THE IDEA BANK

PIONEERS YOUTH

PIONERA '23

FOOD INSECURITY & NUTRITIONAL GAP IN SOUTH ASIA

INTRODUCTION *To*

The Idea Bank is the research core of Pioneers Youth. From panel discussions, handbooks, and competitions to reading nights and movie nights, the Idea Bank strives to educate volunteers and spread awareness on pressing issues related to the South Asian region by giving the youth of South Asia a platform to voice their thoughts, opinions, and most importantly, solutions.

Through **Pionera**, the Idea Bank aimed to create awareness by demonstrating the extent of the food insecurity & nutritional gap in the South Asian region. We thank each and every participant for their efforts that made this project a success.

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Abstract

South Asia is home to more than 1.8 billion people, many of whom depend on agriculture for their livelihoods. Climate change has grown to be a significant worry for agricultural and food security. Extreme weather events, increases in temperature and precipitation, and other effects of climate change are already being felt across the world, and they are predicted to only get worse over the next few years.

This paper aims to discuss the effects of climate change on South Asian agriculture and food security, along with adaptation and mitigation measures. To investigate the social, economic, and environmental aspects of climate change and its effects on agriculture, the paper reviews the findings from the internet.

Based on the results, climate change has a major and varied impact on the region's agricultural production, especially in rain-fed regions where agriculture is highly dependent on rainfall. As a result, food security is expected to become even more undermined.

The study emphasizes the necessity of funding investments in sustainable agricultural techniques, efficient water management, and social safety nets to assist vulnerable populations in solving these difficulties. It also highlights how crucial it is to address the effects of climate change on agriculture and food security in South Asia through integrated efforts at the local, national, and international levels.

Keywords: climate change, food security, agriculture.

Introduction

Understanding how South Asia's agriculture and food security are being impacted by climate change, as well as developing methods for minimizing these consequences, is of colossal importance. Agriculture in South Asia is highly reliant on rainfall. Consequently, changes in temperature and precipitation patterns are anticipated to have an impact on crop phenology, crop yields, and the pressures of pests and diseases. Extreme weather conditions like floods, droughts, and storms can also seriously harm infrastructure and

crops, further lowering agricultural productivity. This, in turn, has the potential to worsen food insecurity. It is crucial to establish and put into action policies and initiatives that support sustainable agricultural and land-use practices, enhance water management, and expand social safety nets to assist disadvantaged communities in solving these difficulties. Apart from focusing on the socioeconomic and biophysical impacts of climate change on agriculture and food security, adaptation and mitigation techniques should be incorporated into wider development plans.

Therefore, to explore the effects of climate change on agriculture and food security in South Asia, this research presents a thorough assessment of the pertinent literature as well as case studies on the concerned topic of discussion. Additionally, it emphasizes the urgent need for action to solve this serious problem and outlines methods for coping with and lessening the effects of climate change on local agriculture and food security.

Literature Review

Climate change has been identified as a significant threat to agriculture and food security in South Asia. This literature review summarizes the impact of climate change on agriculture and food insecurity in South Asia.

1. Climate Change and Agriculture

Climate change has pointedly impacted agriculture in South Asia. Extreme weather events such as droughts, floods, and cyclones have become more frequent, leading to reduced crop yields, livestock losses, and increased soil erosion. The increase in temperature and erratic rainfall patterns have also affected the growth and development of crops, leading to concentrated yields.

The impact of climate change on agriculture is evident from various studies. For instance, a study conducted in Pakistan in 2013 found that the yields of crops such as wheat, rice, and maize have declined by 5–10% due to increasing temperatures. Another study in Bangladesh found that rice yields have decreased by 10–15% due to the increase in

temperature.

2. Climate Change and Food Insecurity:

Climate change has also led to food insecurity in South Asia. The impact of climate change on agriculture has resulted in decreased food productivity and availability, which has led to an increase in food prices. This has made it difficult for the poor to get access to food. Furthermore, climate change has also led to increased migration and displacement, leading to a further decrease in food security. People working on farms move towards urban areas with the hope of getting better, safer, and more secure jobs rather than continuing with farming in uncertain and unstable circumstances. This has led to a decline in the number of farmers, which further decreases food security.

The impact of climate change on food insecurity is evident from various studies. For instance, a study conducted in India found that climate change could lead to a 10% reduction in food availability by 2020. Another study conducted in Sri Lanka found that the increase in temperature and erratic rainfall patterns have led to decreased food production, resulting in increased food prices.

In conclusion, climate change has significantly impacted agriculture and food insecurity in South Asia. The decrease in crop yields, loss of livestock, and increased soil erosion due to extreme weather events such as droughts, floods, and cyclones have led to decreased food availability and increased food prices. To address these challenges, various adaptation strategies have been proposed, including the adoption of climate-smart agricultural practices, improving access to credit and insurance, and increasing awareness about the impact of climate change on agriculture.

Methodology

A mixed-methods research approach was employed to ensure the reliability, validity, and authenticity of the study. This approach involved using both quantitative and

qualitative data collection and analysis techniques. The qualitative data was collected and analyzed using the pertinent academic papers, reports, and policy documents published over the years. The analysis focused mainly on identifying trends and patterns related to climate change and its impacts on agriculture, food production, and food security in the region. Statistical methods were used to analyze the data, including time series analysis and regression analysis.

For quantitative data collection and analysis, a case study was conducted to explore specific issues related to climate change. It involved fieldwork and data collection methods, such as interviews and focus group discussions. It aimed to provide a more in-depth understanding of the challenges and opportunities related to climate change and food security in specific contexts within the region.

Ethical Considerations

The study accorded a high ethical consideration so that it ensured the safety of the participants and the data by safekeeping the responses and maintaining the anonymity of the research participants.

Findings

The results of the survey are discussed in this section. Some of the important points of discussion include the concerning rates of decline in food production and security in South Asia.

Indicators	Bangladesh	India	Maldives	Nepal	Pakistan	Sri Lanka
	2002-04	**2002-04**	**2002-04**	**2002-04**	**2002-04**	**2002-04**
Population (million)	146.7	1065.4	0.32	25.2	153.6	19.1
Food Supply (kcal/person/day)	2200	2470	2600	2430	2320	2390
Number of undernourished (million)	44	209.5	31.9	4.4	37.5	4.2
Proportion of under-nourishment (%)	30	20	10	17	24	22
Dietary energy consumption (kcal/person/day)	2200	2440	2560	2450	2340	2390
	2000	**2000**		**1996**	**1999**	**1996**
National (Poverty headcount, (% of population))	49.8	28.6	-	42	32.6	25
Rural (Poverty headcount, (% of population))	53	30.2	-	44	35.9	27
Urban (Poverty headcount, (%) of population))	36.6	24.7	-	23	24.2	15
	2000	**1999-00**		**1995-96**	**1998-99**	**1995**
Gini of income (%)	32	33	-	37	33	34
	1981-82	**1990**	**1995**	**1995**	**1988**	**1986**
Gini of dietary energy consumption (%)	18	18	14*	15*	18	16

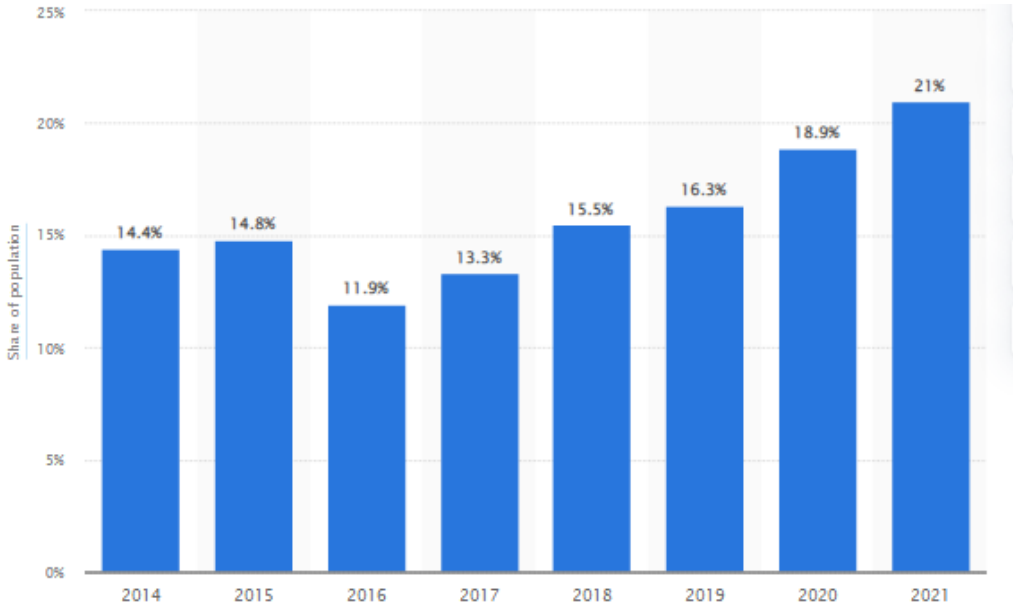
Source: FAO

Food Security Indicators in South Asia

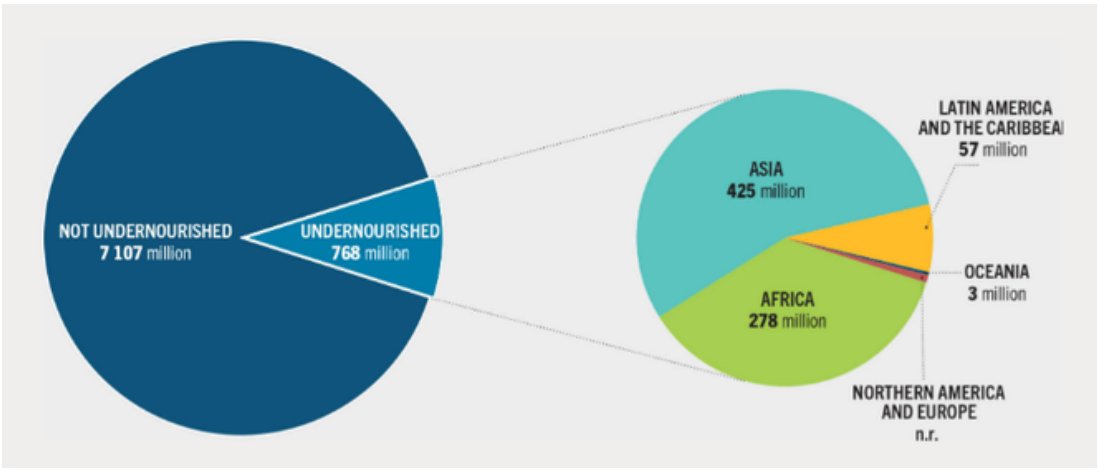
Countries	Value added as % of GDP in agriculture, 2006	Agriculture growth rate (annual % growth, 2006)	Employment in agriculture (% of total employment)
Afghanistan	36	-	-
Bangladesh	20	4.94	51.70 (2003)
Bhutan	22	1.67	-
India	18	2.68	52.00 (2007)
Maldives	-	-0.65	17.30 (2003)
Nepal	34	1.19	66.40 (2001)
Pakistan	19	1.58	43.00 (2005)
Sri Lanka	16	4.71	33.50 (2004)

Source: World Development Indicators, 2008

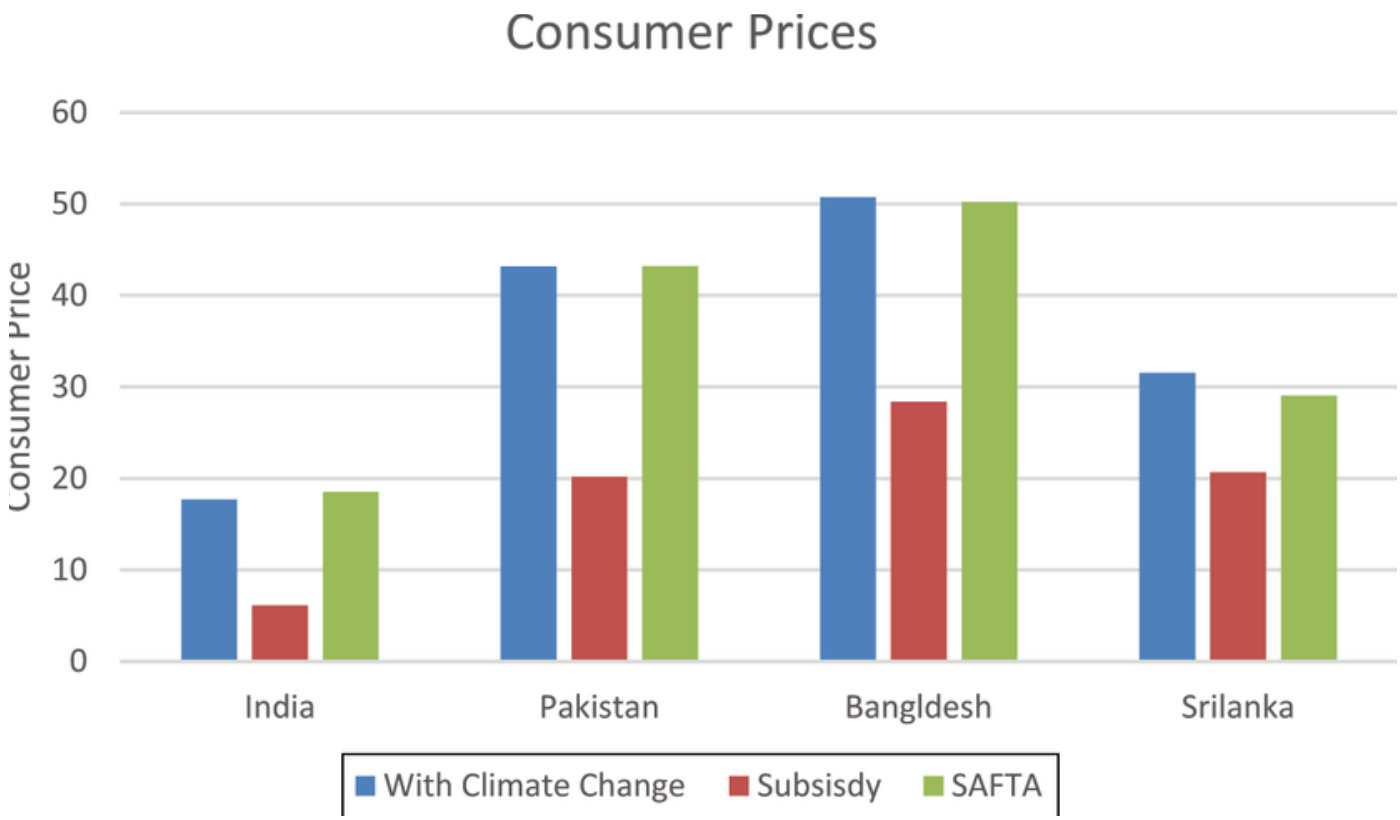
Agricultural State of South Asia



Food insecurity in South Asia from 2014 to 2021



Rate of undernourished people in the world



Food security in South Asia under climate Change and economic policies

The following are the responses from the interview

1. What is the main impact of climate change?

Climate change has resulted in global warming, rising sea levels, increasing droughts, melting glaciers, flash floods, and endangered wildlife.

2. Do you think that we can prevent climate change and its impact on agriculture?

It is a very difficult approach, but control can be taken. There can be green initiatives. Most governments dislike this, and the current system interrupts initiatives like importing fertilizers. Banning factories is a devastating ideology because they give out air that affects the environment. Handling interruptions and coming up with green initiatives can be a solution.

3. How can food insecurity and disasters be minimized?

South Asia has very fertile soil, and ironically, these South Asian countries suffer from food insecurity. Protecting the environment and using natural fertilizers and resources will

improve the situation. We can also improve plantations and give more resources, like financial support to farmers, which will eradicate the loan system.

4. What should be the major changes to eradicate both climate change and its impact on agriculture and food insecurity in South Asia?

State corruption is a major problem in the political system. The organization and activists should take steps to minimize pollution of all kinds and come up with solutions to protect the environment. Soil fertility should be maintained, and various farming methods should be practiced for higher crop yields.

Discussion

Climate change has substantial consequences on agriculture. It directly affects the biophysical environment that supports food production. The discussion on climate change and agriculture should focus on the impacts of climate change on agricultural systems and the strategies for adapting to and mitigating these impacts.

To acclimate to these effects, agricultural systems need to be more resilient and adaptable to changing climate conditions. This can involve a range of strategies, such as crop diversification, the use of drought-resistant crop varieties, and improved water management practices. Furthermore, improving soil health and reducing greenhouse gas emissions from agriculture can help mitigate the impacts of climate change.

The discussion should also consider the social and economic dimensions of climate change on agriculture. Smallholder farmers, women, and marginalized communities are often disproportionately affected by the impacts of climate change as they have limited resources and access to adaptive technologies and practices. Strategies for addressing these social and economic dimensions should be integrated into adaptation and mitigation efforts by improving access to credit and markets, strengthening extension services, and enhancing social safety nets.

Recommendations

A region-specific strategy that considers the distinctive environmental and socioeconomic aspects of the area is necessary to reduce the negative effects of climate change on agriculture in South Asia. Following are some specific suggestions for reducing the impacts of climate change on agriculture:

1. Promoting Sustainable Agricultural Practices:

This includes promoting the use of efficient irrigation systems, soil conservation techniques, and crop rotation practices that can help reduce soil erosion, increase soil fertility, and conserve water.

2. Developing Climate-Resilient Crop Varieties:

Developing crop varieties that are more resistant to extreme weather events, such as droughts, floods, and heatwaves. This requires research and development efforts focused on identifying crop traits that are better adapted to changing climatic conditions.

3. Improving Water Management:

Water is a critical resource for agriculture. Improving water management is crucial for adapting to and mitigating the impacts of climate change on agriculture. This includes promoting water harvesting techniques, developing water-efficient irrigation systems, and improving water storage and distribution infrastructure.

4. Enhancing Early Warning Systems:

Early warning systems can help farmers prepare for extreme weather events by providing timely and accurate information on weather patterns, pests, and diseases. This can be achieved by mobile phone-based applications, community radio, and other communication channels.

Strategies

The following are a few strategies that could help reduce food insecurity in South Asia:

1. Reducing Poverty and Inequality:

Addressing poverty and inequality through policies and programs that promote inclusive economic growth, improve access to basic resources such as food, water, and healthcare, and provide social protection to vulnerable populations is crucial.

2. Supporting Sustainable Agriculture:

Promoting sustainable agriculture practices like agroforestry, organic farming, and conservation agriculture through training, incentives, and policies can help improve food security in the region.

3. Improving Access to Markets:

Improving access to markets through the development of rural infrastructure, such as roads, storage facilities, and marketplaces, can help smallholder farmers increase their income and improve their access to food.

4. Strengthening Resilience to Climate Change:

Strengthening resilience to climate change through the development of early warning systems, climate-smart agriculture practices, and water management strategies is crucial to improving food security in the region.

Conclusion

South Asia, which is home to a sizable share of the world's poor and hungry population, faces serious food security issues. High levels of poverty, inequality, and restricted access to necessities like food, water, and healthcare define the region. Food security in the area is becoming a major concern because of this, as well as the effects of climate change.

Many issues, including poverty, inequality, population increase, and climate change, contribute to food insecurity in South Asia. Many people in the area have limited access to food due to poverty and inequality, and the region's growing population adds to the strain on its already limited resources. Contrarily, it is anticipated that, due to decreased access to water for irrigation and impacts on agricultural output, climate change will worsen food insecurity in the area.

Addressing food insecurity in South Asia also requires a comprehensive approach that includes reducing poverty and inequality, supporting sustainable agriculture, improving access to markets, enhancing nutrition, and strengthening resilience to climate change.

To sum up, climate change is a growing concern around the world. The fact that it seriously impacts agriculture and food security in South Asia is an enormous problem, and this problem must be dealt with before it’s too late to turn things around.

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HOW to REDUCE

FOOD WASTAGE IN SOUTH ASIAN COUNTRIES

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Abstract

This research paper aims to explore the issue of food waste in South Asian countries and identify effective strategies for reducing it. The paper reviews existing literature and case studies, highlighting the extent and causes of food waste in the region, including inadequate infrastructure for storage and transportation, cultural attitudes towards food waste, and overproduction and overstocking. The paper proposes several strategies for reducing food waste, such as improving infrastructure, promoting better harvesting and handling practices, and educating consumers. The findings of this study could inform policy and practice in South Asian countries and contribute to global efforts to achieve a sustainable and equitable food system.

Introduction

Food waste is a pressing issue in South Asian countries, where a significant portion of the population faces hunger and malnutrition. Food waste occurs at every stage of the food supply chain, from production to consumption, and has negative environmental, social, and economic impacts. To achieve food security and sustainability in the region, reducing food waste requires a multi-pronged approach that addresses the root causes of food waste at each stage of the food supply chain. This research paper aims to explore the problem of food waste in South Asian countries, identify effective strategies for reducing it, and contribute to global efforts to achieve a sustainable and equitable food system.

Background

The magnitude of the problem of food waste in South Asian countries is significant, with up to 40% of total food production lost. Factors such as inadequate infrastructure, cultural attitudes toward food waste, and market imperfections lead to overproduction and overstocking. To address the problem, several initiatives have been launched, such as the "No Food Waste" campaign in India and the government's program to distribute

surplus food to vulnerable communities. However, research gaps need to be addressed to effectively reduce food waste in the region, such as identifying the most effective strategies for reducing food waste at each stage of the food supply chain. Policymakers can also play a role in promoting sustainable food systems by developing policies and regulations that incentivize food waste reduction and support the development of more efficient and equitable food supply chains

Antithesis

In this research paper, the thesis is that food waste is a pressing issue that needs to be addressed urgently before further damage is done. The thesis is supported by the argument that food waste contributes to environmental damage and is a major contributor to global warming. Additionally, food waste results in economic and social issues such as the loss of valuable resources, food insecurity, and inequality.

On the other hand, the antithesis argues that food waste occurs due to modern living standards. The antithesis presents the argument that mass production must account for a larger number of customers and delivery and expiry dates, which makes it difficult for producers to know the exact count and date to cater to customers. Additionally, displayed products need to be glamoured to fit marketing standards, which demand specific criteria for shape, color, and size.

It is important to consider both the thesis and the antithesis to present a balanced and well-rounded argument. While the thesis highlights the negative impact of food waste on the environment and society, the antithesis presents an alternate perspective that considers the challenges faced by producers in the food supply chain. By considering both perspectives, this research paper can provide a comprehensive analysis of the issue of food waste in South Asian countries.

Methodology

This research will employ a mixed-methods approach that combines qualitative and quantitative data collection methods. The study will be conducted in two phases: a survey of food waste practices and attitudes and a case study analysis of successful food waste reduction initiatives.

Phase 1: Survey

The survey will be conducted among households, restaurants, and food retailers in urban and rural areas of South Asian countries. The survey will aim to identify the key factors that contribute to food waste at each stage of the food supply chain, including production, storage, transportation, and consumption.

The survey will be developed based on a literature review of food waste studies conducted in South Asian countries. The survey will be pilot tested on a small sample of respondents to ensure that the questions are clear and relevant.

The survey data will be analyzed using descriptive statistics and regression analysis to identify the key drivers of food waste in South Asian countries.

Phase 2: Case Study Analysis

The case study analysis will focus on successful food waste reduction initiatives in South Asian countries. The study will identify and analyze the factors that contributed to the success of these initiatives, including the strategies used, the stakeholders involved, and the policy and regulatory environment.

The case studies will be selected based on a review of food waste reduction initiatives in South Asian countries. The case studies will be analyzed using a qualitative approach that combines content analysis and thematic analysis.

The data collected from both phases of the study will be integrated and analyzed using a mixed-methods approach. The results of the study will provide insights into the

most effective strategies for reducing food waste in South Asian countries and the policy and regulatory environment needed to support these strategies.

Literature Review

The issue of food waste has gained increasing attention in recent years as the world struggles to address the challenge of feeding a growing population while minimizing the negative environmental and social impacts of food production and consumption. In South Asian countries, food waste is a particularly pressing issue, given the high levels of poverty, hunger, and malnutrition in many parts of the region.

Several studies have highlighted the extent of food waste in South Asian countries. For example, a study by the International Water Management Institute (IWMI) found that food waste accounts for up to 40% of total food production in some South Asian countries, with losses occurring at every stage of the food supply chain. Another study by the Asian Development Bank (ADB) estimated that food waste in South Asia could be reduced by up to 40% through improved storage, processing, and distribution systems.

Several factors contribute to food waste in South Asian countries. One key factor is inadequate infrastructure for storage and transportation, which can result in spoilage and damage to crops during transit. This issue is particularly acute in rural areas, where farmers may lack access to refrigeration or other storage facilities. Additionally, cultural attitudes towards food waste may also play a role, as some consumers view throwing away food as a sign of affluence or generosity.

Several strategies have been proposed to reduce food waste in South Asian countries. These include improving infrastructure for storage and transportation, promoting better harvesting and handling practices, reducing overproduction and overstocking, and educating consumers about the negative impacts of food waste. Several initiatives have already been launched in the region to address the issue of food waste, such as the “No

Food Waste" campaign in India, which collects surplus food from restaurants and redistributes it to the needy.

Despite these efforts, there is still a need for further research and action to reduce food waste in South Asian countries. Future studies could explore the effectiveness of different strategies for reducing food waste and identify the barriers and enablers to their implementation in different contexts. Policymakers could also play a key role in promoting sustainable food systems by developing policies and regulations that incentivize food waste reduction and support the development of more efficient and equitable food supply chains.

Results and Findings

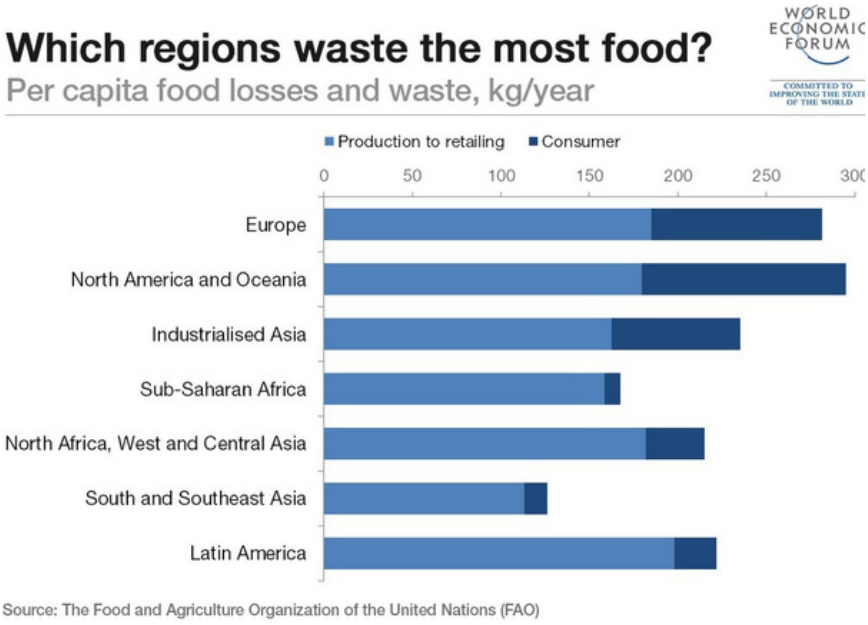

Figure 1.1

The data suggests that food waste in South Asia is relatively low compared to developed nations. However, it is still important to address the issue of food waste in the region, particularly in light of the growing population and increasing food demand. Implementing measures to reduce food waste can not only help alleviate hunger and poverty but also contribute to sustainable food systems in the region.

Figure 1.2

The statistics on the amount of food waste produced by different countries in Southeast Asia, with Singapore having the lowest amount at 744,000 tonnes per year, and Malaysia following with 6 million tonnes per year. Indonesia and Thailand have the highest amount of annual food waste at 8 million tonnes and 17.6 million tonnes respectively, while the Philippines' capital region alone produces 720,000 tonnes. The alarming amount of food waste produced in the Philippines suggests that the country likely produces several million tonnes of food waste each year.

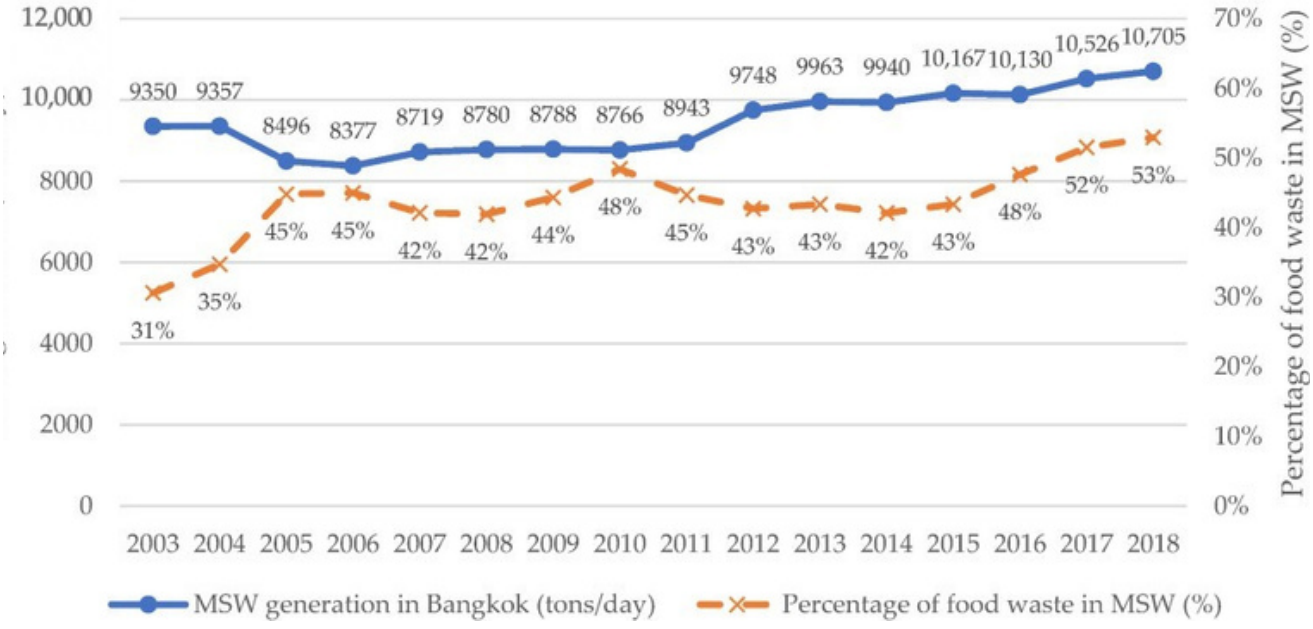

Figure 1.3

This shows the trend in municipal solid waste (MSW) generation and the ratio of food waste (FW) in Bangkok from 2003 to 2018. The graph indicates that the total amount of MSW generated in Bangkok has steadily increased over time, from around 7,000 tons per day in 2003 to over 10,000 tons per day in 2018. The proportion of FW in the MSW has also increased from around 30% in 2003 to over 40% in 2018, highlighting the need for effective measures to reduce food waste in the city.

Conclusion

South Asian countries are facing a growing problem of food waste that not only contributes to environmental degradation but also results in economic losses. Through the analysis of various sources, it is evident that there are several effective ways to reduce food waste in the region, including improving storage and transportation infrastructure, promoting awareness campaigns, and implementing government policies to incentivize food waste reduction. It is imperative for stakeholders, including individuals, businesses, and governments, to take action to combat this issue and work towards a more sustainable and efficient food system. By reducing food waste, South Asian countries can not only mitigate the negative impacts of food waste but also ensure a more equitable distribution of resources and contribute to global efforts to address food security and environmental sustainability.

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