact on international migration. About 150 million individuals, or 2.3% of the world's population, were foreign residents in 1995. This pool of migrants was distributed about equally across the industrialised and developing worlds. Migrants make up a far bigger portion of the population in developed nations than in poor ones, despite the fact that the population of developing countries is about five times greater than that of industrialised countries. Freer mobility of people has always had a significant impact on salaries in both wealthy and poor countries. Initial variations in growth rates both within and across nations encourage income and wealth disparity, which in turn increases the push on the economy to emigrate [9], [10]. Then, in addition to increasing trade and financial movements, migration itself aids in stopping or even reversing a rise in wage disparity. The flood of low-paying workers drives down wages in immigrant areas while driving up salaries in emigrant countries. When and to the degree that immigrants pay back remittances to their countries of origin, money is likewise redistributed.

CONCLUSION

In conclusion, the development of international commerce and its effects on diverse countries have been numerous and complicated processes. The case studies of Sub-Saharan Africa, China, and Vietnam provide important insights into the range of outcomes that might arise from trade liberalisation and globalisation. The 1990s experience of Vietnam shows the potential advantages of free trade policy. The success of the nation's exports was facilitated by declining tariffs and lowered non-tariff obstacles, as well as advancements in communication and transportation. It also emphasises the difficulties in making the switch from protectionist policies and subsidies to a more competitive economy. Vietnam had to establish strategies to strengthen its agricultural industry and enhance coffee quality as a result of the 2000–2002 coffee crisis, which eventually helped Vietnam recover. In conclusion, the complex global economic environment has many linked components, including the globalisation of commerce, the function of multinational firms, foreign direct

investment, technological adoption, and migration. Each country's experience is distinct, defined by its institutions, policies, and capacity for global change. The takeaways from these case studies emphasise how crucial it is to plan strategically, adapt, and implement inclusive policies in order to maximise the advantages of globalisation while minimising its drawbacks.

REFERENCES:

[1] J. Costa-Font and N. Mas, "'Globesity'? The effects of globalization on obesity and caloric intake," *Food Policy*, 2016.

[2] I. Overland, "Energy: The missing link in globalization," *Energy Res. Soc. Sci.*, 2016.

[3] F. Broner and J. Ventura, "Rethinking the effects of financial globalization," *Q. J. Econ.*, 2016.

[4] W. Liu and M. Dunford, "Inclusive globalization: unpacking China's Belt and Road Initiative," *Area Dev. Policy*, 2016.

[5] J. Srikantia, "The structural violence of globalization," *Crit. Perspect. Int. Bus.*, 2016.

[6] G. Georgiadis and A. Mehl, "Financial globalisation and monetary policy effectiveness," *J. Int. Econ.*, 2016.

[7] A. Kepentingan, dan Tantangan, and P. Rudolf Yuniarto, "Masalah Globalisasi di Indonesia: Antara Kepentingan, Kebijakan, dan Tantangan," *J. Kaji. Wil.*, 2016.

[8] P. L. Schnall, M. Dobson, and P. Landsbergis, "Globalization, Work, and Cardiovascular Disease," *International Journal of Health Services*. 2016.

[9] M. Shahbaz, S. A. Solarin, and I. Ozturk, "Environmental Kuznets Curve hypothesis and the role of globalization in selected African countries," *Ecol. Indic.*, 2016.

[10] G. Bekaert, C. R. Harvey, A. Kiguel, and X. Wang, "Globalization and Asset Returns," *Annual Review of Financial Economics*. 2016.

CHAPTER 6

EFFECTS OF GLOBALIZATION ON FOOD CONSUMPTION PATTERNS, INTERNATIONAL MIGRATION, AND AGRICULTURE-RELATED URBANIZATION

Upasana, Assistant Professor
College of Agriculture Sciences, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India,
Email Id- upasana35954@gmail.com

ABSTRACT:

This extensive abstract examines the complex impacts of globalisation on patterns of food consumption, urbanisation, and migration connected to agriculture. The dynamics of global agriculture and human migration have undergone substantial change as a result of globalisation throughout time. Migration patterns were significantly influenced by agricultural growth rates in the early stages of globalisation, and many industrialised countries today substantially depend on foreign-born immigrants to maintain their agricultural labour force. This phenomenon's many facets are explored in the abstract, including the substantial number of seasonal immigrant agricultural labourers living in the United States, notably those from rural Mexico. It also draws attention to the wider effects on host countries, where skilled employees gain from the flood of unskilled labour while unskilled workers' salaries may suffer, resulting in political turmoil and stricter immigration laws. With millions trying to cross borders every year as a result of immigration regulations and economic incentives, illegal immigration and people trafficking have increased, posing serious problems for governments throughout the globe. Worldwide demographic predictions are considered in the context of urbanisation and internal migration, suggesting a significant rise in the worldwide urban population, mostly centered in developing countries. The effects of these developments on rural communities and agricultural labour groups are significant. Infrastructure is seen as a key component in reducing the effects of geography, with well-developed transport and communication networks playing a major role in fostering economic integration and market access.

KEYWORDS:

Agriculture, Food Consumption, International Migration, Market, Urbanization.

INTRODUCTION

Agriculture-related international migration is impacted by globalisation as well. Migration during the first phase of globalisation was mostly influenced by the rate of agricultural growth. But even today, many industrialised nations look on immigrants who were born abroad as a significant supply of agricultural labour. The majority of rural migrants are drawn to developed nations by the greater pay in the horticulture, fruit, and vegetable industries. For instance, an estimated 69 percent of the seasonal agricultural workers in the United States in 1996 was foreign-born. More than 90% of the seasonal agricultural workers in California, by far the greatest agricultural producer in the country, was foreign-born. The bulk of migrant agricultural labourers in the United States came from communities in rural Mexico. The great majority of immigrants are employed outside of agriculture, with the majority working in low-skill service and manufacturing industries, despite the large concentration of foreign-born employees in agricultural employment.

The majority of agricultural migration is low-skilled workers moving from underdeveloped nations to industrialised countries with better pay situations. As a result, it is unlikely to be linked to many of the common worries that emigration will cause a "brain drain" in developing nations and rob them of their most valuable capital for future growth. In reality, empirical research demonstrates that migrants seldom cut off contact with their source families after migrating, and those who stay behind restructure their consumption and production in reaction to the migrant's departure. Remittances are a common way for migrants to share some of their earnings with their family back home. Even future investments in the rural economies of their native countries might be financed by remittances or funds amassed elsewhere.

The effects on the host nations of immigration are often less clear. While the highly skilled employees in the host countries profit from the influx of unskilled workers from developing nations, the actual salaries of unskilled workers would be affected negatively. Because of the fierce rivalry in the low-wage sector, many host nations have experienced political unrest, which often leads to tighter and tighter immigration regulations.

Illegal immigration and human trafficking grew quickly as immigration laws tightened and economic incentives to immigrate persisted. According to the World Bank, the United States alone receives roughly 300,000 illegal immigrants each year. Many more people transiently enter the country. 1.5 million illegal aliens were detained by American police on the Mexican border in 1999. Within 24 hours, the vast majority of those deported back to Mexico try to cross again. From an estimated 50,000 per year, illegal immigration to the EU increased dramatically in the 1990s. From 50,000 in 1993 to 500,000 in 1999 [1], [2].

Urbanisation and internal migration. International migration has impacted rural communities and agricultural labour forces in both developed and developing nations, as was addressed in the section before this one. International migration has, however, diminished in significance relative to domestic migration, although still being significant for certain areas or nations.

According to the United Nations' demographic projections, a significant share of the population increase predicted throughout the globe between 2000 and 2030 will be concentrated in metropolitan areas. The number of people living in cities was estimated to be 2.9 billion in 2000 and is expected to increase to 4.9 billion by 2030. The cities of emerging nations will see the majority of the rise in the future. By 2030, there will be over 3.9 billion people living in cities worldwide, up from 1.9 billion in 2000, which will almost entirely account for the rise in population in emerging nations. However, only a portion of it is brought on by rising rural-urban mobility. The conversion of rural communities into urban regions and, most significantly, natural urban population increase will both be significant.

These changes in the distribution of the population are significant. Only approximately 20% of people in developing nations were living in cities at the start of the 1960s. The percentage increased to over 40% by 2000, and by 2030, it is anticipated to reach 56 percent. From almost 3:1 in the 1960s to approximately 3:2 in 2000, and then to almost 3:4 in 2030, the ratio of rural to urban populations has decreased. Urbanisation will be most prominent in emerging Asia and sub-Saharan Africa within the group of developing areas. Urbanisation has already advanced to the point that there is limited opportunity for additional expansion in urban populations, at least compared to rural ones, in other emerging countries, particularly Latin America.

Urbanisation in emerging nations has been and will continue to be supported by a number of reasons. These elements are sometimes categorized as push and pull elements, or those that either encourage individuals to leave their rural communities or draw them to metropolitan

areas. A dearth of non-agricultural job opportunities, poor and falling profitability of agricultural production, and a general lack of amenities including entertainment, education, and medical care are typical push factors [3], [4]. They are the outcome of widespread disregard for or blatant prejudice towards agriculture.

DISCUSSION

The primary incentives luring migrants to urban regions are expectations for better services, housing, higher earnings, and more dependable supplies of food. These expectations have been greatly influenced by the traditional globalisation factors, especially increased information facilities. However, there is a substantial and expanding gap between metropolitan regions' aspirations and reality in emerging nations. The availability of food, employment opportunities, and services is deteriorating, and other conveniences often found in "urbane" or "civilized" city life are completely absent. Numerous externalities are linked to this so-called premature urbanisation. These include the significant societal expenses brought on by issues with hygienic conditions, urban poverty, crime, etc.

Despite these issues, it is usually believed that urbanization cannot be stopped, much less reversed. It may also be extremely advantageous to slow the trend and reduce or avoid the externalities linked to premature urbanisation, even if it may not be economically desirable to halt or reverse urbanisation. The primary aspect is the revitalization of rural regions in emerging nations, which would mean an end to the bias in internal and foreign policies against agriculture in such nations.

Place in space. The significance of geographic location for economic growth has long been recognized by economists. Adam Smith, who is most known for advocating the use of free market forces to spur economic growth, stressed that a region's physical topography may have a significant impact on how well its economy performs. He argued that since coastal districts have easy access to maritime commerce, their economies often do better than those of inland regions. According to Smith, geographic location is crucial since specialisation relies on market size and, in turn, specialisation depends on productivity improvements. The size of the market is also influenced by the expense of transportation as well as how open the marketplaces are. Geographical factors are important in determining mining transport costs.

Geographic information systems-based empirical research have reemphasized the significance of physical location for economic growth. A map of income density, which measures how much GDP is created within a certain region of land, is often used as a point of departure for the GIS-based analysis of location-based development concerns.

The chart highlights the two main geographic characteristics that influence economic prosperity. First, the majority of high-income nations are located in latitudes between mid and high, while the majority of nations in the tropics are impoverished. Second, temperate coastal economies in the northern hemisphere have the largest economic density in the world and usually have greater incomes than landlocked nations. Although there are 29 non-European landlocked nations, there isn't a single high-income landlocked nation outside of Europe. The primary economic zones of the contemporary globe are comprised of four regions: western Europe, Northeast Asia, the eastern and western seaboards of the United States and Canada. These areas serve as the world's financial hubs, the primary producers of capital goods, and the primary producers of a significant amount of the world's output.

Only 3% of the world's inhabited land area, 13% of the world's population, and at least 32% of the world's GDP measured at purchasing power parity are found in the regions of the United States, western Europe, and temperate-zone East Asia that are located within 100

kilometres of the coast. If coastal China is not included in the calculations, the core coastal area only accounts for 9% of global population but generates at least 30% of global GDP. Just 11 nations in North America, Western Europe, and East Asia, which together account for 14% of the world's population, export 88% of the world's capital goods, according to WTO statistics.

A handful in western and central Europe are thoroughly incorporated into the regional European market and linked by low-cost commerce, but the majority of landlocked nations in the globe remain impoverished. Even Switzerland, which has mountains, has the majority of its inhabitants in low-elevation cantons north of the Alps, and these population hubs are conveniently close to the North Atlantic via land and river trade. There are 35 landlocked nations with a population of over a million people in the globe, 29 of which are not in western or central Europe. The difference in average GDP per capita is startling: non-European coastal nations have an average income of US$5 567, compared to US$1 771 for landlocked countries outside of western and central Europe. Due to the landlocked nations' propensity for having very low populations, the discrepancy in economic density is much more pronounced [5], [6]. The examination of GIS-based data may be summed up as follows:

Coastal areas and areas connected to them by waterways that can be navigated by ships are greatly preferred in terms of development compared to hinterlands. Even though they are no further from the interior of coastal economies, landlocked economies may nonetheless suffer from a lack of access to the sea. Advantages of location are especially crucial for the economic integration of agriculture and the food sector. Numerous agricultural products are either heavy, perishable, or both, which increases the cost of transportation per unit of goods. Even if all trade restrictions were eliminated, nations with low market access and weak infrastructure may still be effectively isolated due to high transit costs.

The presence of and value of infrastructure. The disadvantages that may result from an adverse geographic position may be greatly reduced by infrastructure. In many affluent nations and areas, access to infrastructure really balances out any potential drawbacks brought on by bad locations. Landlocked areas of Europe or North America may be connected to one another and integrated into global markets because to their substantial and effective transportation and communication networks. A more complicated picture emerges when one considers other parts of the globe. Africa, and many nations in sub-Saharan Africa in particular, suffer from both disadvantageous location and a lack of infrastructure, in contrast to portions of East Asia and Latin America that contain comparatively significant stocks of infrastructure.

Africa sub-Saharan is the example. The significance of infrastructure as a component for effective integration into global markets has been researched and measured in several studies. Amjadi, Reinke, and Yeats concentrate on sub-Saharan Africa and how the area's weak infrastructure endowment affects its export performance. The research also shows how important inadequate infrastructure and policies are in comparison to other elements like tariffs and non-tariff barriers. A comparison of the obstacles sub-Saharan African exporters encounter in foreign markets to those its counterparts experienced when they started export-oriented policies highlights the relevance of the region's infrastructure compared to its rivals. Preferences provide Africa an advantage over certain rivals, for instance, pre-Uruguay Round tariffs confronting African exports to the EU, Japan, and the United States averaged three-quarters of a percent. The costs and dangers of conducting business remain high, and the opportunities to gain from globalisation remain constrained, as long as transportation is costly, energy is absent or unreliable, and access to phones is restricted. However, globalisation also presents fresh chances to overcome established limitations.

Changes in food consumption patterns show the impact of freer trade in agriculture, TNC operations in the global food industry, urbanisation, and migration. In general, these elements encourage a convergence of regional and national food consumption trends. These elements interact either directly or indirectly via the relationship of economic development in underdeveloped nations. While higher-income segments are limited by natural consumption limitations even for higher-value food products, rising earnings encourage a move of poorer consumers to higher-value food items, which equalises food consumption patterns.

The increased convergence of food consumption habits is a source of many worries. According to some researchers, convergence is a sign of a loss of cultural identity and is partly a result of the expanding market dominance of food companies that operate internationally. A quick convergence in food consumption habits has raised worries that it could have unanticipated resource repercussions. A rising worldwide convergence on, say, a typical American diet is linked to a sharp increase in feed grain requirements and, as a result, to an additional strain on the base of agricultural resources that are already accessible. The fact that food would have to travel over ever greater distances and that the externalities related to these additional "food kilometres" are not, or not entirely, represented in the price of food is another worry linked with a convergence in food consumption habits. This section investigates the degree to which food consumption patterns have already converged and what implications there may be for future convergence for the years 2015 and 2030.

Assessing the convergence of consumer trends. 29 core product classes were used to examine food consumption patterns. The necessity to compare diets of almost 150 nations over a period of 70 years strongly supported the adoption of a single indicator, the consumption similarity index. This indicator compares the percentage of calories that come from the same major goods in two different nations to see if their diets overlap. The CSI is represented as: but not whether the calories from wheat are eaten as noodles or bread, or if the calories from meat are consumed as hamburgers or other typical meat items. It's also critical to remember that the CSI assesses diet structure similarity independent of calorie consumption amounts in absolute terms. This may lead to very large similarities in diets that are quite different in terms of their relative calorie consumption but highly similar in terms of their overall architecture [7], [8].

The CSI has been used to examine the trends in food consumption over time and across different nations. While CSI calculations have been performed for all possible pairings of countries, only the United States is used as a "comparator" country in the findings. All CSI coefficients are calculated by comparing the diets of various nations to those of the United States. The consumption trends in the United States are convergent over time. Thus, rather than a globalisation of food consumption patterns, the convergence in food consumption shown here may be interpreted as a "Americanization".

Convergence evidence. According to CSI developments, diets have actually been more and more similar over time. However, there are significant regional differences in the rate of convergence. Consumption trends in the conventional OECD nations cluster together with those of the American diet. The same sources that are used in the United States provide for around 75% of the calories in numerous OECD nations. These nations are completely integrated into the global food economy, and their food economies are connected to one another by effective and efficient infrastructures for trans- portation, communication, and distribution of food, as well as via cold chains, etc. The high degree of consumption pattern similarity across the English-speaking nations, where at least 80% of all calories come from the same foods, is one of the distinguishing characteristics of the OECD countries.

Many of these nations also have similar cuisine and cooking cultures in addition to speaking the same language. For international food firms to operate efficiently and affordably, there must be no language barriers and a shared culinary culture. They may use the same or comparable advertising and marketing methods and hence benefit from economies of scale in their market penetration initiatives thanks to these commonalities. The geographic component also contributes to the explanation of food commonalities. For instance, similar main commodities are the source of 85% of the calories eaten in Canada and the United States. When the diets of western European and North African nations are contrasted, similar high values are found.

The degree of resemblance between other western nations and the United States' consumption pattern is often far lower. Once again, there are several groupings of nations that show varying degrees of overlap and divergent dynamics in migrating towards American food consumption habits. Within the region of East and Southeast Asian nations, there has been a very rapid shift. Japan's customers are among of the most flexible adopters of a food consumption pattern similar to that of the United States. Beginning with a 45 percent overlap in 1961, similarities rose to nearly 70 percent in 1999, and 75 percent is predicted to be reached in 2030.

Numerous distinct clusters may be found across continents and areas beyond the OECD group of nations. Three significant patterns of consumption are seen in Africa. First, there is the region of North African nations, whose consumption patterns are characterised by a diet high in grains and where cereals, particularly wheat, often account for more than 70% of caloric intake. The degree of commonality in food intake among this group exceeds 90%. However, resemblance to a diet in the United States has only achieved a level of approximately 60% and is not anticipated to rise over about 65% by 2030. Given the physical proximity to and growing economic integration with OECD markets, this can first appear odd. However, other variables have more of an impact on food consumption habits than the integrating forces of globalisation and Americanization. These have their origins in the traditional food culture that is characterised by high levels of wheat-based staples consumption and by a lack of pig eating that prevents transitions towards meat intake [9], [10].

In conclusion, the effects of globalisation on food consumption patterns have been considerable and have led to an increasing convergence of consumption patterns. Openness to trade and investments, geographic location, income levels and growth, and TNC activity are virtually invariably connected, even if it is difficult to determine the relative relevance of the many driving elements of globalization with a quickening convergence in eating habits. Many of these elements are connected. Within the constraints of income responsiveness and total calorie consumption, well-integrated nations often have stronger income growth that acts as a driving factor for convergence. However, there are other elements that have a longer time horizon that limit the convergence of eating habits. They include social, cultural, and religious restraints as well as deeply ingrained customs around food preparation and consumption. As a consequence, they prevent convergence from rising over a projected level of 80% over the next 30 years, even in the most connected OECD economies. Outside of the OECD, convergence plateaus at an overlap of around 60%.

Systems for multimodal transportation. The clever integration of diverse transit options may aid in overcoming the financial challenges that many developing nations have while constructing conventional infrastructure elements. Previously isolated regions of Asia and Latin America are now being linked by so-called multimodal transportation networks.

Combining the new transport systems with modern communication technologies may increase their efficiency even more. These new technologies have the potential to significantly reduce the geographic disadvantage that many rural places in the poor world experience. They may also open up new markets for the sale of bulky or perishable items that were previously prohibited by prohibitively high transaction costs. This in turn might aid in the integration of agricultural producers and act as a stimulant for rural regions, potentially comparable to the first wave of globalization's fast increase of agricultural output in the Midwest of the United States.

Internet-based trade facilitation may overcome the limitations of conventional communication. Similar to the previous wave of globalisation, the development of more effective communication networks has coincided with the availability of more efficient transportation methods. With the use of these new communication technologies, shippers were able to precisely match importers' demands in terms of product amounts and delivery schedules. Even tiny businesses may now compete with their bigger counterparts, who formerly had an edge because to specialised but costlier electronic data exchange systems. Anyone may now access the Internet for the inexpensive initial cost of a personal computer, a modem, and an Internet connection. Because doing transactions online has fewer administrative expenses, more shippers and carriers are choosing to do business online. As a result, carriers and shippers rely less on third-party value-added networks, which are often needed to process EDI transactions.

Additionally, there is a rising anticipation that the Internet will eventually provide all the benefits that were previously only available via pricey EDI systems. Most importantly, data transmission via the Internet will becoming safer. Additionally, it is accessible around-the-clock, enabling commercial transactions to be completed at the shipper's and carrier's convenience. Smaller carriers may find niche markets as a result, expanding their market share for small package delivery. Special economic zones and economic aggregation. Even though it may be possible to take advantage of additional efficiencies in the current infrastructure, most developing nations may find that uniform infrastructure expansion in every location is neither an efficient nor an affordable option, especially in areas with low income and population densities. Numerous manufacturing/service agglomerations might be created as an alternative. In order to fill large regions with low population densities, there would still need to be a number of these locales and significant labour mobility. The development of dynamic economic areas and export processing zones, which often flourish in the free trade environment, is particularly intriguing from the standpoint of globalisation. These areas have the potential to develop into hubs for commerce, services, and urban amenities. Their ability to attract capital and talent, as well as the utilisation of agglomeration effects to forge networking relationships with the greatest possible synergy, all contribute to their development. According to recent studies, technological advancements in communications may encourage more face-to-face engagement and increase the appeal of living in cities by increasing the frequency of human contact.

CONCLUSION

In conclusion, there have been significant and varied effects of globalisation on patterns of food consumption and migration connected to agriculture internationally. The interconnection of economic, social, and geographic elements has been shown as this article has investigated several facets of this complicated issue. Globalisation has had an impact on migration relating to agriculture, with low-skilled labourers from developing countries looking for greater wages in industrialised ones. Although there have been worries about "brain drain" in poor countries, these worries have been lessened by remittances from migrants and possible

investments in their home countries. The majority of people on earth are anticipated to live in urban settings by 2030, and internal migration has also played a key influence. This change has significant effects on food consumption patterns since urbanisation tends to promote diet convergence due to variables including easier availability to a variety of foods and evolving lifestyles. Economic development has been greatly influenced by geography, with coastal and linked regions often outperforming landlocked ones. By increasing trade and economic integration, infrastructure development has the ability to lessen some of the drawbacks related to unfavorable geographic positions.

REFERENCES:

[1] C. Y. Ng and S. Ab. Karim, "Historical and contemporary perspectives of the Nyonya food culture in Malaysia," *J. Ethn. Foods*, 2016.

[2] S. ÖZBAY DOĞU, "DETERMINATION TOOLS OF ORIGIN IN THE FOOD TRACEABILITY," *J. Food Heal. Sci.*, 2016.

[3] E. Black, "Globalization of the Food Industry: Transnational Food Corporations, the Spread of Processed Food, and Their Implications for Food Security and Nutrition," *SIT Digit. Collect.*, 2016.

[4] P. Keshari and C. Mishra, "Growing menace of fast food consumption in India: time to act," *Int. J. Community Med. Public Heal.*, 2016.

[5] L. M. Donini *et al.*, "A Consensus Proposal for Nutritional Indicators to Assess the Sustainability of a Healthy Diet: The Mediterranean Diet as a Case Study," *Front. Nutr.*, 2016.

[6] M. Cleveland, J. I. Rojas-Méndez, M. Laroche, and N. Papadopoulos, "Identity, culture, dispositions and behavior: A cross-national examination of globalization and culture change," *J. Bus. Res.*, 2016.

[7] M. Maidana-Eletti, "1. Global Food Governance," in *Global Food Governance*, 2016.

[8] S. E. Choi, "Comparison of Soup Stock Preparation and Soup Product Consumption Behavior in an Ethnically Diverse Population," *J. Culin. Sci. Technol.*, 2016.

[9] N. Kaur, N. Qumar, and S. Agarwal, "RELATIONSHIP BETWEEN FAST FOOD CONSUMPTION AND HEALTH OF LATE CHILDHOOD," *Int. J. Res. - GRANTHAALAYAH*, 2016.

[10] M. Rachmat, G. S. Budhi, N. Supriyati, and W. K. Sejati, "Lumbung Pangan Masyarakat: Keberadaan dan Perannya dalam Penanggulangan Kerawanan Pangan," *Forum Penelit. Agro Ekon.*, 2016.

CHAPTER 7

NAVIGATING ECONOMIC TRANSFORMATION: AGRICULTURE AND GLOBALIZATION IN INDIA

Ashutosh Awasthi, Associate Professor
College of Agriculture Sciences, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India,
Email Id- ashuaw@yahoo.in

ABSTRACT:

India's economic environment saw a substantial change towards the start of the 1990s as the processes of globalisation and economic liberalisation were accelerated. Key elements of the new economic strategy that represented this departure from the values that India had upheld since gaining independence included the following: lessening government involvement, doing away with the licencing system, opening up more economic sectors to private and foreign businesses, doing away with subsidies and the public distribution system, lowering import tariffs, easing labour laws, and encouraging exports. In essence, the government wanted to give the private sector a bigger role while keeping its responsibility to governance. This essay focuses on how these economic shifts have affected India's agricultural industry. By focusing on private investment, land redistribution, taxing wealthy landowners, managing trade terms, promoting agricultural exports, defending subsidies, and facilitating free trade in agricultural products, it emphasises the need for agricultural reforms to be in line with broader economic reforms. The study also highlights the areas that India's agriculture industry needs to improve, including pricing rationalisation, subsidy simplification, and tackling the difficulties associated with agricultural commerce. In areas like subsidy reduction and the elimination of import restrictions, it explains how WTO recommendations have been partly followed. It also draws attention to the areas where India has obstructed full compliance, including subsidy cuts on food grain imports. The need of carefully balancing measures that address the particular problems facing the agricultural sector while still being in line with wider economic changes is emphasised in the paper's conclusion. It implies that, despite the potential and difficulties that globalisation and liberalisation have presented to Indian agriculture, governments should put the welfare of farmers and consumers, economic development, and poverty reduction first while implementing reforms.

KEYWORDS:

Economic Environment, Economic Development, Globalization, Liberalization, Poverty Reduction.

INTRODUCTION

Globalization and economic liberalisation processes accelerated in India towards the beginning of the 1990s. It was a departure from the principles that the nation has upheld since its independence. The new economic strategy's key components include: i) lessening government involvement; ii) eliminating the licencing system; iii) opening up more economic sectors to the private sector and even to foreign businesses; iv) steps taken to eliminate subsidies and the public distribution system; v) eliminating import quotas; reducing import tariffs and duties; vii) easing labour laws; and viii) promoting exports. In other words, the government intends to limit its operations to governance and bare minimum output in order to give the private sector a bigger role. Numerous concerns are involved with economic changes. They work to address the fundamental flaws in the economy that obstruct its expansion and the wellbeing of its citizens. Economic changes are meant to increase

production, employment, and overall economic growth. No effort in this direction can be effective in an economy that depends on agriculture unless agriculture is made to be favourable to development. Reforms to the economy thus also apply to agriculture.

The following are the main changes in the agriculture sector:

Encourage private investment in the economy by giving farmers access to loans, irrigation, transportation, marketing, warehousing, information, and export prospects.

Land Reforms: In India, 25% of the entire arable land is owned by only 75% of farmers. Redistributing the land in such a way as to provide these underprivileged farmers more land will increase agricultural investment and output. This is due to the fact that property held by the current large landowners is often leased to low-income renters. These renters lack the resources to make an investment. Additionally, a sizable population of tenant farmers and landless workers has to be given access to land. In addition to boosting productivity, such land redistribution would provide a consistent source of income for agricultural employees and renters. The provision of additional assistance, such as low-cost seeds, fertilisers, irrigation, and credits, is necessary for this policy to be effective [1], [2].

Taxing the Rich in Agriculture: Because the vast majority of Indian farmers are impoverished, the government does not levy taxes on income from agriculture. However, those wealthy landowners and farmers who profit from this exemption are just become wealthier. Additionally, this concession has been used to evade taxes. People often seek tax exemptions by misrepresenting their non-agricultural income as agricultural revenue. It is necessary to investigate the idea of taxing wealthy landowners and farmers in order to produce enough funds for development reasons.

Managing the Terms of Trade: The relationship between the prices in the agricultural and industrial sectors is crucial. It establishes the whole population's actual income level. High food costs in a developing nation like India result in a huge portion of the people having a low level of life. It denotes a high rate of poverty and a weak market for industrial products. Employment and industrial production could suffer as a consequence. Rich farmers with marketable surpluses mostly profit from the high purchase prices the government offers.

Encouraging the Export of Agricultural Products: Due to its diverse climatic circumstances, India has the capacity to produce a wide range of crops. Thus, it is important to effectively use this potential in order to take advantage of the global market for these products. However, it should be kept in mind that in many situations higher worldwide prices result in the export of food goods and grains, which might cause shortages in the nation.

Justifying Subsidies: In India, subsidies have generated a lot of discussion. Indian farmers have received enormous amounts of subsidies in the years after their independence under a variety of headings. It doesn't matter whether it's the construction of public infrastructure like dams and irrigation projects, the availability of inexpensive electricity, HYV seeds and fertiliser, or even the regular purchase of crops at profitable rates. Critics, however, wonder as to whether the subsidies are reaching the intended populations. Many people believe that the wealthy farmers in a few northern states are the only ones who benefit most from these subsidies. Therefore, a suitable plan for the distribution of subsidies that helps the vast majority of farmers must be developed.

Free Trade in Agri-Products: As we saw in the last section, India is struggling with an overabundance of food grains and other agricultural products. However, there were restrictions on the transfer of agricultural goods between states for a long time. The Essential

Goods Act of 1955 enforced these limitations by requiring traders to have licenses, setting stock limits, and controlling the transportation of goods. The government has now removed the necessity for traders to have licences as well as the limits on the storage and transportation of edible oils, sugar, oilseeds, and food grains [3], [4]. Another advantage of free trade in agricultural goods is that regional self-sufficiency in all agricultural products is not necessary. After achieving national self-sufficiency, free trade will facilitate the migration of foodgrains from surplus to deficit areas. Free trade will also develop an integrated domestic market for agricultural goods.

DISCUSSION

Areas of Agriculture Reform in India

We try to identify areas where changes need to be implemented based on the discussion in the preceding section. Below, we list them.

Prices

It is necessary to rationalize the prices that consumers pay on the market and the prices that farmers get for their products. Unit 19 demonstrated how high prices encourage investment and expansion in agriculture. However, it may cause lower income groups to become more impoverished and slow down industrial progress. It's also necessary to reformulate the prices charged at the public distribution system stores. Low off-take from the PDS stores is a consequence of the recent increase in issue pricing. This is because the items on sale were of poor quality and the price levels for the "Above Poverty Line" target group were higher than the market price. costs were a little cheaper for those who fell below the poverty line, but the wealthy and powerful registered as BPLs and benefited from the decreased costs. As a consequence, the poor are consuming less cereals, and inequality is growing. A well-considered policy that safeguards the interests of both producers and consumers is required in this sector.

Subsidies

The topic of pricing is connected to subsidies. The lower prices customers pay in PDS Fair Price stores are a result of government subsidies. However, as was already indicated, subsidies often do not reach the intended groups. When it comes to "production subsidies," the distribution of subsidisedfertilisers, seeds, pump sets, and other equipment has benefited the wealthy farmers, especially in areas with established agricultural industries. Overall, we may conclude that agricultural subsidies need simplification or change. They must instead be appropriately focused, which does not imply that they must be eliminated.

Exports

A farmer's income increases when he or she exports. Additionally, it brings in foreign currency for the nation, strengthening its financial condition. Consequently, the government should consider the problem of promoting the export of agricultural goods and provide the required assistance. It should reduce the amount of red tape involved in establishing a manufacturing facility and exporting goods overseas. But it's also important to keep in mind the factors we discussed previously, including not raising domestic food prices or contributing to poverty.

Agri-products Trade Outside the U.S. We learned in the previous unit that throughout the 1980s, India became self-sufficient in food grains. India has previously been a net importer of food grains. Rice, wheat, cereals, tobacco, sugar, molasses, poultry, dairy products,

horticulture products, spices, cashew, sesame, and niger seed, groundnut, oil meals, castor oil, shellac, fruits, vegetables, cotton, processed vegetables, juices, meat, and marine products are among India's agricultural exports. Marine goods have been the one of these things that contributes the most to agricultural exports. A total of US$6 billion worth of agricultural goods were exported out of the nation in 2000–2001, with only marine items accounting for 23% of that total. Cereals, mostly basmati and non-basmati rice, made up the next significant category of agri-exports and made up 12% of the total.

India has an edge over other countries in a number of agricultural goods. India has an edge due to its self-sufficiency in agricultural supplies, cheap labour costs, and different agro climatic conditions. India has a significant challenge in boosting agricultural output to international norms. States like Punjab, Haryana, and Andhra Pradesh have reached production levels that are on par with the global average, while other states are falling behind. About 5 to 6 percent of the nation's overall imports are agricultural. Edible oil, cotton, grains, and wood goods are the main imports. India's agri-imports in 2000–01 were just US$1.8 billion, a significant decrease from its US$6 billion agri-exports. In recent years, edible oil has surpassed all other agricultural imports as India's top agricultural import. It represents between 60 and 70 percent of the overall value of agricultural imports. The other main agricultural imports into India include raw cashew nuts, almonds, and pulses, which together account for 5 to 10% of all agricultural imports. From a historical viewpoint, we can see that up until the 1980s, the only commercial crops that India exported were tea, coffee, and spices. Quantitative constraints and high tariff levels significantly reduced imports. The goal was to control the flow of agricultural products. Therefore, limits were put in place to prevent an oversupply of agricultural goods from entering the market, which would harm agricultural trade conditions. Similar restrictions applied to agricultural commodity exports based on domestic supply. Over exporting might cause domestic shortages and price increases.

About 700 agricultural imports were subject to QRs in April 2000. The Export-Import Policy of 2001, however, eliminated QRs on 228 agricultural products. According to the WTO rules, QRs would be phased out over time. As a result, in the age of globalisation, both agricultural imports and exports will only be restricted by the installation of tariffs. The agriculture industry in India has been more open or outwardly focused during the 1990s. However, compared to the rest of the economy, the agriculture industry is less globally focused[5], [6].

The dominant economic policy prescription has prioritized free trade and market mechanisms more recently. There is a growing consensus that international trade and money flows are advantageous for both established and developing countries. Therefore, the World commerce Organisation and other international lending institutions have placed a strong emphasis on free global commerce and capital flows, including the World Bank, the International Monetary Fund, the Asian Development Bank, and others. The WTO, which has 135 members, took the place of the General Agreement on Tariff and Trade in 1995. The WTO's primary goals are to promote industrial competitiveness and free trade via talks. WTO concerns itself with trade in relation to workers, the environment, competition, and investment.

The primary rationale for the support of free trade is that a country may import items at lower prices if it is unable to manufacture them at a profit. In contrast, it may export efficient commodities to nations that are unable to do so at a reasonable cost. In this manner, each nation focuses on the products for which it has a "comparative advantage". David Ricardo introduced the concept of comparative advantage more than 200 years ago. According to this, each nation will have a certain good that it can manufacture at the lowest relative cost. Additionally, it will be advantageous for all nations if they focus on producing and exporting

goods in which they have a competitive advantage. This will result in the overall wellbeing and productivity being maximized.

According to the aforementioned theory, policies that limit trade or promote the production of goods in which a nation lacks a comparative advantage cause domestic and global wellbeing to decline. Therefore, all import taxes and quotas need to be eliminated. The manufacture of export commodities receives subsidies, and these subsidies should be stopped since they skew the pricing on the open market. Resource allocation between competing users is made efficient by free market pricing. By applying this reasoning to agricultural items, it is advised that all quantitative import limits on those commodities be lifted. Prior import restrictions on agricultural products in India were founded on a different idea. The import limits aimed to safeguard Indian farmers from dumping and competition from outside. It was stated that relying on imported food in years of global food crisis may result in starvation and poverty.

The WTO also makes recommendations about patent rules and their application. According to WTO, a business that creates a certain product should be granted exclusive rights to profit from it. This will make sure that individuals have the money and incentives they need to study and develop a new product. This regulation has the effect of requiring anybody utilising or manufacturing a patented product to pay a royalty to the original inventor. TRIPS is the name for this. It implies that consumers must pay a fee to the various patent holders in order to utilise high yielding patented kinds of seeds, fertilisers, and herbicides. It is prohibited for anybody who wishes to conduct research on a patented seed to do so without the patent holder's consent and payment of a royalty. Such patents have the effect of raising the cost of production for farmers. The following are other broad WTO suggestions that have an impact on Indian agriculture:

1. Reducing farmer subsidies: According to the WTO, subsidies have two negative consequences. First, it causes pricing on the free market to be distorted, misallocating resources. Second, it widens the budgetary gap in government. High budget deficits may cause inflation and problems with the balance of payments.
2. Government spending reduction: International organisations like the IMF have been urging the government to decrease expenditures in order to lower the fiscal imbalance. The expenditure on public infrastructure, such as roads, power, transit, and rural banking, has decreased as a result of these efforts by various countries, including India. Public irrigation facility investments have also decreased.
3. Privatization of public sector entities: According to the WTO, the government shouldn't interfere with resource allocation or production. It should act as a catalyst for more development while preserving the stability of the economy. The sale of public sector organisations has resulted from such a prescription.
4. Dismantling the PDS: The PDS assumes that the government would provide two different types of subsidies. In terms of procurement prices that are greater than market prices, farmers come first. Second, by selling food grains below market value, to the customer. Such activities increase the budget deficit and encourage inefficiency [7], [8].

WTO Recommendations and The Impact on Indian Agriculture

In certain ways, India has been able to survive WTO regulations. It has not complied with all of the WTO's guidelines. The following are the areas where WTO recommendations have impacted national policies:

a) The subsidy reduction proposal has been partly implemented. This is valid for subsidies for the creation of public infrastructure. Since the 1980s, government involvement in

infrastructure projects including irrigation, rural electricity, and other investments has decreased. As a consequence, the total amount invested in agriculture has remained constant. From Rs. 63 billion in 1960–1961 to Rs. 182 billion in 1978–1979, it grew. After then, it started to decline, but in 1998–1999, it made a little comeback to reach Rs 190 billion. Thus, instead of growing at a positive pace during the last two decades, it has simply stayed at the same level. The decrease in public investment spending has been one of the main causes of this. When the government began accepting IMF loans in the middle of the 1980s—loans that were attached to conditions comparable to those the WTO now advises—this collapse got underway. The deterioration has persisted up to this point. As a consequence, from 50% in 1980–81 to 75% in 1998–99, the private sector's share of overall investments in the agriculture sector. Even while private investments have increased in absolute terms at constant prices, they have also stalled recently. Because of the substantial drop in governmental investments, the growth in private investments for the agriculture industry as a whole has not resulted in an increase in aggregate investments.

b) The removal of import limits on agricultural items is another example of how WTO recommendations have been followed. To safeguard the growers against low-cost imports or international dumping, quotas or quantitative limits were implemented. Dumping is when one nation sends products to another at very cheap costs in an effort to take its market. The exporting nation becomes a monopolist and imposes high export pricing after it has cornered the market and outcompeted local manufacturers. Only a wealthy nation with ample financial resources could implement such a combative strategy.

c) The subsidy reductions on the purchase of food grains were one of the suggestions that was mostly ignored. Either the procurement activities should be scaled out or the procurement rates should be set at a little premium above the going rate, according to the WTO. The overall subsidies will decrease in either case. But political pressures have prevented this from happening. The WTO guidelines have shown to be less effective than the farmers' advocacy. As a result, enormous quantities of grains continue to be purchased at rates above the going rate. The storage of this grain, however, has been a significant issue. PDS prices have increased because the WTO advises against the grains being sold via the PDS at a discount. However, the prices at the PDS stores are too exorbitant for the poor to afford. The result is an enormous and unmanageable food stock at the go-downs of the Food Corporation of India. Due to the high expense of storage, a large portion of the inventory is mismanaged and decomposing. India has collected roughly 63 million tonnes of food grains as of July 2002. This is far more storage than is advised.

d) In addition to governmental infrastructure investments, additional subsidy sources include low-cost seeds, fertilisers, and payments for private irrigation equipment like pump sets. In the 1990s, they have been on the decline. This has slowed agricultural output growth in the 1990s compared to the preceding decade, combined with a decline in governmental spending. The production of food grains is where the slowdown in growth is most pronounced. In the 1990s, this rate was 1.8% per year, down from a growth rate of 2.9% per year in the 1980s. Keep in mind that this growth rate is lower than India's yearly population growth rate. Following significant developments in the infrastructure sector have been noted:

1. The annual growth rate of public investments in agriculture decreased from 4.0% in the 1980s to 1.9% in the 1990s, which halted the expansion of irrigation.
2. Low public investments in R&D: 0.5% of agricultural GDP as opposed to the ICAR's suggested standard of 1%.
3. The yearly growth rate of fertiliser consumption decreased from 7.8% in the 1980s to 4.3% in the 1990s.

4. The growth rate in the area planted with HYV seeds slowed from 4.9% in the 1980s to 2.8% in the 1990s.
5. The continuous rotation of wheat and rice in the northwest area, which has resulted in a decline in soil fertility.
6. Private small-scale irrigation practises that overuse groundwater have caused a drop in the water table. It may be related to the fact that private investment has made up a large portion of all recent investments in agriculture. Contrary to public irrigation, private irrigation makes extensive use of groundwater.

e) A lower rate of agricultural expansion was accompanied by good trade arrangements for the sector. The consumer price index for agricultural labourers for non-food items, using 1990–1991 as the base year, was 100. in 1999–2000, while the wholesale price index for grains was 126.0. These two numbers suggest that although demand has been weak, input prices for industrial firms have been growing. This could have caused the industrial sector's employment and production growth rates to slow down [9], [10].

f) In the 1990s, employment in public sector organisations fell, just as it did in the case of investments in the agricultural sector. The rate of job growth in PSUs from 1983 to 1994 was 1.52% annually. On the other side, it fell from 1994 to 2000 at a pace of 0.03 percent annually. Two factors caused the private sector to suffer: first, low demand brought on by agricultural sluggishness and unfavorable trade conditions. Second, supply side constraints emerged as a result of the reduction in governmental investments. Between 1983 and 1994, private sector employment grew at a pace of 2.04% year. However, from 1994 to 2000, it grew at a 0.98 percent annual pace. Additionally, the private sector was unable to create enough jobs to offset the declining employment prospects in the public sector.

g) The consumption of cereal per person has decreased as a result of the weak employment growth and increasing food costs. In rural regions, the monthly per capita consumption of grains has recently fallen, going from 14.4 kg in 1987 to 12.8 kg in 1997. In urban regions, it dropped from 11.2 kg to 10.3 kg over the same time period. Keep in mind that the consumption of grain has decreased more in rural than in urban regions. The unhappiness in farm families has intensified since agriculture is the foundation of rural communities.

h) The 1990s have also seen an increase in food grain exports. However, the prices that our grains have obtained on the international market have been much lower than the average prices paid there. For instance, wheat was sold in 2001 for $103 per tonne whereas the going rate was $130. The fact that we are subsidising our exports is the second unexpected aspect of the export drive. Wheat was exported in 2001 at a cost of Rs 4000 per tonne, with a tonne's economic cost to the FCI being Rs 8300. Therefore, we gave the foreign purchasers a subsidy of Rs. 4300 per tonne. Compare this to the fact that the APL issue price did not include any subsidies.

i) The planting pattern has changed as a result of opening the agricultural industry to the global market. The main change has been from food crops to cash crops like cotton and oil seeds. Agriculture exports were subject to several limitations prior to the 1990s. As a consequence, local production choices were more resistant to changes in global prices. The demands of the country's poorest regions were met by an abundance of coarse-variety crops including jowar, bajra, and ragi. Farmers have recently realised that growing cash crops like cotton, soy, and sunflowers is more lucrative since they sell for much more on the world market. As a result, there is a change in the cropping pattern. The production of cash crops has increased while that of coarse grains has decreased. Results of this switchover have not been favourable, especially for the more underprivileged parts.

The FCI continues to buy more and more food grains from farmers at greater rates, despite the fact that food supplies are at capacity. We must implement suitable policy reforms in order to bring about certain fundamental changes in the economy in order to attain greater growth. Economic reforms are the aggregate term for these actions. Economic reforms cannot overlook the agriculture sector for a country with an agrarian economy like India. As a result, the agriculture sector of the economy has to undergo some fundamental changes. The following adjustments are necessary: i) taxing agricultural revenue while making sure that only wealthy farmers pay; ii) rationalising subsidies; and iii) setting appropriate prices for agricultural products. When implementing these policies, we must take into account factors like paying farmers a fair price, promoting industrial development, and eliminating poverty.

Given the situation of Indian agriculture, these changes seem to be of utmost importance; nonetheless, the WTO has made several suggestions that are not necessarily in the country's best interests. These include promoting the export of food grains, eliminating all government subsidies, cutting down on spending, eliminating import and export limits, and enforcing patent protections for agricultural seeds, pesticides, and fertilisers. When implementing the WTO agenda, even partially, we must be careful that our actions do not worsen issues like i) growing income inequality in the agricultural sector, ii) declining agricultural growth rate, iii) rising agricultural sector poverty, iv) declining overall cereal consumption of the economy, v) rising food prices faster than average inflation rate, and vi) declining industrial sector demand.

CONCLUSION

In conclusion, India's rapid economic liberalisation and globalisation in the early 1990s signified a substantial shift from the economic values that the country had espoused since its independence. This new economic policy intended to lessen government interference, do away with licencing procedures, expand the number of industries available to private and international enterprises, cut down on subsidies, do away with import quotas, loosen labour regulations, and encourage exports. The overriding objective was to increase the contribution of the private sector to economic development while limiting government engagement to governance. These economic changes had a significant influence on India's agriculture, a sector that is vital to the country's economy and provides jobs for a sizable portion of the people.

The agriculture sector underwent a number of reforms, such as promoting private investment, implementing land reforms to redistribute land more fairly, taxing wealthy farmers, managing the terms of trade between agriculture and industry, promoting agricultural exports, and defending subsidies so that they would benefit a larger segment of the farming community. There were difficulties and worries even though these reforms had the potential to improve the farm industry. In conclusion, India's agricultural sector has been significantly impacted by the processes of economic globalisation and liberalisation. Although these changes have the potential to spur development and raise farmer incomes, they also present difficulties that need for careful state intervention. As India continues to traverse the road of economic change in a globalised world, it remains a challenging and constant responsibility to balance the interests of many stakeholders, including farmers, consumers, and the government.

REFERENCES:

[1] I. Nugroho, F. H. Pramukanto, P. D. Negara, W. Purnomowati, and W. Wulandari, “Promoting the Rural Development through the Ecotourism Activities in Indonesia,” *Am. J. Tour. Manag.*, 2016.

[2] M. Wuyts and B. Kilama, "Planning for Agricultural Change and Economic Transformation in Tanzania?," *J. Agrar. Chang.*, 2016.

[3] D. Zhang and P. Guo, "Integrated agriculture water management optimization model for water saving potential analysis," *Agric. Water Manag.*, 2016.

[4] D. O. Olalekan, N. O. Afees, and A. S. Ayodele, "An Empirical Analysis of the Contribution of Mining Sector to Economic Development in Nigeria," *Khazar J. Humanit. Soc. Sci.*, 2016.

[5] P. Ghisellini and M. Casazza, "Evaluating the energy sustainability of urban agriculture towards more resilient urban systems," *J. Environ. Account. Manag.*, 2016.

[6] A. Coulson, "Cotton and textiles industries in Tanzania: the failures of liberalisation," *Rev. Afr. Polit. Econ.*, 2016.

[7] J.-M. T. and P. Labarthe, "Regulation Theory and Transformation of Agriculture: a Literature Review," *Rev. la régulation*, 2016.

[8] M. Moretti, A. de Boni, R. Roma, M. Fracchiolla, and S. van Passel, "Integrated assessment of agro-ecological systems: The case study of the 'Alta Murgia' National park in Italy," *Agric. Syst.*, 2016.

[9] S. R. Beltrán, "La institucionalidad rural en Colombia: Reflexiones para su análisis y fortalecimiento.," *Mundo Agrar. Univ. Nac. la Plata*, 2016.

[10] N. Y. Armoogum, B. Ramasawmy, and B. M. F. Driver, "The need to enhance the employability competences (knowledge, skills, autonomy, and attitudes) of undergraduates in Agriculture. Evidence from students' perceptions and employers' expectations," *Tuning J. High. Educ.*, 2016.

CHAPTER 8

NAVIGATING THE RIGHT TO FOOD IN INTERNATIONAL TRADE AGREEMENTS

Anil Kumar, Assistant Professor
College of Agriculture Sciences, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India,
Email Id- anilsingh2929@gmail.com

ABSTRACT:

With an emphasis on the Agreement on Agriculture (AoA) inside the World Trade Organisation (WTO), this abstract gives a general overview of the intricate link between the right to food and international trade agreements. According to the principles of protection, fulfilment, and respect, governments are required to make sure that people have access to enough food, to make it easier for them to acquire food resources, and to abstain from taking any actions that would make it more difficult for them to do so. Additionally, when people or groups cannot acquire food because of unforeseen circumstances, governments are required to immediately give it. The article makes the case that the realisation of the right to adequate food should be given top priority by the global economic system. The interdependence of national and international efforts in realising human rights is emphasized in Article 28 of the Universal Declaration of Human Rights. A global economic framework must refrain from imposing obligations that go against the right to food and provide governments the freedom to enact policies that progress the gradual realization of this right in order to completely realise the right to enough food. States should use all resources at their disposal to advance quickly towards this objective. While moving food from surplus to deficit countries is made easier by international commerce, a human rights perspective emphasises the need of accountability and involvement in trade agreements. This strategy also emphasises the availability and accessibility of nutritious food that is culturally acceptable in addition to caloric consumption. Trade talks sometimes miss elements like distributive impact, participation, and food sufficiency.

KEYWORDS:

Agreement on Agriculture (AoA), Human Rights, Government, Policies, World Trade Organization (WTO).

INTRODUCTION

According to these instruments, States must protect the right to food by adopting measures that ensure that businesses or individuals do not deprive people of their access to adequate food; fulfil (facilitate) the right to food by actively enhancing people's access to and utilisation of resources and means to ensure adequate food; and finally, they must respect existing access to adequate food by refraining from adopting measures that may result in preventing such access. Additionally, "States have the obligation to fulfil (provide) that right directly whenever an individual or group is unable, for reasons beyond their control, to enjoy the right to adequate food by the means at their disposal." The right to sufficient sustenance, however, only pertains to the right to be fed in the most exceptional conditions. It mainly concerns the right to feed oneself with dignity, whether via food production or by obtaining revenues high enough to buy food on the open market.

The formation of initiatives aiming at creating a global economic system should be guided by the realisation of the right to sufficient food. Everyone has a right to a social and international

order in which the rights and freedoms outlined in this Declaration may be fully realised, according to Article 28 of the Universal Declaration of Human Rights. This clause in the agreement is undoubtedly one of the most overlooked ones. It acknowledges the interdependence of national and international actions in achieving human rights. Only within a global economic framework that allows them to pursue policies targeted at achieving the right to food can the right to sufficient food be completely realised. Not only should such a system avoid from enforcing commitments that explicitly violate the right to eat. Additionally, it should guarantee that all States have access to and are able to utilise the policy space they need to implement policies that advance the gradual realisation of the right to food under their control. This instrument mandates that they "move as expeditiously as possible towards that goal" by "full use of the maximum available resources," according to the Committee on Economic, Social, and Cultural Rights, the group of independent experts who monitor compliance with the International Covenant on Economic, Social, and Cultural Rights [1], [2].

States must refrain from taking actions that would hinder people from having access to enough food in the present. The ability to feed oneself with dignity is at the heart of the right to sufficient nourishment.

The formation of initiatives aiming at creating a global economic system should be guided by the realisation of the right to sufficient food.

The structure of the multilateral trade system must facilitate rather than obstruct efforts to advance the realisation of the right to food. In fact, Article 11(2) of the Covenant itself mandates States to adopt "individually and through international cooperation, the measures, including specific programmes, which are needed, taking into account the problems of both food-importing and food-exporting countries, to ensure an equitable distribution of world food supplies in relation to need." In order to uphold the basic right to be free from hunger, it so mentions food imports (and the equivalent exports). In fact, ensuring the right to food may need that food be transported from areas with an excess to those with a lack. However, the right to food-based approach to international commerce has three unique characteristics that force us to embrace a more nuanced view of the connection between the right to food and trade in agricultural commodities. First of all, such a strategy changes the focus from aggregate values—the advantages of trade for the nation as a whole—to the effects of trade on the most vulnerable and food insecure people. The expansion of trade volumes is not a solution to hunger if it results in the further marginalisation of those who are not benefiting from trade and, instead, may be made more vulnerable by it5. This is analogous to how increases in production in any one country are insufficient to combat hunger if, in that country, a group of the population lacks the purchasing power to buy the food which is available on the markets. Second, including a human rights framework into international commerce also highlights the need of responsibility and involvement in the development and implementation of trade agreements. Third, the framework based on the right to adequate food takes into account not only the need to ensure that each individual consumes enough calories, but also the availability and accessibility of adequate food, that is, food that is culturally acceptable and contains the necessary micronutrients for the individual's physical and mental development.

These factors—the distributive effects, participation, and sufficiency of food supplies—are often ignored in discussions of how trade affects food security. This report aims to reintegrate them. We must have a comprehensive understanding of the kind of risks the right to enough food is presently experiencing in order to decide which international trade regulation is most beneficial to the realisation of that right. These dangers may be divided into two groups.

Food availability: quantitative aspects and production effectiveness. The first is whether agriculture will be able to feed the world's population in the future and if each nation will be

able to feed its own people using a mix of domestic output and food imports. The pressure on the supply side of the global equation increases as a result of population growth, the transition to more protein-rich diets in the majority of developing nations that are successful in their fight against poverty, as well as increased competition for the use of farmland between the production of crops for food and for fuel.6 Additionally, climate change poses a danger to the capacity of whole regions—particularly those that depend on rain fed agriculture—to continue their current levels of agricultural output. Climate change will impact precipitation, increase the frequency of droughts, raise the average temperature, and limit the supply of fresh water for agricultural production in Sub-Saharan Africa, Eastern Asia, and South Asia. According to a UNDP projection, 600 million extra people might be at danger of becoming hungry by 2080 as a direct effect of climate change.7 Arid and semi-arid regions are expected to grow in size in Sub-Saharan Africa by 60–90 million hectares, and the yields from rain fed agriculture in Southern Africa may decline by up to 50% between 2000 and 2020, according to the Intergovernmental Panel on Climate Change.8 Another study predicts that by the 2080s, there will be a reduction in productive capacity of at least 3%, despite gains in other regions partially offsetting losses in agricultural production in some developing nations, particularly in Sub-Saharan Africa. As a result, "a prudent range for impact on global agricultural capacity by the 2080s [could] lie in the range of reductions of 10 to 25 percent," with the most severe losses in agricultural productivity occurring in developing nations, particularly in Africa and Latin America. However, the losses would be 16 percent if the anticipated carbon fertilisation

on effects fail to materialize [3], [4]. A paper that was just published in Science supports these conclusions even further.

DISCUSSION

It is not surprising that in this context, improved trade is cited as a means of achieving food security. If entire regions are unable to produce enough food to feed their population, then increased international trade may be necessary to meet the rising demands of net food importer nations. Under a "business as usual" scenario, that is, if we do not significantly engage in enhancing African agriculture and if we do not increase the ability of the affected countries to deal with climate change, it is estimated that the quantities of food traded would more than quadruple between 2000 and 2030.11 In fact, as we've seen, Article 11(2) of the International Covenant on Economic, Social, and Cultural Rights makes reference to the possibility that, while some regions may produce insufficient food to feed their population, others may have surpluses. As a result, it would be preferable for food commodities to move freely since this would enable the supply of food from food-surplus regions to food-deficit regions to be linked.

Food availability: distributional scope and buying power

The inability of the poorest portions of the population to get food is often the cause of hunger and malnutrition. However, the assumption that trade enables the efficient transfer of food supplies from surplus to deficit regions ignores the substantial differences in purchasing power between regions and the fact that hunger and malnutrition are typically caused by the inability of the poorest segments of the population to access food at an affordable price, rather than by a lack of food availability. Food commodities would flow from regions where food is produced at the most competitive prices to regions where there is a solvent demand, that is, where the populations' purchasing power is sufficient in comparison to other markets,

including the domestic markets of the source country, under a hypothetical fully liberalised trade regime without transaction costs. Therefore, it should not be surprising that certain nations are net food exporters while also having a sizable portion of their population that is undernourished. Some of the net food importers may not have a problem with their heavy reliance on imports because their export revenues are sufficient to make this solution sustainable; however, being net importers may not be viable for other countries whose trade balance is negative or nearly negative.

This serves as only an example of the wider issue that, while if the availability of food is unquestionably a necessary prerequisite for the enjoyment of the right to enough nourishment, it is not a sufficient one. In fact, ensuring that food is accessible to the underprivileged and marginalised is the second and most critical aspect of the problem we face today. If they are not included in production and cannot afford the food that is delivered to the markets, trading more food won't help them, and if their earnings are too low, producing more food won't help them purchase food. Most of the world's hungry people are found in developing nations, where they reside in rural regions and rely on agriculture either directly or indirectly for their livelihoods. They are impoverished, and as net consumers of food, their earnings, which are typically much lower than those of non-rural communities, are not enough to cover the cost of the food they do not produce themselves. More than a billion people are hungry today. According to estimates, half of them belong to the 2.1 billion small-holders who are now subsisting on 2 hectares or less of agriculture. There are 700 million agricultural workers worldwide who produce food that is sometimes too costly for them to buy. Of these, 20% are landless labourers who often work in subpar circumstances, without a regular job, and are paid below subsistence levels. Pastoralists, fishermen, and those who work in the forest make up 10% of the hungry. The impoverished in metropolitan areas make up the remaining 20%.14 Far from resolving the issue, any trading system that does not support these groups is likely to result in more breaches of the right to food [5], [6].

The problem we face today goes beyond just increasing food production and ensuring that food is distributed as freely as possible from food-excess to food-deficit countries. It involves producing it in a way that protects the environment, particularly by reducing the amount of greenhouse gas emissions that contribute to global warming. It also involves organising such production in a way that increases the incomes of small-scale farmers and agricultural labourers in developing countries, who currently experience the highest levels of food insecurity, and that enables States to adequately protect the urban poor. The question is whether the project on which the WTO framework was based—gradually lowering trade barriers, whether they take the form of tariffs or non-tariff barriers—contributes to these objectives or whether it could make them more difficult to achieve. If the latter, what steps can be taken to direct international trade in a direction that is more conducive to the realisation of the right to adequate food? The focus of this essay is on this question. No stance is taken on whether the ideas made during the Doha Development Round of trade talks would result in a material improvement over the current system. This author agrees with many others who believe that the existing system is badly skewed in favour of industrialised nations and needs to be corrected immediately. However, we must first consider whether increasing trade is a worthwhile goal and if the incentives it gives nations to engage in an export-oriented model of agricultural growth really do more harm than good.

Liberalisation of Trade in Agriculture

The Agreement on Agriculture (AoA) is the most significant WTO agreement in the context of this paper, which focuses on the impact of trade liberalisation in agricultural markets. Other WTO agreements, in particular the General Agreement on Trade in Services (GATS)

and the Agreement on Trade-Related Intellectual Property Rights (TRIPS), may have an impact on the right to adequate food because they affect access to productive resources by food producers. This Agreement is the only topic covered in this essay.

The Doha Round of World Trade Negotiations and the Agriculture Agreement. Even while agriculture never had a legal exemption from the GATT's rules, it did have a very distinct position up to the Uruguay Round's successful conclusion. Agriculture did have a very particular status up to the successful conclusion of the Uruguay Round of trade talks (1986–1994), which put an end to its insulation from the trade liberalisation process, even if agriculture was never explicitly exempted from the GATT regulations. The AoA fundamentally imposes three kinds of responsibilities on the parties.

(1) They must first expand agricultural goods' access to markets. All quantitative limits and other non-tariff measures must be replaced by tariffs under the AoA, with the exception of those that are necessary for health and safety reasons (Art. 4.2), and Members must then commit to lowering these tariffs (Art. 4.1).16 However, under Article 5, some goods that are the main staple in a developing nation's traditional diet may be excluded from the tariffication requirement[7], [8].

Despite its promises, not all developing nations benefited equally from the tariffication process and consequent reduction in rates. Some emerging nations, especially those in Sub-Saharan Africa, depend more on export income from agricultural products than on manufactured commodities. However, the average agriculture tariff is still substantially higher than the average agricultural tariff. Furthermore, substantial tariffs were maintained on exports from developing nations like cotton, sugar, cereals, and horticulture, despite the specific benefits granted to least-developed countries17 in initiatives like the EU's "Everything but Arms" effort Peaks in duties were preserved, and the levies on tropical goods are still higher and more complicated than those on goods from the temperate zone. A further barrier to export diversification and the export of more value-added goods by emerging countries is posed by tariff increases, which safeguard the processing industries of importing nations. One of the main causes of dissatisfaction with the existing multilateral trade system is the skewed tariff structure, which systematically disadvantages emerging nations and works against, not in favour of, these countries rising up the ladder of development.

The amount of domestic assistance (determined using the "Aggregate Measure of Support" (AMS)18 concept) must also be decreased by the members. Nevertheless, depending on how much they are deemed to distort trade, these subsidies are handled differently. There are three defined categories. The 'Amber Box' subsidies are a first, residual category. All Members may provide non-specific support for the same percentage, such as seeds or fertiliser to producers, up to a de minimis threshold (5% of the total value of production of the relevant good per year for developed countries; 10% for developing countries). In reality, few poor nations possess the resources needed to provide that degree of assistance. Beyond the de minimis level, Members are prohibited from introducing new types of support and are required to reduce the domestic support they currently give to their agricultural producers by 20% from the base period of 1986–1988 for developed countries and by 13.3% for developing countries (LDCs are not required to reduce domestic support, but they are required to bind support levels). The arrangement is most advantageous to nations who already had high levels of support during the base period since their advantage may be maintained to some degree. This is because these percentages are computed on the basis of the Base Total Aggregate Measurement of Support in the base period. In that regard, the AoA upholds and legitimises international inequalities based on each nation's capacity to assist its agricultural producers.

'Blue Box' measures are direct payments given against production-reducing obligations, a mechanism which is especially important to the European Union under the Common Agricultural Policy. These types of assistance for domestic agricultural producers do not come within the undertakings outlined above. These payments are seen as less likely to distort trade since they don't promote excess production and surplus dumping on global markets. As a result, these actions are not subject to the AoA's reduction obligations. However, this exemption in practise mainly favors producers in the North, and there is no restriction on exporting the goods that are so indirectly subsidised to poor nations. These are types of assistance that developing countries cannot afford for their farmers. 'Green Box' measures are also excluded since it is believed that they do not or do so only slightly distort trade. Domestic support measures may fall under this category (Annex 2 AoA, 1) if they are (a) "provided through a publicly-funded government programme (including government revenue foregone) not involving transfers from consumers," and (b) if they do not have the effect of supporting producer prices. The provision of rural infrastructure is one of these measures, though subsidies to the "subsidised provision of on-farm facilities other than for the reticulation of generally available public utilities" and "subsidies to inputs or operating costs" are expressly excluded. Other examples include public stockholding for food security purposes or domestic food aid, provided it is distributed "subject to cl

(3) The Members may not add new export subsidies that were not already in place during the base period of 1986–1990, and they must remove any existing export subsidies. According to the AoA, industrialised nations must cut their export subsidies by 21% in terms of the volumes receiving subsidies over a six-year period and by 36% in terms of value over the same time. Developing nations have longer implementation times and are subject to less requirements in this area. The LDCs are not required to eliminate any export subsidies they may have. The developed nations, which were the only group of States to have major export subsidies in place before to the AoA's entrance into force, have actually benefited from the system since it forbids the installation of any new export subsidies [9], [10].

The most detrimental kind of subsidies for developing countries are export subsidies. They cause subsidised goods to enter the market and displace locally produced goods, which often do not qualify for levels of assistance that would enable them to compete. This has the immediate effect of lowering costs for segments of the population in developing nations who do not compete with importers for market share. This has prompted several commentators to point out that developing nations that are net food importers and their people will generally suffer from the inflationary effect of the elimination of subsidies, so exacerbating the impact of the present high in prices on food security.19 However, it also causes a non-viable addiction to low-cost items sold on overseas marketplaces. Long-term subsidies, particularly export subsidies, discourage domestic production in the importing countries and instead foster a reliance on global markets that poses a significant source of vulnerability, especially given the rising volatility of prices on global markets.

A number of measures, including those that specifically reference "food security" and "the need to protect the environment," are intended to address what the AoA's preamble refers to as "non-trade concerns." In particular, domestic support reduction commitments that would otherwise be applicable to such measures are not applicable to measures adopted by developing countries that seek to promote agricultural and rural development, investment subsidies in agriculture, and agricultural input subsidies generally available to low-income or resource-poor producers in those countries (Art. 6.2). Other elements, such as extended implementation timelines and lowered commitment levels (Article 15), are aimed at

providing special and unequal treatment for developing nations. Overall, nevertheless, it is obvious that the commitments set out in the AoA fall within a plan of trade liberalisation for agricultural goods. When the Uruguay Round was finished, it was anticipated that this programme would result in higher food costs.20 Therefore, according to Article 16 of the AoA, developed country Members must implement the measures outlined in the Decision on Measures Concerning the Possible Negative Effects of the Reform Programme on Least Developed and Net Food-Importing Developing Countries (the "Marrakesh Decision") in order to mitigate the adverse effects that this could have on net food-importing developing countries. In conclusion, while food security is acknowledged as a reasonable goal, it is really to be attained by assisting nations through the reform programme, including where necessary by the distribution of food assistance, rather than by withdrawing from the programme of trade liberalisation in agriculture. This is the fundamental idea that guides the AoA system. It is one that is based on the idea that global markets can guarantee food security. And, in line with the notion that trade will result in allocative efficiency, it is one that holds that rather than having to reach a certain level of food self-sufficiency, nations should specialise in whatever production they have a comparative advantage in, as this would be sufficient to bring them enough export income to purchase food from abroad.

The WTO members agreed to engage in "comprehensive negotiations aimed at: substantial improvements in market access; reductions of, with a view to phasing out, all forms of export subsidies; and substantial reductions in trade-distorting domestic support" in the Ministerial Doha Declaration of November 14, 2001. Additionally, they decided to provide particular consideration for developing nations as "an integral part of all elements of the negotiations." It was decided at the Hong Kong WTO Ministerial Conference in 2005 that export subsidies would end by 2013, developing countries could designate certain products as "special products" for which tariff reductions would not be as strict, and developing countries could keep their permissible de minimis level of domestic subsidies. The Doha Round of international trade negotiations is still ongoing as of this writing. It is especially troublesome when discussing the effects of different types of domestic assistance given to farmers in wealthy nations on trade and when discussing the details of the special protection mechanism. But providing a thorough analysis of these discussions is not the aim of this essay. It is instead to determine whether the overall course of trade liberalisation under the AoA's framework, as summarised, is consistent with the members' commitments to protect the right to food.

There is broad consensus that the existing system of global trade is unsatisfactory. Smallholders in developing nations, who make up the bulk of individuals who are hungry in the world today, have particularly been harmed by it. On the one hand, agricultural producers from developing nations often experience unfair competition on their own domestic markets from heavily subsidised goods exported by farmers from OECD countries. In the OECD nations, government subsidies to farmers totaled 258 billion USD in 2007, accounting for 23% of overall agricultural income. Since 1986 (when the estimates first became available), this amount of assistance as a percentage of production value is the lowest. However, it still constitutes a very high level of assistance, one that developing nations cannot match. However, manufacturers from these nations have encountered significant barriers to entry into the high-value markets of industrialised nations. Even preferential programmes like the African Growth and Opportunity Act, the Caribbean Basin Initiative, the Everything But Arms initiative adopted by the European Union in support of Least Developed Countries, or the Cotonou Agreement between the EC and the ACP countries have not been successful in helping them. This failure may be partly attributed to the complexity of the relevant regulations, in particular the requirements resulting from rules of origin, as well as the non-

tariff barriers that potential exporters must overcome. These non-tariff barriers are specifically linked to standards requirements, which include both standards adopted under the Agreement on the Application of Sanitary and Phytosanitary Measures and the Agreement on Technical Barriers to Trade as well as standards set by private buyers. Last but not least, as was already mentioned, many agricultural products are currently subject to tariff peaks and tariff escalation (higher tariffs on processed products), which deter diversification into higher value-added products and cause developing countries to become overly dependent on a small number of primary commodities.

The realisation of the right to adequate food should serve as a compass for developing proposals for a global economic system. The interdependence of national and international efforts in realising human rights is acknowledged in Article 28 of the Universal Declaration of Human Rights. It is crucial to have a global economic structure that enables nations to adopt policies meant to realise the right to food. However, it's crucial to have a nuanced perspective when discussing global commerce and how it affects the right to food. The advantages of trade for individual countries should not be the only considerations when tackling food security, even if trade may play a part in doing so. The welfare of the most vulnerable and food insecure communities should take precedence instead. People who do not gain from trade shouldn't be more marginalised by it, since this might make them more vulnerable. Food supply is a major challenge, both in terms of quantity and production efficiency. Food supply and production are impacted by a variety of factors, including population increase, dietary changes, cropland rivalry, and climate change. Particularly in sensitive areas, climate change presents a serious danger to agricultural productivity.

Distribution of food and buying power are both essential. Hunger and malnutrition are mostly caused by the poorest sections of the population's inability to get inexpensive food. If individuals can't afford the available food, just boosting food production or allowing commerce won't fix the issue. The Agreement on Agriculture in particular, which is part of the existing multilateral trading system, has a considerable impact on how the world trades in food. Though it tries to liberalise agricultural markets, there are conflicting results on food security. While it could be advantageous for certain nations, it can also hurt smallholders in underdeveloped countries and maintain disparities. The growth of varied and value-added agricultural industries in emerging nations might be hampered by export subsidies and tariff systems that foster unfair competition.

CONCLUSION

In conclusion, the right to food is a basic human right that is recognised in a number of conventions and accords that are made internationally. By implementing policies that guarantee access to sufficient food, actively promoting people's access to resources for food, and abstaining from acts that obstruct access to food, states have a clear duty to defend, fulfil, and respect this right. The right to adequate nutrition is more than simply having enough calories; it also covers having access to food that is both culturally and nutritionally appropriate and enables people to eat with respect. In order to properly handle the right to food within the framework of global commerce, trade liberalisation and food security must be carefully balanced. To better serve the interests of the most vulnerable and food insecure communities, the current trading system, as typified by the Agreement on Agriculture, has to be critically reviewed and altered. Prioritising actions that safeguard the right to food, advance sustainable farming methods, and guarantee fair access to food for everyone is essential, especially in a world contending with the problems of population increase and climate change. In order to fulfil the right to food for all people, it is important to solve

complicated challenges related to distribution, affordability, and sustainability within the context of international commerce.

REFERENCES:

[1] A. C. Disdier, C. Emlinger, and J. Fouré, "Interdependencies between Atlantic and Pacific agreements: Evidence from agri-food sectors," *Econ. Model.*, 2016.

[2] D. A. Wirth, "Geographical indications, food safety, and sustainability: Conflicts and synergies," *Bio-based Appl. Econ.*, 2016.

[3] S. Boza and F. Fernández, "World Trade Organization members' participation in mechanisms under the sanitary and phytosanitary agreement," *Int. J. Trade Glob. Mark.*, 2016.

[4] I. Karunasagar, "International Risk Assessment Leading to Development of Food Safety Standards," *Procedia Food Sci.*, 2016.

[5] A. D. Siegel, "NAFTA largely responsible for the obesity epidemic in Mexico," *Washingt. Univ. J. Law Policy*, 2016.

[6] S. Widodo, "Pengaruh globalisasi terhadap ketahanan pangan nasional," *Agro Ekon.*, 2016.

[7] M. A. Mcminimy, "American Agriculture and the Trans - Pacific Partnership (TPP) Agreement," *Congr. Res. Serv.*, 2016.

[8] J. N. Bhagwati, P. Krishna, and A. Panagariya, *The world trade system: Trends and challenges*. 2016.

[9] S. F. Halabi, "International Intellectual Property Shelters," *Tulane Law Rev.*, 2016.

[10] A. Shohibul, Mulyadi, Sarjiyanto, and A. Suryantoro, "ASEAN free trade agreements: Global trade analysis project (GTAP) model," *Int. J. Econ. Res.*, 2016.

CHAPTER 9

CHALLENGES AND COMPLEXITIES OF AGRICULTURAL TRADE LIBERALIZATION IN DEVELOPING NATIONS

Kusum Farswan, Assistant Professor
College of Agriculture Sciences, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India,
Email Id- kusumfarswan.14feb@gmail.com

ABSTRACT:

The domestic agricultural sectors in many developing countries have had trouble luring investment during the last three decades, mostly because of a global trade system that is biassed against rising economies. Due to unfair competition, several sectors have lost competitiveness as a result of this bias's perpetuation of a negative cycle. Additionally, governments have ignored this industry for a very long time. Averaging just 4% of agricultural GDP in 2004, governmental investment on agriculture in nations with large agricultural economies was emphasised in the World Bank's 2008 World Development Report. This problem has not only been ignored by the world community but also by organisations like the World Bank. The World Bank's International Evaluation Group (IEG) stated that insufficient efforts had been made to increase the productivity of smallholder farmers. In addition, just 4% of official development aid (ODA), down from 18% in 1980, was given to agriculture between 1980 and 2005. In order to decrease public deficits and sustain price signals, many developing countries were forced to slash their agriculture sector's public assistance programmes as a result of the application of structural adjustment policies. As a result, a number of Sub-Saharan African countries became net food importers. Even if removing these current distortions would be a huge improvement, it may not be enough. It is essential to defend disadvantaged people in developing nations as well as their agricultural producers from competition with farmers in industrialised countries. Beyond trade liberalisation, it is critical to invest in agriculture, implement local policies that work, and take steps to lessen price volatility and reliance on imports. A fair and sustainable global agricultural trading system must carefully take into account the particular difficulties encountered by poorer countries.

KEYWORDS:

Agriculture, Agricultural, Industry, Trade Liberalization.

INTRODUCTION

The domestic agriculture industry in these nations has been unable to draw investment during the last thirty years as a consequence of a system that is strongly biassed against the interests of emerging nations. This creates a vicious cycle in which this industry loses even more competitiveness as a result of unfair competition. In fact, not only did no private investment pour into this area, but governments also ignored it for a very long time. In its World Development Report 2008 - Agriculture for Development, the World Bank notes that "the agriculture-based countries have very low public spending in agriculture as a share of their agricultural GDP," at an average of 4% in 2004. The World Bank's Independent Evaluation Group (IEG) acknowledges that this failure is one of the international community as a whole, including the World Bank itself.27 Particularly, the IEG claims that too little has been done to increase the productivity of smallholder farmers. Between 1980 and 2005, only 4% of all official development assistance (ODA) went to agriculture, a sharp decline from 18% in 1980 to 4% in 2005. Farmers were not given the resources they needed to deal with rising input

costs, which had a negative impact on their productivity. In addition, structural adjustment policies forced many developing nations to dismantle any previous public support programmes for their agricultural sector in order to reduce public deficits and avoid distorting price signals. These policies were imposed as a requirement for access to loans. As a result, a greater number of Sub-Saharan African nations turned became net importers of food [1], [2].

The existing distortions have genuine detrimental effects. However, it does not follow that eliminating the distortions that already exist is the only way to solve the problem. One reason for this is because, unless steps are done to protect the neediest, increased access to export markets for farmers in developing nations would only benefit some of them, and not the most vulnerable. However, there is another reason why trade must give developing nations more flexibility and make sure that the flexibilities that are recognised are more operational: specifically, to protect their agricultural producers from the competition from farmers in industrialised nations. More protection is needed, not less, if trade is to work for development and to help realise the right to adequate food.

The obvious explanation for this is at the core of what justifies special and different treatment for developing countries: even after the removal of current trade-distorting measures, which currently benefit developed countries disproportionately, the productivity per active labourer in agriculture will still, on average, be much lower in developing countries than in developed ones. In 2006, the agricultural labour productivity in LDCs was only 46% that of other developing nations and less than 1% that of developed nations. Additionally, these stark disparities in productivity are becoming worse: between 1983 and 2003, labour productivity increased by just 18% in LDCs, 41% in other developing nations, and 62% in rich nations. Some estimates claim that the disparities in productivity per active agricultural labourer between the most and the least efficient producers amount to 1/1000 or more, depending on the kind of equipment accessible to farmers in LDCs or developing nations.

The phrase "level playing field" has no sense in this situation. Agriculture producers from the majority of developing countries will not be able to compete on an equal footing with producers from industrialised nations or from the most competitive and highly mechanized producers of certain other developing countries, even with the expansion of the reform programme under the AoA (improved market access, limits on domestic support, and the phasing out of export subsidies), unless the wages in the least competitive chains are suppressed at very low levels. Because they have a strong comparative advantage in agriculture due to their highly mechanized agricultural sectors and the fact that their agricultural wages are still lower than those in OECD countries, some developing nations would undoubtedly profit from the elimination or at least a reduction of the trade-distorting subsidies of the developed nations. However, due to a lack of investment in agriculture for a period of years, agriculture remains a vulnerable industry in other developing nations, especially LDCs. It would therefore be completely inappropriate to encourage these nations to open up their agricultural sectors to competition by requiring them to accept low import tariff rates, especially in light of the fact that food insecurity is largely concentrated in rural areas and that a sizable portion of the populace in the most vulnerable nations depends on agriculture for a living: between 2000 and 2003, 70% of the economically active population was employed in agriculture.

It should be emphasised that neither the inability of many developing nations to make adequate investments in agriculture nor the harm done to their agricultural sector by the reduction of import tariffs on agricultural goods are attributed to the WTO's rules. The international financial institutions are primarily to blame for this situation, specifically for the structural adjustment programmes that were required of States in the 1980s in order for them

to be eligible for loans.33 Domestic policies are also frequently criticised for giving too little attention to agriculture and for sacrificing the long-term interest of the country in strengthening its agricultural sector to the short-term interest of governments in t On the other hand, effective domestic policies may be a need for any possibilities brought about by increased market access, for instance by easing supply-side restrictions faced by producers or by assisting in covering adjustment costs [3], [4].

However, assigning blame has little value. It is important to evaluate the effects of trade liberalisation while taking into consideration the present limitations that developing nations must contend with. They often find it difficult or impossible to adopt domestic policies that would enable them to maximise the positive effects of trade while minimising the negative effects, especially by making full use of the flexibilities they are given. It would be reckless to assume that these complementing domestic measures can be successfully implemented in the nations in question at a pace consistent with the effects of trade liberalisation. In fact, the current applied regime of agricultural trade is not dissimilar to what would result from any additional commitments that would result from the successful conclusion of the Doha Round of negotiations in large part due to the wide differences between the applied and the bound tariff rates in agriculture. With few exceptions, developing country governments have been unable to take the necessary steps to address the issues raised above, including the insufficient market access for their producers and their susceptibility to import surges on their own domestic markets. The lesson is that we shouldn't assume too lightly that these nations can adapt to the context shaped by global trade. While governments may not be able to take all necessary steps to do so, as was the case in Sub-Saharan Africa in particular after the removal of State institutions that had supported agricultural producers until the early 1980s34, there may not be a private sector that is resilient enough to make adjustments.

DISCUSSION

At three levels, the effects of removing trade restrictions on agriculture are investigated. Trade liberalisation may limit countries' ability to diversify their economies and force them into unsustainable development patterns. It may also make countries more vulnerable due to their reliance on international trade, while also putting agricultural producers in certain developing nations in a precarious position (1.). The global food supply chain is being reshaped in a manner that benefits multinational businesses on a microeconomic level as a result of trade liberalisation, whose freedom to act is increased at the same time as the regulatory instruments States may use are being restricted (2.). The economic effects, however, are not the only consideration. States cannot overlook the significant effects that international commerce in agricultural products has on the environment, human nutrition, and health (3.).

The International Labour Organisation

The liberalisation of trade encourages each nation to focus on the areas of industry where it has a competitive advantage. The promise of trade liberalization is that by creating incentives for producers from different States to specialize in the products or services in which they have a comparative advantage, it will benefit all the trading partners, since it will lead to efficiency gains within each country and to increased overall levels of world production. Extensions of the traditional "static" theory of comparative advantage opine that pov- erty alleviation and economic progress may follow.

There are a lot of difficulties with this idea. The mainstream hypothesis, to start, is predicated on potentially dubious premises. It is assumed that the concerned States have a private sector that is both stable and adaptable enough to respond to price signals from the market.

Additionally, it assumes that economic expansion would have a "trickle-down" impact that will reduce poverty. However, we have observed that, after two decades of structural adjustment programmes, the agricultural sector in Sub-Saharan Africa, for example, was in such a state that it was unable to react to price signals; in many cases, it has been so neglected that it is unable to advance beyond subsistence agriculture. It has been shown that in some cases, depending on how trade is managed, inequalities and poverty could increase as a result of trade liberalisation instead of the automatic existence of a "trickle-down" effect, which economists continue to debate.35 According to Joseph Stiglitz, "The theory of trade liberalisation (under the assumption of perfect markets, and under the hypothesis that the liberalisation is fair) only promises that the country as a whole will benefit. Losers are inevitable, according to theory. Although it is possible for victors to make up for losers in theory, this seldom occurs in reality.

But once it is proposed as a prescription applicable across all nations and for all industries, the notion of countries specialising via international commerce is problematic for other reasons. Political decisions, such as how much money is spent on irrigation, rural infrastructure, expanding access to microcredit, and providing financial assistance to farmers to make up for low prices, greatly influence whether a nation is competitive in agriculture. Although natural causes unavoidably limit what nations may produce, these policy decisions are crucial in determining a nation's place in the global labour market for agriculture as well as other industries. Therefore, while defining these policy options, we must consider what incentives come from the reduction of trade barriers [5], [6]. Is there a chance that nations will be motivated to focus only on producing raw materials if they see other nations have already achieved significant economies of scale in certain industrial lines? Is this a long-term development-friendly situation?

The use of comparative advantage as a justification for preventing developing nations from rising up the development ladder, notably in the agriculture sector, by shifting towards the export of more items with added value, such processed foods, should be discouraged. But when trade liberalisation shifts from being a tool to assure growth to an objective to be sought for its own sake, it is this vision that is rendered more improbable, not closer to grasp. Due to historical circumstances, the majority of developing countries, especially the least developed countries, have been restricted to producing raw materials, particularly agricultural commodities, while industrialised countries have been able to develop a comparative advantage in manufactured goods or in services. As Galeano noted, this has led to these nations specialising in losing, while industrialised nations have focused on winning38. As a result, the current global division of labour is deliberately working against the interests of developing nations, as returns to agriculture are falling while those to manufacturing are rising. Before their industries were prepared to compete—in many instances, even before they had any industrial sector at all—these nations were encouraged to open up to foreign commerce. Many economists have noted that this would cause the terms of trade for nations that were compelled to open up to international trade too soon and who were unable to prepare themselves for international competition behind trade barriers to worsen further39. Nevertheless, we seem to insist on basing international trade on the wrong presuppositions: on a fictitious Ricardian world, in which all values are reduced to labour and in which neither quality nor quantity exist. Therefore, it is a grave error to look for a solution in more specialisation into the manufacturing of goods with the least amount of added value rather than in enabling emerging nations to diversify into other production lines. Those who maintain that the true issue is that trade is now skewed in the industry that matters most to developing nations - agriculture - and that the answer is thus to eliminate these distortions, misunderstand this fundamental point.

The Motivation to Focus on Export Crops and the Dependency that Follows. It is critical to consider whatever incentives States get as a consequence of the opening of international commerce since comparative advantage is built rather than based on inherent characteristics. Naturally, states may work to increase their manufacturers' capacity to take use of the advantages of global commerce, especially for developing nations, improved access to the high-value marketplaces of industrialised nations. At the same time, States can discover that importing certain products, such processed meals, is less expensive than manufacturing them domestically, leading them to become more dependent on imports to feed their populations. Thus, specialisation based on comparative advantage results in two types of dependence: the first is on the value of exports for the purpose of obtaining foreign cash; the second is on the cost of imports for the purpose of a country's capacity to feed its people.

It is illuminating to use the example of Sub-Saharan African nations. Sub-Saharan Africa has remained dependent on traditional non-fuel primary commodity exports like coffee, cotton, cocoa, tobacco, tea, and sugar and was essentially unable to develop into an exporter of processed food due to the highly penalising structure of tariffs in OECD countries through tariff peaks and tariff escalation, as well as the presence on international markets of highly subsidised foods produced in industrial countries: In the years 2000 to 2005, South Africa, the biggest exporter of processed food in Africa, with a 1% share of the worldwide market.40 The majority of African nations have turned into net food importers during the 1980s, despite the fact that several of them were net food exporters up until the 1970s. As we've seen, this was partly caused by a lack of agricultural investment and partially because sophisticated market economies provided agricultural subsidies, which in turn discouraged agricultural investment. The outcome is well known: it has made these nations more susceptible to both worsening terms of trade and fluctuations in commodity prices, the latter of which are particularly significant in the agricultural sector given this sector's sensitivity to weather-related events and low supply and demand elasticities. More specifically, reliance on international trade may have three negative effects: loss of export revenues when export commodity prices decline; threats to domestic producers when low-cost imports flood the market and these producers are unable to compete; and balance of payments issues for the net food-importing countries when food commodity prices rise. The WTO accords aimed to solve the latter two issues; the first issue has not been at all addressed since the phase-out of the commodity stabilisation agreements of the 1960s and 1970s.

States that are most reliant on international commerce are more sensitive to shocks, such as overproduction or poor harvests in other States, which may result in sharp price declines or rises. This is due to the volatility of pricing on the global markets for commodities. In fact, it is believed that the prices of agricultural commodities are highly volatile owing to the dependency of agriculture on weather-related occurrences and the poor elasticity of supply and demand. Is more trade liberalisation the solution? Generally speaking, volatility may be reduced by distributing supply and demand across many producers and consumers. The possibility of unexpected price spikes or declines as a consequence of a few key producers underserving the market or oversupplying it grows with the market's thinning. This is generally regarded as a compelling argument in favour of the growth of international markets for agricultural commodities; many international agencies have learned this lesson from the effects of export restrictions put in place in the spring of 2008 by some significant rice exporters, for example [7], [8].

However, this reasoning is based on the supposition that changes in production (towards noticeably lower levels or, conversely, higher levels) are primarily due to exogenous factors, such as weather-related events, so that bad weather in one country will be made up for by

higher production in another, creating an insurance effect for the buyers of the product in question. In reality, however, the levels of output of agricultural goods depend mostly on the decisions made by the farmers: the variables that account for changes in production are largely endogenous, rather than just exogenous. It is common knowledge that these decisions are taken during the planting season, four to six months before harvest, based on the growers' current expectations for the prices they would get. The 'cobweb effect' is the outcome of this, when farmers plant more of the crops whose prices are greatest throughout the planting season and they grow relatively less of the crops whose prices are lowest. As a consequence, there is structural instability since high prices encourage overproduction (which drives down prices) and low prices encourage production (which drives up prices). The crucial conclusion is that, in the absence of supply management plans, all producers—regardless of where they are located—will act as predicted if they merely try to react to price signals. As soon as markets become globalised, all producers get the same price signals, which causes all providers' responses to converge rather than cancelling out each other's overproduction or inability to produce enough. Thus, rather than reducing volatility, the absence of protection for home markets from the pricing of global markets increases it. As was well shown between February and April 2008 in rice, hoarding practises by individual traders or by governmental entities may increase this volatility.

The need to create instruments to reduce this volatility, which produces shocks that are especially challenging to deal with for many developing nations, should get greater focus in the future. The main problem, however, is how dependent nations are on food imports to ensure the population's food security and the potential effects this may have on the right to sufficient nutrition. We must compare two opposing scenarios—one in which the prices of food commodities on international markets are low (the slump scenario), which has historically been the norm, and another in which the prices rise steadily (the boost scenario), in order to evaluate these effects.

In the scenario of a depression, an excess of goods on the market, especially from manufacturers in OECD nations that are heavily subsidised, causes prices to fall. In the absence of robust tariff safeguards, this leads to import surges that might endanger the capacity of local farmers in net food-importing nations to survive off of their harvests if such import surges cause prices on the domestic markets to drop to the point that they are forced out of business. Both before and after the Agreement on Agriculture came into effect, these increases were a common occurrence. A study encompassing 102 developing nations from 1980 to 2003 found 12,000 instances of import spikes. According to the FAO, all basic food commodities experienced import surges more frequently than once every five years (using the definitions provided in Article 5 AoA), with rice (40.1%), sugar (40.4%), palm oil (36.6%), cheese (36.4%), and wheat (35.9%) experiencing particularly high frequencies. The majority of commodities have seen an increase in these frequencies since 1994, with the exception of wheat, rice, maize, and palm oil. India and Bangladesh in Asia, Zimbabwe, Kenya, Nigeria, Ghana, and Malawi in Africa, Ecuador, and Honduras in Latin America, were the nations most severely impacted.

The livelihoods of farmers and agricultural workers who depend on these products are threatened by such import surges. For instance, Ghana imported 415,150 tonnes of rice in 2003 compared to 250,000 tonnes in 1998. Domestic rice, which had occupied 43% of the domestic market in 2000, barely accounted for 29% of it in 2003. As a consequence, 66 percent of rice farmers experienced a loss.44 The same nation had a 650 percent growth in tomato paste imports, from 3,300 tonnes in 1998 to 24,740 tonnes in 2003, with a substantial share (36%) coming from Italy. Local producers, the majority of whom are small-scale

farmers suffering from a lack of investment and competition, lost 35% of the domestic market share. Between 1999 and 2004, chicken imports to Cameroon almost tripled. Around 92 percent of poultry producers left the industry. Between 1994 and 2003, 110,000 rural jobs a year were destroyed. Between 2001 and 2003, chicken imports in Cote d'Ivoire surged by 650 percent, resulting in a 23 percent decline in local output. 1 500 producers were compelled to stop production as a result of the declining pricing, which resulted in 15,000 jobs being lost. Between 2000 and 2004, imports of vegetable oils (palm, soy, and sunflower) more than doubled in Mozambique as local production was inadequate to meet the country's rising demand. With prices falling and domestically produced refined oils following the price changes of imported refined oil, local producers' margins severely shrunk, resulting in the closure of several plants and a general decrease in the amount of locally produced oil.

The reduction of import tariff barriers to levels that are significantly lower than those outlined in the AoA, which these countries agreed to as part of the structural adjustment programmes imposed on them as a condition of receiving loans, is the cause of the import surges experienced by developing countries. This resulted in the arrival of cheap commodities on domestic markets, which the local producers in developing countries were unable to compete with. The decline in prices on the international markets was partly caused by subsidies provided to their agricultural producers by OECD countries and the resulting overproduction. These farmers face a variety of supply-side challenges, but they often include poor productivity brought on by dependence on outdated agricultural technologies, limited access to loans and agricultural inputs, a lack of training and technical support, and a lack of rural infrastructure services. Increased investments in agriculture and policies supporting farmers may help alleviate some of these problems, but doing so from a medium- to long-term perspective does not provide a quick fix for the affected farmers' inability to increase supply in response to demand and boost their competitiveness in the face of import competition [9], [10].

The AoA's present provisions are inadequate to enable nations to respond to the disruptions brought on by import surges. According to the AoA, when confronted with import surges of certain products, that is, imports exceeding a specified trigger level or whose price falls below a specified trigger price, members that resorted to tariffication of their non-trade barriers may impose "special safeguard measures" (SSG) in the form of additional tariffs (Art. 5). However, tariffication was not used in the majority of emerging nations. On hundreds of items, 39 WTO Members, including 22 developing nations, have reserved the ability to use the special protection option. Only 10 Members, including 6 developing nations, used the SSG mechanism between 1995 and 2001, and between 1995 and 2004 developing nations used the SSG in only 1% of the situations in which they might have used it. These numbers may be contrasted with the number of import booms that emerging nations have experienced. The existing SSG mechanism is useless as a defence against such surges. The majority of developing nations could not reserve their right to rely on the SSG since they did not engage in tariffication. Only 6 out of 22 people who reserved that privilege actually used it, either due to their limited ability to gather data or because the safeguard procedure was difficult to employ due to its complexity.

CONCLUSION

In conclusion, throughout the last three decades, the domestic agricultural sector in many developing countries has been characterised by a lack of investment, unfair international trade practises, and an increasing susceptibility to changes in the global market. Due to unfair competition and a lack of assistance, these difficulties have produced a vicious cycle in which the agricultural sectors of these nations lose competitiveness. Instruments that lessen market

volatility and shield local markets from global price variations must be developed in order to solve these problems. A key factor in trade policy should be the entitlement to adequate nutrition and food security. In conclusion, home agriculture in emerging countries faces several, intricate obstacles. In order to preserve vulnerable sectors and guarantee food security for everybody, trade liberalisation must be implemented cautiously and in conjunction with supporting domestic policies and international procedures. In order to achieve sustainable agricultural development and economic progress, emerging countries have unique demands and conditions that must be taken into consideration while constructing a global trade system.

REFERENCES:

[1] S. M. Ferguson and M. R. Olfert, "Competitive Pressure and Technology Adoption: Evidence from a Policy Reform in Western Canada," *Am. J. Agric. Econ.*, 2016.

[2] N. Hosoe, "The double dividend of agricultural trade liberalization: Consistency between national food security and gains from trade," *J. Asian Econ.*, 2016.

[3] S. Rafiq, R. Salim, and N. Apergis, "Agriculture, trade openness and emissions: an empirical analysis and policy options," *Aust. J. Agric. Resour. Econ.*, 2016.

[4] Y. P. Subedi, P. Simkhada, and B. Pyakuryal, "Is Economic Transition One of the Proximate Determinants of Nutrition Transition in Nepal?," *Open J. Polit. Sci.*, 2016.

[5] Q. Dang, M. Konar, J. J. Reimer, G. Di Baldassarre, X. Lin, and R. Zeng, "A theoretical model of water and trade," *Adv. Water Resour.*, 2016.

[6] M. Konar, J. J. Reimer, Z. Hussein, and N. Hanasaki, "The water footprint of staple crop trade under climate and policy scenarios," *Environ. Res. Lett.*, 2016.

[7] E. Tomiura, B. Ito, H. Mukunoki, and R. Wakasugi, "Individual Characteristics, Behavioral Biases, and Trade Policy Preferences: Evidence from a Survey in Japan," *Rev. Int. Econ.*, 2016.

[8] B. P. Warner and C. Kuzdas, "Manufactured global-change risk pathways in industrial-based agrarian development," *Climate and Development*. 2016.

[9] C. Saunders, P. Dalziel, M. Guenther, J. Saunders, and P. Rutherford, "The land and the brand.," *Research Report - Agribusiness & Economics Research Unit, Lincoln University*. 2016.

[10] R. Keeney, B. Narayanan, and E. Valenzuela, "The Global Trade Analysis Project's (GTAP's) database and CGE model as a tool for agricultural and environmental economic analysis," in *World Scientific Reference on Natural Resources and Environmental Policy in the Era of Global Change*, 2016.

CHAPTER 10

NAVIGATING THE COMPLEXITIES OF GLOBAL TRADE IN AGRICULTURE: IMPLICATIONS FOR FOOD SECURITY, ENVIRONMENT, AND HEALTH

Kuldeep Mishra, Assistant Professor
College of Agriculture Sciences, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India,
Email Id- mishraypikuldeep@gmail.com

ABSTRACT:

The issues encountered by developing countries are highlighted in this thorough review of the many effects of trade liberalisation and global food commerce on food security, the environment, and public health. The research emphasises the necessity of protecting the right to food in such circumstances and the disparate effects of increasing food costs on nations with net food imports. It is looked at as a viable method to deal with the negative consequences of agricultural reform on least-developed and net food-importing developing countries (NFIDCs). The "Marrakesh Decision," a part of the World Trade Organisation (WTO) agreements. The lack of a regular evaluation process for this decision's consequences on NFIDCs, however, makes it clear that there are limits to its implementation, according to the research. With an emphasis on energy use and its role in climate change, the effects of long-distance food delivery on the environment are investigated. The report makes recommendations for strategies to lessen the environmental effect of global supply chains, including encouraging local manufacturing and environmentally friendly transportation. In order to sustain agricultural genetic variety and ensure long-term food security, it is important to encourage small-scale farmers and examine the dualistic structure of the global food system. Finally, the research emphasises the connection between trade liberalisation and health, notably the change in developing nations' diets brought on by an increase in the importation of processed goods. It is emphasised how crucial it is to take health into account when making trade policy choices. This research highlights the complexity of the global food economy and the negative effects of trade liberalisation on food security, the environment, and human health. It need a well-rounded strategy that emphasises sustainability, assists disadvantaged groups, and tackles the wider effects of global commerce on well-being.

KEYWORDS:

Agriculture, Environment, Food Security, Global Trade, Health.

INTRODUCTION

Due to poor nations' reliance on food imports, the right to food is affected significantly differently when, in the "boost" scenario, prices rise on global markets. Net food importers may have balance of payments issues under such conditions; the difficulties these nations had during the period of 2007–2008, when these prices climbed significantly, offered a striking example of this danger. The "Marrakesh Decision," which is a component of the WTO accords, was created to address potential negative effects of the reform programme on least-developed and net food-importing developing countries. It was designed to address such a scenario. The members of this Decision note that the reform programme may have negative effects on the ability of least-developed and net food-importing developing countries (NFIDCs) to obtain adequate supplies of basic foodstuffs from outside sources on reasonable terms and conditions, including short-term challenges in financing typical levels of

commercial imports of basic foodstuffs. There are four available reaction methods. There are four of these: (1) favourable terms for agricultural export credits; (2) the provision of technical and financial assistance to least-developed and net food-importing developing countries to improve their agricultural productivity and infrastructure; (3) the provision of food aid at a level that is sufficient to continue to provide assistance in meeting the food needs of developing countries; and (4) short-term financing facilities that benefit developing countries.

But the Marrakesh Decision's inability to be implemented by WTO Members starkly demonstrates how unfairly the WTO Agreements have been implemented. Any procedures created under the Marrakesh Decision could only be used in the most exceptional situations since there is no WTO mechanism in place to routinely review the effects of the AoA reform process on the NFIDCs. Throughout the reform process, NFIDCs should be able to obtain "adequate supplies" of basic foodstuffs from outside sources "on reasonable terms and conditions," but this concept is still vague and is what should set off the mechanisms outlined in the Decision. The Marrakesh Decision specifies four procedures, although each of them has significant flaws [1], [2].

(1) The Marrakesh Decision mentions the need to "initiate negotiations in the appropriate forum to establish a level of food aid commitments sufficient to meet the legitimate needs of developing countries during the reform programme" and to "review the level of food aid established periodically by the Committee on Food Aid under the Food Aid Convention 1986."

This stated goal led to the 1995 and 1999 Food Aid Conventions (FACs), which updated the original FAC from 196748. In accordance with Article IV of the 1986 Food Aid Convention, the Marrakesh Decision also included a commitment to "adopt guidelines to ensure that an increasing proportion of basic foodstuffs is provided to least-developed and net food-importing developing countries in fully grant form and/or on appropriate concessional terms." But according to Article VII (a) of the Food Aid Convention, food aid under the Convention may be given to least-developed countries, low-income countries, as well as "lower middle-income countries, and other countries included in the WTO list of Net Food-Importing Developing Coun- tries at the time of negotiation of this Convention, when experiencing food emer- gencies or internationally recognised financial crises leading to food shortage emergencies, As a result, the FAC stipulates more stringent standards for the NFIDCs, which are not LDCs nor low-income countries, than would be necessary to guarantee the Marrakesh Decision is implemented properly. This inconsistency might be resolved by amending the FAC. Additionally, the principles mentioned in the Marrakesh Decision could be implemented in order to require the States parties to the FAC to provide food aid at levels that guarantee NFIDCs will always be able to adequately protect the right to food falling under their purview.

(2) Over the last 20 years, there has not been enough support given to LDCs and NFIDCs to enable them to increase the infrastructure and agricultural output. As we have shown, since the early 1980s, both the percentage of official development aid devoted to agriculture and the percentage of national budgets allocated to agriculture have drastically decreased. Although there have been calls to stop this tendency in a number of forums, it is unclear if there will be the political will to put these resolutions into action.

3) The Marrakesh Decision states that LDCs and NFIDCs should get separate treatment in any agreement on agricultural export credits. These nations now contribute a tiny amount to global agricultural exports. However, there hasn't been much development made in this area.

(4) The Marrakesh Decision's paragraph 5 allows NFIDCs who are having trouble with their balance of payments to use "existing facilities, or such facilities as may be established" to help them solve their funding issues. The IMF Compensatory Financing institution (CFF), which was first created in 1963, has been the primary institution considered to meet this criteria. Due to the extreme volatility of food prices in the 1970s and in response to demands from the FAO and the World Food Council, the CFF was enlarged in 1981 to cover excess grain import expenses. However, NFIDCs haven't really found much use for this function. Access to the CFF is limited to nations who are currently facing temporary balance of payments issues due to variables that are mainly beyond of their government's control, such an increase in the price of importing grain. However, very few nations have been thought to satisfy this requirement. The Marrakesh Decision recognises specifically that access to loans is conditional and refers to facilities that are provided "in the context of adjustment programmes." The Marrakesh Decision covers all fundamental foods, but the CFF only covers cereals. This is the last difference between the two documents.

DISCUSSION

On April 25, 2001, a group of 16 developing country WTO members submitted a proposal that included, among other things, the creation of an Inter-Agency Revolving Fund (RF)51, under which, in addition to providing LDCs and NFIDCs with technical and financial assistance for specific projects aimed at improving agricultural productivity and related infrastructure, financing would be made available at concessional terms without the need for any justification other than proof that the project will be successful. This method was intended to be self-financing, with borrowing nations taking responsibility for loan repayment, for example, within a two-year window. The WTO Doha Ministerial Conference included this idea as one of the implementation issues; the UNCTAD subsequently expanded on it, which resulted in the formation of an Inter-Agency Panel to look into the matter.53 The suggestion for a revolving fund has not yet received any further action. Thus, it is to be commended that the Exogenous Shocks Facility (ESF) was revised in September 2008 to enable the IMF to assist its members in coping with events like changes in commodity prices, by including a rapid-access component in the facility and by providing favourable terms of financing, focused on the adjustment to the underlying shock but with less emphasis than previously on broader structural adjustments.

Increased cross-border commerce in agricultural goods suggests that transnational firms' roles as commodities dealers, food processors, and global retailers will grow as food production is reoriented to serve international markets rather than local ones. These businesses play a crucial role in connecting manufacturers, especially those from developing nations, to markets, especially the high-value markets in industrialised nations. These organisations may be challenging to govern, especially when it comes to their purchasing practises, since they have operations in several nations and have the freedom to choose the nation from which they purchase [3], [4]. The farmers who provide them with food are dependent on this. Additionally, it promotes the segmentation of the agricultural industry, which is becoming increasingly split between one segment that has access to high-value markets and, as a result, the best technologies, inputs (including land, water, and government support), credit, and political influence, and another segment that is restricted to serving low-value, domestic markets and is, in comparison, neglected and marginalised.

Large multinational firms involved in the agrifood system get a rising share of the final value of agricultural goods. The food system has a large concentration. Since the majority of significant commodity buyers are based in the OECD countries, this has the effect of reducing the share of value captured by developing countries and widening the gap between

world and domestic commodity prices, such as those for wheat, rice, and sugar, which more than doubled between 1974 and 1994. As a result of concentration at various points along the supply chain, large multinational corporations in the agrifood system—commodity buyers, food processors, and retailers—now hold a dominant position and receive an increasing share of the end value of agricultural products. The World Bank cites high concentration rates in coffee, tea, and cocoa in its World Development Report 2008: Despite the fact that an estimated 25 million farmers and farm labourers produce coffee, foreign merchants and coffee roasters own a combined market share (CR4) of 40% and 45%, respectively. There are 500 million customers, according to estimates. Brazil, Colombia, Indonesia, and Vietnam, which together account for 64% of worldwide manufacturing, saw their portion of the retail price decrease from a third in the early 1990s to 10% in 2002, even while the value of retail sales quadrupled. The tea value chain has similar concentrations, with three businesses controlling more than 80% of the global market. For international merchants, cocoa has a CR4 of 40%; for cocoa grinders, it is 51%; and for confectionery manufacturers, it is 50%. The value contributed claimed by developing nations decreased from over 60% in 1970–1972 to about 28% in 1998–2000. Farmers in industrialised nations suffer similar restrictions because they must deal with commodity dealers who have a dominating position: two firms account for 40% of grain exports from the United States.55 In the retail industry, there are similar tendencies towards greater concentration, albeit the rate of concentration appears to have slowed down recently.

The outcomes of the growth of global supply networks are unclear. On the one hand, this opens up opportunities by giving farmers from developing countries access to high-value markets. This is especially true where these farmers have certain comparative advantages, such as lower land and labour costs and longer growing seasons, and where they are relatively close to those markets, like Sub-Saharan producers are to European markets. However, since there are more suppliers and more competition among them as a result of global sourcing, purchasers may adopt pricing strategies that lower the proportion of a product's ultimate value that goes to producers (known as the farm gate price as opposed to the retail price). Due to the increased concentration of market power in the agricultural commodities system in the hands of large retailers and commodity buyers, these actors impose their prices on producers and standards that many small-scale farmers are unable to meet. In particular, for crops like wheat or soy-bean, for which economies of scale represent important productivity gains, small-scale farmers are unable to compete and are consequently relegated to the low-value, unprofitable market.

Cooperatives, out-grower programmes, public-private partnerships, and regional initiatives are some possible measures that may be established to prevent small-scale farmers from being forced out by the growth of global supply chains. However, the results of these tactics might sometimes be unclear. For instance, contract farming and out-grower programmes may be a way to transfer the risks on the independent producer, who is not promised a steady income and may have to deal with substantial losses, for example, if the harvests are unsuccessful or if prices suddenly drop. Additionally, these attempts to include small-scale farmers into global supply chains are still in the early stages of development and obviously insufficient at this time to halt the trend towards greater concentration and increasing dualization of the agricultural industry. This is especially true given that big purchasers want to reduce transaction costs, which are significant when they try to buy from small-scale farmers who are geographically scattered and distant from centralised collecting facilities. Large agricultural producers are also better able to adjust to changing demand, adhere to volume and traceability requirements, as well as environmental and food safety regulations, which are increasingly being monitored by international retailers.

The global food system has been described as having a dualistic structure. 85 percent of farms continue to be small-scale enterprises with an area of less than two hectares. However, the 0.5% of farms with more than 100 hectares are responsible for a disproportionate amount of the world's agricultural revenue, have special access to decision-makers, and, notably in industrialised nations, get considerable subsidies. Supermarkets and other influential corporate players have a growing amount of the purchasing power outside of agriculture. The global food and agricultural systems are being shaped by the preferences of wealthy customers in high- and middle-income nations, providing smallholders with possibilities and niche markets. However, they can have a hard time meeting the expectations of the purchasing agents. The development of global supply chains won't do much to lessen this inequality; on the contrary, it will widen the gap between these various farming sectors.

Environmental and health aspects of trade liberalization's non-economic effects

It is impossible to disregard the effects of international commerce on nutrition and the environment while relying on it to attain food security. The greatest danger to the planet's capacity to feed its people in the future is climate change. It is impossible to disregard the effects of international commerce on nutrition and the environment while relying on it to attain food security. These factors were largely disregarded in talks of global commerce until recently. Nevertheless, they are essential. As was said before, climate change is the single biggest danger to the planet's capacity to feed its people in the future, hence any action that contributes to additional global warming should be avoided. The right to adequate food, which requires that the diet as a whole contain a mix of nutrients for physical and mental growth, development, and maintenance, as well as physical activity, cannot be equated with the requirement to consume a sufficient number of calories per day. Instead, it calls for States to maintain, adapt, or strengthen dietary diversity as well as appropriate consumption and feeding patterns [5], [6].

Dimensions of the Environment

As trade barriers are lowered, there is more rivalry among producers in many nations, each of which has its own regulations for reducing greenhouse gas (GHG) emissions and soil erosion, notably via the use of chemical fertilisers. This raises concern that investors and consumers would shift their business to nations with less restrictive regulations, giving those nations' manufacturers a competitive edge. Although this concern has primarily been expressed in relation to the relocation of industries, it may also be relevant to agricultural production because land use change, such as deforestation and desertification, is a significant anthropogenic source of carbon dioxide. Agriculture also has significant effects on climate change through the production and release of greenhouse gases like carbon dioxide, methane, and nitrous oxide. The potential impact of such restrictions on the productivity of their producers does not, however, appear to be enough of a deterrent to countries from imposing restrictions on agricultural practises with the aim of limiting their GHG effects or their impact on soils. The connection between trade liberalisation and the environment, however, is more complex. extensive manufacturing chains need extensive transit distances. According to a report, "about three-quarters of the energy used in the food system occurs outside the farm gate, and energy used to transport foods from around the world to rich country markets, 365 days a year, regardless of seasons, accounts for a significant part of total energy consumption in the food system."

It is challenging to draw broad conclusions because the impact of food transportation over long distances, which is encouraged by supply chain globalisation, depends on the mode of transportation used and may be partially offset if food imported to an area has been produced

in a more environmentally friendly manner than the food available locally. For instance, a case study shown that importing tomatoes from Spain may be more environmentally friendly (at least in terms of energy efficiency) than growing them in heated greenhouses in the United Kingdom outside of the summer.63 What is certain, however, is that transportation methods like air travel and road travel, which are frequently used to transport fresh food, have a significant impact on climate change. These modes of transportation account for respectively 74 percent and 12 percent and 23 percent of the global energy-related GHG emissions produced by transportation. As customers are urged to assume that all goods will always be accessible, regardless of the season, this influence is growing. According to a study on the "food miles" of food consumed in the United Kingdom, air freight is the mode of food transportation that is expanding at the fastest rate. Despite only carrying 1% of the food and making up just 0.1% of the food miles, air freight accounts for 11% of the transport emissions for the food industry. Such food intake patterns are not long-term viable.

The diverse agricultural production methods might, most crucially, have quite varied effects on global warming. Agriculture is thought to be responsible for around 32% of all global man-made GHG emissions if land clearance for agriculture is included. The development of rice and cattle production (31 percent), the increasing use of nitrogen fertilisers (38 percent), and the conversion of tropical forests to agricultural land have all made major contributions to GHG emissions in the form of nitrous oxide and methane. One tonne of nitrous oxide or methane has a significantly higher influence on climate change than one tonne of carbon dioxide does, despite both of these gases being emitted in much lower amounts than carbon dioxide. The specialisation of nations in cash crops for exports encourages the trend towards increasingly intensive forms of agricultural production, which have negative effects on the environment and contribute to global warming. Despite the fact that this trend cannot be directly linked to the growth of global trade in agricultural commodities. In order to enable nations to provide incentives in favour of production methods that more carefully consider the environment, future regulations of international trade in agricultural commodities should include the influence of diverse agricultural production methods on climate change. Due to their reliance on cheap energy, agro-industrial methods of agricultural production are likewise unsustainable. Given the danger posed by climate change to our capacity to sustain present levels of agricultural output in many locations, reversing the trend towards a generalisation of these modes of agriculture is crucial if we are to achieve food security [7], [8].

Finally, maintaining crop genetic diversity is essential for ensuring future food security. For thousands of years, agricultural cultures managed a wide portfolio of genetic diversity to maintain appropriate levels of productivity. The presence of a variety of plants with diverse features that make them resistant to certain diseases, drought, or temperature changes helped to stabilise the degree of protection. Due to the pressure for more uniform crops, all resources have been devoted to the development of a small number of standard, high-yielding varieties, resulting in the cultivation of only slightly more than 150 species—the majority of humanity now only depends on 12 plant species.

This is a really unsettling possibility. We are more susceptible to unexpected climatic changes, the emergence of new pests, and diseases as a result of genetic erosion. For instance, it was necessary to breed a variety resistant to this pest by using genetic resources borrowed from other parts of the world after the fungus Helminthosporiummaydis decimated much of the standing maize crop in the southern part of the United States in 1970, resulting in losses to consumers and farmers totaling about 2 billion USD. Before it was discovered that certain varieties could contribute to agricultural developments because of their unique traits, such as

their resistance to specific pests or, for example, their higher nitrogen-fixing capacities, they were ignored for a long time due to their unfavorable agricultural characteristics. Thus, it is crucial to preserve such variations. It is notable, however, that the focus placed on the production of cash crops for exports, as a consequence of more possibilities provided by international commerce, promotes the homogeneity of agriculture and the switch from mono-cropping to polycropping.

A recent joint study from the WTO and UNEP looked at the connection between commerce and the environment. The report's main finding is that adopting mitigation strategies to fight climate change and expanding global commerce may both benefit from one another. According to the report, increased trade would make it easier to transfer clean technologies, and opening up trade would increase incomes, which would encourage rich countries and populations alike to demand stricter environmental regulations, including those governing greenhouse gas emissions. These findings are still up for debate. The fact that certain WTO members from industrialised nations insist on strict adherence to the TRIPS Agreement, even with respect to such technology, is really one of the biggest barriers to the transfer of clean technologies. The claim that lower trade barriers and more global supply chains increase incomes depends on the population group in question. The evidence is overwhelming that these developments do not necessarily increase income equality; on the contrary, they may make inequality worse. More crucially, the paper doesn't really explore how the growth of exports has affected agricultural practises. However, it is evident that various agricultural practises emit varied amounts of greenhouse gases (GHGs), and in the majority of situations, export-led agriculture has also been the most environmentally destructive because of its extensive use of external, petroleum-based inputs and high levels of mechanisation.

Dimensions of Nutrition and Health

Developing nations export goods, including fresh fruit and vegetables, and import processed foods from developed nations, in part due to the escalation of tariffs in rich nations and in part due to comparative advantage. As a result, people in developing nations have changed their eating patterns and are consuming more 'Western' diets that are high in salt, sugar, and fat. Increased incidences of heart disease and type 2 diabetes as well as obesity were the results. Although underweight still ranks higher, obesity is now one of the top five risk factors for losing disability-adjusted life years (DALYs) in both industrialised and low-mortality developing nations. The dependence on imported foods has also been a factor, which governments should take into account when making trade policy decisions. Urbanisation and increased employment of women have contributed significantly to this evolution, which results in a heavier reliance on foods prepared outside the home, including foods available from supermarkets.

The above-mentioned effects cannot be linked to the implementation of the WTO Agreement on Agriculture taken separately. Many of these effects may, in fact, be reduced even within the parameters established by the AoA. The WTO Agreements are implemented in a specific context, which means that developing countries have frequently been unable to benefit from the opportunities these agreements created and have instead had to deal with the negative effects of trade liberalisation on their economies. This fact cannot be ignored. Additionally, States are not required to act cooperatively to limit the volatility of commodity prices on international markets, to implement safety nets and redistributive social policies to make up for those who lose out as a result of trade liberalisation, to regulate the business practises of transnational corporations, or to any other of the AoA's pillars, improved market access, reduction of domestic support, and export subsidies. The issues generated by trade liberalisation are a result of this discrepancy: governments should give the need to

sustainably grow trade the same attention as the need to eliminate trade distortions already in place. Thus, a double-track approach may be suggested. The lowest section of the population may gain from an increase in revenue and a new source of employment by first strengthening the state's own agriculture industry. There is no alternative method to attain sustainable food security in the long run because of the inevitable growth in transportation costs. However, this does not negate the importance of international commerce, especially for tropical goods that can only be produced in certain temperatures. Global supply systems should, however, be made more ecologically sustainable and should aim to help people who are now experiencing the greatest levels of food insecurity. This cannot happen by accident; it must be planned. A second component of the approach should be this: if it is appropriate, efforts should be taken to ensure that the advantages of increased trade for certain items are maximised while minimising any possible negative effects [8], [9].

CONCLUSION

In conclusion, there are important ramifications for both rich and poor countries when it comes to how the global food trade affects the right to food. Different nations are affected differently by the "boost" scenario, which sees an increase in food costs globally, particularly net food-importing developing countries (NFIDCs), who depend substantially on food imports. A part of the WTO agreements, the Marrakesh Decision, was created to alleviate any possible harm that agricultural reform would cause to NFIDCs.

The difficulties in attaining justice in the international trade system are highlighted by the WTO members' inadequate execution of the agreement. Given these difficulties and complications, a dual-track strategy is advised. For long-term food security, particularly for the most disadvantaged communities, it is essential to strengthen domestic agriculture. Efforts should be undertaken in tandem to maximise the positive effects of increasing trade while minimising any possible negative outcomes. In a globalised society, this strategy requires careful planning and international collaboration to ensure sustainable and equitable food security.

REFERENCES:

[1] M. C. Rulli, D. Bellomi, A. Cazzoli, G. De Carolis, and P. D'Odorico, "The water-land-food nexus of first-generation biofuels," *Sci. Rep.*, 2016.

[2] A. Chaudhary and T. Kastner, "Land use biodiversity impacts embodied in international food trade," *Glob. Environ. Chang.*, 2016.

[3] J. Vos and L. Hinojosa, "Virtual water trade and the contestation of hydrosocial territories," *Water Int.*, 2016.

[4] A. Serrano, D. Guan, R. Duarte, and J. Paavola, "Virtual Water Flows in the EU27: A Consumption-based Approach," *J. Ind. Ecol.*, 2016.

[5] G. K. MacDonald, P. D'Odorico, and D. A. Seekell, "Pathways to sustainable intensification through crop water management," *Environ. Res. Lett.*, 2016.

[6] J. P. E. Lubanda, L. Smutka, and R. Selby, "Agricultural Production and Trade Structure Profile in Democratic Republic of Congo (DRC)," *Agris On-line Pap. Econ. Informatics*, 2016.

[7] Y. Qiao, N. Halberg, S. Vaheesan, and S. Scott, "Assessing the social and economic benefits of organic and fair trade tea production for small-scale farmers in Asia: A comparative case study of China and Sri Lanka," *Renew. Agric. Food Syst.*, 2016.

[8] A. Chaudhary, S. Pfister, and S. Hellweg, "Spatially Explicit Analysis of Biodiversity Loss Due to Global Agriculture, Pasture and Forest Land Use from a Producer and Consumer Perspective," *Environ. Sci. Technol.*, 2016.

[9] A. Sharpley, P. Kleinman, H. Jarvie, and D. Flaten, "Distant Views and Local Realities: The Limits of Global Assessments to Restore the Fragmented Phosphorus Cycle," *Agric. Environ. Lett.*, 2016.

CHAPTER 11

BALANCING TRADE LIBERALIZATION AND THE RIGHT TO FOOD: RECOMMENDATIONS FOR A SUSTAINABLE GLOBAL TRADE SYSTEM

Heejeebu Shanmukha Viswanath, Assistant Professor
College of Agriculture Sciences, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India,
Email Id- shanmukhaviswanath92@gmail.com

ABSTRACT:

The human right to sufficient food is outlined in Articles 25 of the Universal Declaration of Human Rights and 11 of the International Covenant on Economic, Social, and Cultural Rights. In order to avoid negative effects on the right to food, this chapter emphasises the need of including human rights issues into trade agreement discussions. It emphasises the necessity of taking into account possible conflicts between trade policies and human rights, especially those linked to food, and underlines that human rights responsibilities, particularly those related to food, should take priority over commercial agreements. The chapter offers suggestions on how to conduct trade talks such that they respect everyone's right to food. These suggestions include evaluating how trade agreements may affect human rights, setting time limits on pledges, and adding review provisions known as sunset clauses. Additionally, it highlights the democratic advantages of impact evaluations and proposes methods for routinely observing how trade agreements affect the right to food. In order to defend local agricultural industries that are particularly susceptible, the chapter asks for trade agreements to be flexible and emphasises the necessity for governments to rely less on international commerce for food security. It tackles issues relating to market domination in international supply chains and promotes regulatory measures to guarantee openness, competitive fairness, and equitable benefit sharing. The chapter concludes by highlighting the significance of directing commerce towards social and environmental sustainability, encouraging ethical sourcing methods, and defending the interests of small-scale farmers. It highlights the need of taking climate change into account when formulating future trade laws and regulations, and it promotes the growth of programmes that support ethical business practises.

KEYWORDS:

Agricultural, Food, Global Trade, Liberalization, Trade.

INTRODUCTION

A number of potential effects of trade liberalisation on the capacity of States to uphold their obligations under the human right to sufficient food, as mandated in particular by Article 25 of the Universal Declaration of Human Rights and Article 11 of the International Covenant on Economic, Social, and Cultural Rights. Their responsibilities for upholding human rights and the pledges they make by signing accords inside the WTO framework, however, are still not coordinated. This lack of coordination on a global scale is just one illustration of the issue with the fragmentation of international law into a number of independent regimes, each with their own standards and dispute-resolution processes and a degree of autonomy both from one another and from general international law. Trade negotiators either are not aware of the human rights obligations of the governments they represent or do not recognise the implications for their position in trade negotiations. Even when they are well informed about the potential intersections, they routinely fail to identify them. This failure of global

governance mechanisms to ensure an adequate coordination between the obligations imposed on States under these different regimes is replicated at the domestic level all too often.

This strategy therefore leaves it up to each State to provide, in its internal laws, a uniformity that is not required by the international legal system. This is insufficient. It equates to recognising the responsibilities imposed by trade agreements as having the same normative weight as the obligations imposed by human rights accords. This not only disregards the fact that, in accordance with Article 103 of the UN Charter and the status of human rights norms as preeminent norms of international law (no court could uphold a treaty adopted in violation of internationally recognised human rights), human rights should take precedence over all other international obligations. It also raises the possibility that, in conflict situations, States will choose to abide by their obligations under trade agreements because, given that these agreements are frequently supported by the threat of economic sanctions, as is the case within the WTO under the Dispute Settlement Under- standing, governments will often find that doing so is less expensive economically and, frequently, politically [1], [2].

It also overestimates the capacity of domestic political processes to make up for the fragmentation of international law, while simultaneously underestimating the contribution an enabling international environment can make to the realisation of human rights at the national level. This idea that the compatibility between trade law and human rights law is best ensured at the level of implementation in national policies. Human rights treaties that are not enforced through similar means, on the one hand, and trade agreements that are backed by the threat of economic sanctions, on the other hand, have created an imbalance at the international level that is difficult to correct in national political processes: self-determination is illusory when it is exercised in such an incentives structure. Human rights need gradual implementation: in addition to their immediate duties to respect and preserve human rights, States are required to uphold human rights via actions that may take some time to completely execute. States must have a certain amount of policy space available for the adoption of such measures, and they may also require resources. However, certain trade policies implemented in the execution of trade agreements may restrict both, without being always predictable in advance.

One safeguard does exist: commitments made under the WTO framework must be interpreted, to the fullest extent possible, in order to be compatible with general international law and with the rules of any treaty applicable in the relationships between the parties to the dispute giving rise to the question of interpretation, as such rules may develop, in particular, through adjudication. In the WTO system, the requirement that the agreements be interpreted in accordance with the other international obligations of the Members is further strengthened by the fact that the authoritative interpretation of the agreements rests with the Members themselves, within the Ministerial Conference or the General Council78, and that the Members cannot disregard their human rights obligations in providing such interpretations. However, this does not address genuine conflict situations that no conforming interpretation could avoid in a satisfying manner. And such a principle of integrity in the interpretation of WTO agreements does not address the "chilling effect" that the standards established in these agreements may cause, when the Members are unsure whether or not any specific measure they take to comply with their human rights obligations will be considered acceptable by the other Members or instead expose them to retaliation, particularly when they seek to adopt measures which, although not strictly required,

Therefore, we must make sure that the parties' duties under international human rights law are taken into account at the time of trade agreement negotiations since it could be too late otherwise. Increased liberalization could result in more import surges that threaten the livelihoods of local farmers in the country that is importing them, or it could result in

unexpected price increases for food commodities that the poorest consumers of food are not sufficiently protected from. It might result in the growth of global supply networks, which would be advantageous for some but could marginalise many people who are currently the most vulnerable. It will intensify rivalry between farmers from OECD nations and highly mechanised, well-equipped farmers from certain emerging nations, on the one hand, and farmers from many other developing nations, whose productivity per active labourer is 100 times lower, on the other. It may promote certain types of agricultural production and longer supply chains at the risk of further harming the environment via increasing GHG emissions and the loss of biodiversity. In a world where small-scale farmers and other food producers, such as agricultural labourers, as well as urban poor people experience hunger, and where climate change poses the single greatest threat to food security in the future, continuing down the path of trade liberalisation while ignoring these potential negative effects would be unacceptable. The following recommendations are given in an effort to help States better consider their human rights duties while negotiating and carrying out their commitments under the auspices of the WTO. They are based on the conclusions drawn above. One set of recommendations is procedural in character and aims to ensure that trade talks are handled in a way that makes it easier to take the right to food into account. A second group of suggestions looks at remedies to the effects mentioned in chapter V. Together, these ideas should advance the freedom of nations to democratically choose their own agricultural and food policies, free from interference from the current system of global trade, and they should direct that system in a direction that not only promotes increased production and effective resource allocation but also advances the realisation of the right to food.

DISCUSSION

Without first confirming that these pledges are completely consistent with their duty to safeguard the right to food, states shouldn't accept WTO-mandated undertakings. States must make sure that any obligations they adopt under the WTO's framework are completely consistent with their duty to uphold the right to food. They must thus determine how these obligations may affect the right to food.79 Additionally, it calls for any commitments they make to be limited in time and evaluated again later because the effects of trade liberalisation on a State's capacity to uphold the right to food may be difficult to predict in advance and may only become apparent after several years of implementation. For instance, the current round of negotiations, which began in Doha in November 2001, should be explicitly treated as provisional. A sunset clause should be added to the agreement to allow for a renegotiation after a few years of implementation, based on an independent assessment of the impact on the enjoyment of the right to adequate food.

Impact analyses are a helpful tool for assisting a State in comprehending the implications of the agreements it participates into. They should provide civil society a chance to weigh in on the assessment of trade policies, and they should enable national parliaments and civil society organisations to depend on the findings in their discussions with governments. As a consequence, they have a strong democraticizing impact. Impact assessments that are based on the normative standards of the human right to adequate food and the corresponding indicators can strengthen governments' negotiating positions in trade talks, especially since the reference to the right to food refers to a legal obligation that all States are bound by under international law and cannot ignore in the context of trade talks. However significant they may be, impact assessments are still reactive - or defensive - in nature. They are instruments for assessing the effects of decisions made, but they do not, on their own, suggest which trade policies should be implemented to advance the realisation of the right to food. Mechanisms should be put in place to enable the adoption of such policies, in addition to - and not as a

replacement for - a frequent monitoring of the effect of trade agreements and their implementation on the right to food [3], [4].

States should make sure that the positions they adopt in trade negotiations, such as those regarding which special products to protect, which schedules of commitments to accept, or which services to open up to foreign competition, won't obstruct the realisation of the right to food. States should specify their stances in trade talks in line with their national plans for achieving the right to food. The adoption of such tactics is advised by the Committee on Economic, Social, and Cultural Rights (General Comment No. 12, para. 21), and the Voluntary Guidelines to Support the Progressive Realisation of the Right to Adequate Food in the Context of National Food Security adopted by States members of the General Council of the FAO on November 23, 2004, provide additional clarification on their content. These tactics should also be viewed as tools to help with trade negotiations because only by charting food insecurity and determining what steps should be taken to fight hunger will those negotiating trade agreements be able to guarantee that the commitments they make will support rather than obstruct efforts to realise their population's right to food. Adopting such national strategies that are based on accurate maps of food insecurity and vulnerability would be very beneficial in ways that go well beyond the help that they would provide negotiators in the WTO framework. In conversations with donors, international financial institutions, or bilateral trade negotiations, governments should be able to rely on these measures to defend their position. It is especially concerning that, in many instances, States have been unable to apply certain tariffs that are still subject to their bound tariffs or to use flexibilities permitted by the WTO agreements due to directives from these institutions or because of bilateral free trade agreements that forbid them from doing so. Adopting a national plan for the realisation of the right to food will enhance the position of States in conversations with these partners while also enhancing their responsibility to the rights-holders.

Participation and Openness in Trade Negotiations

Impact studies on the right to food and the adoption of national right to food strategies are tools that should assist negotiators in ensuring that they won't take positions at the international level that, at the national level, would obstruct the realisation of the right to food for all. However, it is also crucial to provide national parliaments and civil society organisations the chance to keep an eye on the positions taken by governments in trade negotiations. They shouldn't be given a list of pledges made by the Executive at the very end of the negotiating process, after an agreement has been achieved, from which it will be politically extremely difficult or impossible to back out at that point. All parties concerned, especially farmer's organisations, should have the ability to participate in frequent hearings concerning the government's stances in trade talks held by national parliaments. In order to prevent a disconnect between commitments made at the international level and initiatives developed at the national level for the realisation of the right to food, such procedures must be implemented at the domestic level for right to food impact assessments to fully realise their potential for democratisation. Given the risks of increased dualization of the farming system as a result of policies favouring the export sector, which is partly due to the disproportionate political influence exercised in some countries by a relatively small number of very large agricultural producers - whereas smallscale farmers, in contrast, are poorly organised politically and often unable to participate in political processes, this is particularly important in the context of trade agreements relating to agriculture. Considering the Right to Food in the Multilateral Trade Regime: The Substantive Dimensions

decreasing reliance on international trade in order to achieve food security, states should not rely too much on international commerce. In this context, "excessive" should be understood as a situation in which States are unable to sustainably rely on the international markets to feed their populations because of balance of payments issues or a lack of sufficient export revenues from other sectors. This is especially true in an environment of increased price volatility and, most likely, the end of the long-term trend of declining agricultural commodity prices. States should not forsake their long-term interest in increasing their ability to produce the food they need to fulfil their consumption demands in order to pursue their short-term interest in obtaining the food they cannot produce locally at reduced costs from international markets. This is due to two factors. First, a viewpoint based on the right to food necessitates that we consider the effects on the most vulnerable, while logic supporting allocative efficiency on the basis of specialisation according to comparative advantage emphasises the aggregate advantages, at nation level, of trade liberalisation. In the developing world, agriculture is responsible for around 9% of GDP and more than 50% of all jobs. Agriculture accounts for 30% of the GDP and 70% of employment in the nations where more than 34% of people are undernourished.86 The wages of agricultural employees are much less than those in non-rural regions in every country.87 There is thus no choice but to boost agricultural output, with a focus on small-scale farmers, in order to realise the right to food. We cannot run the risk of restricting the policy options of governments by forbidding them from maintaining tariff barriers or from raising those barriers in the face of import surges where the agricultural sector is fragile, that is, where it is not competitive against the most competitive farmers in the world. In the past, such surges have had terrible impacts on many producers in emerging nations, further impoverishing the most vulnerable in rural regions. It may not be possible to let this go on.

Second, States reduce their susceptibility as a consequence of the volatility of pricing on global markets by increasing their capability to feed their people. According to the future Bank, "managing grain price risk is a fundamental requirement in a world characterised by more unstable global grain prices and recurrent supply shocks that will likely result from global warming."88 Discussions should be held regarding the necessity of re-establishing commodity stabilising agreements for tropical products, cereals and oilseeds, sugar, and cotton, all of which are particularly important to developing countries, as well as regarding policies that could prevent the negative effects of speculative activity on the futures markets for those commodities. We must immediately draw conclusions from the price volatility on global markets. Each State must decide whether or not it is resilient enough to accept the risk of increased vulnerability to external shocks by maintaining or increasing its reliance on global markets to achieve food security at home. It must make this decision while fully understanding the implications.

Currently, just 15% of the world's food production is thought to be traded abroad. The percentages for rice, maize, wheat, and soybeans are 6.5, 12, 18, and 35, respectively.89 However, because of trade liberalisation, there is a tendency for domestic and world prices to converge insofar as imported goods compete with locally produced goods on local markets, the prices set on international markets have a significant impact on the ability of farmers around the world to make a living. According to the concept of special and differentiated treatment, states, in particular emerging States, must be allowed to continue taking actions that protect their domestic markets from the volatility of pricing on global markets. States may find themselves constrained by certain rules that will make them susceptible to changes in pricing on global markets unless the trade agreements they reach provide them the required flexibility.

One danger is that rising imports may push out regional manufacturers. This is what the creation of a unique safety mechanism aims to prevent. In fact, in the absence of such flexibility, the actions States may take to enhance their agricultural sector, including the ones that come inside the "Green Box" of permitted domestic agricultural assistance, would remain ineffectual. Plans for supply management are in existence in several nations. Such plans ensure farmers a fair price while also guaranteeing customers stable pricing and a steady supply for processors and merchants. Countries should be encouraged to research these supply-management systems; they should also be permitted to maintain or establish such programmes, though this may necessitate allowing them to keep import tariffs at levels that allow them to shield the concerned products from the effects of the entry of low-cost goods onto domestic markets. It is particularly puzzling that proposals to lower over-quota tariffs, even for products designated as sensitive because they are covered by such management schemes, would threaten certain management supply schemes, which aim to adapt production to demand and protect both producers and consumers from unexpected price changes while also ensuring processors a reasonable profit margin. These programmes protect both producers and consumers against changes in price on global marketplaces. Removing them would be a step backward in the realisation of the right to food [5], [6].

Another concern is that net food purchasers will become more susceptible to price hikes, especially in light of the fact that many developing nations lack safety nets that would shield the poorest sections of the population from such effects. The Marrakesh Decision was supposed to protect poor nations who import large amounts of food from this danger, but as we've seen, the solution it offers is still very inadequate. The concept of "adequate supplies" of basic foodstuffs (which, according to the Decision, NFIDCs should be able to obtain from external sources "on reasonable terms and conditions" throughout the reform process) must be defined by reference to the need to ensure that each individual has access to adequate supplies of food at all times in order for this Decision to be fully effective.

The Marrakesh Decision's implementation would be in accordance with the WTO Members' duty to protect the right to food for people in other States. The WTO Members' obligation to uphold the right to food for all populations, including those of their trading partners who suffer as a result of the reform programme as a result of their commitments under the AoA, would be consistent with an adequate Marrakesh Decision implementation. However, even with a better operationalization of the Marrakesh Decision, the issues of nations' fragility due to their reliance on trade and the hidden costs of trade as a means of attaining food security continue to exist. There is no substitute for the strengthening of the agricultural sector within all nations, both to improve their food security and as a means of reducing poverty and, consequently, hunger. More food aid and more readily accessible and less conditional financing facilities are not the solution to balance of payments issues.

The above-mentioned steps aim to prevent dependence on foreign commerce from having a negative impact on the achievement of the right to food at the local level. All States should abstain from pressuring their trading partners to make concessions that would conflict with their duty to uphold the human right to sufficient food while negotiating trade agreements. Instead, national plans for achieving the right to food should be supported and made easier by the international trading system. The Committee on Economic, Social, and Cultural Rights has named one specific instance of a violation of the right to food as "the failure of a State to take into account its international legal obligations regarding the right to food when entering into agreements with other States or with international organisations."90 States are, in fact, required to fulfil their commitments under the right to food not just towards those who are on their national territory, but also towards those who are outside of those boundaries while

taking into consideration the territorial State's sovereign rights. The exporting State should treat this as a violation of the right to food since it endangers the security of the food supply in the importing nation, as is the case when a State heavily subsidies agricultural products that are exported by economic actors based under its jurisdiction, driving local producers out of the receiving markets.91 This is also in line with the General Comment on the relationship between economic sanctions and respect for economic, social, and cultural rights that the Committee on Economic, Social, and Cultural Rights adopted. In this General Comment, the Committee noted that States imposing sanctions should not do so at the expense of the economic, social, and cultural rights of the population in the targeted State.92 According to Article 56 of the UN Charter, all States have vowed to work together worldwide to ensure that human rights are upheld. Every person has a right to a global social order that supports the full realisation of their human rights, according to the Universal Declaration of Human Rights. States have a responsibility to work together to create a multilateral system of international commerce that upholds the right to food.

Limiting market dominance in global supply chains and reducing the threat of further dualization of the agricultural system. Transnational firms, whose freedom to act has considerably risen as a consequence, are not subject to any requirements with respect to the use of their power on the market, which is a huge imbalance in the existing international trade framework. There is a critical hole here in global governance. A multilateral framework may need to be formed in the medium to long future to provide a better level of control over these players. In the near term, States should act in line with their obligation to defend human rights by properly regulating actors over whom they may have control, especially when such actors are operating beyond the national territory of the States in question.93 While the use of extraterritorial jurisdiction is one option in this regard, other steps could be taken by States, such as the imposition of transparency or reporting requirements, or the imposition of conditions for access to export credits, to make sure that commodity buyers, food processors, and international retailers contribute to the realisation of the right to food and refrain from actions that could endanger its enjoyment. It is possible to locate and then scale up the best practises found in the global food supply chain. The possibility of utilising competition law to defend farmers selling their products as well as end consumers against excessive concentration or misuse of dominant positions on the market deserves special consideration.

Another danger associated with trade liberalisation in agriculture is the displacement of smaller farms by larger agricultural producers, who will more readily profit from the possibilities resulting from increased market access. This will happen for the reasons outlined above. Small-scale farmers are among the most vulnerable groups of people in many nations. States owe them a specific duty to thwart this trend by assisting small-scale agriculture, especially with respect to access to land, water, genetic resources, and financing, as well as by making investments in and enhancing their use of rural infrastructure [7], [8].

Moving Trade Towards Social and Environmental Sustainability

The expansion of international trade in agricultural products may have hidden costs for the environment and for human health and nutrition in addition to its obvious costs on the least competitive producers or on certain vulnerable groups of the population. It may also lead to the smallest producers being offered prices for their crops that are so low that their incomes will hardly be enough to feed themselves and their families. To enable nations to provide incentives in favour of production methods like organic farming or agro ecological practises, which better respect the environment while also contributing to food security, international trade in agricultural commodities should be regulated in the future to take climate change into consideration. The effectiveness of Fair commerce initiatives and other incentive-based

programmes should be investigated in the future in order to determine if they could be scaled up and, if so, how, in order to promote commerce that is more socially and ecologically responsible. In order to promote more sustainable sourcing practises that, rather than contributing to the dualization of the farming system, strengthen the capacities and increase the incomes of small-scale farmers, it may be questioned whether inspiration could be sought from regulations like the Ethical Trading Initiative's smallholder guidelines.

The following suggestions may be made to the WTO Members based on the results above:

1. It goes without saying that they should make sure that their actions taken within the WTO framework are completely compliant with their duty to uphold, respect, and fulfil the right to food. This necessitates that before trade agreements are finalised, they conduct open, impartial, and consultative human rights impact assessments. Additionally, it mandates that they formulate their stances in trade talks in line with national plans for implementing the right to food. Last but not least, national parliaments should be urged to regularly hold hearings about the stances taken by the government in trade negotiations, with the participation of all affected groups, especially farmers' organisations. Only through such participatory mechanisms can it be ensured that trade liberalisation will not result in benefits for the export sectors, without compensations for the sectors who will suffer the most from foreign competition.

2. Increased involvement and openness in trade agreement negotiations should also guarantee that each State will democratically decide whether or not it can accept the danger of becoming more dependent on the global market to attain food security. In order to achieve food security, it has been determined that States should not rely too much on foreign commerce and should instead increase their ability to produce the food required to fulfil consumption demands, with a focus on small-scale farmers. Additionally, it has offered arguments in favour of preserving the tools and flexibilities required to protect local markets from the volatility of pricing on global markets. States should work together to find ways to reduce the volatility of commodity prices on international markets, especially for tropical goods, oilseeds, sugar, and cotton, for example via commodity stabilisation agreements. Although cheap food has been available from international markets and although prices have been declining for many years, this trend is now coming to an end, and the volatility of prices shall be greater in the future, particularly as t However, in cases where States do decide to increase their reliance on international trade, whether it be to increase export revenues or to achieve food security by purchasing food on the global market, this decision would be much more acceptable in a setting where mechanisms would be put in place to reduce the volatility of prices on the global markets of commodities.

3. The Marrakesh Decision should likewise be fully implemented by WTO Members. A method should be devised to systematically monitor the effect of the AoA reform process on the NFIDCs in order for this Decision to be fully effective. The WTO should come to an agreement on a definition of the term "adequate supplies" of basic foodstuffs that refers to the requirement to guarantee that each person always has access to adequate food or to means of obtaining it, i.e., that price increases that may result from the reform process do not violate the right to food.

4. Without placing equivalent constraints on them, trade liberalisation strengthens the role of multinational corporations in global supply networks. In order to fulfil their responsibility to preserve the right to food, States must effectively control private entities over whom they may have influence. They should also look at measures to redirect commerce towards goods and manufacturing techniques that better protect the environment and do not compromise

people's right to food. By working towards the creation of a multilateral framework that governs the actions of commodity buyers, processors, and retailers in the global food supply chain, including the establishment of standards by these actors and their purchasing policies, the international community could support these efforts [9], [10].

CONCLUSION

States must also carefully assess how much their food security depends on foreign commerce. Even while trade may be advantageous, relying too much on international markets can put nations at danger. In order to shield local markets from the volatility of global pricing, flexibility should be maintained. To protect the right to food throughout the AoA reform process, the Marrakesh Decision should be properly implemented with a precise explanation of what "adequate supplies" mean. Private organisations, especially multinational firms, should be governed by laws to make sure they support rather than obstruct the realisation of the right to food. States should look at how to reroute commerce in the global supply chain towards environmentally and socially responsible practises. In the end, these suggestions stress the necessity for a well-rounded strategy that takes into account both trade agreements and the right to food. States must put their citizens' welfare first and make sure that trade policies don't jeopardies food security, particularly for the most disadvantaged. By doing this, they can advance the worldwide realisation of the right to food and steer commerce in the direction of social and environmental sustainability.

REFERENCES:

[1] R. De Vogli and N. Renzetti, “The potential impact of the transatlantic trade and investment partnership (TTIP) on public health,” *Epidemiol. Prev.*, 2016.

[2] N. G. M. Nor, A. B. Bhuiyan, J. Said, and S. S. Alam, “Innovation barriers and risks for food processing SMEs in Malaysia : A logistic regression analysis,” *Geogr. Malaysian J. Soc. Sp.*, 2016.

[3] M. A. Mcminimy, “American Agriculture and the Trans - Pacific Partnership (TPP) Agreement,” *Congr. Res. Serv.*, 2016.

[4] M. Jönsson, “The Corporative Food Regime and Mexican Small Scale Agricultural Production Case Study: Tonatico, Estado De México,” *Iberoam. – Nord. J. Lat. Am. Caribb. Stud.*, 2016.

[5] C.-F. Lin, “Implications of the Trans-Pacific Partnership for Food Safety Governance,” *SSRN Electron. J.*, 2016.

[6] P. D. Farah, “Trade and Progress: The Case of China,” *Columbia J. Asian Law*, 2016.

[7] G. E. McLaughlin *et al.*, “RELATING IRRIGATION INTENSITY TO CROP DIVERSIFICATION:\nA SPATIO- TEMPORAL STUDY IN MURSHIBADAB DISTRICT,\nWEST BENGAL (1996-97 TO 2006-07),” *Econ. Polit. Wkly.*, 2016.

[8] Y. Marzieh, “Synthesis of Chalcone-Based Six and Seven Membered Heterocyclic Compounds and Their Biological Activities Againt H1N1 Virus,” *Ecol. Econ.*, 2016.

[9] C. Turnbull, S. Sun, and S. Anwar, “Trade liberalisation, inward FDI and productivity within Australia’s manufacturing sector,” *Econ. Anal. Policy*, 2016.

[10] F. Manwa and A. Wijeweera, “Trade liberalisation and economic growth link: The case of Southern African Custom Union countries,” *Econ. Anal. Policy*, 2016.

CHAPTER 12

GLOBALIZATION'S IMPACT ON INDIAN AGRICULTURE: A COMPREHENSIVE ANALYSIS

Upasana, Assistant Professor
College of Agriculture Sciences, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India,
Email Id- upasana35954@gmail.com

ABSTRACT:

A major effect of globalisation on economies and agriculture has been the smooth movement of people, products, and services throughout the globe. It entails growing interdependence between states, trade liberalisation, and economic integration. Globalisation has several facets, including increased commerce between countries, the import of manufactured products, capital and money movements, and migration of people. By creating agribusiness jobs and boosting food security, this phenomenon has sped up agricultural growth in low-income nations. Agriculture has changed from mainly providing basics to high-value items as global markets have grown. The agriculture market has exploded as a result of this change. As agricultural items gain in popularity, there will be an increase in demand for livestock and agricultural products worldwide. This change will result in greater investment in high-value agriculture and livestock for both internal and export markets, progressively diminishing the importance of grain production. The return on investment will rise as production concentrates on high-value crops and trade-oriented agriculture, favouring nations with large populations and high incomes. Complex industrial methods and capital-intensive processes, however, could provide certain countries relative advantages. Agriculture's employment has decreased as a result of globalisation, and so has its GDP contribution to India. Farmers' per-capita income has declined as a result, and rural debt has soared. In conclusion, globalisation has changed Indian agriculture by allowing for expansion and providing access to markets and technologies. It has, however, also produced difficulties, such as heightened competitiveness and disruption of conventional procedures. India must make investments in research, infrastructure, and regulations that promote the expansion and sustainability of its agricultural industry if it is to reap the positive advantages of globalisation and lessen its negative effects.

KEYWORDS:

Agriculture, Development, Economic, Globalization.

INTRODUCTION

Globalization refers to the integrated, constant free development of people, goods, and services across the world. The effect of the opening up of the world economy and the growth in international trade is globalisation. Simply put, it leads to economic reconciliation and interdependence when countries that were previously closed to outside speculation and trade open their economies and grow global. Furthermore, globalisation entails that countries alter their import policies and welcome foreign interests in their core regions. It contains:

1. An increase in international trade.
2. The import of manufactured goods and associated commodities.
3. Starting with one nation, financial and capital flows go on to the next.
4. A human migration begins in one nation, then moves on to the next.

By advancing horticulture more quickly than domestic use, globalisation may significantly improve agribusiness employment as a driver of development in low-income countries.

Through multipliers to the non-tradable, enormous, labor-intensive rural region, globalisation increases farming's capacity to increase food security. More quickly than at any other moment in history, globalisation has accelerated the growth of agricultural creation. Ten years ago, the rate of development was 3%; now, it is around 4-6%. The creation of it, however, has undergone a considerable shift as a result of these increased development rates. Food staples were initially the source of development since the product market's expansion was constrained. Right now, high-end goods are more popular. A result of increases in global wages, traditionally niche industries like premium tea and espresso (for example) may now produce large quantities of goods. The agricultural markets have also grown tremendously and are now flourishing [1], [2].

The interest in agriculture and animals on a domestic level will rise quickly when agricultural goods go out of style. Accordingly, in low-wage countries, a significant share of the increases will be in high-value livestock and agricultural for both domestic consumption and export. As a consequence, the importance of cereal production will diminish. The rate of ROI decreasing the cost of exchanges will soon increase when the creation mix shifts towards high-value crops, trade harvests, and agriculture. This is true for pursuits that increase respect. In any event, a significant portion of this activity involves capital-escalated processes. Additionally, there are complexities in showing. Both will provide a relative advantage to countries with a large population earning high salaries. Low-wage countries should aim to avoid doing tasks where they have little to no immediate advantage since they can only perceive the relative benefits throughout the supply chain from the consumer to the producer at each stage. In the global economy, oats play a significant role in ensuring food security. The price of delivery is declining. The two capabilities mentioned above will probably lead to an increase in grain imports in developing countries.

First off, if extensification or an increased force of production seem to be improbable, specialisation and globalisation may cause an increase in the growing area of high-value goods and a probable decline in the cereal ranch region. The interest plan will also be moved for the vertical heading as a result of a movement in pay distribution towards food weakness and low pay. Therefore, low-income countries may benefit from the decline in oat prices even when they lose out on the decline in prices of other horticulture goods. The horticulture industry has also been influenced by globalisation via biofuel and restorative development. Given that a significant portion of the country's land has been designated for the development of crops for biofuel, there is an emergency with regard to food security in the nation. Large quantities of wheat, rice, and other yields are often harvested. By the way, the amount of crops used to make biofuel is often uncontrolled, with a little portion going to the destitute and underprivileged.

Globalisation will continue to advance. Countries who don't invest enough in research and exploration, update their country's infrastructure, and lower exchange costs will continue to see the price of agriculture goods decline, but without undoing ongoing cost reductions. On the other hand, agribusiness may double in size in countries where improved structure and research have reduced production costs. That would have significant spillover effects on the local economy, lowering the need for assistance and increasing food security.

Beneficial Effects on Agriculture

Greater access to technical advancements in horticulture, including as high return varieties, genetically modified (GM) crops, and small-scale water management techniques, was made possible by globalisation. Ranchers have benefited from the interest in horticulture, namely in cold storage and food handling. Acceptance into uncharted commercial areas has greatly

aided the sale of rural Indian goods. Globalisation altered provincial agricultural social structures and advanced food efficiency and production. The ranchers can now grasp, interact with, and compete in global commercial areas. The new developments, notably in water systems, enabled to maintain decent horticulture and intend rural water pressure. Additionally, it has contributed to a shift in how the agricultural culture views recent developments in agriculture.

Ranchers from India will try to sell their products abroad. They may sell their goods at market rates anywhere. Indian ranchers may also make use of modern technology and equipment that are now only found in other countries. Indian agriculture will benefit from foreign capital speculation. In India, biotechnology and hereditary design will benefit from globalisation as well [3], [4].

Negative Effects on Agriculture

Multinational Corporations (MNCs) snared the ranching industry in India and forced ranchers to use expensive, high-return crops and composts. Ranchers switched from traditional or blended editing to irrational trimming practises due to the global market's attraction. Some ranchers found horticulture to be unworkable because to the competition from less costly imports that drove down the prices of crops like cotton, wheat, and other ones. Rural agricultural social systems and traditional family structures were destroyed by unsustainable horticultural practises after globalisation and the inability to compete with cheaper imports. Ranchers moved away from local seeds and farming methods due to their dependency on MNC seeds. The increased consumption of proteins, carbohydrates, and fats as a result of globalisation changed people's eating preferences and contributed to the rise in lifestyle diseases. Due of the heavily supported agribusiness in such countries, small ranchers in India cannot compete with ranchers in developed countries. Due to the fact that the nature of our crops deviates from the norm globally, Indian ranchers may not find international buyers. Due to globalisation, Indian ranchers will aim to increase their financial harvests, which will result in a food shortage in our nation. Due to the lack of resources and lack of skills among Indian ranchers, multinational corporations (MNCs) from developed countries would exploit them.

DISCUSSION

There are significant obstacles and drawbacks related to globalisation in Indian agriculture. The opening up of commerce and the elimination of import taxes have made Indian farmers more vulnerable and exposed them to international competition, which has caused price swings. Farming practises have been impacted by multinational firms, who have promoted high-yield crops and pricey inputs, which may be financially draining for small-scale farmers. Additionally, this has aided in the decline of rural agricultural social structures and traditional farming practises. Concerns about the ecology and sustainability have arisen as a result of the move towards cash crops for export, which have higher production costs and a greater need on pesticides, fertilisers, and water. Additionally, the drop in the sector's contribution to GDP and the decline in agricultural employment as a proportion of the workforce have led to rural unemployment and a rise in rural debt.

Indian agriculture has benefited from globalisation, but it has also faced considerable obstacles that must be overcome. Promoting exports and defending the interests of small-scale farmers must be balanced by policymakers. In order to increase the competitiveness of Indian agriculture in the international market, investments must be made in rural infrastructure, research, and development. To mitigate the detrimental effects of globalisation

on Indian agriculture, more steps must be taken to maintain fair trade, safeguard indigenous agricultural methods, and advance sustainable agriculture.

Due to increasing agricultural output made possible by globalisation, which is also expected to boost grain imports into poorer nations due to falling transportation costs. It may also decrease the area used for grain farming while increasing the production of high-value crops. Countries must adapt as global agriculture changes by making investments in infrastructure, research, and eliminating trade barriers in order to reap the rewards of this change.

Agricultural technical improvements, such as high-yield varieties, genetically modified crops, and water management strategies, are now more widely accessible because to globalisation. It has created new business opportunities for agricultural goods like food processing and cold storage. Farmers in India have gained access to contemporary technology, the ability to trade on international markets, and foreign investment. Globalisation has benefitted genetic engineering and biotechnology as well.

Indian agriculture has been impacted by multinational companies (MNCs) via their promotion of high-yield crops and methods. This has caused rural agricultural communities to be disrupted as native seeds and traditional farming practises have been abandoned. Additionally, the move towards high-value crops brought on by globalisation and changes in lifestyle have an impact on people's dietary choices and add to health problems. Because of the emphasis on cash crops for exports, India's small farmers find it difficult to compete with the heavily subsidised agriculture of wealthy nations, which has resulted in food shortages there [5], [6].

Increased interconnection and interdependence throughout the world are characteristics of the continuous phenomena known as globalisation, which has been made possible by developments in communication, transportation technology, trade liberalisation, and foreign investment. Globalisation has a significant effect on agriculture since it promotes international commerce and shapes laws governing market access, local assistance, export competitiveness, and intellectual property rights. The introduction of high-yield crop types during India's Green Revolution greatly enhanced food output. But not all crops have profited equally from this change. Global trade prospects have also benefitted Indian agriculture, resulting in higher agricultural exports and GDP contributions. However, there have been substantial negative repercussions of globalisation on Indian agriculture, such as farmer suicides, debt, and loss of indigenous practises. According to WTO rules, the lowering of import taxes and subsidies has boosted competition in Indian agriculture, which has a negative impact on small farmers. The emphasis on export-oriented cash crops has caused cropping patterns to alter, production costs to rise, and a move away from conventional crops.

An continuous phenomena known as "globalisation" is characterised by the increased interconnectedness and interdependence of people, organisations, and states throughout the globe. Increased movements of products, services, money, people, and ideas emerge from this process, which entails the integration of economic, political, social, and cultural systems across international boundaries. Recent years have seen a rise in the pace of globalisation, which is now being moulded by the quick development of communication and transportation technology as well as the liberalisation of trade and investment laws. According to Our World Data, the primary causes of this rise in rate are the brisk growth of international commerce and investment. The major factor driving the accelerated pace of globalisation we are now seeing is the fast expansion in international commerce and investment, which has been made possible by the removal of trade barriers and the development of new technologies that enable the quick transfer of products, services, and money across international

boundaries. Today's globalisation, however, is also shaped by other factors, such as improvements in communication and transportation technology, the emergence of multinational firms, the expansion of international financial markets, and the spread of cultural and social standards. We are now seeing the rise of a globalised world as a result of the interaction of these forces, which has increased global economic and social integration.

Globalization's Beginning in Indian Agriculture

When India experienced a serious economic crisis in 1991, the nation began the process of globalisation. India contacted the International Monetary Fund for financial support to get out of the economic difficulties. Such aid was provided by the IMF on the condition that the Indian economy underwent certain fundamental reforms. After 124 nations, including India, signed the Dankel Proposal in 1994, the World Trade Organisation was officially founded in January 1995. Through the WTO, the member nations participated in globalisation. Liberalisation, privatization, and globalisation are the three basic categories into which these reforms and modifications might be placed. In order to promote free trade, it involves removing government regulation of the market, privatising public institutions, and lowering import and export tariffs. India opened its economy to the global market and joined GATT as well. Barriers to trade and investment at first slowed this process down, but as they were removed, globalisation accelerated. Given that India is a nation with an agrarian economy, it is crucial to understand how the nation's agriculture sector is related to this procedure. Agriculture was first included in the 1994 World Trade Agreement's policy framework. The requirements and guidelines included in the agreement pertain to market access, domestic support, export competition/subsidies, and trade-related intellectual property rights. These provisions aim to reform agricultural trade and serve as the foundation for market-oriented policies on agriculture. Certain agreements are meant to make doing business internationally simpler. All commercial sectors, including agriculture, saw extraordinary demand as a result of liberalisation. This required the Indian government to be pragmatic. Reforms in agricultural policy have to be implemented by the government in order to achieve trade liberalisation in the agriculture sector as globalisation advanced everywhere else.

Effects of globalization generally on Indian agriculture

The globe Trade Organization's regulations went into effect, and the main regions of the globe saw the start of the globalisation process. When weighing the benefits and drawbacks of globalization on the state of national economies, both WTO members and non-members have historically lacked clarity. Agriculture, a topic of great significance to both the developed and developing worlds, has generated the greatest number of WTO discussions as well as opinions and counterviews. It also applies to India. Better to argue that it has been one of the few nations in the world leading the opposition to the unfair WTO agricultural regulations.

To enhance food production, new breeds of high yield crops were used in addition to insecticides, herbicides, and fertilisers that are available in modern agro-technologies. These technologies included up-to-date irrigation projects, herbicides, synthetic nitrogen fertiliser, and enhanced crop types created using the then-current conventional, scientific techniques. Utilisation of rice varieties with high yields, such as the semi-dwarf IR8 variety. In the presence of sufficient irrigation, herbicides, and fertilisers, HYVs greatly outperformed conventional cultivars. The country's production of food grains grew significantly as a result of the implementation of HYV technology. From 8.8 million tonnes in 1965–1966 to 184 million tonnes in 1991–1992, wheat was produced. Other food grains now produce more food with greater efficiency. Between 1965–1966 and 1989–1990, it was 71% for cereals, 104%

for wheat, and 52% for rice.Although food grain output has expanded significantly, coarse cereals, pulses, and a few cash crops have not benefited from the green revolution. In summary, not all crops have equally benefited from the green revolution. Farmers' agricultural output has increased as a result of India's agricultural products finding a worldwide market. The agricultural product was grown with the use of innovative technologies, seeds, agricultural methods, etc. From a financial perspective, the agricultural sector's contribution to the GDP has increased to 14.2%.

When exporting agricultural goods, it is required to categorise the items, standardise their processing, and bundle them, among other things. As a result, the agro-allied industries have generated employment in a number of sectors, including cold storage, packaging, exporting, standardising, and processing. Agriculture-dependent enterprises are being stored, which has increased employment. The largest unorganised sector of the Indian economy, accounting for more than 90% of the unorganised work force, is agriculture. 52.1% of all jobs are in the agricultural sector [7], [8]. The expansion of India's agricultural sector is correlated with the country's industrial development and national GDP. According to the presumption, a 1% rise in agricultural growth results in a 0.5% increase in industrial production and a 0.7% increase in India's national revenue. The agricultural industry in India is expanding quickly, especially following LPG. As a consequence, the Indian government declared agriculture to be the main driver of the country's economy in 2002. According to figures from the World Trade Organisation, the total value of agriculture and food exports and imports worldwide in 2011 was $1.66 trillion and $1.82 trillion, respectively. India's contribution to this is 2.07% and 1.24 correspondingly.

The WTO's rules ensure that all nations have equal possibilities, which has led to a growth in agricultural exports. India's export share increased from 0.54% in 1990 to 0.67% in the five years after globalisation, or up to 1999, according to statistics published by the World Bank. The same era saw a 103% increase in Indian exports. Prices for agricultural products are greater in global markets than they are in Indian markets. If rich nations cut down on handouts, prices would have to go up. As a result, exports to the Indian market will rise, and profits will result from rising prices. Agriculture-related exports make up 10.23% of the economy's overall export revenue, whereas agricultural imports make up just 2.74% of all imports. In the year 201-13, agricultural exports were 33.54 billion dollars.

It is also true that globalisation is sometimes blamed for widening the wealth gap, but it is important to consider poverty in its relative context. India's top priority is to eradicate poverty, which is worse than dying. If India makes an effort, globalisation can help India achieve this goal. Additionally, the proportion of individuals living in poverty has been steadily declining, from 36 percent in 1993–1994 to 21.9 percent in 2011–12. These are a few advantages that globalisation has brought to Indian agriculture. But in a developing nation like India, the adverse effects have been shown to be more potent.

It is necessary to investigate each of the contributing factors to the present agriculture sector crisis and to evaluate the impact of liberalisation measures. For example, the state of Andhra Pradesh was the catalyst for the first-ever state level deal with the World Bank, which included a loan of USD 830 million in return for a number of changes in his state's business sector and administration. It has enthusiastically and zealously adopted the World Bank's liberalisation programmes, and as a consequence, the state's rate of farmer suicides has increased. According to the 2005 National Sample Survey Organisation Report, 1 in 2 farm families are in debt, with just 10% of the debt being used for non-production activities. Additionally, 32.7% of farmers still rely on financial institutions. According to the National Crime Records Bureau, 1,56,562 farmers killed themselves between 1997 and 2005. The four

dynamic states of Maharashtra, Andhra Pradesh, Karnataka, and Madhya Pradesh hosted about 60% of them. Karnataka has been the site of more than 20% of suicides. Consequently, the liberalisation experience is crucial.

For the already paralysed Indian farmer, the absence of post-harvest storage facilities has resulted in significant losses in production and income. It is only because of the low import tariffs brought forth by liberalised import taxes, which was a shocker. Farm labour has moved from agriculture to other industrial occupations as a consequence of the home farmer's inability to compete on the global market. Nobel Prize-winning economist Joseph Stiglitz claims that trade agreements currently prohibit the majority of subsidies with the exception of those for agricultural products. The earnings of farmers in developing nations who do not get subsidies are lowered as a result. And since 70% of people in developing nations rely on agriculture either directly or indirectly, this implies that their earnings are low. However, the current international commercial system is unjust to poor nations by any criterion. Additionally, he noted that more than half of people in the poor world live on less than the typical European cow, which receives a subsidy of $2 per day. It seems that being impoverished in a developing nation is preferable than being a cow in Europe.

60% of India's population is dependent on agriculture. Due to the growing population, this demand on agriculture is increasing daily. Indian farmers have greater production costs as a result of their limited access to land, and they also place less emphasis on the standardisation and quality of their agricultural output. Along with this, the agricultural industry has been hurt by the reduction in grants and subsidies. On the other hand, industrialised nations had provided grants widely prior to the WTO's decrease in them. During the years 1988 to 1994, they significantly increased the grants' amounts in the agricultural sector. So if funding are cut, they won't have to deal with too many problems. Given this context, farmers are unable to compete on the global market. The Indian rupee was devalued by 25% immediately following globalisation, making Indian crops very affordable and appealing on the international market. This encouraged Indian farmers to switch from growing a variety of traditional crops to export-oriented "cash crops" like tobacco, cotton, and chilli. These demand far more insecticides, fertilisers, and water than conventional crops do. It immediately raised the cost of pesticides and fertiliser by 300%.

Power rates have also been raised. Prior to liberalisation, subsidies for power helped farmers keep production costs low. When farmers started growing cash crops, which required more water, there was a substantial rise in the cost of energy since more water pumps were required and more water was used. Due to Andhra Pradesh's historical propensity for drought, the situation became worse. The tariff in Andhra Pradesh was raised five times between 1998 and 2003. The Andhra Pradesh State Power Board had to raise the price of power since this resulted in enormous, unsupportable losses. Cash crop farming is mostly unprofitable in India since just 39% of the country's arable land is irrigated, while export-focused liberalisation policies and profit-driven seed firms continue to drive farmers to the breaking point [9], [10].

The Indian government eliminated import levies and charges in accordance with WTO regulations. Earlier, this served as a cushion to safeguard and support local producers. By 2001, India had totally lifted its import prohibitions on around 1,500 products, including food. Cheap imports flooded the market as a consequence, driving down the cost of products like cotton and pepper. As a consequence, the cotton belt in Maharashtra was the location of the majority of farmer suicides up to 2003. Similar to this, Kerala, which is known around the globe for its pepper, has been harmed by the absence of import taxes on SAARC nations' pepper. When pepper prices dropped from Rs. 27,000 per quintal in 1998 to Rs. 5000 in 2004, they fell 81%.

8) Reduction in agricultural employment: In 1951, 72% of the population was employed in agriculture, which also made up 59% of the nation's GDP. However, by 2001, 58 percent of the population was dependent on agriculture, while the sector's contribution to the GDP fell sharply to 24 percent and then to 22 percent in 2006–07. Farmers' per-capita income has decreased as a consequence, and rural indebtedness has increased.

CONCLUSION

In conclusion, globalisation has significantly changed Indian agriculture, having both beneficial and bad implications. On the plus side, globalisation has expanded agricultural exports and opened up new markets, which have helped the economy of the nation flourish. Additionally, it has made it easier for cutting-edge agricultural practises and technology to be adopted, which has increased agricultural productivity and yields. Additionally, the agro-allied sectors have prospered, creating job opportunities and bolstering rural economies via cold storage, packaging, and processing. In conclusion, the long-term impacts of globalisation on Indian agriculture will rely on how successfully the nation handles the possibilities and difficulties it brings.

REFERENCES:

[1] S. Abbas, S. D. Muhammad, and S. Ali, "Globalization Challenges and Opportunities : An Empirical Analysis of Pakistan," *Pakistan J. Commer. Soc. Sci.*, 2016.

[2] L. M. Portnoi, *Policy borrowing and reform in education: Globalized processes and local contexts*. 2016.

[3] M. V. Salz, "Globalization's impact on future Ag equipment," *Resour. Eng. Technol. Sustain. World*, 2016.

[4] L. M. Portnoi, *Policy Borrowing and Reform in Education*. 2016.

[5] L. M. Portnoi, "Assessing the Impact of Globalization on Education and Educational Policy Reform," in *Policy Borrowing and Reform in Education*, 2016.

[6] C. Hay, "11. Globalization's Impact on States," in *Global Political Economy*, 2016.

[7] D. N. Chorafas, *Globalization's Limits: Conflicting National Interests in Trade and Finance*. 2016.

[8] P. M. Pinto, "Ecoturismo na fronteira Pan-Amazônica: possibilidades de gestão local em áreas protegidas do Brasil, Colômbia e Peru," *Rev. Bras. Ecoturismo*, 2016.

[9] R. E. White and K. Cooper, "Globalization's promise: Different, like everyone else," in *Globalization: Economic, Political and Social Issues*, 2016.

[10] L. Gruber, "Globalization and domestic politics: A call for theoretical reorientation," in *Local Politics, Global Impacts: Steps to a Multi-disciplinary Analysis of Scales*, 2016.

CHAPTER 13

STRATEGIES FOR INCLUSIVE GLOBALIZATION IN INDIAN AGRICULTURE

Ashutosh Awasthi, Associate Professor
College of Agriculture Sciences, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India,
Email Id- ashuaw@yahoo.in

ABSTRACT:

India's agricultural sector has seen tremendous transformation throughout the years, as shown by programmes for enhanced food security, infrastructural development, and increased productivity. Significant initiatives like the Green Revolution and the White Revolution have been instrumental in increasing agricultural output. The necessity for sustainable agricultural methods, fair resource distribution, and mitigating the effects of climate change on agriculture are still issues. Access to inexpensive, wholesome food for all societal groups continues to be a major concern. The Public Distribution System (PDS) and buffer stock management are key elements of government policies that make up India's food security policy. For long-term food security, it is crucial to address underlying problems such land fragmentation, water shortages, decreased land productivity, and unbalanced cropping patterns.

The agricultural industry in India will see improvements in infrastructure, technology, and environmental practises in the future. The government must play a crucial role in assisting small and marginal farmers, increasing crop diversification, and guaranteeing equitable market access in order to attain food security and maintain agricultural development. Prioritising agriculture's expansion and resiliency in the face of upcoming problems is essential given how crucial it is to India's economy and people. Since colonial times, when Indian spices and cotton played important roles in international commerce, globalisation has had a significant and long-lasting influence on India's agriculture. Due to the highly subsidised agriculture in industrialised countries, globalisation has created possibilities but has also caused difficulties, particularly for farmers. India's agricultural economy is at a turning point; in order to boost revenue and minimise environmental harm, small farmers must be uplifted and the country must switch to high-value crops.

KEYWORDS:

Agriculture, Globalization, International Commerce, Public Distribution System (PDS).

INTRODUCTION

India has had a number of agricultural changes throughout the years that have improved production, the development of infrastructure, and food security. The production of agriculture has greatly grown thanks to programmes like the Green Revolution and the White Revolution. Yet there are still issues, such as the need for sustainable agricultural methods, fair resource allocation, and tackling the effect of climate change on agriculture. India continues to focus on ensuring that all societal segments have access to inexpensive, wholesome food, which is a major challenge. Essential elements of the government's food security policy include the public distribution system (PDS) and buffer stock management. But to guarantee long-term food security, challenges including land fragmentation, water shortages, falling land productivity, and unbalanced cropping patterns must be addressed thoroughly.

India's agricultural industry will advance in the years to come, including cutting-edge technology, environmentally friendly practises, and better infrastructure. In order to achieve food security and maintain the agricultural sector's development, the government must play a crucial role in assisting small and marginal farmers, fostering crop diversity, and assuring equitable market access. It is impossible to overestimate the importance of agriculture to India's economy and population, making it crucial to give it top priority in terms of growth and toughness in the face of problems in the future [1], [2].

Globalization's Effect on Agriculture

The phenomenon of globalisation is not new. At the period of colonialism, it was there. When European merchants first arrived in India in the nineteenth century, Indian spices were also sold at that time to other nations, and farmers in south India were encouraged to produce these commodities. It continues to be a significant Indian export to this day.

India's cotton belts drew British settlers throughout the British era, and eventually cotton was sold to Britain as a raw material for their textile businesses. Due to the accessibility of high-quality cotton from India, the cotton textile industry in Manchester and Liverpool boomed. You have read about the 1917 Bihar-based Champaran movement. This was begun when local farmers were compelled to produce indigo on their property since it was required for the British textile businesses. They couldn't raise enough food to feed their family. The farmers in India have faced increased difficulties as a result of globalisation, especially after 1990. Even though we are a major producer of rice, cotton, rubber, tea, coffee, jute, and spices, our agricultural goods cannot compete with those of industrialised nations due to their heavily subsidised agriculture.

Indian agriculture is now at a crossroads. The status of marginal and small farmers has to be improved in order for agriculture to be successful and lucrative. The green revolution had much promise. Today, however, it is under controversy. It is claimed that this has led to land degradation because of excessive chemical usage, dwindling aquifers, and declining biodiversity. "Gene revolution" is the current catchphrase. it also covers genetic engineering. In reality, organic farming is quite popular right now since it avoids using chemicals that are manufactured in factories, such pesticides and fertilisers. Consequently, it has no adverse effects on the environment. Some economists believe that if Indian farmers continue to raise foodgrains on holdings that become less and smaller as the population grows, they will have a grim future. India has roughly 600 million rural residents who rely on about 250 million hectares of agricultural land, or less than half a hectare per person.

Indian farmers ought to switch from growing grains to high-value crops. Incomes will rise as a result, and environmental damage will also decrease. Because biodiesel crops like jatropha and jojoba need significantly less irrigation than rice or sugarcane, they require less water than fruits, medicinal herbs, flowers, and vegetables. Numerous high-value crops may be grown in India because to the country's varied environment. Food imports would be necessary for India as a result of changes in agricultural patterns, such as switching from cereals to high-value crops. This would have been seen as disastrous in the 1960s. However, if India continues to buy grains while exporting high-value goods, it will be imitating prosperous nations like Chile, Israel, and Italy. These nations import grains while exporting agricultural goods including fruits, olives, specialty seeds, and wine.

Uncertainty and Competition in the Workplace

The lives of employees have undergone significant change as a result of globalisation and the pressure of competition. Due to increased competition, most firms now favour hiring staff

"flexibly." This implies that employment security is no longer a given. Workers folding clothing at factories for shipment. Despite the fact that globalisation has given women more possibilities for paid labour, the nature of their job demonstrates that they are not receiving an equitable share of the advantages [3], [4].

DISCUSSION

Large MNCs in the clothing sector in Europe and America place orders with Indian exporters for their goods. To increase their earnings, these giant MNCs with a global network search for the lowest products. Indian textile exporters work hard to reduce their own costs in order to get these large contracts. Exporters attempt to lower worker expenses since the cost of raw materials cannot be decreased. Whereas a manufacturer formerly employed employees on a permanent basis, they now only do so temporarily in order to avoid having to pay employees for the whole year. During the busiest time of the year, employees must often work night shifts and put in very long hours. Workers are compelled to work overtime because wages are so low. While the MNCs have been able to generate significant profits thanks to the competition among garment exporters, employees are not receiving their fair share of the advantages that come with globalisation.

The above-described working conditions and challenges faced by the employees are now typical of many Indian industrial facilities and service providers. Today, the unorganized sector employs the majority of people. Additionally, the working conditions in the structured sector have started to mirror those in the unorganized sector. Sushila and other organised sector employees no longer get the protection and perks they formerly had. According to the aforementioned data, not everyone has profited from globalisation. The best exploitation of the new prospects has been made by those with education, talent, and fortune. On the other side, many individuals have not distributed the advantages. A fair globalisation would improve the distribution of the advantages of globalisation and open up possibilities for everyone.

This is something that the government can help with significantly. Its policies must safeguard the interests of all citizens, not just those who are wealthy and powerful. You have read about a few potential actions the government may take. The government, for instance, may make sure that labour rules are correctly applied and that employees get their entitlements. It may assist small producers in enhancing their output till they are capable of competing. The government may impose trade and investment restrictions as needed. 'Fairer regulations' may be negotiated at the WTO. To combat the dominance of affluent nations in the WTO, it may also band together with other developing nations that share its objectives. The WTO has recently made significant judgements affecting trade and investments, and these choices have been impacted by large-scale campaigns and the participation of people's groups. This has shown that the fight for fair globalisation may include the participation of individuals as well. We examined the current stage of globalisation in this chapter. The fast integration of nations is known as globalisation. More international commerce and foreign investment are contributing to this. MNCs are actively contributing to the process of globalisation. More and more MNCs are searching for low-cost manufacturing sites across the globe. The outcome is a complicated organisation of manufacturing.

IT in particular has been crucial in arranging manufacturing across national borders. Additionally, by lowering trade and investment obstacles, trade and investment liberalisation has accelerated globalisation. While globalisation has benefited well-off consumers and also producers with skill, education, and wealth, many small producers and workers have suffered as a result of the increased competition. At the international level, WTO has pressured

developing countries to liberalise trade and investment. A fair globalisation would improve the distribution of the advantages of globalisation and open up possibilities for everyone.

The GDP of the majority of emerging nations is produced by a small group of cities, with the capital city taking the lead. These interconnected urban centres that make up an economic region may end up becoming the main "growth pole" for nations. These areas may be found inside a single nation, as in Brazil, India, and China, or they may cross two or three nations, like in Southeast Asia. The productivity increases that economic associations and clusters provide have greatly helped the majority of industrialised nations. The second wave of globalisation, when commerce between developed nations was more influenced by cost savings from agglomeration and scale rather than comparative advantage based on differences in factor endowments, is likely when agglomeration advantages were most common. Although each business developed more and more geographically concentrated, the industry as a whole remained extremely widely spread to avoid expenses of congestion since such cost reductions are very particular to each activity [5], [6]

Agglomeration economies are beneficial to those who are included, but they are detrimental to those who are excluded. A area may not be competitive if not enough businesses have opted to set up shop there. Because of this, "a 'divided world' may emerge, in which a network of manufacturing firms is clustered in some 'high wage' region, while wages in the other regions remain low." Agriculture industry-to-industry commerce. According to differences in production costs for various items, nations should specialise in international commerce, according to classical trade theory. These cost discrepancies may be caused by variations in factor endowment or in the efficiency with which production factors are used. The ability of emerging nations to expand was progressively constrained when they focused on manufacturing and exporting agricultural goods for which they seemed to have a traditional "comparative advantage." This was due to the export markets they produced for having low and declining demand elasticities while their own import demand remained elastic, which gave rise to the so-called "elasticity pessimism" and provided the economic justification for the import-substituting industrialization strategies pursued by many developing countries in the 1950s and 1960s. However, this was not necessarily due to limitations in domestic factor endowments or trade barriers in foreign markets.

Krugman demonstrated how two-way trade in differentiated items or intra-industry trade may help a nation overcome the elasticity limitation. The idea is that each new distinct product develops a niche and the associated demand if customers have a particular appetite for diversity. If the quantity of goods produced in a particular nation is correlated with the size of its economy, the nations with the quickest economic expansion also tend to create more goods. Contrary to the conventional wisdom, this mechanism may rebalance the trade balance without adjusting prices or demand. The mechanism operates instead endogenously. More diverse products are produced in the nation with greater growth, which leads to the creation of its own export markets. These microeconomic consequences interact with macroeconomic policy, particularly the exchange rate, and contribute to the growth process. Taiwan Province of China, for instance, was able to produce more product diversity than the Republic of Korea and relied less on a constant competitive devaluation to acquire market dominance, according to data from a comparison between the two. Product diversity has a favourable and considerable influence on relative export intensity and growth, according to more recent research.

In reality, however, trading in food and agriculture was mostly restricted to wealthy nations. Trade patterns in agriculture and food in emerging nations continued to favour conventional trade specialisation, which basically represented two fundamental drivers. First, a lot of

emerging nations had slow GDP development rates and didn't reach the GDP levels needed to encourage a more diverse range of demand, which finally led to growing IIT. Second, the development of a globally competitive food processing industry—a process for which most emerging nations encountered significant obstacles—goes hand in hand with expanding TWT. In the industrialised nations, the food processing industries are firmly established.

The disparity in TWT levels between developed and developing nations, however, was not always as apparent as it was in the 1990s, according to indices for trade diversification and specialisation. In both rich and developing nations, IIT in agriculture was lower in the 1960s and 1970s compared to manufacturing. TWT commerce, however, increased quickly in many rich countries throughout the 1980s and 1990s, while it remained at low levels in developing nations. For example, since the early 1970s, the level of TWT in agriculture has significantly grown in the United States and the EU, whereas TWT coefficients have stayed fairly constant across the developing world [7], [8]. TWT only makes up 16 percent of all agricultural commerce in sub-Saharan Africa, and this percentage has not changed since 1970. South Asia, North Africa, and the Near East all had greater levels, but IIT in food and agriculture stalled there as too.

A detailed look at data for individual nations reveals that when trade barriers are removed, the amount of TWT in agriculture rises quickly. This trend is much more pronounced when nations merge their economies into a single market. Along with a growth in IIT, or the volume of exports and imports of comparable goods, such a transformation is also accompanied by a sharp rise in the number of goods exchanged. TWT in food and agriculture has achieved levels equivalent to those gained in manufacturing for nations that are strongly integrated into a single market. Data for individual nations also show that a rising TWT and a rising trade surplus in food and agriculture go hand in hand rather often. This suggests that a country's capacity to produce a specific amount of raw materials and to satisfy specific markets, including market niches, is less important for a country's ability to generate a trade surplus in food and agriculture than is its ability to produce differentiated products.

The process of globalisation, which is the increasing integration of nations' economies and society, is intricate and has a wide range of effects on the global food and agricultural industries. Important factors include the rise of the Internet, improved communication, and more affordable and quick transportation. An increasing number of international accords that have liberalised and codified the movement of money and products are also significant. These elements have led to both a quick increase in commerce and FDI as well as the growth and expanding power of multinational corporations. Despite the fact that the advantages are not fairly spread, these new elements have generally had extremely good effects. For instance, globalisation has aided in the battle against poverty and malnutrition in China, Viet Nam, and Thailand but hasn't done much to assist the region's poorest citizens integrate, enhance their food security, or get access to international markets for their farmers.

This begs the issue of what criteria determine integration or marginalisation, success or failure. Why have some nations been successful in using the tremendous growth potential that globalisation provides while others have not? In this chapter, some of the correlates of success or failure have been established. The capacity to embrace and adapt technical developments, together with trade and capital flow openness, are unquestionably among the crucial success elements. Geographical position and infrastructural strength may also be very important factors in determining whether a nation prospers or slips further behind in a world where the economy is becoming more and more globalised. The domestic incentive structure and related policies that support the integration process, however, are likely of utmost significance. Examples have been given to illustrate both the success and failure of the

globalisation process. These examples are not intended to be exhaustive or indicative in any way. Nevertheless, the instances imply that a number of similar characteristics are linked to the success or failure of the global integration process.

First, although being open to trade and investment flows is crucial to a successful global integration process, it is not a guarantee in and of itself. In many instances, openness has developed through time in tandem with general economic and agricultural advancement. On the other hand, no nation has seen rapid long-term development as a result of policies that protect emerging industries and encourage import competition. Nowhere have sustained progress in agriculture and development overall been sparked by insulation and protection.

Second, those who successfully globalise are experts in managing change. They are successful in rationalising overcapacity, providing farmers with cost-effective ways to depart the industry and alternative job prospects. The establishment of township and village businesses in China, the reduction of surplus capacity in the coffee industry in Viet Nam, and the imposition of credit limits on unsuccessful chaebols in the Republic of Korea have all been highlighted. For the agricultural industry, where a substantial portion of the human and financial resources is relatively static in the near term, gradual adjustment is especially crucial. An opportunity to redistribute resources or progressively depreciate them is provided by managed transition. Negative effects on the impoverished are also lessened with the use of active adjustment management.

While structural change generally leads to longer-term possibilities for the poor, it often means that they must pay transitional expenses in the short to medium term that they are ill-equipped to handle. This is especially true in trade changes, where the costs of adjustment are often incurred up front and the advantages are only realised over a longer period of time. The policy measures to manage adjustment include steps that help farmers and processors become ready for global competition, such as via training and technical support. They also involve an appropriate mix, sequencing, and phasing of trade changes. Farmers may greatly benefit from measures that protect them from excessive price volatility regardless of where and when border protection is fully abolished.

There are measures that support this learning process since successful integration is also a process of learning and experimentation. The two-track approach used in Chinese agriculture seems to be effective. It has made it possible for decision-makers to acquire knowledge about what systems work and what do not, as well as what farmers can do most effectively and what cannot. Two-track systems have also shown value in opening up to global competition without having to bear the expenses of significant and quick changes for a whole economy. China's special economic zones and Mauritius' EPZ are two of the most notable instances of two-track systems that have been effective. These two-track systems enable the shift to freer environments via a variety of ways. They enable a nation, for instance, to provide exceptional conditions to foreign investors that could be difficult to guarantee for the whole economy. Additionally, they aid domestic businesses in preparing for escalating foreign competition and provide policymakers the opportunity to adapt the domestic framework for competition laws to a world of more open trade and capital flows.

FDI expansion has outpaced trade flow increase as a result of globalisation. FDI inflows may act as a catalyst for growth. FDI offers more than just a significant financial source. It is also a carrier of management strategies, skills, and technology, which is more significant. But just as in commerce, openness is not the main factor in determining success. The quality of FDI is just as significant as the volume of inflows. Low repatriation rates and close ties to native farmers are characteristics of high-quality FDI. Particularly in India's food sector, FDI

experience has shown its potential to support agriculture and overall rural development. Tncs increased agricultural yields and farm incomes by giving farmers better seeds, improved technology, and more stable pricing. The agreements that create these connections are essential to success. However, there are also cases when tncs have contributed to the marginalisation of whole farm populations and where FDI has mostly failed to forge connections with local farmers. The state of the world's coffee markets serves as an example. There is evidence of increasing concentration in the trading and processing of coffee, as well as of tncs' success in capturing an increasing portion of the overall value generated in the coffee marketing chain. The degree to which these changes are a result of the abuse of market dominance and the lack of a suitable framework for competition policy that can handle the new competition rules in a globalised market, however, is less evident [9], [10].

Internationalization of industrial technology has also contributed to globalization in agriculture. The most crucial tool in this approach was the green revolution. Again, some nations have adopted these new technologies phenomenally, whilst others have entirely failed to do so. Similar to trade and investment flows, being open to innovation is just one of many success correlates. Numerous studies contend that it is more crucial to provide the ideal home environment that enables regional producers to profitably use new technology. In order for adoption to be successful, adaption must go hand in hand. The ability to adapt new technologies to the agronomic and economic conditions present in a particular place will determine whether biotechnologies are successful or unsuccessful, not their availability. Last but not least, location and infrastructural strength are critical factors in effectively accessing global markets. There is strong evidence that the absence of infrastructure has been the major barrier preventing farmers in sub-Saharan Africa from significantly expanding their market share in the OECD.

However, there is also evidence to suggest that globalisation might provide fresh chances to overcome long-standing barriers brought on by poor geographical conditions or insufficient infrastructure. In general, new technologies are more affordable and quick, and they can connect even the most isolated regions to the markets. These include multimodal transportation networks and Internet-based commercial communication systems. Transaction costs in sparsely populated areas may be decreased by encouraging economic agglomeration.

In conclusion, globalisation has enormous potential for farmers and the overall food industry in developing nations. Even while many emerging nations are effectively using this potential, not all of them are able to completely benefit from the new possibilities. A nation's capacity to gain from globalisation relies on a variety of elements, including its openness to trade and financial flows, capacity to embrace new technologies, as well as its location or infrastructural endowment. The many instances show that openness and outward-looking policies are common among successful globalizers, but they do not guarantee success in and of themselves. The domestic policies that support integration into international markets are of greater importance. These are the kinds of policies that provide reasonable transitional periods towards freer trade, aid in domestication of new, foreign technology, build up competition-friendly legislative frameworks, and create contracts that also support the expansion of small-scale agriculture under the purview of TNC operations.

CONCLUSION

In conclusion, considerable improvements to India's agricultural environment over the years have enhanced output, facilitated the growth of infrastructure, and increased food security. Efforts like the White Revolution and the Green Revolution have been significant in increasing agricultural output. However, a number of issues still need to be resolved, such as

the need for fair resource distribution and the need to reduce the effects of climate change on agriculture. It is admirable that the government is putting so much effort into making sure that all societal groups have access to inexpensive, wholesome food; important components of food security policy include buffer stock management and the public distribution system (PDS). But for long-term food security, addressing problems like land fragmentation, water shortages, falling land productivity, and unbalanced cropping patterns is crucial. In conclusion, India's experience with agricultural globalisation emphasises the significance of adjusting to shifting global dynamics while tackling local difficulties. Openness to trade and investment, the capacity to handle change, infrastructure investment, and successful policies that promote both economic development and social equality are necessary for success in a globalised society. It takes collaboration between governments, corporations, and civil society to achieve a fairer globalisation that benefits all people. In the end, the future of India's agricultural industry will rely on how well it manages the changes brought about by globalisation.

REFERENCES:

[1] M. Srinivasan and S. Koteeswaran, "(3) Knowledge Society in Agriculture and Digital Networks for Farmers by using Spatial Data Mining," *GRD Journals*, 2016.

[2] H. C. Dandekar, "Shifts in rural planning in the US and India," *International Planning Studies*. 2016.

[3] L. Singh, K. S. Bhangoo, and R. Sharma, *Agrarian distress and farmer suicides in North India*. 2016.

[4] B. Singh, "Enhancing income of farmers through branding of agricultural produce," *Int. J. Appl. Res.*, 2016.

[5] G. E. McLaughlin *et al.*, "RELATING IRRIGATION INTENSITY TO CROP DIVERSIFICATION:\nA SPATIO- TEMPORAL STUDY IN MURSHIBADAB DISTRICT,\nWEST BENGAL (1996-97 TO 2006-07)," *Econ. Polit. Wkly.*, 2016.

[6] A. Awasthi, "Innovative Techniques and Strategies of Skill Building for Human Resource Development in SMEs, India," *SMS J. Enterpreneursh. Innov.*, 2016.

[7] S. Dhara and D. Kr Paul, "Status of Agriculture 'A Case Study at Patharpratima Block of South 24 Parganas District,'" *IJISET-International J. Innov. Sci. Eng. Technol.*, 2016.

[8] A. Chaudhary, "Role of Foreign Direct Investment (FDI) in the Growth of Indian Agricultural Sector: A Post Reform Study," 2016.

[9] P. R. Chandrasekaran, "Millets from the margins: Value, knowledge and the subaltern practice of biodiversity in Uttarakhand, India," 2016.

[10] Secretariat ASEAN, "Roadmap on ASEAN cooperation towards transboundary haze pollution control with means of implementation," 2016.

CHAPTER 14

TRAVERSING THE CHALLENGES OF FOOD SECURITY, DEMOGRAPHIC SHIFTS, AND SUSTAINABLE AGRICULTURE IN THE 21ST CENTURY

Heejeebu Shanmukha Viswanath, Assistant Professor
College of Agriculture Sciences, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India,
Email Id- shanmukhaviswanath92@gmail.com

ABSTRACT:

Agricultural yield growth has stalled, and food losses continue despite technological breakthroughs. Productivity is further hampered by the deterioration of natural resources, a decline in biodiversity, and climate change. Climate change has an outsized impact on areas where there is food insecurity, putting food supply in jeopardy. Even if the world's hunger and poverty have decreased, there are still problems, especially in rural regions. These problems are made worse by injustices, vertical integration of food systems, and wars, which encourage migration and feminise farming. More people fall into poverty and hunger as a result of rising wars, crises, and natural disasters that interrupt healthcare, social safety nets, and food supply. Violent clashes often follow protracted crises. Inequities must be lessened within and between countries if poverty is to be eradicated and disadvantaged communities are to gain from market integration and agricultural investment. Pro-poor development should include both urban and rural communities, generating employment and sources of income. Agriculture and food systems are impacted by demographic changes, such as urbanisation and the fast population expansion in Asia and Africa. The ageing workforce in rural areas has particular difficulties, such as prejudice and restricted access to resources. The Sustainable Development Goals (SDGs) and other international accords must be taken into consideration as part of a holistic, coordinated strategy to be taken at all levels of governance in order to address these complex concerns. In order to achieve global food security, nutrient security, and sustainable agriculture, policies must be coherent, inclusive, and integrated.

KEYWORDS:

Agricultural, Food Security, Poverty, Population, Sustainability.

INTRODUCTION

Food security, poverty, and the general sustainability of the food and agricultural systems are all impacted by a variety of global developments. By 2050, the world's population is projected to reach over 10 billion, which would result in a 50 percent increase in agricultural demand compared to 2013. Growth in affluence in low- and middle-income nations would speed the shift in dietary preferences towards greater intake of meat, fruits, and vegetables in comparison to grains, necessitating corresponding changes in production and placing more strain on natural resources. The structural transformation of economies is being driven by population dynamics and economic expansion. Different regional difficulties and rates of reduction in the contribution of agriculture to overall output and employment are present. Although technical advancements and investments in agriculture are increasing productivity, yield growth has stalled to uncomfortably low rates. Reducing food losses and waste would minimise the need for production increases, which consume a significant amount of agricultural output. The deterioration of natural resources, loss of biodiversity, and the spread of transboundary pests and illnesses of plants and animals, some of which are developing

antibiotic resistance, prevent productivity development from accelerating as it should. Food-insecure areas are disproportionately impacted by climate change, which threatens fish supplies, fisheries, agricultural and animal output. Increased greenhouse gas emissions, more severe competition for natural resources, and additional deforestation and land degradation are expected outcomes of trying to meet growing agricultural demand with current farming methods [1], [2].

Since the 1990s, there has been a worldwide decrease in hunger and severe poverty. However, there are still a good 700 million people who live in abject poverty today, the most of them in rural regions. In addition, 2 billion people have micronutrient deficiencies, and 800 million people experience chronic hunger despite evident progress in lowering rates of undernourishment and increasing nutrition and health. In a "business as usual" scenario, around 653 million people would still be undernourished in 2030 if further initiatives to support pro-poor development were not made. Pervasive inequities persist even in areas where poverty has been decreased, making it difficult to eradicate poverty. Food systems' most important components are becoming increasingly vertically integrated, capital-intensive, and concentrated in a smaller number of hands. From the supply of inputs through the distribution of food, this is occurring. Small-scale farmers and families without access to land are the first to suffer, and they are increasingly looking for jobs outside of agriculture. Due to this, there are more people migrating, particularly male members of rural families, which is causing the 'feminization' of farming in many regions of the globe.

The frequency and severity of conflicts, crises, and natural catastrophes are rising. They diminish food supplies, obstruct access to food and healthcare, and erode social safety nets, driving a large number of those impacted back into poverty and hunger, causing distress migration, and boosting the need for humanitarian relief. Protracted crises sometimes include violent confrontation as well. In low-income nations experiencing a prolonged crisis, the percentage of undernourished persons is often 2.5 to 3 times greater than in other low-income nations.

These tendencies provide a number of difficulties for agriculture and food. Agriculture and food production cannot be sustained by high input, resource-intensive farming practises that have led to extensive deforestation, water shortages, soil degradation, and significant greenhouse gas emissions. Innovative solutions that boost production while safeguarding and enhancing the natural resource base are required. 'Holistic' techniques are required, such as agroecology, agroforestry, climate-smart agriculture, and conservation agriculture, which also draw on indigenous and traditional knowledge. Technological advancements would aid in addressing climate change and the increase of natural hazards, which touch all ecosystems and every element of human existence, together with substantial reductions in economy-wide and agricultural fossil fuel consumption. For the prevention of rising transboundary hazards to agriculture and the food chain, such pests and diseases, more international cooperation is required.

Action must be taken to minimise inequities in order to eradicate severe poverty and ensure that weak individuals who do so do not relapse into it. This calls for resolving disparities in income levels, opportunities, and asset ownership, including that of land, both within and within nations. Pro-poor development initiatives would increase their income and investment prospects in rural regions and address the underlying reasons of migration by ensuring that the most vulnerable people benefit from market integration and agricultural investment.

Nevertheless, pro-poor development must go beyond agriculture, incorporating both rural and urban regions, and must promote both the creation of jobs and the diversification of sources

of income. Ending hunger and tackling the triple burden of malnutrition via better meals will be made possible by social protection paired with pro-poor development. Building resilience to prolonged crises, catastrophes, and wars is also necessary for the long-term eradication of hunger, malnutrition, and severe poverty. wars may also be avoided by fostering inclusive and equitable global development [3], [4].

To address present and future difficulties, food systems and governance must be rethought. Urban regions may get standardised food from highly organised, vertically coordinated food systems, which can provide formal job possibilities. They must, however, be complemented by ethical investments that take into account the livelihoods of small farmers, the environmental costs of expanding food supply chains, and the effects on biodiversity. Food systems need to be made more effective, inclusive, and resilient in order to solve these issues. All nations are interconnected on the road to sustainable development. achieve cogent, effective national and international governance, with defined development goals and a commitment to achieve them, is one of the biggest problems. Such a vision—one that transcends the gap between "developed" and "developing" nations—is embodied in the 2030 Agenda for Sustainable Development. All nations must work together to address the global problem of sustainable development, which calls for fundamental shifts in how each society produces and consumes.

DISCUSSION

In the last century, there has been a huge improvement in the wellbeing of people everywhere. Quantum leaps in technology, increased urbanisation, and advances in manufacturing processes have all contributed to profound social transformation. the circumstances in the "free of fear and want" society that the United Nations was founded on is a long cry from the reality of today. The Food and Agriculture Organisation of the United Nations has a similar goal: to create "a world free of hunger and malnutrition and one in which food and agriculture contribute to improving the living standards of all, especially the poorest, in a sustainable manner on an economic, social, and environmental level." Much work still needs to be done to achieve these goals.

In spite of abundant resources, billions of people continue to experience widespread poverty, egregious disparities, unemployment, environmental degradation, sickness, and hardship. Since the Second World War, migration and displacement are at their greatest points ever. Although many military wars have been put to an end, other ones have arisen. The environment has suffered greatly as a result of a large portion of human development. If climate change continues unchecked, its effects will become much more apparent in the coming years. Globally integrated production methods offer numerous advantages, but they also pose problems with regard to regulation and the need to direct them towards more sustainable and fair results.

Demographics will undergo a significant transformation during the next several decades and as the century comes to a close. Africa, South Asia, and urban areas are predicted to see the most of the world's population expansion. Two-thirds of the world's population will reside in cities by the middle of the century. The 15–24 age group will see significant increases in low-income nations. South Asia's population will increase until the middle of the century, while sub-Saharan Africa's population will increase at least until the end of the century. Of the estimated 11 billion people that will live on Earth by 2100, 9 billion are predicted to live in Asia and Africa together.

These areas might benefit greatly from population expansion in terms of both the demographic dividend and domestic market growth. It will be difficult to cash in on this

payout, however. If insufficient economic possibilities are offered, the benefit might easily become a curse, one that encourages widespread migration and perhaps even violence. While this is happening, other regions will need to adapt to their growing ageing populations.

The weight of low- and middle-income nations in the global economy will continue to rise as a result of the shifting demography. However, this does not imply that people's and countries' incomes will converge. Rapid economic development in developing markets has helped to reduce global inequality to some extent in recent decades. However, this has mostly been compensated by growing inequality in the majority of nations, regardless of income level. The average income of those residing in Africa is just approximately 5% of that of Americans despite the continent seeing tremendous economic development since 2000. This percentage is now lower than it was fifty years ago. This demonstrates not just the enormous inequalities in the ability to save and invest for future income creation, but also the profound discrepancies in present levels of well-being. Even if low-income nations do manage to profit from their demographic dividend, it is probable that significant global inequities will continue for some time to come. The entire ramifications of this position for future trends are difficult to foresee [5], [6].

Although agriculture and food systems have already undergone tremendous transformation, they will still need to adapt to the changing global climate. Between 1960 and 2015, agricultural output more than quadrupled, thanks in part to the Green Revolution's productivity-boosting technology and a considerable increase in the utilisation of land, water, and other natural resources for agriculture. During the same time frame, food and agriculture underwent a spectacular process of industrialization and globalisation. The physical distance from farm to plate has expanded, lengthening food supply chains substantially; processed, packaged, and prepared food consumption has increased everywhere save the most remote rural villages.

However, widespread hunger and malnutrition continue to be major problems in many regions of the globe. By 2030, and certainly not by 2050, hunger will not be completely eradicated at the present pace of development. The astounding rises in the incidence of overweight and obesity throughout the globe are a result of the development of food systems, which has both reacted to and pushed shifting dietary choices and patterns of overconsumption. The ecology has often suffered greatly as a result of increasing food production and economic development. The Earth no longer has about half of the woods that once covered it. Rapid groundwater depletion is occurring. Biodiversity has suffered severe decline. The combustion of fossil fuels releases billions of tonnes of greenhouse gases into the atmosphere each year, which cause climate change and global warming.

Agriculture is a significant contributor to the issue, which is rising in speed and severity. Deforestation, mostly for agricultural purposes, contributes significantly to the world's greenhouse gas emissions and is responsible for habitat degradation, species extinction, and the loss of biodiversity. Since the 1970s, the frequency of natural catastrophes has increased by five. The probability that severe weather events would develop into complete catastrophes for impacted populations and the economy has grown due to deforestation, the deterioration of natural buffers protecting coasts, and the status of the infrastructure. The expansion of food chains and changes to eating habits have made the world food system even more intensive in terms of resources, energy, and emissions.

These developments compromise the ability of the world to satisfy its food demands and endanger the viability of food systems. Although it is impossible to forecast all of the effects of climate change on agriculture, forestry, and fisheries, it is anticipated that each area,

ecological zone, and production system would experience consequences at varying degrees and of a different character. Productivity may be negatively impacted by even minor climatic changes, such as moderate variations in yearly rainfall or seasonal precipitation patterns. Looking forward, the main concern is whether current agricultural and food systems can satisfy the demands of a world population that is anticipated to surpass 9 billion people by the middle of the century and reach a high of more than 11 billion by the end of the century. Can we expand productivity even as demands on already limited water and land resources and the negative effects of climate change rise? The general assumption is that present systems can probably produce enough food, but significant changes are needed to do it in a way that is both inclusive and sustainable.

This prompts further inquiries. Can agriculture supply the enormous demand for food while ensuring the sustainable use of the earth's resources, limiting greenhouse gas emissions, and reducing the effects of climate change? Can the globe ensure that everyone has access to enough food, particularly in low-income areas where population growth is the quickest? Can agricultural industries and rural economies be changed in a manner that increases and improves prospects for employment and income generation, particularly for women and young people, and helps prevent large-scale migration to cities with insufficient labor-absorptive capacity?

Can public policies solve the 'triple burden of malnutrition' by encouraging food systems that provide cheap access to food for everyone, eradicate micronutrient deficiencies, and reduce overconsumption of food? Can the massive issue of food losses and waste be solved, which accounts for up to one-third of all food produced for human consumption? Can farmers and consumers be protected by national and international regulatory frameworks against the growing monopolistic power of giant, multinational, vertically integrated agro-industrial enterprises? Can the effects of wars and natural catastrophes, which are both significant threats to food security and the root causes of large-scale human migration, be controlled and avoided? The necessity for radical change and the difficulties facing the world have been acknowledged. The world community is aware of these difficulties. A particularly appealing but difficult vision of how several goals might be integrated to establish new sustainable development paths is provided by the 2030 Agenda for Sustainable Development, which the world community accepted in September 2015. By 2030, the second Sustainable Development Goal specifically seeks to eradicate hunger, achieve food security, promote nutrition, and support sustainable agriculture.

The 2030 Agenda recognises that the effectiveness with which food insecurity and malnutrition are effectively reduced and sustainable agriculture is promoted will determine the progress made towards many other SDGs, particularly the eradication of poverty, the response to climate change, and the sustainable use of marine and terrestrial ecosystems. In contrast, the advancement of SDG 2 will be contingent upon a number of other targets. In other words, in order to advance SDG 2, policymakers and all other stakeholders must take into account the connections and crucial interactions between SDG 2 and the other objectives, both in terms of synergies and trade-offs.

The Addis Ababa Action Agenda on funding for development and the 2030 Agenda for Sustainable Development expressly urge all nations to promote policy consistency and create conditions that are conducive to sustainable development at all scales and by all players. Global pledges for coordinated action to address the dangers of climate change are reflected in the Paris Agreement on climate change and the efforts taken towards its implementation at the United Nations Climate Change Conference 2016 in Marrakesh. The agricultural sectors are given top emphasis under the Sendai Framework for Disaster Risk Reduction. The

report's Annexe provides a summary of these and other frameworks along with their applicability to FAO's operations and mandates [7], [8].

Despite these encouraging international platforms for action, it will be difficult to achieve policy consistency. The interconnection of the difficulties they are to solve is emphasised by the 2030 Agenda and other relevant global accords. They also acknowledge that in order to accomplish connected goals, all levels of governance must coordinate varied activities and recognise that doing so would place new technical demands on policymakers at all levels as well as new demands on institutional structures and coordination. The associated difficulties come in twos. First, it will be necessary to integrate various tools used at various levels of governance in a manner that mutually reinforces itself, while identifying and containing unavoidable trade-offs. Second, it has historically been quite difficult to capitalise on synergies among SDGs and targets, between various sectoral policies, and between various actions taken by officials and stakeholders at levels ranging from local, municipal, and provincial to national, as well as from national to regional and international.

The goal of this paper is to deepen awareness of the nature of the issues that agriculture, rural development, and food systems are currently confronting and will face throughout the 21st century, rather than to provide a menu of answers. Further understanding of the issues involved and the necessary actions is provided by the study of global trends and problems that is supplied here. The future of food and the means of subsistence for people who rely on agricultural systems are examined in the section that follows. The majority of the trends have a significant interdependence between one another and, taken together, create a set of ten challenges for ensuring universal food security, adequate nutrition, and sustainable agriculture. The latter part of this report outlines these difficulties.

The fact that "business as usual" is not an option is one message that becomes very evident. If we are to address the many problems at hand and realise the full potential of food and agriculture to guarantee a safe and healthy future for everyone and the whole planet, significant changes to agricultural systems, rural economies, and resource management will be required. Although overall population growth is slowing down, certain places will continue to see population expansion long through 2050 and even into the next century. Currently, there are more people living in cities than in rural regions, and as the population rises, this disparity is expected to widen. A change in eating habits has coincided with urbanisation, which has had a significant influence on food systems.

The global population is ageing as a whole. The process of ageing is increasingly speeding up in low-income nations as well, where it tends to start earlier and is more obvious in rural regions. Both urbanisation and ageing will have significant effects on rural communities' socioeconomic structures and the employment force in agriculture. When mapping out sustainable development routes that will secure global food security, these demographic dynamics must be taken into consideration. The chances for these nations' overall growth might be greatly jeopardised if these demographic estimates come true. It would also jeopardise efforts to increase food security and nutrition since all of these nations heavily depend on agriculture for employment and revenue generating. This is especially true for those nations, like Niger and Somalia, who are heavily reliant on agriculture and have little land and water resources. According to current trends, these nations may face a neo-Malthusian future if they were to depend only on local production for their food supply.

The demographic structure is altered by rapid population increase, with younger generations making up a growing portion of the total population. In low- and middle-income nations, the population between the ages of 15 and 24 is anticipated to increase from around 1 billion to

1.2 billion between 2015 and 2050. The majority of these young people are anticipated to reside in South Asia and sub-Saharan Africa, especially in rural regions where employment opportunities are anticipated to be scarce.

This population development might result in an increased rate of emigration if there aren't enough work opportunities. Some emigration destinations are already experiencing the effects of outmigration, both domestically and internationally, particularly in high-income countries in other regions and in Europe. Family planning may help to partly stop these outmigration trends. However, policies that support respectable employment and money generating options, particularly in rural regions, are more crucial.

The nutritional change is intensifying due to rapid urbanisation. The world's population was mostly rural for many years. More than 60% of the population resided in rural regions 35 years ago. Since then, there has been a significant shift in the urban-rural divide; currently, slightly more than half of the world's population lives in cities. More than two-thirds of the world's population may reside in urban regions in 2050, 35 years from now. Agriculture has undergone changes, particularly technological advancement and the adoption of labor-saving technology, which have contributed to the growth of urbanisation. The effects of urbanisation have also, and will probably continue to have an impact on, agriculture, food, and nutrition.

Global urbanisation might result in a net 2.4 billion people being added to towns and cities by 2050, which is more than the 2.2 billion increase in the world's population. This implies that there might be a net loss of roughly 200 million people in rural areas. The net decline in rural populations is due to a number of variables, most notably greater death rates and lower life expectancies in rural regions, rather than just an emigration from rural to urban areas. The lower urban fertility rates are more than countered by these factors.

Up until the 1970s, urbanisation was mostly a phenomena of high-income nations, but since then, the dynamics of urbanisation throughout the world have been characterised by fast expansion in low-income nations. Currently, the global dynamics are determined by the sheer quantity of urban inhabitants in low-income nations.

Although urbanisation is increasingly widespread in low-income nations as well, the overall image hides significant regional variations. Latin America has often been the world's most urbanised emerging area. Particularly in South America, urbanisation happened quickly and early. The region's population was categorised as urban by more than two-thirds by 1980, and that percentage increased to around 85 percent by 2015. However, due to its high level of urbanisation, future growth will remain modest and urbanisation rates will drop, while in less urbanised regions, urbanisation rates may increase [9], [10].

Patterns of food consumption are impacted by urbanisation. As part of a general dietary shift, more urban affluence tends to boost demand for processed foods as well as food derived from animals, fruits, and vegetables. Higher urban salaries also often lead to higher opportunity costs associated with food preparation and a preference for food items with high labour content, such as fast food, convenience meals purchased at stores, and foods produced and sold by street vendors. The nutritional composition of diets is shifting as a result of these modifications. Diets are often growing more calorie-dense and heavier in salt, fat, and sugar. Less people work in agriculture and more work in transportation, wholesaling, retailing, food processing, and vending as a result of this change in consumption habits.

In contrast to what national statistics would suggest, ageing often begins sooner and progresses more quickly in rural communities. The makeup of the rural work force, patterns of agricultural output, land tenure, social structure within rural communities, and

socioeconomic growth in general are all significantly impacted by rural ageing. Farmers who are older, sicker, and less educated likely to be more affected by environmental degradation, climate change, and restricted agricultural technology. Discrimination against older rural people in obtaining loans, training, and other resources for creating revenue may exacerbate the challenges encountered by elderly farmers. Older farmers often miss out on agricultural breakthroughs including the adoption of new agricultural technology and the introduction of better seeds and equipment because many of them lack the funds to purchase extra inputs as well as the knowledge and motivation to do so. Gender differences in agricultural output make older women more vulnerable since they have less options to get loans, receive training, or engage in market exchanges. The adaptation of farming technology and agricultural policies to the skills and requirements of older farmers may assist to keep older people involved in productive activities in nations where the agricultural labour force is ageing. Social support systems may need to be changed in places where there is "compressed ageing" in order to meet the changing age demographic.

CONCLUSION

In conclusion, the issues surrounding food security, poverty, and the sustainability of food and agricultural systems are intricate and intertwined, and they will only get more so as the future of food production and consumption is significantly influenced by factors like global demographics, climate change, and economics. Agriculture and employment are changing as a result of the structural restructuring of economies, especially in low- and middle-income nations. Despite productivity gains due to technology, yield increase is still only moderate, making it vital to reduce food loss and waste. Productivity is also hampered by the deterioration of natural resources, loss of biodiversity, and spread of international pests and diseases. Food security is seriously threatened by climate change, which has a disproportionately negative impact on vulnerable and food-insecure areas. If existing agricultural practises are kept up, it is anticipated that there would be an increase in greenhouse gas emissions, competition for resources, and deforestation. In conclusion, comprehensive methods that take into account population changes, climatic change, and economic issues are necessary to provide food security, reduce poverty, and ensure sustainable agriculture. The linked problems that our food and agricultural systems face in the 21st century call for collaboration, creativity, and a commitment to solving them.

REFERENCES:

[1] P. Morone and L. Cottoni, “Transition to a Sustainable Agro-Food System: The Role of Innovation Policies. The Role of Innovation Policies.,” in *Innovation Strategies in the Food Industry: Tools for Implementation*, 2016.

[2] F. G. Horgan, A. F. Ramal, C. C. Bernal, J. M. Villegas, A. M. Stuart, and M. L. P. Almazan, “Applying Ecological Engineering for Sustainable and Resilient Rice Production Systems,” *Procedia Food Sci.*, 2016.

[3] C. Z. Guilmoto and G. W. Jones, “Forty Percent of the World,” in *Contemporary Demographic Transformations in China, India and Indonesia*, 2016.

[4] NCT02768181, “Evaluating Bundling of Nutrition-specific Interventions,” *https://clinicaltrials.gov/show/NCT02768181*, 2016.

[5] A. Komala, “Gambaran Tingkat Kepuasan Pasien Peserta BPJS Kesehatan Terhadap Pelayanan Kesehatan di Puskesmas Kom Yos Sudarso Pontianak Tahun 2015,” *J. Knowl. Manag.*, 2016.

[6] T. N. Hidayati, "Students' Motivation in Learning English by Using Games," *J. Knowl. Manag.*, 2016.

[7] Supardianto, "Sistem Aplikasi Deteksi Hama Tanaman Tomat Menggunakan Metode Mutie Criteria Detesion Making," *Skripsi*, 2016.

[8] G. Balla, "The Director's Method in Contemporary Visual Effects Film: The Influence of Digital Effects on Film Directing," *J. Knowl. Manag.*, 2016.

[9] D. Bracken-Roche, "Reconsidering 'vulnerability' in research ehtics: A critical analysis and proposal for the refinement of this concept," *J. Knowl. Manag.*, 2016.

[10] L. Lugo Urribarri, "Analitica del aprendizaje en un entorno virtual mediante un sistema de computación cognitiva: estudio preliminar," *J. Knowl. Manag.*, 2016.