

POLICY REPORT

A Handbook for Policy
Makers and Practitioners

Food Security and Agri-Food Policies in the New South

Lessons from successes and
failures in agri-food development

Isabelle Tsakok

2024



POLICY CENTER
FOR THE NEW SOUTH



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I would like to thank Peter C. Timmer, Professor emeritus, Harvard University for his inspirational guidance and generous support throughout.

About Policy Center For The New South

The Policy Center for the New South (PCNS) is a Moroccan think tank aiming to contribute to the improvement of economic and social public policies that challenge Morocco and the rest of Africa as integral parts of the global South.

The PCNS pleads for an open, accountable and enterprising "new South" that defines its own narratives and mental maps around the Mediterranean and South Atlantic basins, as part of a forward-looking relationship with the rest of the world. Through its analytical endeavours, the think tank aims to support the development of public policies in Africa and to give the floor to experts from the South. This stance is focused on dialogue and partnership, and aims to cultivate African expertise and excellence needed for the accurate analysis of African and global challenges and the suggestion of appropriate solutions.

As such, the PCNS brings together researchers, publishes their work and capitalizes on a network of renowned partners, representative of different regions of the world. The PCNS hosts a series of gatherings of different formats and scales throughout the year, the most important being the annual international conferences "The Atlantic Dialogues" and "African Peace and Security Annual Conference" (APSACO).

Finally, the think tank is developing a community of young leaders through the Atlantic Dialogues Emerging Leaders program(ADEL) a space for cooperation and networking between a new generation of decision-makers from the government, business and civil society sectors. Through this initiative, which already counts more than 300 members, the Policy Center for the New South contributes to intergenerational dialogue and the emergence of tomorrow's leaders.

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Foreword

In our world that produces enough for all, chronic hunger stalks millions in the developing world. These millions are trapped in a vicious circle of low productivity and under nutrition. This dire situation threatens to be even more challenging given climate change; increasing urbanization and demographic growth especially in Africa; high indebtedness of emerging and market developing economies, as well as low-income countries; and lowered global growth prospects. But this bleak situation should not breed despair. Widespread hunger was the fate of the majority of the population in today's rich, industrialized countries over some two centuries or so ago. Today, these countries have largely achieved food security at the macro level.

How did they escape "hunger and premature death...?" They were freed by the agricultural and industrial revolutions, which ushered in our technologically-advanced, productivity-driven modern world. Pathways for today's hungry millions out of debilitating hunger and low productivity also hinge on their adoption of productive modern technologies in the agri-food sector as the first key step up the long ladder of development.

Drawing upon historical and prevailing insights, and country experiences worldwide, this handbook is about lessons learned from these hard-earned successes in industrialized and developing countries. While each pathway was unique, there are nevertheless robust patterns in what worked and why. Policy makers and practitioners should embrace these lessons while fully realizing there is no guaranteed pathway to success. Success is within reach to the extent national leadership's vision of a food secure country is anchored in, and aided by mission-oriented institutions based on research and learning; and implemented by competent administrations committed to the public good.

Policies that have worked in many contexts to free millions from chronic hunger and put them on a pathway to food security promise to be of high interest to policy leaders in Africa and elsewhere looking for actionable ways to promote a food secure growth for all. By addressing this handbook to policy makers and practitioners, the Policy Center for the New South is pleased to contribute to turning their vision into action.

Mr. Karim El Aynaoui

Executive President,
Policy Center for the New South

List of Acronyms

AD	: Anti-Dumping
AE	: Auxilio Emergencial (Emergency Aid in Brazil)
AfCFTA	: African Continental Free Trade Area
AfD	: Agriculture for Development
AGRA	: Alliance for a Green Revolution in Africa
ASEAN	: Association of Southeast Asian Nations
AU	: African Union
BGSI	: Black Sea Grain Initiative
BEP	: Bolsa Escola Program
BFP	: Bolsa Familia Program
Bt	: Bacillus thuringiensis (used in the context of genetically modified crops)
CA	: Conservation Agriculture
CAP	: Common Agricultural Policy
CCT	: Conditional Cash Transfer
CG	: Center for Global Development
COVID-19	: Coronavirus Disease 2019
CRI	: Regional Investment Centers (Centres Régionaux d'Investissement)
CRISPR	: Clustered Regularly Interspaced Short Palindromic Repeats (a gene-editing technology)
CSA	: Climate Smart Agriculture
DHS	: Demographic and Health Surveys
ECB	: European Central Bank
EMDEs	: Emerging Market and Developing Economies
EPZ	: Economic Processing Zone
EU	: European Union
FAO	: Food and Agriculture Organization
FDI	: Foreign Direct Investment
FSH	: Food Security Holistic
FSS	: Food Self-Sufficiency
FSY	: Food Sovereignty

GMO	: Genetically Modified Organisms
GBP	: Great British Pound
GR	: Green Revolution
HYV	: High-Yielding Varieties
IFPRI	: International Food Policy Research Institute
LICs	: Low-Income Countries
MAMO	: Malabo-Montpellier
MERCOSUR	: Southern Common Market
NDM	: New Development Model
NEPAD	: New Partnership for Africa's Development
NT	: No-Till
OPEC+	: "Organization of the Petroleum Exporting Countries" plus non-OPEC producers
PPP	: Purchasing Power Parity
SG	: Safeguards
SSA	: Sub-Saharan Africa
SUS	: Sistema Único de Saúde (Unified Health System in Brazil)
TTF	: Title Transfer Facility
UN	: United Nations
USD	: United States Dollar
WBG	: World Bank Group
WFP	: World Food Program
WWII	: World War II

Executive Summary

Millions are severely malnourished in a world where there is enough for all. Hunger and malnutrition stalk more than 3.1 billion people. Yet, widespread hunger in all its forms is a problem which has been largely solved at the macro level in today's high-income, industrialized countries. Their "escape from hunger and premature death" is a fairly recent phenomenon. It began around 300 years ago, continued for most of the 20th century and is still ongoing today. The problems faced by poor countries nowadays are similar to those faced by today's wealthy countries for over two centuries.

What can we in the New South¹ learn from the achievements and struggles of different countries around the world on how to achieve food security for all? This book is about what it has taken to achieve food security in successful countries, what lessons we can derive from both successes and failures in agri-food development worldwide, and what opportunities and challenges lie ahead.

The main message is that such achievements require that the vicious circle between undernutrition and low agricultural productivity be broken. It takes sustained government commitment to increase the productivity and incomes of the rural poor by integrating their agricultural and rural economy in a sustained growth process that transforms both agriculture and the overall economy. Such a decades-long process is necessary but not sufficient, as it needs to be complemented by investment in areas outside the agri-food sector, such as in human capital, a social safety net to strengthen the productivity and resilience of people, in an environment threatened by climate change.

Governments must build a business-friendly environment within a stable macro framework and invest in the macro, trade and agri-food sectors, so that farmers themselves want to invest in the productivity of their farms because they view it as profitable. Since climate change is challenging the known techniques of an already risky sector, governments must invest in research, extension and knowledge dissemination so that farmers especially, the majority of whom are smallholders, can thrive and be resilient and sustainable. More broadly, investment in human capital and in the

1. In our fluid world of Great Power competition, the New South is composed of developing countries, from low- to upper middle-income levels, which do not want to be defined by historical divisions and alliances. Instead, they want to further their development interests in a peaceful and inclusive way, in particular, by reducing poverty and achieving shared prosperity at home, and abroad by building alliances and partnerships in a multi-polar world and by reforming multilateral institutions. The many issues raised by this challenging mission are discussed at length in El Aynaoui *et al.* (December 2023) and in Ishmael (October 2023) on the cases of South Africa, India and the Caribbean countries.

generation of a knowledge base, including the data needed to monitor, evaluate and guide policies, is essential for driving a knowledge-intensive and inclusive process of economic transformation. Success is within reach to the extent leadership's vision of a food secure country is implemented by competent administrations committed to the public good.

Key messages for policy makers and practitioners are in Annex 1.

Introduction

Everyone wants to be food secure, yet millions are not. The challenge of achieving food security for these millions of people is projected to become even more daunting, given global trends of: (i) demographic growth—an addition of nearly two billion to reach 9.7 billion by 2050; (ii) rapid urbanization—projected to reach 68% of the world’s population by 2050; and (iii) climate change—with the possibly deleterious impact of warmer temperatures on human health, the frequency and severity of extreme water events such as droughts and floods and declining water quality, promoting the growth of harmful algae and bacteria. According to the FAO *et al.* (2023), some 3.1 billion, or around 42% of the global population, could not afford a healthy diet in 2021; some 2.4 billion or 29.6% suffered from moderate to severe food insecurity in 2022.

These millions are caught in the malnutrition-low productivity trap; e.g., women are more likely to suffer hunger than men; millions of children under age 5 suffer from stunting, wasting, and excess weight; rural adults are more afflicted (33%) than adults in peri-urban (28%) and urban areas (26%). Yet the fast-growing urban populations in Sub-Saharan Africa (SSA) and Southern Asia have some of the highest numbers of malnourished. With the already high percentage of slums in SSA’s urban areas, these numbers are very concerning.² Hunger has been on the rise in Africa since 2010, and has risen in all sub-regions, going from 19.4% in 2021 to 19.7% in 2022, a higher figure than in any other region of the world (FAO *et al.*, 2023).

In a world of plenty, why is there so much hunger and malnutrition? At an aggregate level, the answer is obvious. They are very poor; they cannot afford to buy the food they want. At a policy level, the answer is far from obvious. It is not clear how to eradicate extensive poverty in a sustainable and inclusive way.

Widespread and chronic hunger is decidedly not because food production grows arithmetically while population grows geometrically, as Malthus argued.³ In Malthus’ view (1798), the number of mouths to feed will inevitably outstrip the capacity of the food system to satisfy the demand increase. Posterity has proven him wrong. As Sen

2. WDI. Population living in slums (% of urban population) – Sub-Saharan Africa (2020) e.g., Botswana: 40%; Benin: 68%; Côte d’Ivoire: 53%; Ethiopia: 64%; Ghana: 33%; Kenya: 61%; Niger: 70%; Nigeria: 49%; Rwanda: 38%; South Africa: 24%; Sudan: 74%; Tanzania: 41%; Madagascar: 67%; Mozambique: 55%; and Zambia: 48%. <https://data.worldbank.org/indicator/EN.POP.SLUM.UR.ZS?locations=ZG>.

3. Thomas Malthus (1766-1834) was a cleric, scholar and a political economist. He first published his famous *Essay on Population* in 1798.

(1999)⁴ pointed out, world population has grown nearly six times since 1798, yet food output and consumption per head are much higher than in Malthus' time. He argued that "...[t]he focus has to be on the economic power and substantive freedom of individuals and families to buy enough food and not just on the quantum of food in the country in question."⁵

The escape from hunger is one of the great freedoms we all want; a freedom which liberates us to live fuller lives, irrespective of our different cultural and historical backgrounds. This handbook is about what we can learn from how millions escaped the scourge of hunger, premature death and food insecurity.

In Section I, the book presents a current and historical overview of the problem of widespread hunger and premature death. After clarifying the three most commonly used concepts of food security, it presents an overview of policy approaches focused on how best to transform low-productivity agriculture, reduce widespread poverty and hunger, and achieve food security. Section II presents some key lessons from case studies. These analyze the struggles since the end of World War II of a wide array of countries in reducing poverty and achieving food security, to varying degrees of success. It concludes with an overview of the major areas of consensus and controversy.

4. Amartya Sen (born November 3, 1933) received the Nobel Prize in 1998.

5. "What is crucial in analyzing hunger is the substantive freedom of the individual and the family to establish ownership over an adequate amount of food, which can be done either by growing the food oneself (as peasants do) or by buying it in the market (as the non-growers of food do)". (Sen, 1999: 161)

Section I

An overview of our hungry world and pathways to escape it

The developing world is burdened with widespread hunger

The scourge of chronic hunger and under nutrition: While most people in rich industrialized countries have “escaped hunger and premature death” (Fogel, 2004),⁶ this is not the case for millions of people in developing countries. The statistics are alarming. An estimated 9.2% of the world’s population suffered from undernourishment in 2022, including roughly 122 million more in 2022 than in 2019, before the COVID-19 pandemic. About 29.6% (2.4 billion) of the global population suffered moderate to acute food insecurity in 2022, of which some 900 million (11.3% of the population) were severely food insecure. There was some progress in reducing hunger in Asia and in Latin America, but hunger is still on the rise in Western Asia, the Caribbean, and all sub-regions of SSA. Particularly alarming are the numbers of very young children and women seriously affected. An estimated 148.1 million (or 22.3%) of children under 5 years of age suffered from stunting (low height for age) in 2022; 45 million (or 6.8%) were wasted (low weight for height); 37 million (or 5.6%) were overweight. Stunting and wasting were more prevalent in rural areas, whereas excess weight was more of an issue in urban areas. Women are more affected than men in every region, although the gap narrowed significantly between 2021 and 2022. In 2022, 27.8% of adult women were moderately to severely food insecure, compared to 25.4% of adult men. 10.6% of women faced severe food insecurity compared to 9.5% of men (FAO, 2023). The extent

6. The full title of this classic is *The Escape from Hunger and Premature Death, 1700-2100, Europe, America and the World*. Robert William Fogel (2004, Cambridge University Press). Robert William Fogel (July 01, 1926-June 11, 2013)

to which women and children are affected is particularly worrisome, as it means that today's hunger will cast a long shadow over the health, cognitive ability and productivity of the next generation.⁷

Lower global growth prospects exacerbate the burden of debt, persistent conflict and climate extremes:

The challenge of achieving food security for the hungry billions is made even more daunting by the reduced prospects for global growth. Both industrialized and developing countries are projected to grow more slowly in 2024 and 2025 than in the decade preceding COVID-19, with a projected growth of 2.4% in 2024, rising to 2.7% in 2025, and one in every four developing countries poorer than before the pandemic. The global annual growth average for the 2010s was 3.1% (WBG, Jan 2024). The reduced prospects for growth are not surprising, given the succession of global conflicts and dislocations since the COVID-19 onslaught and the environment of accelerating climate change. First, the disruptions to the global supply chain in 2021 caused a widespread shortage of goods and services at the very time when pent-up demand from Covid was being felt, thereby undermining economic growth and employment. Then, on February 24, 2022, Russia launched its invasion of Ukraine (referred to as "special operations") by Russian President Putin, triggering escalating global prices for corn, wheat, and fertilizer and causing the most damage to the food-importing nations in Africa. We are already in the third year of the Russia-Ukraine war. There was a brief ray of hope when the Black Sea Grain Initiative (BSGI) was signed on July 27, 2022. The BSGI eased the shortages until it was terminated on May 18, 2023. The shipments did help stabilize global prices of grain at USD 800/t (or GBP 620/t) from a peak of GBP 1,360/t. (Wintour, July 2023). The response of the financial authorities was predictable. Given inflationary trends, US Federal Reserve and European Central Banks raised interest rates to counter inflation: e.g., US Fed Fund rate rose to 5.5% (December 2023), ECB to 4.5 % (September 2023) and Bank of England to 5.25% (December 14, 2023). For highly indebted and fiscally constrained developing countries, EMDEs and especially LICs,⁸ these interest rate hikes are devastating, as government debt in the average LIC has grown by 30% of GDP to reach 67% of GDP (2022). Government debt

7. As well stated by Dasgupta (1993): "The general effects of persistent undernourishment and infections vary widely, but they all result in an impaired life...In expectant mothers it affects the growth of the fetus, and therefore its health status (e.g., weight at birth) ... It affects the lactation performance of nursing mothers... affects brain growth and development...reducing the energy that children have for learning...Among adults, it diminishes their muscular strength, their capacity to do physical work, and their protection against a wide range of infectious diseases ... it brings marked psychological changes...[diminished] life expectancy."

8. LICs are low-income economies; Emerging Market and Developing Economies (EMDEs). The World Bank country classifications are as follows. The EMDEs are: Argentina, Brazil, Chile, China, Colombia, Egypt, Hungary, India, Indonesia, Iran, Malaysia, Mexico, the Philippines, Poland, Russia, Saudi Arabia, South Africa, Thailand, Turkey, the United Arab Emirates and Ukraine. The LICs (2023) are: Afghanistan, Bangladesh, Benin, Burkina Faso, Burundi, Central African Republic, Chad and Comoros. Six of the eight LICs are in Sub-Saharan Africa.

has doubled since 2011 (World Bank Blog, June 2023). EMDEs are also in a tight spot with little substantial debt relief in sight (CGD, Blog post, November 2023). According to the World Food Program (WFP), the world is experiencing its worst food crisis in modern history, as long-standing conflicts and climate extremes in ten developing countries drive their people to the brink of famine⁹ (WFP, March 2023).

The many faces of food security and insecurity worldwide

At a personal level, the meaning of food security is obvious: Individuals and households around the world know the level of food security they want for themselves and their families: the ability to access (purchase and/or grow or rear) adequate and nutritious foods when they want them and the assurance that this access will continue. Anything less, even if temporary, is food insecurity. Food insecurity spans a whole spectrum, from mild, periodic worry about having adequate food to chronic and severe hunger. Irrespective of its severity, food insecurity is deeply worrisome, if not downright devastating, for anyone living constantly in such fear.

At the macro and policy level, three food security concepts prevail: The three main concepts of food security are very different and have led to different approaches and different impacts on food security. Their main features are presented graphically in policy papers PP 20-18 and 20-33, June and November 2020 [attached]: Selective Review of Food Security Policy Worldwide, Part I and II. They are:

- a) The 1996 FAO concept:** Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet the dietary needs for a productive and healthy life.
- b) Food self-sufficiency (FSS):** The ability of a region or country to produce enough food (especially staple food crops) without needing to buy or import additional food.
- c) Food sovereignty (FSY):** “Food sovereignty is the right of peoples to healthy and culturally-appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture

9. These ten countries are (the numbers in parentheses are millions of people): Democratic Republic of Congo (DRC) (26), Afghanistan (19.9), Yemen (17), Syria (12), The Sahel (13 projected), South Sudan (7.7), Sudan (15.8), Somalia (6), Northern Ethiopia (5.5) and Haiti (4.7 projected). The WFP was created in 1963.

systems. It puts the aspirations and needs of those who produce, distribute and consume food at the heart of food systems and policies rather than the demands of markets and corporations.” Declaration of Nyéléni,¹⁰ the first global forum on food sovereignty, Mali, 2007.

Key differences with major policy impact: The FAO concept requires that all four pillars of availability, access, utilization and stability exist simultaneously. It is holistic and demanding, referred to as FSH here. The utilization pillar of FSH rests on good nutrition. FSH does not specify how countries are to ensure that the four pillars exist simultaneously. The FSS and FSY are political-economic concepts that emphasize nationalism in agriculture, food trade protection and domestic agricultural policy formulation. FSY also opposes the power of multinational corporations that dominate global agriculture trade. Neither FSS nor FSY require that all individuals and households be adequately nourished at all times, or be free from the worry of acquiring such nourishment. This handbook adopts the FSH concept. It is obviously an ideal still to be achieved in many countries. In my view, it most closely resembles what we, as consumers who are net buyers of food, want.

How did today’s high-income, industrialized economies “escape hunger and premature death”?

A selective overview of past achievements according to historians: The “escape from hunger and premature death did not become a reality for most ordinary people until the twentieth century” (Fogel, 2004). Life expectancy at birth increased dramatically over two centuries or so ago, between 1725 and 1900. It went from 32 to 48 to 76 years in England or the United Kingdom, from 26 (1750) to 46 to 77 in France and from 50 to 48 to 76 in the United States.¹¹ Building on McKeown’s work, and based on his extensive research on mortality in England and France (from around 1700 on), Fogel¹² showed that adequate nutrition and use of more productive technologies interact synergistically and have been largely responsible for the growth in per capita income. The evidence shows that improved nutrition and use of more productive technologies must go in hand in hand to generate growth, essential for food security. Simply put,

10. Nyéléni is the name of a legendary peasant woman from Mali who grew crops and fed her people well.

11. Life expectancy at birth in high-income, industrialized countries since 2000 has continued to increase, albeit at a slower pace, reaching the mid-80s for women (2020s).

12. Fogel was Nobel Laureate in 1993.

Fogel argued that the synergistic interaction of better nutrition and more productive technologies was key. Thus, “I have estimated that when labor input is adjusted for intensity (measured by calories), improved gross nutrition accounts for roughly 30 per cent of the per capita growth in Britain between 1790-1980” (Fogel, Nobel Lecture, December 1993). Fogel’s argument about the key importance of improved nutrition is supported by the findings of other historians, including:

- The central importance of improved nutrition and living conditions in escaping hunger and premature death, thus lengthening life expectancy, was outlined in the mid-1950s by Thomas McKeown.¹³ The McKeown thesis was controversial (Colgrove, 2002) in that he downplayed the relative roles of public health measures, improved sanitation, vaccination and medical innovations in increasing life expectancy. McKeown showed that mortality was decreasing long before drugs were introduced for a whole series of diseases and continued to fall at much the same rate after their effective introduction. McKeown emphasized “care” over “cure”.¹⁴
- Building on the contributions of McKeown and Fogel, Deaton’s analysis (2013, 2015)¹⁵ of the key factors resulting in “the great escape” identifies several major societal forces, in addition to factors relating to productivity and nutrition. In particular, he identifies the Enlightenment,¹⁶ the Industrial Revolution, public health measures and education, and the germ theory of disease. He emphasizes that knowledge is key.
- Lindert and Williamson (1983) argued that during the Industrial Revolution, after 1820, English workers, namely farm labor, the middle group, artisans and white-collar workers¹⁷ experienced a rise in living standards, as shown by their increased

13. Thomas McKeown (November 02, 1912- June 13, 1988), a British physician and epidemiologist, is considered the father of social medicine by Fogel and Deaton.

14. One example McKeown used is the fall in mortality from tuberculosis in England and Wales between the 19th and 20th century, long before the introduction of the effective antibiotic Streptomycin in 1947 and the BCG vaccination in 1954. BCG is *Bacillus Calmette-Guerin*, a vaccination used against tuberculosis.

15. Angus Deaton (born October 19, 1945) was awarded the Nobel Prize in 2015. The title of his Nobel Lecture was: “Measuring and Understanding Behavior, Welfare and Poverty”.

16. The Enlightenment, also known as the Age of Reason, was an intellectual and cultural movement which started in the 18th century. It emphasized reason over superstition and science over blind faith. Great thinkers, including John Locke, Isaac Newton and Voltaire, questioned accepted knowledge and spread new ideas about openness and religious tolerance, and exalted the spirit of investigation. The Enlightenment was a major turning point in Western culture and civilization.

17. The workers are stratified from bottom to top: blue collar comprising farm labor (bottom 40%), middle group and artisans (labor aristocracy) and white collar (Lindert, Peter H. and Jeffrey G. Williamson, Feb 1983: Tab. 1)

earnings and longer life spans (except in Liverpool and Manchester). Despite the deplorable urban living conditions depicted by Engels (1845),¹⁸ the quality of life was improving in both urban and rural England.

- Floud *et al.* (2011) show that improvements in the nutritional status of the populations of England, Wales, continental Europe¹⁹ and the United States, sustained since around the 1700s, have been gradually increasing the height, capacity for work and life expectancy of successive generations in the West. Fogel calls this evolutionary process, whereby sustained improvements in nutritional status change the human body and its capacities (physical and intellectual), technophysio evolution, a transformative process unique to the human species. This evolutionary process is set in motion by the synergistic interaction between improving the nutritional status of the majority of the population and their use of more productive technologies. Such interaction has been a key enabling factor for the agricultural and industrial revolutions, whose exact timing may be hotly debated, but which all agree occurred roughly during the period of interest (Allen, 1999)²⁰ and ushered in the modern world of higher productivity and growth.²¹

The message from historians is clear: the “escape from hunger and premature death” shows that good nutrition is a fundamental investment in human capital and the very foundation of healthier, more productive and longer lives. Still, millions in the developing world are suffering from the scourge of hunger.

18. Friedrich Engels, German philosopher, wrote *The Condition of the Working Class in England*. This book was based on his 1842-44 stay in Manchester, a city at the heart of the Industrial Revolution. It was translated from German into English and published in 1887. Engels was the eldest son of a successful German textile industrialist.

19. The continental European countries included (depending on the years and available data) are (i) in the west: Denmark, France, the Netherlands, Germany, Switzerland; (ii) in the east: Poland, Russia; (iii) Nordic: Norway, Finland, Sweden, Iceland; (iv) southern/central: Greece, Italy, Croatia, Czech Republic, and Slovenia.

20. The exact timing of the English agricultural (increased agricultural productivity and output) and industrial revolutions has been hotly debated by historians. Much of the debate is whether the agricultural revolution preceded or was contemporaneous with the industrial revolution. According to one school, referred to as revisionists, the agricultural revolution started way earlier, in the 16th and 17th centuries, a long time before the parliamentary enclosures of the late 18th and early 19th centuries. The standard view, reaffirmed by Overton, was that the agricultural revolution started during this latter period of enclosures, and attributed the enclosures as a major contributing factor. Allen, however, argues that there were two agricultural revolutions; the earlier one preceded the enclosures; and the latter occurred during the first half of the 19th century. For our purpose, what matters is that both agree that these two revolutions occurred and their period stretches over the same period of increased nutrition and longer life expectancy.

21. Fogel and Costa (1997) argue that their research on the causes of the secular decline of mortality refer to this process in terms of “a synergism between technological and physiological improvements that has produced a form of human evolution that is biological but not genetic, rapid, culturally transmitted and not necessarily stable.”

How can millions in the New South “escape hunger and premature death”?

A selective overview of current policy recommendations: This selective overview of prevailing policy recommendations focuses on how to transform low-productivity agriculture, reduce extensive poverty and hunger and achieve food security. For any country with a substantial agricultural sector (10% of GDP or more),²² these approaches view agricultural transformation as the gateway to becoming an industrialized, high income, modern economy.²³ They argue that promoting sustained agricultural productivity growth, especially among smallholders, is the first key step in the escape from hunger and premature death for millions. So, what should be done?

i. Africa can do it if...: According to the African Transformation Report, Agriculture Powering Africa’s Economic Transformation, Africa can build, within a generation, a modern agriculture that is competitive and sustainable, supports “a middle-class lifestyle for a growing number of farmers and powers Africa’s transformation” (ACET, 2017).²⁴ The agenda for transformation includes policies which promote (a) secure land tenure rights and access to land; (b) use of yield-increasing technologies which include improved seeds, fertilizers and water control (through irrigation where needed); and (c) improved farm management techniques. The agenda emphasizes the importance of a supportive macroeconomic (including policies which have an impact on exchange rate, trade and the cost of credit) and regulatory environment for agricultural transformation.

ii. A macro level strategy promoting pro-poor agricultural transformation is critical: At the macro level, Timmer (2004) argues that governments should promote policies that “integrate the food economy into a development strategy that seeks rapid economic growth with improved income distribution [...] With such policies, economic growth and food security

22. Excluded are city states like Singapore or oil exporting countries like Saudi Arabia.

23. Timmer (2007) describes the five processes of structural transformation: (1) declining share of agriculture in the gross domestic product (GDP); (2) declining share of agriculture in employment; (3) rural-urban migration; (4) growth in the service and manufacturing sectors; (5) a demographic transition from high birth and mortality rates to low births and mortality rates, bringing about a reduction in population growth rates. A turning point is reached when the share of employment in agriculture has declined at a faster rate than the share of agriculture in GDP.

24. ACET is the African Center for Economic Transformation. It is a pan-African economic policy institute supporting Africa’s long-term growth through transformation. It was founded in 2008 by K.Y. Amoako, former UN Under-Secretary-General and head of UN Economic Commission for Africa (UNECA).

mutually reinforce each other.” Sustained improvements in agricultural productivity and food security within a rapidly growing economy are not the results of the “free” market. Governments must work with markets to reach myriads of farmers and private entrepreneurs to integrate the food economy into the economy-wide growth process. Indonesia under President Suharto (1967-98) is a prime example;²⁵ but not only Indonesia but much of East and Southeast Asia as well, for example South Korea (1965-93), Malaysia (1970-95) and China (1980-98). More broadly, to improve food security in their rice-dominated economies marked by extensive poverty, post-WWII governments of East and Southeast Asia have moved on three fronts simultaneously: they pursue rapid growth at the macro level, poverty reduction through agricultural and rural economic growth, and rice price stability.

iii. Investment in agriculture, human capital and social protection are essential: Agronomists advocate a wide range of policies to help smallholders adopt more productive techniques, essential in an age of climate change.²⁶ The MAMO²⁷ Panel (2013) proposed sustainable intensification (SI) as a “new paradigm for African agriculture.” SI assembles techniques of precision farming which can produce more with less inorganic fertilizers and pesticides, while preserving the natural resource base and adapting to climate change. According to Conway (2012),²⁸ sustainable intensification enables countries to meet the quadruple challenge of “higher productivity, improved stability, more resilience, and greater equitability.” Government investment is required to promote agricultural research and extension services to assist smallholders in using mitigation and adaptation techniques essential for thriving under climate change. Sustainability concerns within the intensification paradigm are to be addressed through conservation agriculture (CA), reduced till on no-till (NT) farming, climate smart agriculture (CSA), landscape agriculture, eco agriculture and green agriculture.²⁹ In addition to sustainable intensification, Denning includes

25. After the Asian Financial Crisis (1997-98) which devastated Indonesia after 3 decades of substantial growth—in 1970, GNI per capita was USD 70, reaching GNI per capita USD 1,090 in 1997—it recovered in subsequent decades, to reach USD 4,580 (2022), becoming an upper middle-income country (WDI).

26. More than 80% of the world’s farms operate on less than 2 ha. Smallholders produce more than 80% of food in Asia and SSA. Worldwide, they produce around 35% of food, according to the FAO (2023).

27. The Malabo Montpellier (MAMO) Panel.

28. Sir Gordon Conway (July 06, 1938-July 30, 2023) was an agricultural ecologist, known as a leader in sustainable agriculture development. (Kwan, Aug 2023)

29. These techniques of crop farming and livestock rearing reduce emissions per unit of output (SI) and focus on adaptation and mitigation to climate change (CSA) (Campbell *et al.*, October 2014).

investment in market infrastructure, post-harvest stewardship, healthy diets and social protection (Timmer, review March 2023).³⁰ Disseminating these techniques through digital technologies can assist Africa leapfrog its transformation process in a variety of ways, including assisting farmers in accessing research and extension services in a timely fashion, supporting precision agriculture of SI and accessing market information and efficient logistics in transport and storage, essential for integration in value chains, especially of high value crops (MAMO Panel, 2019). In an agricultural setting where the average age of farmers is 60 years (ACET, 2017), widespread digital use requires intense farmer training. Equally important, given the youth bulge and the need to make agriculture more profitable and hence more attractive to youth, they must also be trained to become digitally savvy. Thus, investment is needed not only in hard infrastructure (e.g., electricity, transport and communications), but also in human capital (e.g., health and education, specific training) and in social protection, as proposed by Denning.

iv. The persistent neglect of agriculture must stop: Mellor (2017) argues that governments should invest in the African Union’s target of 10% of annual government expenditures and undertake reforms, including abandoning inefficient fertilizer and cereal price subsidies. He advocates that governments should promote small commercial farming as the most effective way to reduce poverty and hunger. Typically, agriculture has suffered from gross underinvestment, in particular in agricultural research and extension which is the “core of modernization” (IFPRI book launch for Mellor (2017), February 2018). The persistent underinvestment in agriculture continues despite substantial empirical evidence that agricultural growth has had a greater poverty-reducing effect than growth in other sectors. Indeed, most African governments, except for Rwanda, had fallen far short of their Maputo pledge (2003) by the time of the Malabo pledges (2013) (NEPAD, 2016) and even in the period to follow (2022) (Kretschmer *et al.*, 2022).

v. Agriculture for Development (AfD) strategy—supply and demand dimensions: De Janvry and Sadoulet (2020) summarize AfD in five steps: (i) asset building of smallholders; (ii) green revolution; (iii) agricultural

30. Glenn Denning is a professor of professional practice and founding director of the Master of Public Administration in Development Practice program at Columbia University’s School of International and Public Affairs. His recent publication, reviewed by Timmer, is *Universal Food Security* (2023).

transformation; (iv) rural transformation; and (v) structural transformation. They emphasize the continued under-investment in agricultural development in agriculture-based economies with extensive poverty,³¹ despite the fact that it has repeatedly been shown to be poverty reducing and transformative. Supply-side approaches that can promote the uptake of potentially more productive and profitable technologies include improving access to information on technological and market opportunities; credit and affordable insurance and marketing infrastructure; and making local markets more competitive (e.g., by breaking the collusion of local traders). Can use of digitalization improve information dissemination (e.g., research and extension messages), timely market information and other forms of outreach? Demand-side approaches include assisting with contract development with downstream market agents in a value chain and, where product quality is critical (e.g., milk), having an independent certification body operating at early stages in the value chain. Can a strategic choice of contact farmers increase outreach? Promotion of value chain development linking smallholders to supermarkets and the agro-industry should include assisting them to acquire assets of land, capital, health, knowledge and skills and initiate the development of, or participation in, value chains and producer organizations with the capacity and bargaining skills to engage in contracting (De Janvry *et al.*, 2020).

To sum up: A policy taxonomy for successful agricultural transformation: The policy taxonomy shows that the anti-agriculture bias pervasive in developing countries that adopted the industry-first, import-substituting strategy must be removed to create a supportive macro environment (IFPRI, 2017). The taxonomy first categorizes the policies broadly in terms of the sectors they target: the macro economy, the rural economy and agricultural markets. The four broad policy categories are public investment, price interventions, macroeconomic policies, and land and other institutional reform. These are then further disaggregated.³² The listing makes it clear that a holistic approach is being advocated.

31. "The modal SSA country spends only 5% of its public expenditures on agriculture [...] In 2011, only six countries (Swaziland, Cabo Verde, South Africa, Botswana, Namibia, and Mauritius) met the CAADEP research goal [of 1% of AG GDP]" (de Janvry and Sadoulet, 2020).

32. The nine sub-categories are: (1) research and development (R&D) and extension; (2) rural infrastructure; (3) rural health and education, (4) anti-agricultural bias, (5) trade policy reform, (6) monetary and exchange rate policy, (7) economic diversification, (8) land reform and (9) credit (IFPRI, 2019).

Section II

What can the New South learn from the achievements and struggles of food secure countries on how to achieve food security for all in the 21st century?

Lessons from successes and failures worldwide: selected country experiences

Arthur Lewis argued for the centrality of increasing agricultural productivity in order to bring about industrialization: Case studies of different countries worldwide, at varying stages of development, show how the long struggle for food security at the macro level can be won or lost. Developing countries that have neglected agriculture in the early stages of development pay a heavy price in terms of low agricultural productivity, the inability to transform their agriculture and industrialize, and the persistence of widespread hunger and poverty. This is a robust pattern. Sir Arthur W. Lewis argued that increasing agricultural productivity is a sine qua non for industrial development.³³ Without the growth in agricultural production to keep up with growing urban demand due to industrialization, wages will rise and the terms of trade will move against the non-agricultural sector, thereby reducing private sector profits, savings and

33. Sir Arthur Lewis (January, 23 1915-June 15, 1991) was knighted in 1963. He developed the dual sector model of development in 1954 called Economic Development with Unlimited Supplies of Labor. He received the Nobel Prize in 1979 which he shared with Theodore W. Schultz (April, 30 1902-February 26, 1998).

investment and slowing the pace of industrialization and growth (Lele *et al.*, 2021). The country case studies below illustrate various dimensions of this process.

Raising agricultural productivity in a sustainable and inclusive manner is essential but not sufficient: An essential first step for escaping the hunger trap is to break the vicious circle of low agricultural productivity and poor nutrition, as demonstrated amply by Fogel's research. The three main concepts of food security and their impact on the pursuit of food security in sixteen countries at different stages of development were analyzed in two policy papers (PP 20-18, PP 20-33). "This great diversity of experiences shows that countries whose leadership promoted sustained agricultural productivity growth in the earlier decades of their development within a macro and trade framework of expanding markets (domestic and foreign), succeeded best in achieving FSH. They recognized the complex short- and long-term challenges of achieving FSH and did not reduce them to only domestic production of more basic staples". Countries that promoted food self-sufficiency as food security had precisely this narrow focus: they prioritized and subsidized basic staples but achieved neither food security nor food self-sufficiency. (See the discussion below on food self-sufficiency.) The country case studies show the trade-offs and complementarities in the decades-long march towards food security. Ensuring any level of food security requires not only agricultural transformation but overall economic transformation as well. Agricultural transformation that raises the wages and economic opportunities of the poor and hungry over a period of decades is necessary, but far from sufficient. A successful economy-wide growth strategy must generate the investible resources required to fund investments, including those in human capital, social safety nets and the resilience and productivity of the entire system [See PP 20-18, June and PP 20-33, Nov].

Raising agricultural productivity to power successful agricultural transformation worldwide requires a robust set of five conditions: Successful agricultural transformation entails two simultaneous developments: (i) increases in productivity (output per unit of input variously defined) sustained over two to three decades at least; and (ii) sustained increases in income for the majority of farm/rural households. This concept of success has both a positive and a normative component. It is the kind of transformation a country needs to substantially reduce poverty and achieve food security for the majority. Only a minority of countries have succeeded in transforming their agriculture in this way. An analysis of countries at different stages of agricultural transformation—the minority of successful ones as well as those that show great

potential for success—exhibit a strong pattern of five conditions (Tsakok, 2011).³⁴ The five conditions, analyzed and illustrated in various country examples, and set out in five PBs in 2018 [Attach PB 18-22; PB 18-23; PB 18-29; PB 18-32; and PB 18-33], are:

1. **A stable framework of macroeconomic and political stability.** Central and local governments are able to enforce peace and order.
2. **An effective technology-transfer system.** Research and extension messages reach the majority of farmers; that is, the research messages are disseminated (extended) to farmers.
3. **Access to lucrative markets.** The majority of farmers benefit from expanding markets of paying customers. It makes good business sense for these farmers to invest in agricultural and rural production.
4. **An ownership system including a system of usufruct rights that rewards individual initiative and toil.** It is feasible for farm/rural families to gain monetarily from risk-taking and hard work.
5. **Employment-creating non-agricultural sectors.** As agriculture becomes more productive, its workforce must decline. If these workers do not find other jobs that pay as well as agriculture, farm poverty would simply be transferred to other sectors.

While these conditions may seem obvious, what is not so clear is how only a minority of governments have been able to maintain these over a period of decades. Only this minority of countries has achieved the “escape from hunger and premature death” for most of their populations. The major policy implication is that government investment in, and the delivery of, public goods and services over this period is essential in maintaining these conditions and successfully transforming poverty-ridden, subsistence agricultures.

Agri-food systems remain low productivity despite the abundant resources of mineral wealth—the resource curse in SSA: Case studies of Nigeria and Mozambique show the consequences of poverty and hunger due to the continued neglect of agri-food/agri-business systems in terms of investment and supportive policies for

34. The countries analyzed in relation to the existence or non-existence of the five conditions are (in order of presentation in the book): England/UK in the 18th and 19th centuries; Japan from the Meiji Restoration (1868-1912) to the 1960s; American agriculture in 19th-20th century; Ireland; Portugal; the Republic of Korea; Taiwan, China; India; People’s Republic of China; Indonesia; Malaysia; Tunisia; Brazil; Chile; Canada; Australia; New Zealand; Argentina; Ghana; Egypt; the Philippines; Mexico, and Morocco.

smallholders. In Nigeria, these systems suffer not only from the Dutch Disease³⁵ but also from widespread protectionist measures, vested interests and the poor management of Nigeria's sovereign wealth fund.³⁶ The heavy dependence on oil revenue in government budgets (federal and consolidated) and export earnings makes oil a curse rather than a blessing. Mozambique is also richly endowed—with plentiful land, water, mineral resources and a strategic position with a long coastline—but its agriculture is no better off. However, even during the years of stability and relatively high growth (1992-2015),³⁷ the FRELIMO Government (which has been in power since the peace agreement with RENAMO in 1992),³⁸ did not pursue a pro-poor growth strategy. In fact, income inequality, Gini coefficient at 0.47 in 2008 and increasing to 0.56 in 2014, makes Mozambique one of the most unequal economies in Africa. This high level of income inequality is rooted (at least partly) in the political and economic disempowerment of the largely Muslim Makua population and other impoverished people of northern Mozambique, in particular in Cabo Delgado, where the war of independence (1964-75) against Portuguese rule started.³⁹ Furthermore, annual expenditure on agriculture, (the sector where most of the poor live) was 4% of government expenditure, well below the 10% pledged by all African governments in Maputo in 2003. In this inimical policy environment, the prevalence of a low productivity, subsistence agriculture is predictable and widespread hunger is inevitable. As in Nigeria, relentless poverty exacerbates violent conflicts, ethnic and/or religious [Attach [PB 41-22](#), June & [PB 43-22](#), July].

Mauritius has no mineral wealth, but by drawing upon its political economy and institutional assets has transformed its agriculture and economy, virtually eliminating extreme poverty: At independence (1968), Mauritius was a monocrop island, completely dependent on trade preferences for its sugar. Its GNP per capita was then USD 260; it rose to USD 12,444 in 2019 in the pre-Covid period and fell to USD 10,360 in 2022, largely as a result of Covid. By the 2010s, Mauritius had diversified away from sugar into textiles manufactured in its Economic Processing Zone (EPZ since the

35. "Dutch disease" refers to an overvalued currency, consequent on a large influx of foreign exchange due to the export of a mineral resource; e.g., oil exports. This overvalued currency reduces the competitiveness of non-oil sectors and encourages competing imports as well.

36. These points were also made by IMF: Nigeria selected issues, February 08, 2021.

37. The primary drivers of this high growth were capital intensive megaprojects, which attracted substantial FDI.

38. FRELIMO stands for Frente de Libertação de Moçambique, in Portuguese; in English, 'Liberation Front of Mozambique. RENAMO for Resistência Nacional Moçambicana; in English, 'Mozambican National Resistance. The first multi-party elections were held in 1994.

39. Conflict in Northern Mozambique has worsened with the discovery (around 2010) of enormous gas reserves in the Rovuma Basin off the coast of Cabo Delgado; and is expanding as several foreign (regional and external) troops are being drawn in to counter the Islamic group al Shabab (also known as Ansar-al-Sunnah) (Aidi, Policy Center for the New South, May 2022).

1970s) and tourism. It also diversified its cane cluster into bagasse, molasses, vinasse⁴⁰ and bio-ethanol. It only promoted self-sufficiency for a wide range of vegetables and tropical fruits and imports around 77 % of its total food requirements, e.g., rice, wheat flour, milk, meat and temperate fruits. Sugar-dominated agriculture contributed to 22% of GDP at independence, and diversified agriculture to around 3.4% of GDP in 2013. However, success is not forever. Covid-19 hit Mauritius hard as poverty rose—at USD 5.5 per day at 2011 PPP line, poverty is projected to have increased from around 11% to 16% in 2020 and was still above 11% in 2023 (World Bank, April 2021).⁴¹ Mauritius had to remake itself from the 1980s on. By the 2020s, it has to remake itself again to adapt to climate change and a more competitive but fragmented global economy. This time around, it wants to rebuild itself as a knowledge-intensive, inclusive economy [Attach PB 37-21, Oct 2021; PB 10-23, Feb 2023].

The food self-sufficiency (FSS) approach sustainable with the increased unpredictability and scarcity of water? Both Egypt and Morocco have adhered to a food self-sufficiency (FSS) approach for well over 60 years in their agri-food policy. And yet Egypt, which was 70% self-sufficient in wheat in the 1960s, had become one of the largest wheat importers in the world by the 2020s. Egypt is “set to become the world’s largest wheat importer [in 2023-2024...] and is projected to import 12 million tons of wheat up from 11.2 million the previous year” (The New Arab Staff, June 2023). In Morocco, despite the focus on FSS, as well as enormous investment in irrigation and through the Plan Maroc Vert (2008-18), rainfed cereals still occupy more than half of its arable land as well as its agricultural imports. (Abdelaaziz Ait Ali *et al.*, 2022). Moreover, the FSS approach promotes water-thirsty crops—wheat, rice and sugar beet in Egypt and wheat, sugar and milk in Morocco.⁴² Both Egypt and Morocco are listed as water-stressed countries.⁴³ Thus, in Egypt, fresh water availability per capita per year was estimated at 570 m3 (2018), approaching the extreme water scarcity level of 500 m3 (WBG, November 2022). In Morocco, the equivalent has decreased from 2,650 m3 (1960) to 620 m3 (2020) (WBG, October 2022). The government of Egypt (GoE) has a long-standing food subsidy program, which has evolved over the years. Baladi bread has continued to be subsidized and, in 2023, it was available to

40. Vinasse is a final by-product of bio-mass distillation, mainly from ethanol production from sugar and starch crops, or cellulosic material. Also called dunder, it can be used in fertilization and irrigation practices. However, excessive use can result in negative environmental outcomes.

41. During the COVID lockdown, GDP contracted by 15.6% in 2020. Income inequality rose in the decade of the 2000s. The rise in income inequality was moderated by extensive public transfers. (World Bank: Mauritius Poverty and Equity Brief, April 2021)

42. Water use (m3per T): wheat: 1450; sugar: 5000; milk: 6000. (Serghini, 2015: Tab 24)

43. The level of structural water stress is below 1000 m3/per capita per year. (WBG, Oct 2022)

nearly 80% of Egypt's population (Rock-Singer, May 2023).⁴⁴ Morocco subsidizes soft wheat flour and sugar.⁴⁵ The FSS approach is costly in both fiscal and environmental terms.⁴⁶ With Covid-19, followed by multiple global shocks and low economic growth, both governments are fiscally strained. In addition to the reforms required to regain fiscal balance, both governments must urgently address how best to satisfy increasing urban demand for potable water as well as other increasing non-agricultural demands. In a world affected by climate change, increasingly unpredictable and seeing greater water scarcity as global warming increases, the FSS "business as usual" approach is being severely tested in these water-stressed countries. The PPs on Egypt and Morocco discuss what are at stake and how the FSS approach can be reconfigured in a way that increases both food and water security, while ensuring the prices for basic staples remain stable and facilitating the energy transition to renewables. Although the stakes are high, fundamental reforms for ensuring its food and water security in a water-scarce world are likely to meet with stiff opposition. It requires the forging of a new social contract between the people and their government, since access to basic subsidized food has become a time-tested social contract. [Attach [PP 01/23](#), Jan; and [PP 06/23](#), May]

Policies conducive or inimical to sustained agricultural productivity growth

How to promote fertilizer use for smallholder agriculture in SSA: The capital importance of soil fertility and its proper management for high productivity agriculture is widely recognized, as fertilizer was a key input in the green revolution (GR) that swept through Asia (mid-1960s to 1990s). Government leadership translated into substantial public support including infrastructural investments and input subsidies, new farming techniques for millions of smallholders using a package of high-yielding dwarf varieties (HYV) of wheat, rice, and maize, pesticides and herbicides, improved water control through irrigation and better market access. PB 19-35 shows how and why access to land tenure security and good water control remove two key structural constraints that

44. By the 2010s, households holding ration cards were entitled to cooking oil, sugar, rice, and tea. (World Bank, 2010). By 2020s, Egypt had a conditional cash transfer program takaful, and an unconditional cash transfer program, Karama. (World Bank blog; Nov 2020) As of 2022, these cash programs covered about 16% of the population, or 17 million poor. (IFPRI Policy Brief, April 2023)

45. In Morocco, the focus of FSS has been on "strategic" crops, namely wheat, sugar, vegetable oils, meat, and milk, all import substitutes. By 2023, only soft wheat flour (Farine Nationale de Blé Tendre) and sugar continue to be subsidized and protected. During the Covid crisis, gas for cooking and for irrigation was also subsidized.

46. Just on subsidies, the GoE allocated around 24% of its budget to food and another 22.5% to petroleum and electricity. (Mohamed, Aug. 2023)

typically undermine efficient fertilizer use. These two factors were correctly emphasized by the Malabo-Montpellier (MAMO) Panel (2018). The Conference on Land Policy in Africa (2017) also showed the key importance of inclusive and equitable access to land, especially where youth is concerned.⁴⁷ The GR in Asia was a game changer: agricultural productivity increased and densely populated Asia averted a full-blown Malthusian catastrophe. GR adoption thus enabled many Asian countries to lay down the roots of their long journey towards agricultural and overall economic transformation. In order to solve the hunger problem in Africa, an African GR is essential. Increased and proper fertilizer (organic and inorganic) use has a key role to play, as emphasized by the Abuja Declaration (2006), which closely followed the Maputo Declaration (2003) and was reaffirmed and enlarged upon by the Malabo Declaration (2014).⁴⁸ To date, and despite fertilizer subsidies in many African countries, fertilizer use remains low—an average of 17-22 kg/ha versus an average of 146 kg/ha worldwide—with fragile soils across much of Africa, deficient in essential nutrients and organic matter, inevitably undermining yield growth (AGRA, 2019). This low fertilizer use is not surprising, given successful experiences in Asia and elsewhere, as discussed in two policy papers in 2019 [Attach [PP 19/16](#) Sept. 2019; and [PB 19-35](#), Oct 2019].

Fertilizer must be promoted as just one key link in a long chain of production and productivity: These PPs analyze why fertilizer alone is far from sufficient for increasing agricultural productivity: fertilizer is but one link, albeit a key one, in a complex system of production and marketing which incentivizes and enables farmers to be productive because they are profitable. Too often, African governments have expected too much from inorganic fertilizer alone.⁴⁹ The strengths and weaknesses of subsidizing fertilizer at the cost of ignoring complementary public goods and services, essential in making the subsidies trigger an African GR, are well exemplified by the Malawi Farm Input Subsidy Program (2005-20).⁵⁰ Maize yields and production did increase in the years they received the subsidy but the longer-term benefits in terms of soil fertility and yield

47. ACET (2017) pointed out that the average age of farmers in SSA was 60 years old. The governments should therefore seek to attract Africa's youth when developing the agri-food sector.

48. The Abuja Declaration for an African Green Revolution (2006) recommended fertilizer application reach an average of 50kg/hectare (2015) from an average of 15-17 kg/ha (AGRA, 2018). Today, average fertilizer application is still very low, averaging 22 kg/ha versus world average of 146 kg/ha (World Bank Blog, December 2022). The Maputo Declaration of the Comprehensive Africa Agriculture Development Programme (CAADP) committed African heads of State to two goals: 6 % annual growth in agricultural productivity and 10% of annual government expenditures to be allocated to promoting agricultural transformation.

49. De Janvry and Sadoulet (2020: 6) also point out a lack of complementary inputs, which include lack of organic fertilizer for soil texture and lime for soil acidity, excessively high risks, and high transaction costs to reach markets.

50. The Malawi FISP was once lauded as a model for the rest of Africa. Malawi, which had suffered from chronic food deficits, had bountiful harvests in 2006 and 2007. However, longer term impacts on maize production, sustainable intensification and soil fertility increases are questionable.

increases did not materialize⁵¹ (IFPRI, 2010). In addition, the opportunity costs in terms of foregone complementary investments are high. Thus, although subsidies helped the spread of improved maize seeds over large parts of SSA, yield growth was low, and low and inefficient fertilizer use has persisted. The hoped-for “revolution” in maize production did not take place. While repeated evidence shows that the promotion of fertilizer cannot be viewed as a “magic bullet”,⁵² it is also true that there is no one-size-fits-all fertilizer policy and finding an effective balance among complementary inputs is far from automatic.⁵³ [See [PP 19/16 Sept. 2019](#); [PB 19-32, Oct 2019](#), and [Attach PB 19-35, Oct 2019](#)].

Promoting regional market access to millions: Africa has recently embarked on the implementation (since January 2021) of the African Continental Free Trade Area (AfCFTA).⁵⁴ Full implementation, expected to take place over a period of decades, promises to be a game changer. For an Africa battered by Covid-19, and by the multiple global crises since then, the promises of an agricultural and economy-wide transformation through regional market integration could not have come at a better time. Insights from similar experiences of the EU, the ASEAN and, to a lesser extent, MERCOSUR, have yielded both positive and cautionary lessons.⁵⁵ However, these lessons are from different models of regional market integration that are still being tested, in the context of a world in turmoil and suffering the effects of climate change. [Attach [PP 14-21, Aug, 2021](#)]

Positive lessons

- All benefitted (though to varying degrees) from vastly expanded trade. Fundamental to their success, they replaced armed conflict with negotiation and economic integration made possible by peace. For example, Europe was devastated by

51. Two complementary inputs that were missing: (1) improved maize seed varieties; and (2) the loss of soil nutrient due to continuous monocropping. (IFPRI, 2020)

52. AGRA (2019) also argued for a holistic approach (p 151).

53. For example, in Punjab, the Government of India (GoI), has been promoting a package of subsidized inputs since the mid-1960s. But now, too much fertilizer is used with detrimental environmental and output consequences. Moreover, the politics of subsidies make it very hard for the GoI to change course. In China, though fertilizer was not subsidized, farmers' use of fertilizers was excessive, undermining environmental sustainability. (For detailed discussion, see [PP 19/16 Sept. 2019](#).)

54. The AfCFTA was signed by 44 of 55 member states in Kigali, Rwanda, on March 21, 2018. As of March 2023, nine countries have yet to ratify the Agreement: Somalia, South Sudan, Sudan, Eritrea (has not signed the Agreement), Madagascar, Benin, Liberia, and Libya (African Union, Theme of the Year 2023: Acceleration of AfCFTA Implementation).

55. MERCOSUR was the 6th attempt at regional market integration in Latin America. The first was under no other than the famous liberator, Simon Bolivar (July 24, 1783-Dec 17, 1830) in 1826. For details, see [PP 19/16 Sept. 2019](#).

World War II when its visionary leaders (six founding members)⁵⁶ decided in 1957 to promote peace and prosperity through market integration. Similarly, visionary leaders (five founding members)⁵⁷ in Southeast Asia decided to pursue peace and prosperity through negotiation and regional market integration, instead of resorting to military force to settle conflicts, a strategy they feared would make the region more vulnerable to balkanization by external world powers.

- Furthermore, although the EU and the ASEAN represent two different models of regional market integration, each succeeded in substantially improving the income, productivity and food security of their peoples because they successively increased the scope of free trade agreements among member countries. As discussed in PP 14-21, they both started out on a modest scale but expanded over the decades (in membership as well as sectors involved), as the broad-based economic benefits of expanded trade materialized.
- Their success also owed much to substantial injections of investment from outside the region, as well as fundamental reforms that deepened and facilitated trade. In the early years, the reconstruction of Europe received a major economic boost from America's injection of USD 15 billion under the Marshall Plan (1948-52; the equivalent of USD 114 billion in 2020). In Southeast Asia, the economic boost came primarily in the form of FDI (1950s-80s) by fast-industrializing Japan, South Korea, Taiwan, and Hong Kong, which were seeking more labor-intensive modes of production as they graduated to more capital-intensive manufacturing.
- They undertook structural reforms. In the EEC, these included the Common Agricultural Policy (1962), which was a major engine driving the transformation of EU's agri-food sector. The CAP was, however, only one component of the economic reconstruction and recovery programs targeting the entire economy. In the ASEAN, with the adoption of the GR in the mid 1960s-90s, agricultural policy transitioned from taxation to neutral to subsidization of an export-oriented agriculture. A more productive and higher-value added agriculture contributed to strengthening "Factory Asia" in a region known for high growth with equity.

56. The six founding members of the European Economic Community (EEC) were Belgium, France, Italy, Luxembourg, The Netherlands and West Germany. They signed the Treaty of Rome in 1957. Over several decades, the EEC has been enlarged and restructured, becoming the European Union (EU) in 1993, and expanding its membership to 27 countries by the 2000s. The UK left (BREXIT) in Jan 2020.

57. The five founding members of the ASEAN are Indonesia, Malaysia, The Philippines, Thailand, and Singapore. The foreign ministers of these countries created the ASEAN on Aug. 08, 1967 in Bangkok, choosing cooperation to promote peace and prosperity for the region, and negotiation to resolve regional conflicts. They were concerned that external world powers (e.g., USA, the Soviet Union) would use their intra-regional conflicts to balkanize the region. By 2010, the ASEAN Free Trade Area (FTA) included China (2005), South Korea (2007), Japan (2008), India (2010), Australia and New Zealand (2010).

Cautionary lessons

- The path of high protectionism, including substantial subsidization, adopted by the CAP undermined the competitiveness of agricultural commodities in developing countries, thereby damaging millions of smallholders. Furthermore, due to the budgetary burden imposed, the EU has been under constant pressure to cut back and restructure the subsidies.
- Although MERCOSUR countries did benefit from expanded trade and reduced political tensions during the brief period from 1991-98, the expansion of intra-MERCOSUR trade was undermined by several factors. First, there was continual domestic turmoil in member countries, for example, Venezuela becoming a failed state in 2014, the high volatility of recurrent boom-and-bust cycles in Argentina, which continued into 2023,⁵⁸ and the recurrent political crises in Paraguay.⁵⁹ Second, Argentina, a key member of MERCOSUR, only partially implemented most of the articles of the Treaty of Asuncion. This seriously weakened the free trade and market integrating aspect of the Treaty. Thus, of the eleven policy provisions of the Treaty, only two were implemented and even those two only partially so. The two provisions implemented related only to the mobility of goods and of capital.⁶⁰ Third, although Argentina substantially reduced tariff barriers, it imposed temporary tariff barriers (TTBs) of anti-Dumping (AD) and safeguards (SG) against other member countries, most notably against Brazil, the largest member. Fourth, Brazil's substantial devaluation of its currency, the Real, in 1998-99, seriously impaired Argentina's competitiveness.⁶¹ Not surprisingly, given these various structural problems, members sought to emphasize their global trade instead.

58. Volatility of Argentina's economic experiences: boom 1991-98; bust: 1999-2001; boom: 2003-11; bust: 2012-17. Pronounced volatility and recurrent crises have characterized Peronist Argentina, which chose, in November 2023 a non-Peronist, a radical libertarian, Javier Milei, who vowed to transform the crisis-prone Argentina he inherited. In 2023, Argentina was experiencing a 140% inflation, and international debt default (Sabatini, Chatham House, November 2023). Argentina's structural vulnerabilities run deep; e.g., a macro system prone to "large dual fiscal and current account deficits, [...] weak market institutions [...] which reduce productivity and business opportunities, [...] significant government red tape for enterprises, [...] weak and non-professional bureaucracies, no access to international financial markets, extensive foreign exchange and price controls, large and regressive subsidies on transport, and energy" (WBG, March 2019). The economy contracted by 1.6% in 2023 and real GDP is expected to contract by an additional 2.8% in 2024. Argentina has started implementing a stabilization program with the IMF (World Bank, Overview, April 2024).

59. Paraguay had political crises in 1996, 1999, 2012. Its GNI per capita was USD 5,540 (2020) and USD 5,920 (2022) Atlas Method. Source: World Development Indicators (WDI)

60. Omitted from implementation were critical policy provisions with respect to labor mobility, monetary and exchange policy, tax policy, industrial policy, unfair trade practices, regional development and research and development. For more discussion, see PB-14/22, March 2022: The experience of the Argentine Republic—Market Integration within MERCOSUR and with Other Global Partners: Insights for AfCFTA countries?

61. Note that this devaluation was in violation of one of the policy provisions of the Treaty, namely that member nations were to harmonize their exchange rate policy.

China emerged as MERCOSUR's biggest trading partner by the 2010s.

Six case studies analyze the socio-economic and food security situation of several countries at an inflection point in their development trajectory, and argue that the option of market integration offered by the AfCFTA and global trade has the potential to transform their economies, including their agri-food sector. However, they must have the leadership and long-term commitment necessary to undertake and monitor the required reforms. The case studies discussed are South Africa, Mauritius, Argentina, Uruguay, Rwanda and Madagascar [Attach [PB 38-21](#); [PB 39-21](#); [PB 14-22](#); [PB 16-22](#); [PB 51-22](#); and [PB 64-22](#)].

Use of Genetically Modified Organisms (GMOs) - promising or problematic for a productive and resource-saving agriculture? The power of bioengineering to produce crops with desired traits, such as tolerance to insects and drought, even with higher nutritional value, would seem to be the “magic bullet” for solving the hunger problem.⁶² Given this power, all countries with widespread hunger should embrace GMOs. However, this is definitely not the case. GMOs are the subject of fierce and seemingly irreconcilable controversies in rich and developing countries alike. For proponents of GMOs, they are the answer to food scarcity in a world affected by climate change and dwindling resources. For the opponents, they harm human health, bio-diversity and the environment. Since GMOs were first commercialized in the United States in the mid 1990s, the increasing controversy around their use illustrates the importance of public trust in specific sources of information, when the scientific pros and cons involved in any product are complex and difficult for lay people to understand. Trust in governments, industry and even the scientific community has eroded over the decades.⁶³ Repeated consumer surveys from around the world show that most people understand little about GMOs but doubt that they are good for human nutrition and health or environmental sustainability. Even in China, which has invested heavily in the development of GMOs since 1988 (e.g., corn, soybeans and cotton, and a variety of horticultural crops), consumer distrust has increased after infamous food adulteration scandals [Attach [PB 21-02](#), Jan 2021; [PB 21-06](#), Feb 2021, Part I and II]..⁶⁴

62. The first major bio-engineered field crops in the United States are alfalfa, corn (maize), sugar beet, soy bean, golden rice and cotton. GMOs in fruits and vegetables include apples, potatoes, sweet corn, squash, tomatoes, and Hawaiian papaya.

63. Many consumers believe that agri-food multinationals are too powerful and that they influence the opinions of scientists.

64. Between 2003 and 2014, adulteration scandals totaled over 9000. One of the most infamous was the Sanlu melamine milk powder scandal that claimed thousands of victims, including 54,000 babies requiring hospitalization.

Increasingly powerful bio-engineering is here to stay: Despite controversy, bioengineering technology has continued to make huge advances, for example CRISPR-Cas9, a precise gene editing tool with multiple applications, enables scientists to rewrite the genetic code of almost any organism.⁶⁵ If Africa wants to harness the power of this technology to transform its agriculture, Masahela *et al.*, (2023) argue that it should consider “a coordinated policy and regulatory guidelines across the fields of biotechnology”. This is particularly important as Africa has recently embarked on its regional market integration process through the AfCFTA, and since Africa wants to continue trading with both the USA and the EU,⁶⁶ which have very different approaches to GMOs. As of 2023, Africa is a patchwork of different frameworks. South Africa,⁶⁷ Kenya, Nigeria, Eswatini, Ethiopia, Ghana, Malawi, Mozambique and Sudan have all commercialized Bt cotton.⁶⁸ Based on worldwide experience of the importance of gaining consumer trust in GMOs if producers want to increase their use, the AU should give the utmost attention to disseminating scientific, evidence-based information on GMOs targeted at consumers when formulating an Africa-wide regulatory framework for the use of biotechnologies.

Policies that increase or undermine resilience to shocks that impact food security

Roots of resilience? Poverty and food security in Brazil under dual shocks: Brazil’s experience of the double shock to the economy highlight the critical importance of preparedness –fiscal and institutional–for strengthening the resilience and food security of the poor and vulnerable. The year 2020, when it was struck by both COVID-19 and an oil price collapse, was disastrous for Brazil. When these two shocks hit, Brazil’s economy had already been weakened by several years of recession since 2015. This period was preceded, fortunately, by a substantial reduction in poverty, during the “golden decade” of 2003-13. However, poverty was still widespread, although very

65. CRISPR stands for Clustered Regularly Interspaced Short Palindromic Repeats. Dr. Jennifer Doudna (UC Berkeley) and Dr. Emmanelle Charpentier (Max Planck Unit for Science and Pathogens, Berlin) won the 2020 Nobel Prize for chemistry. The first clinical trials began in 2019.

66. The EU seems to be considering loosening its rules regarding new genetic technologies (NGT) in plant breeding, as indicated by the decision at the meeting of the European Parliament’s environment committee on January 24, 2024 (Foote, Jan 2024).

67. In Africa, South Africa has the largest acreages in maize, soybean and cotton.

68. Bt stands for *Bacillus Thuringiensis*, a soil-swelling bacterium. The insertion of Bt into plants causes them to produce insecticidal proteins which are effective at killing some of the most injurious caterpillar pests of cotton.

unequally distributed by regions and race.⁶⁹ Moreover, Brazil's economy has exhibited low total factor productivity (TFP) growth for decades,⁷⁰ despite the fact that its dualistic agriculture has been an economic powerhouse.⁷¹ In addition, Brazilians have paid an enormous price for President Bolsonaro's (January 2019–December 2022) skepticism of the seriousness of the COVID-19 threat: a heavy toll of more than 600,000 deaths, including thousands that could have been avoided (Canineu *et al.*, October 2021). Despite all these negative circumstances, the resilience of the poor and the vulnerable was substantially strengthened, partly by the progress made during the "golden decade", partly by the social insurance and protection programs that connected them to fiscal assistance. The "golden decade" was powered by the commodity supercycle, as Brazil is a major exporter of crude oil, iron ore, soybeans, raw sugar, poultry and bovine meat. During this period, Brazil expanded formal employment and eliminated poverty for nearly 25 million people as formal employment remained the main path out of poverty. Income inequality was also reduced. The commodity boom enabled the government to increase its fiscal space and expand its spending on education, health and pensions. Brazil already has two famous conditional cash transfer (CCT) programs to assist the poor by investing in their education and health: the *Bolsa Escola Program* (BEP), which had been in place since 1995, and the *Bolsa Familia Program* (BFP). President Lula de Silva (2003–10) expanded and consolidated several CCTs and BEPs under BFPs (federal since 2003). Access to health services was also expanded under the *Sistema Único de Saude* (SUS) and other social and rural pensions. The bottom 40% benefited from the economic boom and the social programs. In addition, unemployment insurance protects the formally employed in all quintiles and includes the *Auxilio Emergencial* (AE) to assist the informally employed. In contrast to what happened elsewhere in Latin America, poverty decreased in 2020 thanks to AE and other social programs (WBG, 2022). Brazil's experience clearly shows that preparedness by the state is critical for building resilience—preparedness in terms of fiscal resources and the institutional structures needed to reach the poor and vulnerable. The power of these fiscal transfers can be seen in the rise of poverty and food insecurity as soon as the government

69. Thus, moderate poverty was 14% and 17.8% in the north and northeast regions respectively while it was 3.4% and 4.1% in the south and southeast regions respectively. In rural areas, moderate poverty was 20.3% (2014); whereas it was 5.1% in urban areas. However, Brazil's urban population makes up some 85% of the total population (2015) and 60% of the poor live in urban areas. The majority of the poor are Afro-Brazilians. The indigenous peoples have the highest rates of extreme poverty. (World Bank Group, May 2017).

70. The only exception is the high TFP growth since the 1970s, in only the largest (1000ha +) and smallest (0–5 ha) farms but not in the majority of farms, which are mid-sized (20–200 ha) (See PB 07–21, March 2021 for a more complete discussion).

71. Brazil's agriculture is an economic powerhouse: it has become the world's largest producer of sugar cane, coffee, tropical fruits and orange juice. It is a major producer of cotton, cocoa and tobacco, and home to the world's largest commercial cattle. Brazil is the largest exporter of soybeans (next to the United States) and the world's second largest producer of GMOs—soybeans, maize, and cotton. And yet, primary agriculture is only around 4.5% of GDP, but with agro-industry, the combined sector contributes to around 25% of GDP.

curtailed these transfers in 2021 (WBG, 2022) [[Attach PB-07/21, March 2021](#)].

Brazilian resilience viewed within the Social Capability Approach to explaining resilience to economic shrinking: The Social Capability Approach (Lund University, Resilience to Economic Shrinking) posits that five interrelated social capabilities are crucial for building resilience to shocks resulting in economic downturns. These are:

- i. Inclusiveness or broad-based economic growth;
- ii. Engagement in more complex and transformative economic activities;
- iii. Generation of social arrangements to resolve conflicts;
- iv. The state's autonomy against vested interests;
- v. The state's accountability in delivering public goods (Andersson, 2018).

These social capabilities are not viewed as prerequisites to resilience; rather they can and should be enhanced in the development process, in addition to the focus on growth. When viewed within this framework, Brazil's short-term resilience was strengthened during the "golden decade" when economic growth was inclusive, as well as equity- and poverty-reducing. Also, the state strengthened institutional mechanisms to deliver public goods and services to the poor and vulnerable. Longer-term resilience in Brazil will require much more: namely sustained productivity growth, which has faltered.⁷² Canuto *et al.* (March 2024) argue that if Brazil wants to break out of the middle-income trap it is in, it needs to raise its productivity growth by embracing structural reforms to make it a more open and competitive economy, capable of diversifying into more complex products. According to them, Brazil needs to fight "productivity anemia [... and] public sector bloat." It is interesting to note that many of the reforms called for, such as breaking up monopolies and leveling the playing field, reducing corruption⁷³ and barriers to entry, and building human capital and capacity to benefit all segments of society, including women, would also increase its resilience against shocks and shrinking, according to the Social Capacity Approach. After Lula won his second presidency in 2023, the world is watching to see whether Brazil has the leadership and commitment to undertake the deep reforms necessary to forge a path of sustained

72. In the 1990s and 2010s, the contribution to productivity growth that would come from structural transformation was negative. Labor did leave agriculture, but it went to services that had in some areas even lower productivity than in agriculture. Over 1990-2023, the average TFP growth for Brazil was negative: -0.9 %. (Canuto *et al.*: 26, 40)

73. It is alleged that the Brazilian Supreme Court's investigative order of Transparency International (TI) is a retaliation against TI for its CPI 2023 for Brazil: Rank 104/180; Score: 36/100. (Transparency International, February 6, 2024). For comparison, the least corrupt country is Denmark, with R: 1; and S: 90; most corrupt is Somalia: R: 180; S: 11 (2023) (Corruptions Perception Index, 2023).

productivity and inclusion.⁷⁴

War and high food inflation—the Russia-Ukraine War highlights the strengths and weaknesses of Morocco’s approach to food security:

Food self-sufficiency has been the hallmark of Morocco’s approach to achieving food security since independence (1956). Successive governments have invested heavily in building dams and irrigation infrastructure, and protecting “strategic” commodities.⁷⁵ And yet, when the Russia-Ukraine war broke out in Feb 2022, Morocco was not food self-sufficient.⁷⁶ Instead, it was vulnerable to the high food inflation triggered by the war because it imported nearly half of its cereal imports from Russia (17%) and Ukraine (32%). It was far from self-sufficient in one of its most important “strategic” commodities: soft wheat flour.⁷⁷ The combination of successive droughts (2019-20, 2021-22), the pandemic (2020) and the war-triggered food inflation (2022) highlighted a key problem with the FSS approach in a water-scarce, “small”⁷⁸ country—it is very costly in financial and economic terms. In any case, a country can achieve any level of FSS if costs were not a concern, but costs are a concern. Fortunately, Morocco had the funds and the institutional mechanisms to deliver its subsidies on soft wheat flour, sugar and cooking gas⁷⁹ and maintained macro stability in a region in turmoil. The Total Compensation Fund spent was estimated at 2.6% of GDP (2022).⁸⁰ Guaranteeing stability is a strength of Morocco’s FSS but it is not food security. Although extreme poverty has been virtually eliminated in Morocco, the “subjective” poor were estimated at 45% (about 17 million) of the population (2007-14) (WBG, Jan 2019).⁸¹ With such limited achievements from its costly FSS, its government budget under strain and a high public debt, and given that water scarcity is an increasing threat under climate change, this latest crisis is an opportune time to fundamentally reconsider its food security approach. In the Morocco of the future under climate change, the nexus of food-water-energy security will have to be achieved simultaneously—a major challenge. Indeed, the New Development Model

74. Such a path is discussed in *The Brazil of the Future: Towards Productivity, Inclusion and Sustainability* (World Bank, 2023).

75. Morocco’s dualistic agriculture has also benefitted from decades-long tax exoneration. The large farmers are the main beneficiaries.

76. Since the structural adjustment programs of the 1980s, Morocco has replaced the goal of FSS with Food Sovereignty. However, the policies regarding “strategic” commodities are similar.

77. The other “strategic” food commodities are sugar, vegetable oils, meat and milk.

78. “Small” in the trade sense: Morocco is a price taker on world food markets, not a price maker. A “large” country is a price maker for internationally traded commodities.

79. Cooking gas is also considered a basic necessity for poor households.

80. To address other pressing demands, the total cost is estimated at 3.7% of GDP (2022).

81. The “subjective” poor are those who consider themselves poor, such as unemployed youth, informal wage workers, and women (primarily urban). Rural “subjective” poverty was estimated at 47%-54% of the population, and urban at 39%-40% (2007-14). Some 44 % of the middle class consider themselves poor (WBG, Jan 2019).

(NDM, 2021) of his Majesty King Mohamed VI is calling for such a review, as family farming (smallholders) is to be integrated with an “efficient, food logistics platform [...] and downstream agro-industrial value chains.” Given the new focus, the NDM is calling for a reassessment of the priority at any cost placed on “strategic” food commodities [Attach [PB 34-22, April 2022](#)].

So, what does it take to achieve food security in our turbulent world? – Consensus and controversy

Conclusion

The “escape from hunger and premature death” for millions in the minority of high-income industrialized economies is one of humanity’s greatest achievements. The scourge of hunger and premature death for millions in low- and middle-income countries is one of humanity’s greatest tragedies, all the more so since it is largely avoidable.

How the escape can be achieved: The majority view is that this scourge can be defeated by breaking the stranglehold of poor nutrition and hunger that is widespread in countries with low agricultural productivity and stagnant agricultures by using more productive technologies in agriculture. The policy question is how to break the vicious circle between poor nutrition and low agricultural productivity and low production. The main messages are that governments must invest in making more productive and climate resilient technologies accessible to and profitable for smallholders, who represent the majority of farmers. To do so requires not only providing financial resources but also creating and maintaining a conducive environment, both economic and institutional, over a period of decades, to help farmers adopt these technologies. More broadly, governments must balance the urgent demands of the short term for crisis management, stability and social protection, with the demands for long-term, inclusive and resilient growth that will break the stranglehold of widespread hunger (Timmer, 2015). The challenging task of achieving food security for all, called the

“mandate of heaven”⁸² in East Asia, cannot be left to “free” markets. It is a public good, the very foundation of a thriving society.

Major controversy surrounds the question of how best to implement these measures in specific contexts: There is considerable controversy on how best to implement policies in specific geographical, geo-political and institutional settings. This controversy shows that the struggle for food security is tantamount to choosing sound, long-term development strategies. Recurrent controversy centers around:

1. **Finance for investing in agriculture:** How much is enough, how should funds needed be raised and how should they be spent in effective ways? This is a fundamental issue since the investment must be sustained for decades at least. A continuing issue in Africa is the inability of most governments to allocate 10% of their annual budgets to developing agriculture, even though this is the amount agreed upon repeatedly by all African governments. More generally speaking, it is a demanding balancing act deciding how much to allocate to agricultural transformation in the long term, versus developing social safety nets to strengthen resilience and food security in the shorter term.
2. **Choice of agricultural technologies:** The majority view advocates sustainable intensification, adapted to climate change. However, is agriculture that uses insecticides, pesticides and other inorganic inputs (e.g., industrial agriculture as in the United States) destroying our health and environment? (Food Print, 2024) A vocal movement claims this to be the case and argues that organic, farming without the use of GMOs, is the way to safeguard human health and environmental sustainability. At a time when agricultural technologies and farming worldwide must adapt to climate change, including contributing to decreasing GHG emissions, many view the debate surrounding agricultural technologies as a matter of survival for the planet. Whether reliance on organic farming alone is sufficient to provide plentiful food for all is still to be proven. After all, with “industrial” agricultural techniques, long-term grain prices (wheat, maize, corn, rice) fell between the 1950s and the 2000s (Timmer, 2015), but there is no such evidence for organic foods.
3. **Input subsidies, especially for fertilizer:** Fertilizer subsidies are favored by politicians. However, they are often criticized for not contributing to long-term soil fertility or increased agricultural productivity in policy environments that are missing other complementary factors to make them productive and profitable. The opportunity cost is high, especially as subsidies often end up mainly benefitting

82. The “Mandate of Heaven” is 天命 (tian ming), literally, order from heaven in Chinese. Emperors in China had to keep this mandate to stay in power. They can be overthrown if they failed to do so. This concept and its responsibilities on rulers are rooted in Confucian philosophy.

well-off farmers and not poor smallholders. The debate over fertilizer subsidies is an integral component of a larger debate on how best to spend scarce funding for agriculture.

4. **Access to and enforceable—property and usufruct—rights to land:** For farmers, land is a key production asset in terms of access and tenure security, including security of usufruct rights. However, millions of smallholders still labor under tenuous access and tenure security conditions. These conditions work against their ability or the incentive to invest long term in the fertility of their soils and the profitability of their farming enterprises. Despite the agreement in principle that these unfavorable conditions should be eliminated, how best to end them for smallholders continues to be an explosive socio-political issue, especially in many formerly colonized countries, where land continues to be inequitably distributed, communal tenure is common and land administration is weak.
5. **Farmers' access to and efficiency of water use:** With climate change and increasing non-agricultural uses of water due, for example, to urbanization, industrialization and population growth, the defining issue is becoming that of how best to improve water access and control in primarily rainfed and water-scarce agriculture. This is a complicated issue, given the financial constraints involved coupled with the need to decarbonize.
6. **The focus on agriculture itself and on the smallholders who make up the majority of its workforce:** Dercon argues that “low productivity agriculture is a dead end [...] We need to get away from that fixation on smallholders and focus on a development model that actually improves livelihood opportunities” (Kusters, 2022). The debate is often about focusing on smallholders instead of larger farmers as the most effective way to reduce poverty and hunger in countries where agriculture is still important (contributes 10% or more to GDP). Notable advocates against the widely held view that transforming smallholder agriculture is essential for reducing poverty and hunger and transforming the entire economy include Paul Collier, Stefan Dercon, Douglas Gollin and Adrian Wood (Lele *et al.*, 2021).

The “escape from hunger and premature death” for millions is the challenge of our times. The continued comfort of the minority may well depend on meeting this challenge. Our world is in turmoil, with global growth prospects lower again and many governments in developing countries either highly indebted, fiscally constrained, or under pressure to deal primarily with immediate issues of instability. With so much “noise” from ongoing crises, the need to invest long term in a slow growing sector may sound like an impossible challenge for individual governments to conquer. Many governments that have successfully set their agricultures on a high productivity and

inclusive path have addressed such challenges by strengthening their social contract with people and responding to their short-term food security concerns. The measures implemented include the development of a social safety net and the stabilization of staple food prices.

Yet can developing countries with widespread hunger continue to neglect agriculture? Growing urban areas with their high percentage of slums do not offer any safety valve. The only way forward is to remember that crises have also been opportunities for forging new approaches and partnerships that have enabled us to progress. One of the important partnerships proposed is a pan-African one, consistent with efforts of market integration under the AfCFTA (Ghanem, November, 2022). This pan-African approach, which would complement the efforts of individual countries, would focus on drawing on the AU and current development institutions to promote the free flow of agriculture and food throughout the continent, build much-needed hardware infrastructure and encourage the dissemination and use of key inputs. These inputs include services such as agricultural research and extension, fertilizers and the building of a continent-wide fund for food imports during crises. Other collaborative possibilities can and should be created.

Experience to date shows that a strategy that promotes agricultural productivity and the incomes of smallholders as the first rung on the long ladder of development, in an inclusive way and over a period of decades, has worked. The key thing is to start and then sustain the process. The decades-long struggles of countries are ample proof that the achievement of food security for all is akin to nation building. There is strong evidence that such an achievement needs visionary leadership, committed to the public good and capable of drawing on strong institutions of learning and research, aided by continual policy monitoring and evaluation, as well as competent and mission-oriented public administration.

Annex 1

Food Security and Agri-Food Policies in the New South:

Key Messages for Policy Makers and Practitioners

Chronic hunger in developing countries traps millions of people in a vicious circle of malnutrition and low productivity, a sobering contrast to the level of food security that has been achieved at the macro level in today's rich, industrialized countries. These rich countries experienced similar problems of widespread hunger and premature death when they were poor, two centuries or so ago.

So how did they achieve food security? The general answer is obvious. They raised productivity, incomes, and purchasing power to benefit all, but how more specifically? How did successful countries in the industrialized and developing world transition out of widespread hunger, malnutrition and food insecurity? Analyses of historical records show that these countries succeeded by breaking the vicious circle of malnutrition and low productivity.

Successful countries worldwide have broken this vicious circle by putting their agriculture firmly on the path of higher productivity growth, which then expanded and transformed the economy. Though country strategies differed, there are robust patterns as to what worked.

They included the following decisions by policy makers:

1. They chose peace and stability over violent conflict to address internal and external geo-political issues;
2. They invested in the sustained productivity of their agriculture, and in public goods and services, which expanded markets and trade (domestic and foreign) for

smallholders, other farmers and agro-processors;

3. They also strengthened the social contract with their people by addressing short-term food security concerns, e.g., a social safety net, stable prices of basic staples;
4. They invested in human capital (e.g. health, education, training, people's resilience) to increase productivity and the ability to build income-earning assets;
5. To raise and mobilize the funds needed, they exploited opportunities to form political and trade alliances (domestic and foreign) and generate economy-wide pro-poor growth.

Policy makers succeeded because they inspired and were aided by competent and committed government administrations for decades. Investment in human capital, and in the data and knowledge base to guide policies and their implementation, is essential for policy makers to anchor their vision and sustain it through institutions inspired by the same mission.

With climate change, high levels of debt and lower global growth prospects, the challenge of achieving sustainable food security for impoverished millions in developing countries may seem impossible. However, the challenge was also daunting for today's food secure countries. Many had just experienced the devastation of war, which had deeply scarred their people and weakened the economy. They chose to invest in the future against large odds. While countries learned from each other, they also had to experiment, for there is no guaranteed pathway to success. The key is to stay the course, including staying flexible in the face of setbacks. Food security is a public good. It requires government, mission-driven and competent public institutions, the private sector and markets to work together.

Annex 2

List of PPs (total # 6) and PBs (total # 20) attached.

- PP 20-18 and 20-33, June and Nov. 2020: **Selective Review of Food Security Policy Worldwide, Part I and II.**
- PB 18-22; PB 18-23; PB 18-29; PB 18-32; and PB 18-33: **The Five Conditions**
- PB 41-22 & PB 43-22: **Nigeria and Mozambique**
- PB 37-21, Oct 2021; PB 10-23, Feb 2023: **Mauritius**
- PP 01/23, Jan 2023; and PP 06/23, May 2023: **Egypt and Morocco**
- PP 19/16 Sept. 2019; and PB 19-35, Oct 2019: **Fertilizer use/policy for smallholders in SSA**
- PP 14-21, Aug, 2021: **Regional market integration—the EU, ASEAN, MERCOSUR**
- PB 38-21; PB 39-21; PB 14-22; PB 16-22; PB 51-22; and PB 64-22: **Cases of South Africa; Mauritius; Argentina; Uruguay; Rwanda; and Madagascar.**
- PB 21-02, Jan 2021; PB 21-06, Feb 2021, Part I and II: **GMOs**
- PB-07/21, March 2021: **Brazil under dual shocks**
- PB 34-22, April 2022: **Impact on Morocco's food security from the Russia-Ukraine War**

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