Summary Edition

AFRICA & INDIA

comparing countries' and states' economic and agrifood system developments and lessons for public policy

Editors
Joachim von Braun | Ashok Gulati

OPEN ACCESS

Introduction

Agriculture plays a pivotal role in driving economic growth, reducing poverty, and addressing food and nutrition insecurity, particularly in rural areas where the majority of the poor reside. Empirical evidence highlights agriculture's superior impact on poverty reduction compared to other sectors, as it creates strong multiplier effects through increased labour demand, higher wages, and expanded rural incomes (Christiaensen et al., 2011; Klasen & Reimers, 2017). These effects enable households to consume more diverse diets, improving nutrition and overall well-being. Furthermore, agricultural growth directly enhances food availability while indirectly fostering economic linkages that benefit rural economies. These linkages have broad effects that call for a food systems approach (Badiane et al. 2023; Gulati et al. 2023).

Despite significant global progress in reducing poverty and hunger, rural areas in regions such as Sub-Saharan Africa and South Asia continue to experience high levels of undernutrition and poverty. For these regions, improving agricultural productivity is not only essential for food security but also represents a cornerstone for broader socio-economic development and poverty alleviation. This underscores the critical need for investments in agricultural research, infrastructure, and extension services to unlock the sector's transformative potential for growth and nutrition.

India and Africa have made significant strides in transforming their agricultural sectors, yet both face persistent challenges leading to high levels of hunger, malnutrition, and poverty (Figure 1). India has evolved from a food-insecure nation to a global agricultural powerhouse through the Green Revolution, achieving an average agricultural growth of 3.3 percent per year from 2000 to 2023, while Africa's sector grew at 4.5 percent annually from 2000 to 2019, supported by initiatives like the Comprehensive Africa Agriculture Development Programme (CAADP).

However, issues such as low productivity, limited access to modern inputs, climate vulnerabilities, and population growth exacerbate undernourishment, with Africa and India accounting for two-thirds of the world's undernourished population in 2022. Fostering access to nutritious food requires multisectoral solutions beyond mere production increases, emphasizing nutrition-sensitive policies, household resilience, and reduced inequalities. This summary of the main book provides brief insights into structural change patterns, agricultural growth drivers, nutrition outcomes, and public spending roles in Africa and India. The book uses a unique matching approach between Indian states and African countries to facilitate South-South learning for enhanced productivity, food security, and malnutrition reduction.

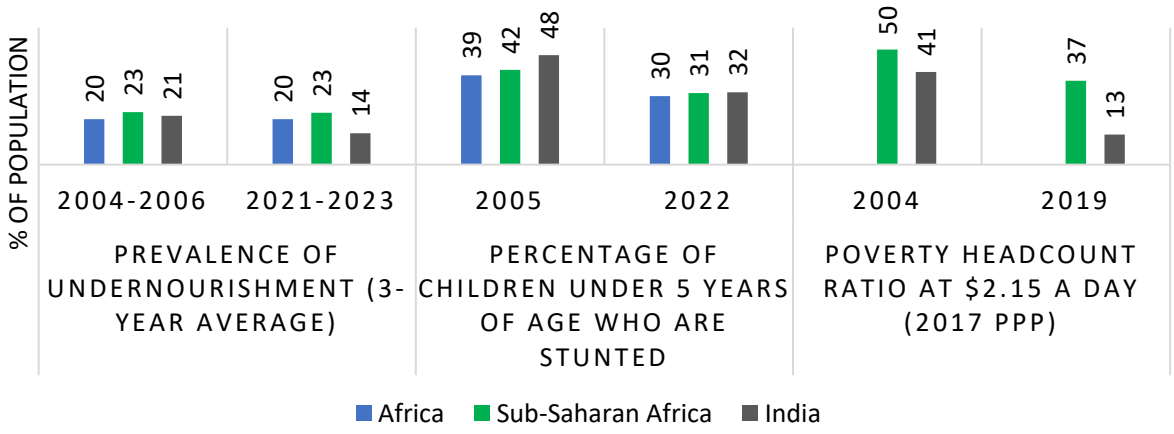

Figure 1: Prevalence of poverty, undernourishment and stunting (%).

Overview of Structural Change and Agricultural Transformation

Using a clustering approach, 20 major Indian states are matched with 24 African countries based on economic, agricultural, and social indicators, forming five distinct clusters for comparative analysis. This method reveals shared patterns in structural transformation, where both regions have seen declining shares of agriculture in GDP and employment since 2000, alongside substantial agricultural growth and doubled productivity in many areas. However, drivers differ: India's growth stems from intensification via inputs like irrigation (averaging 48% coverage), fertilizers (168 kg/ha), and mechanization, while Africa's relies more on land expansion, with lower input use (irrigation at 6%, fertilizers at 17 kg/ha). Clusters (see Figure 2) highlight opportunities for mutual learning. For instance, in high-growth clusters like Gujarat-Morocco, diversification into high-value crops and livestock has boosted incomes and nutrition. Low-growth clusters, such as Punjab-Egypt-Algeria-South Africa, face stagnation due to over-reliance on staples, calling for investments in R&D, extension services, market infrastructure, and digital technologies to enhance sustainability and diversification. Livestock plays a key role across clusters, suggesting integration with cropping systems for resilience and value addition.

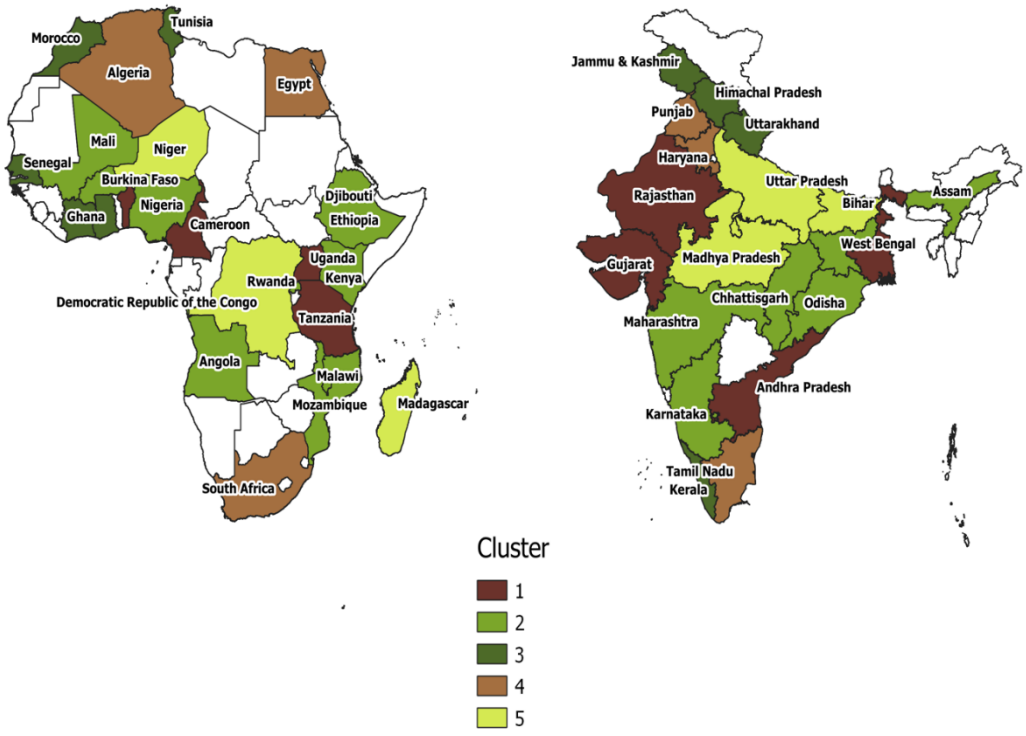

Figure 2: Clusters based on hierarchical clustering, 2016

Drivers of Agricultural Growth

Agricultural growth averaged 3.3% annually in India (2000-2023) and 4.5% in Africa (2000-2019), but productivity gaps persist, with Indian states often outperforming African counterparts in land and labor efficiency (Figure 3). Key drivers include inputs (fertilizers, irrigation, machinery), infrastructure (roads, electricity, ICT), and diversification. Regression analysis shows diversification significantly impacts growth in both regions, while infrastructure like electricity and transport is crucial for Africa.

Recommendations emphasize reforming input subsidies, investing in climate-

resilient technologies like precision irrigation, and strengthening extension services and farmer producer organizations (FPOs). Addressing climate variability through water management and land tenure reforms can enhance resilience, particularly in water-scarce areas. Private-public partnerships are vital for linking smallholders to markets and reducing post-harvest losses.

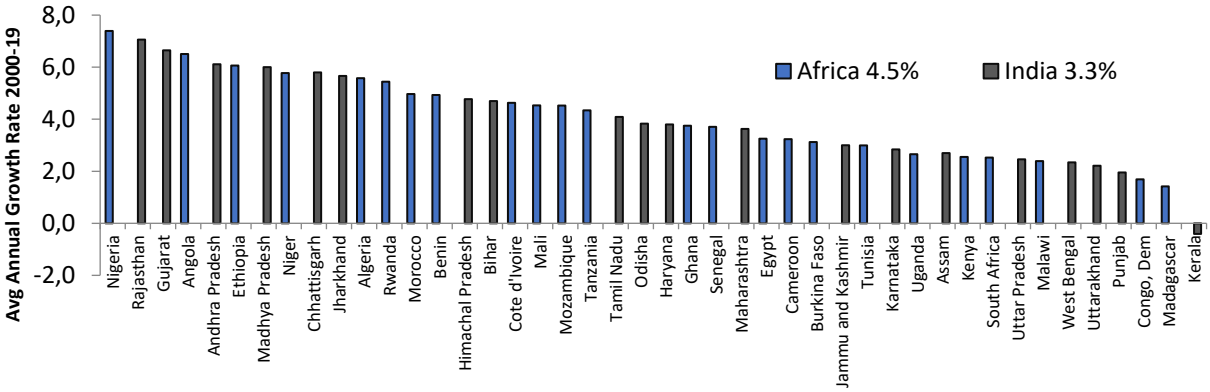

Figure 3: Average annual growth rate of Agricultural GDP (%) (2000 to 2019)

Impact of Structural Transformation on Nutrition Outcomes

Structural transformation has mixed nutrition impacts. Higher agricultural income per capita and diversification reduce undernutrition, but declining agricultural employment shares correlate with better outcomes only when productivity rises (Figure 4). In both regions, shifts toward fruits, vegetables, and livestock improve diets, yet staple dominance exacerbates micronutrient deficiencies. Biofortification (e.g., orange-fleshed sweet potatoes in Mozambique) offers a proven intervention to enhance child nutrition. Female education and declining rural populations positively influence outcomes, with Africa's rural share at 65% hindering progress. Policies must integrate agriculture with health, education, and sanitation to amplify benefits, prioritizing infrastructure to support nutritious food systems.

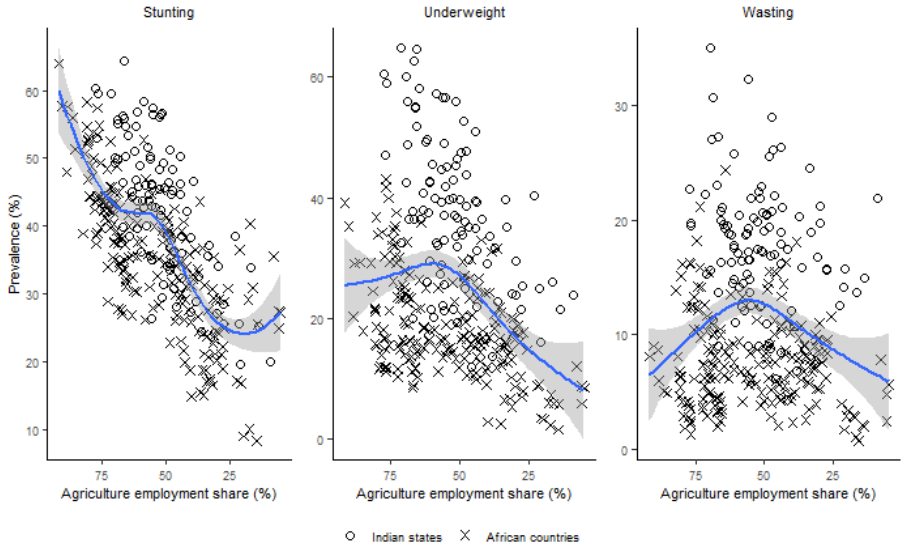

Figure 4: Undernutrition as a function of agricultural employment share

Role of Public Spending

Public spending on agriculture averages 3-4% of total budgets in both regions, below targets like CAADP's 10% (Figure 5). High performing countries allocate more to infrastructure and producer support, yielding 2-3 times higher growth and reduced child malnutrition (stunting down 10-15% in top spenders). R&D and extension are underfunded (0.5-1% of ag GDP), while subsidies dominate, leading to inefficiencies. Reallocating from subsidies to public goods like R&D, infrastructure, and extension can boost productivity. As such, fiscal balance is key to protecting agricultural investments during constraints to sustain growth, poverty reduction, and nutrition gains.

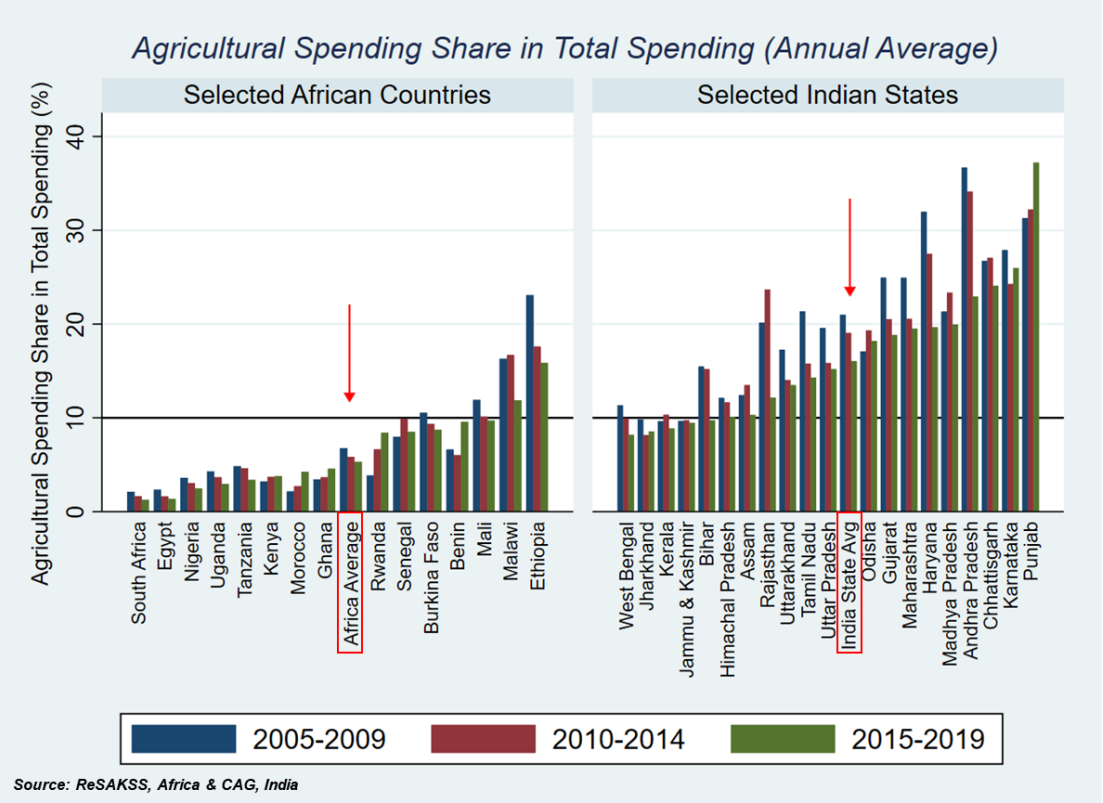

Figure 5: Share of agricultural spending in total spending among African countries and Indian states

Conclusions and Recommendations

Agriculture remains central to growth and nutrition in India and Africa. Cluster analysis identifies South-South learning opportunities for resilient and sustainable sectors. Key recommendations include: investing in innovations (irrigation, digitalization, climate-smart practices); diversifying into livestock and high-value crops via infrastructure and PPPs; increasing agricultural spending on R&D and extension; reforming subsidies for public goods; integrating nutrition-sensitive policies with social sectors; balancing fiscal priorities; and tailoring development aid to local contexts. For detailed analysis and empirical evidence refer to von Braun & Gulati (2025).

Selected References

Christiaensen, L., Demery, L., & Kuhl, J. (2011). The (evolving) role of agriculture in poverty reduction—An empirical perspective. *Journal of Development Economics*, *96*(2), 239–254. https://doi.org/10.1016/j.jdeveco.2010.10.006

Klasen, S., & Reimers, M. (2017). Looking at Pro-Poor Growth from an Agricultural Perspective. *World Development*, *90*, 147–168. https://doi.org/10.1016/j.worlddev.2016.09.003

von Braun, J., & Gulati, A. (2025). *Africa and India comparing countries' and states' economic and agrifood system developments and lessons for public policy*. AF Press New Delhi, India. Open Access Download Book PDF

Ousmane Badiane, Sheryl L. Hendriks, Katrin Glatzel, Fadi Abdelradi, Assefa Admassie, John Asafu Adjaye et al. **Policy Options for Food System Transformation in Africa and the Role of Science, Technology and Innovation** Pages 713-735 Open Access In: Joachim von Braun, Kaosar Afsana, Louise O. Fresco, Mohamed Hag Ali Hassan (ed.) 2023. Science and Innovations for Food Systems Transformation. Springer. Open access. https://link.springer.com/book/10.1007/978-3-031-15703-5

Ashok Gulati, Raj Paroda, Sanjiv Puri, D. Narain, Anil Ghanwat **Food System in India. Challenges, Performance and Promise** Pages 813-828 Open Access In: Joachim von Braun, Kaosar Afsana, Louise O. Fresco, Mohamed Hag Ali Hassan (ed.) 2023. Science and Innovations for Food Systems Transformation. Springer. Open access. https://link.springer.com/book/10.1007/978-3-031-15703-5