

Edited by  
Ramesh Chandra Das

# Growth, Poverty and Developmental Aspects of Agriculture

Countries' Perspectives



# **Growth, Poverty and Developmental Aspects of Agriculture**

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# **Growth, Poverty and Developmental Aspects of Agriculture: Countries' Perspectives**

EDITED BY

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INVESTOR IN PEOPLE

*In memory of my colleagues  
Dr Kamal Ray and Sanat Kumar Chakraborty*

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# List of Abbreviations

## *Chapter 1*

ARDL	Auto Regressive Distributed Lag
DEA	Data Envelopment Analysis
FAO	Food and Agriculture Organization
FDI	Foreign Direct Investment
ICU	India, China and United States of America
NGO	Non-Government Organization
TMEC	Tratado entre México, Estados Unidos y Canadá
USCM	United States-Canada-Mexico

## *Chapter 2*

ATMA	National Mission on Agriculture Extension
DAM	Digital Agriculture Mission
DEA	Data Envelopment Analysis
DMU	Decision Making Unit
EMDE	Emerging Market and Developing Economy
FPO	Farmer Producer Organizations
GATT	General Agreement on Tariffs and Trade
MSP	Minimum Support Price
NABARD	National Bank for Agriculture and Rural Development
PMFBY	Pradhan Mantri Fasal Bima Yojana
PMKISAN	Pradhan Mantri Kisan Samman Nidhi
RWBCIS	Restructure Weather Based Crop Insurance Schemes
SFA	Stochastic Frontier Analysis
TE	Technical Efficiency
WTO	World Trade Organization

*Chapter 3*

ABP	Anchor Borrowers' Programme
ACGSF	Agricultural Credit Guarantee Scheme Fund
AGDP	Agricultural Gross Domestic Product
ALAB	Agricultural Labour
ALAN	Agricultural Land Area
AMACH	Agricultural Machinery
ARDL	Auto Regressive Distributed Lag
BF	Bank Financing
CACS	Commercial Agriculture Credit Scheme
CBA	Commercial Bank's loan to the Agricultural sector
ECM	Error Correction Term
FDI	Foreign Direct Investment
FMARD	Federal Ministry of Agriculture and Rural Development
FSD	Financial Sector Development
GDP	Gross Domestic Product
INT	Interest Rate
NIPC	Nigerian Investment Promotion Commission

*Chapter 4*

ARDL	Auto Regressive Distributed Lag
BP	British Petroleum
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2</sub> E	Carbon Dioxide Emission
CUSUM	Cumulative Sum
ECM	Error Correction Model
EKC	Environmental Kuznets Curve
FAO	Food and Agriculture Organization
FC	Forest Coverage
FDI	Foreign Direct Investment
FDI_AGR	FDI Inflows in Agriculture Sector
GHG	Greenhouse Gas
GtCO <sub>2</sub>	Gigatonnes Carbon Dioxide
ICU	India, China and United States of America

IPCC	Intergovernmental Panel on Climate Change
Ln	Natural Log
MEA	Millennium Ecosystem Assessment
OECD	Organization for Economic Cooperation and Development
REC	Renewable Energy Consumption
SDG	Sustainable Development Goals
TEEB	The Economics of Ecosystems and Biodiversity
UN	United Nations
USA	United States of America
US	United States
VECM	Vector Error Correction Model
VEC	Vector Error Correction
VA_AGR	Value Added in Agriculture Sector
WPP	World Population Prospects

*Chapter 5*

AMEG	Mexican Association of Livestock Fattening
GDP	Gross Domestic Product
NAFTA	North American Free Trade Agreement
TMEC	Tratado entre México, Estados Unidos y Canadá
USCM	United States-Canada-Mexico

*Chapter 6*

AGROSE	Agrupación Española de Entidades Aseguradoras de los Seguros Agrarios Combinados, Spain
AUSAID	Australian Agency for International Development
AUTP	Asuransi Usaha Tani Padi, Indonesia
CCIS	Comprehensive Crop Insurance Scheme
CNY	Chinese Yuan Renminbi
CPIS	Coconut Palm Insurance Scheme
ECIS	Experimental Crop Insurance Scheme
FIIS	Farm Income Insurance Scheme
FNGCA	National Agricultural Disaster Fund, France
JICA	Japan International Cooperation Agency

MNAIS	Modified National Agricultural Insurance Scheme
MPCI	Multi-Peril Crop Insurance
NAIS	National Agricultural Insurance Scheme
NBS	Nature Based Solutions
NCIP	National Crop Insurance Programme
NDVI	Normalized Difference Vegetation Index
NGO	Non-Government Organization
NTB	Negusa Tenggara Barat, Indonesia
PCIS	Pilot Crop Insurance Scheme
PICC	Peoples Insurance Company of China
PMFBY	Pradhan Mantri Fasal Bima Yojana
PPP	Public–Private Partnerships
PROAGRO	Programa de Garantia da Atividade Agropequária, Guarantee Programme for Agricultural Activities, Brazil
PRONAF	Programa Nacional de Fortalecimento da Agricultura Familiar, Brazil
PSSCI	Pilot Scheme on Seed Crop Insurance
SEAF	Seguro da Agricultura Familiar, Insurance for Family Agriculture, Brazil
USD	United States Dollar
UT	Union Territory
WBCIS	Water Based Crop Insurance Scheme

*Chapter 7*

AIC	Akaike (1969) Information Criterion
GARCH	Generalized Autoregressive Conditional Heteroscedasticity
MGARCH	Multivariate Generalized Autoregressive Conditional Heteroscedasticity
ARCH	Autoregressive Conditional Heteroscedasticity
MANOVA	Multivariate Analysis of Variance
RML	Reuters Market Light

*Chapter 8*

AIBP	Accelerated Irrigation Benefit Programme
ANOVA	Analysis of Variance

NPK	Nitrogen, Phosphorus, and Potassium
RBI	Reserve Bank of India
TFPG	Total Factor Productivity Growth

*Chapter 9*

CDMP	Comprehensive Disaster Management Programme
CPP	Cyclone Preparedness Programme
DMB	Disaster Management Bureau
DM	Disaster Management
DRR	Disaster Risk Reduction
ERM	Emergency Response Management
FAP	Flood Action Plan
FGD	Focus Group Discussion
GR	Gratuitous Relief
LGIs	Local Government Institutions
MoDMR	Ministry of Disaster Management and Relief
NDMC	National Disaster Management Council
NGO	Non-Governmental Organization
NPDM	National Plan for Disaster Management
OMS	Open Market Sale
SOD	Standing Orders on Disaster
SSNP	Social Safety Net Programs
SPSS	Statistical Package for the Social Sciences
UP	Union Council
VGD	Vulnerable Group Development
VGf	Vulnerable Group Feeding

*Chapter 10*

ADF	Augmented Dickey-Fuller
ARDL	Autoregressive Distributed Lag
ECT	Error Correction Term
FAO	Food and Agriculture Organization
OECD	Organisation for Economic Co-operation and Development
PP	Phillips-Perron

VAR	Vector Autoregressive
VECM	Vector Error Correction Model

*Chapter 11*

ASHA	Accredited Social Health Activist
CAGR	Compound Annual Growth Rate
CSAPs	Climate-Smart Agricultural Practices
DAC & FW	Department of Agriculture, Cooperation and Farmers Welfare
DES	Directorate of Economics and Statistics
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
GHI	Global Hunger Index
GVA	Gross Value Added
ICDS	Integrated Child Development Services
Kg	Kilograms
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MT	Million Tonnes
NABARD	National Bank for Agriculture and Rural Development
NFSA	National Food Security Act
PDS	Public Distribution System
PMGKY	Pradhan Mantri Garib Kalyan Yojana
PPP	Public Private Partnership
R&D	Research & Development
RFID	Radio Frequency Identification
SEZ	Special Economic Zones
TISM	Total Interpretive Structural Modelling
TPDS	Targeted Public Distribution System
WFP	World Food Programme
WFS	World Food Summit

*Chapter 13*

ACC	Accessibility
ADF	Augmented Dickey-Fuller

AFF	Affordability
ARDL	Autoregressive Distributed Lag Model
AV	Availability
AWW	Agricultural Wage of Women Worker
CI	Cost of Education
CV	Coefficient of Variation
DFE	Difference Fixed Effect
ECM	Error Correction Model
EPWRF	Economic and Political Weekly Research Foundation
FAO	Food and Agricultural Organization
IBRD	International Bank for Reconstruction and Development
KMO	Kaiser–Meyer–Olkin
MDFSI	Multidimensional Food Security Index
MG	Mean Group
NFHS	National Family Health Survey
NIA	Net Irrigated Area
NSDP	Net State Domestic Product
NSSO	National Sample Survey Organization
PCA	Principal Component Analysis
PCE	Per Capita Electric Consumption
PMG	Pooled Mean Group
RBI	Reserve Bank of India
SDG	Sustainable Development Goals
STA	Stability
TLR	Total Length of the Road
UNDP	United Nations Development Programme
WFPR	Workforce Participation Rate

*Chapter 14*

ADB	Asian Development Bank
BHA	Bureau for Humanitarian Assistance
UNDP	United Nation Development Programme
USAID	United States Agency for International Development

*Chapter 15*

SDG	Sustainable Development Goal
GSDP	Gross State Domestic Product
FINP	Food Insecure but Non-Poor
FSP	Food Secure but Poor
FIP	Food Insecure and Poor
FSNP	Both Food Secure & Non-Poor
MPI	Multidimensional Poverty Index
OLS	Ordinary Least Squares
HCR	Head Count Ratio

## About the Editor

**Ramesh Chandra Das**, PhD, is currently a Professor and the Head of the Department of Economics, Vidyasagar University, India, with 25 years of teaching and research experience. Professor Das has published more than 100 articles in reputed journals and has written and edited more than 20 books. His research interests lie in applied macroeconomics, public economics and environmental economics.

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## Foreword

In an era defined by rapid technological advancements and shifting global dynamics, the importance of agriculture remains undiminished. It is both the foundation of economies and the frontline in the battle against poverty and food insecurity. This makes *Growth, Poverty and Developmental Aspects of Agriculture: Countries' Perspectives*, edited by Professor Ramesh Chandra Das, a timely contribution to the ongoing dialogue on how agriculture can continue to fuel development, sustain populations and alleviate poverty across various regions, particularly in developing and emerging countries. Professor Das, along with a distinguished panel of contributors, provides a compendium of research that navigates through the multifaceted role of agriculture in economic growth and development. The book is structured in two insightful sections, with the first focusing on the growth dynamics of agriculture and the latter delving into the intertwined issues of poverty, food security and development.

The relevance of this book cannot be overstated. At a time when global food security faces threats from climate change, political instability and economic disparities, the studies contained within offer crucial insights. The research not only assesses current agricultural practices and their efficiencies, such as in the production of food grains across Indian states and the sustainability of agricultural growth in Pakistan, Bangladesh, Nigeria like countries and G20 Groups, but also addresses complex global issues like food price volatility and the economic theories surrounding food production and security.

What sets this book apart is its global perspective, capturing experiences from Nigeria, Mexico, Pakistan and India, among others, along with several groups of economies. Each chapter contributes to a richer understanding of the local challenges and solutions that define agricultural growth and its impact on poverty reduction and food security. For instance, the investigation of agricultural exports under renegotiated trade agreements offers a keen look at how international policies influence local agricultural practices and outcomes. The timing of this publication is particularly significant. As nations grapple with the Sustainable Development Goals (SDGs), understanding the link between agricultural practices and poverty alleviation is critical. This book not only contributes to academic and policymaking discourses but also serves as a vital resource for stakeholders aiming to forge a path towards sustainable agricultural practices that

support economic growth and ensure food security. Emerald Publishing should be commended for bringing such a crucial piece of scholarly work to the public, aiding in the dissemination of knowledge that could very well dictate the quality of life and economic stability for billions of people worldwide.

*Hasan Dincer*

## Preface

It is still verifiable that the agricultural sector has been the vivacious decider within the progression of a country, indeed within the period of technological advancements. With the presentation of innovative headways within the sector, most of the nations from the south are currently experiencing greater well-being, less poverty and destitution and food security. The impacts got boosted when the universal exchange perspective of the division was taken into consideration. Assisted by the development of agrarian yield, numerous nations of the world have made it conceivable to diminish the wage crevices between the less created and the created nations through wage joining. Having a critical share in add up to yield of an economy, its instability in production, abdicate rates, costs, etc. may moreover cause the same for the full economy. Consequently, solidness issue along the related agro-variables gets to be one of the critical plans of the present research attempt.

Under the milieu, the present edited book titled *Growth, Poverty and Developmental Aspects of Agriculture: Countries' Perspectives* throws light upon compiling studies related to the growth, stability, crop insurance, poverty and food security aspects of the agricultural growth in the countries and groups, especially from the developing world.

The book is compiled of 15 chapters which are divided into two broad sections. Section I covers the growth aspects of agriculture across the countries and groups, containing eight chapters including this introductory chapter, and Section II captures the studies related to the poverty, food security and developmental aspects of agriculture across the countries and groups covering seven remaining chapters.

The summary observations are that the countries have improved their growth in the agricultural sector leading to food insecurity and poverty reductions that helped in the overall development of the citizens. The institutional factors such as credit, insurance, irrigation and good governance have instigated the growth process of the sector. Besides the glorious achievements, the sector has faced fluctuations and instability in its production and productivity in several crops at the country as well as regional levels, which lead to hurdles in achieving sustainability in the sector. In addition, in some regions of India, it was observed that the non-poor section of the society is relatively less food-secured compared to the poor section of the society, making the social imbalance in the reverse directions. Thus, the overall impression from the book is that the governments of the countries, states and local regions should come forward with proper governance

and institutional facilities to overcome the sustainability problems arising out of the agriculture sector.

The contents of the book may provide thought-provoking solutions to the existing problems of growth, poverty, food security and overall developmental issues of the agriculture sector, and there may be the possibilities of value addition to the existing literature in this area. Readers and policymakers will benefit immensely from the contents of the book.

While carrying out the book project, the editor got tremendous support from different corners of the academic and social world. The editor acknowledges the support of the entire Emerald Team, the contributing authors and the Foreword writer. In addition, the editor is indebted to his parents, wife, daughter and other members of the family for their sacrifice and support to unveil the title. However, the editor is solely responsible for any error still left in the book.

*Ramesh Chandra Das*

Section I

## **Growth Aspects of Agriculture Across the Countries and Groups**

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## Chapter 1

# Growth, Poverty and Developmental Aspects of Agriculture: An Introductory Note

*Ramesh Chandra Das*

Vidyasagar University, India

### Abstract

From the history of economic development for all types of economies of the world, agriculture has been a major source of income growth, food security and development. It applies traditional as well as modern tools and technologies to maintain rising growth trends, although in some cases it makes the environment polluted. The developing countries of today, those who were suffering from poverty and food insecurity, have now been able to grow several crops and feed their growing population. Productivity has been rising in the sector with the support of institutional interventions, such as credit and financing facilities, crop insurance facilities, irrigation facilities, fertilizer provisions, among others, leading to more production with the same level of two traditional inputs such as labour and capital. The world has been facing, on the other hand, the fluctuations and instabilities in the trends of different types of agricultural productions and yield rates. The present book, with the background, aims to cover up studies on the poverty increase and food security aspects of agriculture in several countries and populations. The summary of the studies shows that there has been growth in agricultural production and productivities and in maintaining more food security in the covered countries with institutional support but with rising fluctuations. The governments of these countries are recommended to intervene and make appropriate institutional support in an equitable manner across their regions so that rising growth could be maintained in a steady path in the agricultural sector.

*Keywords:* Agricultural sector; growth; poverty; food security; development; institutions

## **Introduction**

It is undeniable that agricultural growth has been the important determiner in the progress of a nation, even in the era of technological advancements. With the introduction of technological advancements in the sector, most of the countries from the south are now experiencing good well-being, less poverty and increased food security. The effects are boosted when the international trade aspect of the sector is taken into consideration. Furthermore, with the growth of agricultural output, many countries across the world have made it possible to reduce the income gap between the less developed and the developed countries through income convergence. Having a significant share in the total output of an economy, its volatility in production, yield rates, prices, etc. may also cause the same for the whole economy. Hence, stability issues for the related agro-variables become one of the important agendas of the present research. From the history of economic development for all types of economies of the world, agriculture has been a major source of income growth, food security and development. It applies traditional as well as modern tools and technologies to maintain rising growth trends, although in some cases it causes environmental pollution. The developing countries of today, those who were suffering from poverty and food insecurity, have now been able to grow several crops and feed their growing population. The productivity has been rising in the sector with the support of institutional interventions such as credit and financing facilities, crop insurance facilities, irrigation facilities, fertilizer provisions, among others, leading to more production with the same level of the two traditional inputs such as labour and capital (Čolović & Petrović, 2014; Das, 2023; Das et al., 2018; Duxbury, 2001; Enjolras et al., 2012; Gangopadhyay, 2004). The world has been facing, on the other hand, the fluctuations and instabilities in the trends of different types of agricultural productions and yield rates.

The problem of food security depends much on food availability along with access, utilization and stability (Clay, 2002; FAO, 2006; Frongillo, 1999). This book will focus on the food availability criterion including both food production and trade in foods. The nature of agriculture is such that every nation is not capable of producing every product with the same quality and with the same efficiency. Therefore, food security in the modern era means not only a rise in per capita production but also a successful engagement in the international trade both as an exporter and an importer. Now, with the rise in food prices, both production and export of food are expected to increase in the domestic as well as in the international market. With the profitability of the agriculture, investments and productivity of the agricultural sector will also rise. Hence, a remunerative farm price seems to be the precondition of food security. In addition, crop insurance schemes have been successful in many countries, leading to food supply guaranteed at the suppliers' end. The existing literature reveals that there has been

growth in the agricultural sector worldwide with fluctuations due to various causes. The growth of the sector leads to food security of the world population and low level of poverty, especially of the south, even if there are issues related to agro-products exports, imports, price volatility, etc.

## **Objectives of the Book**

Under the aforementioned backdrop, *Growth, Poverty and Developmental Aspects of Agriculture: Countries' Perspectives* aims to compile studies related to the growth, stability, crop insurance, poverty and food security aspects of the agricultural growth in different countries and populations, especially from the developing world.

## **Review and Discussion on the Chapters**

The book is composed of 15 chapters, which are divided into two broad sections: Section I covers up the growth aspects of agriculture across the countries and populations containing eight chapters including this introductory chapter, and Section II captures the studies related to the poverty, food security and developmental aspects of agriculture across the countries and populations covering the remaining seven chapters. A brief sketch of all the chapters is outlined here.

Chapter 2 explores various aspects of production of food grains across 30 Indian states, and it emphasizes on measuring the efficiency of food grain production of all the 30 states on the basis of non-parametric Data Envelopment Analysis (DEA) with the additional consideration of economies of scale. The results highlight the fact that the Indian states are about 21% inefficient in terms of food grain production with the average efficiency score being 0.79. The methodology adopted for this study incorporates crucial factors such as usage of land area, usage of fertilizers and allocation of bank credit to carry the analysis forward.

Chapter 3 examines the short- and long-term effect of deposit money banks' loan on Nigeria's agricultural sustainability for the period 1985–2017 using the autoregressive distributed lag (ARDL) bonding test. The study found that bank loans have a negative impact on agricultural sustainability in both the short and long terms. Along the same line, deposit money banks' interest rate also has an inverse relationship on Nigeria's agricultural sustainability in both the long and short terms. The study concludes that bank finance is very impactful in stimulating agricultural sustainability within the context of the Nigerian economy.

Chapter 4 investigates the causal association and short- and long-term effects of foreign direct investment (FDI) inflows, forest coverage and CO<sub>2</sub> emissions on the agricultural productivity of the India, China and US (ICU) economies for the period 1990–2023 using the ARDL test. The results confirm that FDI inflows have a significant and positive impact on Indian and Chinese agriculture productivity, whereas CO<sub>2</sub> emissions adversely affect US agriculture productivity in the long term. In the short term, CO<sub>2</sub> emissions led to agricultural productivity in

both China and the US economies. The bound test and error correction mechanism (ECM) result also confirmed the long-term connection and convergence of the equilibrium path among the studied variables except India. It is thus recommended to encourage FDI in the agriculture sector and expand the use of environmentally friendly technology to decrease carbon emissions and promote forest coverage for sustainable growth and higher agricultural production.

Chapter 5 deals on Mexico which has invested in finding measures to attract FDI to its territories by signing the United States–Canada–Mexico (USCM) treaty in 1994 that posits it as the largest direct exporter of the United States, who is likely to withdraw from the treaty after the renegotiation of the USCM aims to determine the advantages and disadvantages of doing so. It is contended that the renegotiation of the TMEC does not have to put the agricultural commodities and products from the State of Sinaloa in a wave of uncertainty regarding its exports. The study suggests that such a renegotiation is not beneficial for Sinaloan agricultural exportation putting forth the evidence to support the hypothesis employed.

Chapter 6, citing crop insurance being the protectors to the farmers and helping in reducing any element of chance associated with agriculture, intends to explain the role of crop insurance towards sustainable agriculture and to make a study of the crop insurance schemes prevalent in the selected European and Asian countries. The study concludes that crop insurance is being offered in the selected European and Asian countries in various forms. Public–private partnership is very common among these selected countries.

Chapter 7, quoting uncertainty in commodity pricing as a major cause of concern for farmers of developing countries like India, intends to observe the decision-making process of farmers of Burdwan district of West Bengal, India, using the generalized autoregressive conditional heteroscedasticity (GARCH) model to measure the extent of volatility in spot prices of potato and also to observe the existence of seasonal effects, over the period of 2003–2019. It finds that the market price of potato decreased during its season of production and peaked during the off-season period. The result implies that the volatility of potato forecasting is tending towards the standard error correction in the long term; from 2003 to 2019, the trend of potato price was influenced by multiple events. The result indicates that the farmers must focus on short-term structural events in the potato market.

Chapter 8 focuses first on the stability analysis of quantity of food production and irrigation facilities in the top 10 rice-producing states in India and then on the stability of yield rates in three varieties of paddy production: Aus, Aman and Boro. It also focuses on irrigation facilities across the blocks in the Paschim Medinipur district of West Bengal, as a special case. It studies the growth and stability by means of trend analysis and Coppocks method and finds out that Uttar Pradesh and Andhra Pradesh have a positive significant correlation between irrigation facilities and paddy production. It is also found that the correlation between changes in the yield rate of paddy production and changes in irrigation is positive and significantly related to some agriculture-rich blocks in Paschim Medinipur district under West Bengal. Therefore, the results lead us to

prescribe that the government should focus on irrigation facilities in those areas where the effects of irrigation facilities are realized well.

Chapter 9 explores the impact of flash flooding in Bangladesh on food security, employment and the overall well-being of the affected population; it also evaluates government and NGO initiatives taken to alleviate the crisis in Bangladesh by adopting a mixed-methods approach and incorporating qualitative and quantitative data collection techniques through surveys of the five affected villages. It finds out that the flash flood has caused severe damage to the agricultural sector, with almost every farmer in the affected area losing their single-season high-yielding *boro* paddy, resulting in year-long food insecurity and unemployment. The government responded to the situation by providing year-long food and monetary aid through various social safety net programmes.

Chapter 10 analyses the impact of a rising food prices on the problem of food security of the G-20 countries from the perspective of food production. The study has taken rice as a representative food item, and using the ARDL technique; it has found that rice production is significantly responsive to the domestic relative price of rice. However, there is no price incentive operative for rice productivity. Rather, it finds the evidence of a negative relation between rice productivity and domestic rice prices in relation to the global prices.

Chapter 11, pointing out the availability of food, access to food and absorption of food as the three key aspects of food security, intends first to measure the annual growth rate and compound annual growth rate (CAGR) of production of food grains, nutri coarse cereals, total pulses and nine oilseeds for the period 2011–2021 in India, and then, to estimate the per capita availability of these crops as a measure of the food security in India. It observes that the highest production is recorded in between 2011 and 2021 for food grains (315.72), followed by the production of nine oil seeds (36.7), total pulses (27.69) and nutri coarse cereals (26.42). The per capita availability of food grains increased from 206.17 kg in 2011 to 224.30 kg in 2021. The per capita availability of total pulses increased from 13.59 kg in 2011 to 19.67 kg in 2021, which indicates India has managed food security successfully in the past decade.

Chapter 12 explains how a predominantly agricultural country, Pakistan, has been reduced into a food resource poor country, and how has the negligence of social, economic and cultural sectors made Pakistan more insecure. This study mainly looks for an answer to two questions: first, should food insecurity be studied in isolation as a separate issue or as a part of the larger issue of governance, security and people; and second, isn't there a need to drastically restructure the economic, political and security landscape and framework to significantly diminish poverty, illiteracy and food insecurity in the country?

Chapter 13 examines the status of food security for selected states in India during 1995–1996 to 2018–2019 where the statuses of food security for the states are estimated by applying the multidimensional food security index. The study has also used panel ARDL method for the estimation of log-term and short-term relationship between food security and socio-economic indicators of different states. It is observed that the value of the food security index has significantly increased over the study period. The food security conditions for all the states

have improved at higher rates in the second sub-period compared to the first sub-period in the country. Furthermore, the food security of most of the states is associated with the per capita power consumption, workforce participation rate and cropping intensity in the country. In addition, the regional imbalance has decreased, establishing that food security of the poorer states improved at a higher rate compared to the richer states.

Chapter 14 intends to investigate the causes and consequences of food security in Pakistan and Afghanistan through the content analysis method. Due to the acute financial crisis since 2021, both countries are searching for a way out of this economic hardship. Some common problems in both countries include lack of industrialization, ethnic conflicts, political violence, terrorism, corruption, mis-governance, arms trafficking, drug trafficking and human trafficking, poverty, illiteracy, over-dependency on foreign aid, etc. The study reveals that due to wrong governmental policy, corruption, lack of agriculture policy and food security policy, food security is a very common basic problem for both countries. For Pakistan, over-expenditure on the military head and the Chinese debt trap made the situation more complicated. Again, due to the shortage of water, modern irrigation systems, droughts and modern agriculture equipment, Afghanistan could not produce adequate food for their people.

The final chapter, Chapter 15, critically reviews the methodologies applied to measure household poverty and food insecurity and examines the relationship between the two applying the m-logit model for data analysis using primary data collected from two villages of the Balasore district of Odisha, whose major livelihood relies on agriculture. The results show that even households living above the poverty line suffer from the problem of food insecurity. About 20.5% of the non-poor are food insecure in the study villages. Hence, there is a need for properly targeted policy interventions and to revise the methodologies applied to measure household poverty and identify beneficiaries so that non-poor households are not deprived of food security programmes.

## **Conclusion**

The studies covered in the book have mainly aimed at examining the poverty increase, food security and developmental aspects of agriculture in countries and populations. The summary observations are that the countries have improved their growth in the agricultural sector leading to food security and poverty reductions that helped in the overall development of the populations. Institutional factors such as credit, insurance, irrigation and good governance have instigated the growth process of the sector. Besides these glorious achievements, the sector has faced fluctuations and instabilities in its production and productivity in several crops at the country as well as regional levels, which leads to difficulty in achieving sustainability in the sector. In addition, in some regions of India, it was observed that the non-poor section of the society has relatively less access to food compared to the poor section of the society, thereby making a reverse social imbalance. Thus, the overall impression from the book is that the governments of