

THE HIDDEN MIDDLE OF AGRIFOOD SYSTEMS: A SYSTEMATIC REVIEW OF LEADING AUTHORS AND POLICY RECOMMENDATIONS

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ABSTRACT

This report synthesizes the literature on the Hidden Middle of agrifood systems—the midstream segment that connects producers to markets through processing, logistics, and intermediation. Based on the work of seventeen leading authors and the analysis of 3,500 policy recommendations from 568 publications, it identifies common priorities and canonical policy orientations. The evidence reveals a strong convergence around bundled interventions that combine finance and risk mechanisms, logistics and processing infrastructure, food-safety and quality systems, and information and coordination platforms. These policy bundles form a coherent theory of change: competitiveness and inclusion depend on reducing the costs of investing, complying, and coordinating within food value chains. The study concludes that the Hidden Middle should be understood as a strategic lever of transformation, where integrated investments and institutional coherence can drive both efficiency and equity in agrifood systems.

RESUMEN EJECUTIVO

Este informe sintetiza la literatura sobre el eslabón oculto de los sistemas agroalimentarios, es decir, el segmento intermedio que conecta a los productores con los mercados mediante el procesamiento, la logística y la intermediación. A partir del trabajo de diecisiete autores principales y del análisis de 3.500 recomendaciones de política provenientes de 568 publicaciones, identifica prioridades comunes y orientaciones de política canónicas. La evidencia revela una fuerte convergencia en torno a paquetes de intervención que combinan mecanismos de financiamiento y gestión de riesgos, infraestructura logística y de procesamiento, sistemas de inocuidad y calidad de los alimentos, y plataformas de información y coordinación. Estos paquetes de políticas configuran una teoría del cambio coherente: la competitividad y la inclusión dependen de reducir los costos de invertir, cumplir regulaciones y coordinarse dentro de las cadenas de valor alimentarias. El estudio concluye que el eslabón oculto debe entenderse como una palanca estratégica de transformación, donde las inversiones integradas y la coherencia institucional pueden impulsar tanto la eficiencia como la equidad en los sistemas agroalimentarios.

1. INTRODUCTION

Over the past decade, the Hidden Middle of agrifood systems—the constellation of actors operating between production and final consumption—has attracted growing attention within the international research and policy community. This segment, encompassing traders, processors, logistics providers, and wholesale intermediaries, performs the critical functions that connect farms to markets, yet it has long remained analytically invisible. While the upstream and downstream ends of the value chain have been extensively studied, the midstream has often been viewed merely as a transmission channel rather than as a transformative arena in its own right.

Recognizing this gap, a distinctive body of literature has emerged since Reardon’s seminal 2015 publication, which formally introduced the concept of the Hidden Middle. Since then, the notion has evolved into a robust analytical and policy framework linking midstream upgrading to food system efficiency, inclusion, and resilience. This report contributes to that evolving field by systematically reviewing and synthesizing the work of the leading authors who have shaped its development.

The central purpose of the study is to identify the principal contributors to the Hidden Middle literature and to systematize the policy recommendations they advance for strengthening midstream functions in agrifood systems. The analysis focuses on how these scholars conceptualize the role of midstream small and medium enterprises (MSMEs) and what kinds of policies they view as most effective to enhance competitiveness, lower transaction and coordination costs, improve logistics and infrastructure, facilitate formalization, and expand the social and economic reach of midstream actors.

To achieve this, the report combines large-scale text and bibliometric analysis with qualitative interpretation. It draws on a curated corpus of publications authored by seventeen leading researchers—whose combined output defines much of the contemporary agenda on food system transformation—and a database of more than three thousand extracted policy recommendations. These sources are processed, classified, and analyzed to derive a typology of canonical policies that capture the dominant policy orientations within the field.¹

The document is organized into five sections. Following this introduction, Section 2 presents the methodological framework used to identify authors, select publications, extract and classify recommendations, and generate the canonical typology. Section 3 introduces the

¹ In this study, canonical policies refer to representative or recurrent formulations of policy recommendations that encapsulate the central intent of multiple similar proposals identified across the literature. Each canonical policy synthesizes thematically equivalent recommendations under a unified expression, allowing for systematic comparison, quantification, and clustering across authors and topics.

selected authors, mapping their institutional affiliations, co-authorship networks, and thematic emphases. Section 4 synthesizes the canonical policy recommendations emerging from the corpus, highlighting the most recurrent themes and their internal logic. Section 5 contrasts these academic perspectives with the strategies and operational portfolios of major development institutions, identifying points of convergence and divergence.

Beyond the descriptive synthesis, the report offers an analytical contribution to the growing debate on how to operationalize midstream transformation. By consolidating the dispersed insights of a highly interconnected community of researchers, it provides a structured understanding of where consensus lies, where conceptual gaps persist, and how policy thinking on the Hidden Middle has evolved since its inception. The resulting knowledge base serves as a reference for future research, dialogue, and investment strategies aimed at building stronger, more equitable, and more efficient midstream systems within global agrifood chains.

2. METHODOLOGY

The methodological approach combined computational text analysis with systematic qualitative validation, following a structured seven-step process (see Annex 1). Automated tools were used to manage and process a large volume of bibliographic and textual information, including Python-based scripts, GROBID for structured PDF parsing, and other custom-built routines for keyword filtering, clustering, and semantic normalization. These automated procedures were complemented by manual supervision and expert review at each stage to ensure contextual accuracy, thematic relevance, and interpretive consistency.

The overall process sought to identify, extract, and classify policy-oriented insights from a vast corpus of publications authored by leading Hidden Middle scholars, balancing algorithmic efficiency with substantive judgment and conceptual rigor.

2.1. Methodological Sequence

2.1.1. Selection of authors and initial corpus

The identification of authors began with a review of the scholars most frequently cited in the Hidden Middle section of the background paper by Berdegué, Trivelli and Corvalán (2023)². This provided an initial set of leading researchers whose work has been central to the analysis of midstream segments in agrifood systems—among them Reardon, Barrett,

² Berdegué, J. A., Trivelli, C., & Corvalán, C. (2023). Creating more and better employment in agrifood systems. CGIAR.

Minten, Liverpool-Tasie, Jayne, Christiaensen, Swinnen, Berdegú, Vos, Davis, Dolislager, Maertens, Tschirley, and Thurlow.

To broaden the scope and incorporate complementary analytical perspectives, three additional authors—Diao, Pauw, and Tamru—were identified through targeted searches based on thematic relevance and citation proximity. This process yielded a final set of 17 authors, selected according to two main criteria:

- **Thematic relevance:** a demonstrated focus on value chains, agrifood transformation, SMEs, logistics, standards, or market coordination; and
- **Academic or programmatic influence:** high citation frequency or active participation in development programs and international research collaborations.

The resulting network of authors shows a high degree of interconnection, with frequent co-authorship across multiple publications. This pattern underscores the existence of a cohesive epistemic community around Hidden Middle research, characterized by shared conceptual frameworks and overlapping empirical agendas.

2.1.2. Compilation and organization of publications

For each selected author, a comprehensive search was conducted to identify academic and policy-oriented publications (journal articles, book chapters, working papers, and institutional reports).

Metadata and abstracts were collected and standardized into a unified bibliographic database, consolidating 1,593 publications. Each record was tagged with author(s), year, title, publication type, and co-authorship links, allowing subsequent tracing of overlapping networks and thematic clusters across the corpus.

2.1.3. Filtering publications relevant to the Hidden Middle

Not all publications dealt explicitly with Hidden Middle topics. Therefore, a relevance filtering process was implemented to isolate those that directly addressed midstream dynamics within agrifood systems.

This involved both automated keyword-based screening (using a curated dictionary of terms such as aggregation, processing, logistics, value chain upgrading, SME competitiveness, standards, storage, wholesale markets, etc.) and manual review of abstracts to validate contextual relevance.

After iterative filtering and verification, the corpus was reduced to 568 publications directly or indirectly related to the Hidden Middle (see attached file `master_publications_1.xlsx`).

2.1.4. Extraction of relevant text fragments (“snippets”)

Because abstracts were insufficient for policy content analysis, full-text versions of the 568 relevant publications were downloaded and processed. Using a combination of automated scripts and manual curation, text snippets—short, self-contained fragments—were extracted from sections most likely to contain policy insights (typically introductions, conclusions, and policy recommendations).

Each snippet was stored as a discrete textual unit associated with its bibliographic metadata. The resulting dataset comprised roughly 6,800 snippets, which formed the empirical foundation for subsequent semantic analysis.

2.1.5. Identification of policy recommendations

From this snippet corpus, all policy recommendations were extracted—defined as prescriptive statements that propose specific actions, instruments, or strategies related to the Hidden Middle.

Through a two-step cleaning process (deduplication and relevance validation), approximately 4,500 unique policy recommendations were identified.

A final thematic screening retained only those explicitly or implicitly referring to midstream issues—such as logistics, cold chains, aggregation, processing, market access, and SME upgrading—resulting in a refined dataset of about 3,552 valid recommendations (see attached file `master_recommendations_1.xlsx`).

2.1.6. Development of a policy typology

An analytical typology was developed inductively from the content of these 3,500 recommendations. This typology classifies recommendations according to their type of intervention and policy objective, capturing both functional and strategic dimensions of midstream strengthening.

The classification process combined semantic keyword matching with interpretive coding. The resulting typology includes main categories and more granular subcategories derived from co-occurring themes, as shown in Table 1.

Table 1. Typology of Policy Recommendations, by Theme

Category	Subcategory	Definition
Infrastructure & Equipment (Midstream)	Wholesale & Retail Markets (upgrading/formalization)	Modernization and formal management of wholesale/retail food markets as intermediary nodes for aggregation and exchange.
	Storage, Silos & Collection Centers	Construction and upgrading of storage facilities and collection/aggregation centers to reduce losses and stabilize flows.
	Cold Chain & Refrigerated Logistics	Cold rooms, chilled/freezer storage, and refrigerated transport to preserve perishable products along the midstream.
	Logistics Hubs, Corridors & Distribution	Intermediary logistics platforms and corridors linking aggregation, processing and wholesale nodes.
	Road Connectivity for Midstream Corridors	Road and transport connectivity explicitly serving midstream functions (aggregation, processing, distribution, wholesale).
Processing & Value Addition	Plant & Equipment Upgrading	Capital deepening for processing capacity and technology to increase value addition and product quality.
	Hygiene, GMP & Plant Conditions	Compliance with hygiene, sanitation and good manufacturing practices within processing facilities.
	Packaging, Labelling & Presentation	Standardization and improvement of packaging, labelling and presentation to meet market and regulatory requirements.
Standards, Quality & Food Safety (SPS/TBT)	Standards & Technical Regulations (harmonization)	Development, alignment and adoption of national/international standards and technical regulations for food quality and safety.
	Inspection, Laboratories & Metrology	Institutional capacity for inspection, testing, accreditation and traceability along the midstream.
Aggregation & Vertical Coordination	Aggregation & Collection Services	Physical and organizational mechanisms that consolidate product flows from multiple suppliers before processing or wholesale.
	Contracts & Buyer–Supplier Governance	Formal arrangements that structure transactions between farmers, traders and processors to reduce risks and align incentives.
	Warehouse Receipt Systems (WRS)	Collateralization of stored commodities to unlock finance and enable orderly marketing over time.
Finance & Risk for the Midstream	Credit, Guarantees & Blended Finance	Financial instruments tailored to midstream SMEs to address collateral gaps and investment risks.
	Working Capital, Factoring & Trade Finance	Liquidity and short-term financing for purchasing, inventory and distribution cycles.
	Insurance & Price-Risk Management	Tools to hedge or transfer risks related to price volatility and shocks affecting midstream actors.
Market Regulation & Competition	Licensing & Permitting Simplification	Administrative streamlining for logistics and trading operations to reduce transaction costs and delays.
	Wholesale Price Transparency & Market Information	Systems that provide timely, reliable data on volumes and prices to improve decision-making and discipline market power.
	Competition Policy & Antitrust Enforcement	Rules and enforcement to deter cartels, abuse of dominance and other anti-competitive practices.
Industrial & Territorial	Food/Agro-Industrial Parks & Zones	Spatial concentration of midstream activities to leverage shared services, lower costs and enable spillovers.

Policy (Clusters)	Public-Private Partnerships (PPP) for Midstream Infra	Use of PPP instruments to finance and operate logistics and processing infrastructure.
Digitalization & Data	Digital Traceability, e-Permits & e-Invoicing	End-to-end digital records and paperless regulatory/commercial processes for midstream transactions.
	B2B Platforms & Smart Logistics	Digital marketplaces and fleet/route optimization to match supply, demand and transport capacity efficiently.
Trade Facilitation (Midstream-relevant)	Customs, Border SPS & Clearance Times	Measures at the border to expedite movement of processed goods and perishables while ensuring safety.
	Tariff Structure & Incentives for Processing	Tariff and tax instruments that encourage local processing and competitive input sourcing.
Skills & Institutional Capacity (Midstream)	Technical Training for Plant & Logistics	Training and certification for operators, technicians and managers in quality, maintenance and logistics.
	Strengthening Standards & Food-Safety Agencies	Organizational capacity of NSBs, food-safety and metrology institutes to regulate and support midstream compliance.
Governance & Public-Private Coordination	Multi-Stakeholder Councils & Task Forces	Formal mechanisms for policy coordination and joint action among public entities and private actors.
	Decentralization & Role of Local Governments	Empower sub-national governments to manage markets, logistics platforms and compliance services.
Urban & Territorial Food Systems	City-Region Logistics Planning & Intermediate Nodes	Integrated planning that connects rural belts and secondary cities with metropolitan wholesale and retail networks.
Information, Monitoring & Evaluation	Market Intelligence, MIS & Dashboards	Data systems to monitor prices, flows, compliance and performance of midstream interventions.
Inclusion & Formalization (Midstream)	SMEs, Women & Youth Participation	Policies that expand access and participation of SMEs and under-represented groups in midstream functions.
	Formalization & Regulatory Compliance	Measures that lower entry and compliance costs and increase formal participation in midstream activities.
Environmental Sustainability (Midstream)	Energy/Water Efficiency & Effluents	Resource-efficiency and environmental management systems in processing and logistics operations.
	Loss Reduction & By-product Valorization	Interventions that cut food loss and create value from by-products and residues.
Resilience & Business Continuity	Essential Services & Continuity of Markets/Logistics	Safeguards to keep food logistics and markets operating during crises.
	Disaster-Risk Management for Storage/Processing	Risk assessment and mitigation for warehouses, hubs and plants facing natural or systemic shocks.
Public Demand & Procurement	Institutional Procurement for Midstream	Use of public purchasing to create stable demand and strengthen midstream SMEs and processors.

Each recommendation was assigned to a category and subcategory, creating a structured matrix that supports quantitative and qualitative analyses.

2.1.7. Semantic reduction and canonical policies

To reduce redundancy and improve analytical coherence, a final semantic reduction stage was applied. Recommendations sharing similar meaning, intent, and scope were clustered together using a combination of text similarity algorithms and manual validation, yielding a set of canonical policies for each subcategory.

Each canonical represents the most representative or synthetic formulation of a group of equivalent policy recommendations. The outcome was a consolidated matrix linking every subcategory to its canonical statements and associated frequency counts—forming the basis for the comparative and interpretive analyses presented in subsequent sections.

2.2. Limitations of the methodological approach

Although the methodological sequence ensured systematic coverage, transparency, and semantic consistency, several conceptual and technical limitations must be acknowledged.

- **Epistemic interdependence among authors.** A significant limitation arises from the fact that the selected authors form a highly interconnected research community. Most have co-authored extensively with each other over the past two decades, sharing data, frameworks, and policy interpretations. In such a context, distinguishing what “belongs” to a specific author becomes both methodologically difficult and analytically unproductive. The study, therefore, treats their collective output as a shared corpus of ideas rather than as a set of individually attributable positions.
- **Conceptual ambiguity and fuzzy boundaries of the Hidden Middle.** The notion of the Hidden Middle itself lacks a universally agreed-upon definition. While some themes—such as logistics, aggregation, processing, or wholesale markets—are clearly midstream, others occupy more ambiguous or peripheral positions. Topics such as regulation, trade policy, and labor formalization intersect indirectly with midstream dynamics, although they are not always explicitly framed within it. As a result, the boundaries of inclusion required careful judgment, and in some cases, broad interpretive choices were made to capture adjacent but relevant dimensions.
- **Classification challenges and forced typologies.** Because of the diversity of policy recommendations and the overlapping nature of many interventions, assigning each recommendation to a single category or subcategory sometimes involved forced fits. Some

statements touch on multiple dimensions simultaneously—for instance, linking credit access with infrastructure or standardization with innovation—making discrete categorization inherently imperfect. The typology developed here thus represents a pragmatic analytical framework rather than a definitive taxonomy.

- **Automated extraction and semantic precision.** Computerized tools (Python scripts, GROBID parsers, and keyword filters) are efficient in handling large volumes of text but imperfect in capturing nuance, tone, or context. Complex document structures and implicit policy messages occasionally escaped automated detection. Manual checks corrected most inconsistencies, yet some contextual subtleties may remain underrepresented.
- **Definitional scope and subjectivity.** Given the heterogeneity of the literature—ranging from econometric analyses to conceptual essays—interpretive subjectivity could not be entirely eliminated. The process required human judgment in determining relevance, coding recommendations, and formulating canonical statements. To mitigate this, the team prioritized explicit transparency and replicable coding logic over interpretive depth.
- **Quantitative representation versus analytical significance.** The frequency of recommendations in each category reflects thematic emphasis in the literature, not empirical validation or consensus strength. Quantitative indicators should therefore be interpreted as analytical signals rather than definitive measures of importance.

Despite these limitations, the study sought to maintain maximum transparency, consistency, and replicability. By combining computational tools with systematic expert validation, it provides a structured and verifiable synthesis that minimizes the inherent subjectivity of reviewing 568 academic papers and interpreting thousands of policy statements across diverse contexts.

3. SELECTED AUTHORS AND THEMATIC FOCUS

This section presents the analytical foundation of the study in terms of its author-based corpus construction. The analysis focuses on a selected group of 17 researchers who have made the most significant and sustained contributions to the study of the agrifood Hidden Middle since 2015. Together, these scholars represent the core of an epistemic community that has shaped the conceptual, empirical, and policy understanding of midstream dynamics within food systems. Their work—characterized by frequent co-authorship, shared institutional affiliations, and thematic continuity—defines the contours of what can now be regarded as a consolidated research field.

3.1. Identification of principal authors

The analytical core of this study is based on the systematic review of publications authored by 17 researchers who have played a leading role in shaping the contemporary literature on the agrifood Hidden Middle. The selection combined quantitative and qualitative criteria. Quantitatively, these authors represent the most prolific contributors to the field since 2015, according to bibliometric searches that identified over 550 relevant publications directly addressing midstream dynamics, structural transformation, and market coordination in agrifood systems. Qualitatively, the group reflects the epistemic nucleus of the research community that has developed this concept, with frequent co-authorship among its members and consistent institutional affiliations to key academic and policy-oriented organizations such as Michigan State University, FAO, IFPRI, and the World Bank, among others.

Table 2 presents the list of selected authors, their primary institutional affiliations, and the number of works reviewed in this study. Together, these 17 authors account for the majority of the scholarly output on midstream transformation over the last decade, including both peer-reviewed research and analytical publications produced for development agencies.

Table 2. Selected Authors

Researcher	Main Academic Affiliation	# Publications related to HM*
Bart Minten	International Food Policy Research Institute (IFPRI)	93
James Thurlow	International Food Policy Research Institute (IFPRI)	92
Thomas Reardon	Michigan State University & International Food Policy Research Institute	90
Xinshen Diao	International Food Policy Research Institute (IFPRI)	66
Johan Swinnen	International Food Policy Research Institute (IFPRI)	65
Lenis Saweda O. Liverpool-Tasie	Michigan State University	61
Karl Pauw	International Food Policy Research Institute (IFPRI)	59
Rob Vos	International Food Policy Research Institute (IFPRI)	56
Miet Maertens	KU Leuven	47

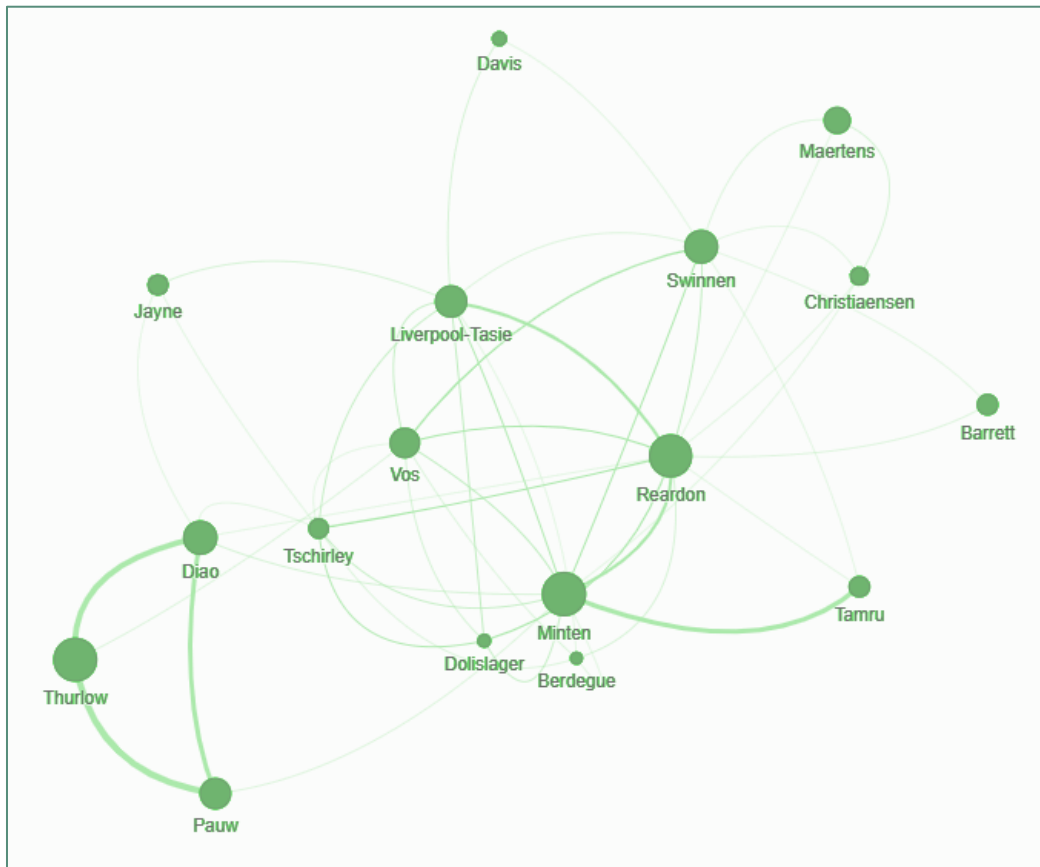
Christopher Barrett	Cornell University	32
Seneshaw Tamru	International Food Policy Research Institute (IFPRI)	32
Thomas S. Jayne	Michigan State University	30
David Tschirley	Michigan State University	29
Luc Christiaensen	The World Bank	24
Benjamin Davis	Food & Agriculture Organization	14
Michael Dolislager	Messiah University	11
Julio A. Berdegúe	Rimisp – Centro Latinoamericano para el Desarrollo Rural	9

* Selected publications for this review. Includes co-authorships.

3.2. Co-authorship network and research community

The pattern of collaboration across this group of authors reveals a highly cohesive and interdependent research network. Figure 1 displays the co-authorship map generated from the 568 reviewed publications. The network is notably dense, with most nodes directly connected through shared works, reflecting long-standing institutional and project-based collaboration. A small number of scholars—most prominently Thomas Reardon, Bart Minten, David Tschirley, and Johan Swinnen—occupy central positions in the network, acting as bridges between subgroups affiliated with organizations such as IFPRI, the World Bank, and Michigan State University.

Figure 1. Co-authorship network among the 17 principal authors, 2015–2024



This structural proximity implies that the *Hidden Middle* literature is not a loose aggregation of isolated contributions but a co-evolving body of work driven by a single, interconnected epistemic community. The strong co-authorship ties have facilitated the development of a common analytical vocabulary—shared constructs around midstream SMEs, coordination, logistics, and standards—and have contributed to the remarkable conceptual coherence observed in the recommendations analyzed in later sections. The limited number of external or “peripheral” contributors reinforces the idea that the field has matured within a relatively compact and collaborative research environment.

3.3. Thematic distribution of authors' work

To understand the relative emphasis that each author places on different dimensions of midstream transformation, the corpus of publications was cross-classified using the typology of policy domains developed for this study. Table 3 presents the resulting matrix, where columns correspond to the fifteen thematic categories and rows to the 17 authors. Each cell expresses the percentage of the author's publications that primarily address the corresponding policy domain.

Table 3. Distribution of authors' publications by thematic category, percentage of total works per author

Author	Aggregation & Vertical Coordination	Digitalization & Data	Environmental Sustainability	Finance & Risk for the Midstream	Inclusion & Formalization	Industrial & Territorial Policy	Infrastructure & Equipment	Market Regulation & Competition	Processing & Value Addition	Public Demand & Procurement	Resilience & Business Continuity	Skills & Institutional Capacity	Standards, Quality & Food Safety	Trade Facilitation	Urban & Territorial Food Systems
Barrett	2%	5%	7%	10%	5%	1%	43%	6%	1%	1%	1%	2%	15%	2%	0%
Berdegue	11%	5%	1%	7%	10%	6%	26%	4%	1%	0%	0%	1%	27%	2%	0%
Christiaensen	6%	8%	2%	10%	8%	3%	40%	2%	7%	0%	0%	3%	8%	2%	1%
Davis	5%	5%	3%	13%	12%	2%	24%	3%	1%	0%	0%	13%	12%	7%	0%
Diao	3%	4%	1%	9%	11%	6%	32%	2%	9%	0%	2%	4%	9%	7%	0%
Dolislager	5%	4%	0%	1%	17%	3%	47%	1%	7%	0%	0%	5%	4%	4%	1%
Jayne	9%	1%	1%	15%	6%	2%	31%	19%	4%	0%	0%	2%	4%	6%	0%
Liverpool-tasie	7%	3%	3%	7%	7%	3%	46%	3%	4%	0%	0%	5%	12%	1%	0%
Maertens	8%	3%	2%	5%	5%	2%	17%	3%	5%	0%	0%	3%	37%	9%	0%
Minten	5%	3%	1%	5%	5%	2%	43%	5%	6%	0%	0%	2%	20%	3%	1%
Pauw	6%	5%	3%	8%	3%	4%	45%	2%	7%	0%	0%	1%	13%	4%	1%
Reardon	8%	4%	1%	6%	7%	3%	48%	5%	4%	0%	0%	2%	11%	1%	0%
Swinnen	10%	3%	2%	8%	4%	4%	28%	8%	6%	0%	1%	1%	22%	4%	0%
Tamru	4%	3%	1%	5%	3%	2%	33%	6%	9%	0%	1%	1%	28%	4%	1%
Thurlow	4%	4%	3%	9%	6%	3%	46%	3%	6%	0%	0%	0%	12%	4%	0%
Tschirley	5%	3%	0%	10%	8%	2%	30%	2%	6%	0%	0%	8%	22%	3%	1%
Vos	4%	5%	3%	10%	5%	3%	45%	4%	4%	0%	1%	1%	13%	3%	0%

* Percentages per category add up to 100% in each row.

Note: The results presented in Table 3 derive from a structured cross-classification of the 568 reviewed publications. For each publication, the research team identified the primary and secondary authors. It matched them to one or more policy categories using the typology developed in Section 2. The classification was automated through a Python-based text-mining pipeline, followed by manual validation for accuracy. Each author's profile was calculated as the percentage of publications associated with each thematic category, normalized over the total number of works attributed to that author. The resulting matrix allows comparison across researchers while preserving proportional weights, providing a transparent and reproducible measure of thematic orientation.

The results reveal a high degree of thematic convergence across the group, combined with distinct specializations that reflect institutional mandates and disciplinary backgrounds. Overall, the literature produced by this community concentrates on five domains: infrastructure and equipment, standards and food safety, industrial and territorial policy, urban and territorial food systems, and finance and risk for the midstream. Collectively, these categories account for over half of all reviewed works, indicating a shared concern with the physical, regulatory, and financial underpinnings of midstream development.

At the same time, specific authors display differentiated emphases that reflect their institutional and disciplinary orientations:

- **Infrastructure-centric profiles with standards as a secondary axis.** A first constellation includes Reardon, Minten, Liverpool-Tasie, Pauw, Thurlow, Vos, Christiaensen, Dolislager, and Tschirley, whose publication portfolios are dominated by Infrastructure & Equipment (Midstream)—typically at or above one-third of their outputs (e.g., Reardon 48%, Minten 43%, Liverpool-Tasie 46%, Pauw 45%, Thurlow 46%, Vos 45%, Christiaensen 40%, Dolislager 47%). Within this group, standards and food safety often appear as a second pillar (e.g., Minten 20%, Reardon 11%, Pauw 13%, Vos 13%, Tschirley 22%), consistent with agendas that couple cold chain, warehousing, wholesale market modernization, and energy reliability with compliance and quality upgrading. Finance and market regulation feature as cross-cutting but typically secondary domains (e.g., Christiaensen and Vos at 10% finance; Jayne is an outlier on regulation—see below).
- **Standards-centric profiles with complementary infrastructure and trade/regulation.** A second constellation comprises Maertens, Swinnen, Berdegú, and Tamru, characterized by a comparatively high share of Standards, Quality & Food Safety (Maertens 37%, Swinnen 22%, Berdegú 27%, Tamru 28%), combined with material attention to infrastructure (Maertens 17%, Swinnen 28%, Berdegú 26%, Tamru 33%). In these portfolios, regulatory alignment, certification, and SPS/TBT issues are recurrent, often connected to quality differentiation and export competitiveness; trade facilitation receives a non-trivial share in several cases (Maertens 9%, Swinnen 4%, Tamru 4%). Berdegú's distribution additionally underscores aggregation/coordination and inclusion (11% and 10%, respectively), reflecting territorial governance concerns.
- **Market governance, competition, and finance-oriented profiles.** A third constellation is led by Jayne, whose work shows a distinctive emphasis on Market Regulation & Competition (19%) together with substantial attention to Infrastructure & Equipment (31%) and Finance & Risk (15%). This pattern is consistent with analyses that link midstream performance to market structure, regulatory discipline, and investment incentives. Barrett aligns partially with this orientation—combining infrastructure (43%) with standards (15%) and finance (10%)—but with a broader cross-cutting scope that also includes environmental sustainability (7%). Christiaensen, already noted in the first cluster for infrastructure (40%), similarly maintains notable shares in finance (10%) and inclusion

(8%), pointing to a governance-and-incentives reading of midstream constraints. Swinnen also bridges standards (22%) and market governance (8%), underscoring regulatory architecture as a competitiveness lever.

- **Structural transformation and economy-wide perspectives with midstream anchors.** Finally, Diao and Thurlow exhibit thematic mixes that connect midstream enablers to economy-wide modeling and structural change. While both have high shares in infrastructure (Diao 32%; Thurlow 46%), their distributions include non-trivial weights in Finance & Risk (Diao 9%; Thurlow 9%), Trade Facilitation (Diao 7%; Thurlow 4%), and—in Diao’s case—Processing & Value Addition (9%) and Inclusion & Formalization (11%). Davis belongs in this broader perspective as well: his portfolio balances infrastructure (24%) with finance (13%), inclusion (12%), skills (13%), and standards (12%), indicating a programmatic orientation that integrates firm-level upgrading, workforce capabilities, and institutional capacity.

Taken together, these constellations confirm a shared orientation toward the physical and institutional backbone of the midstream—infrastructure, standards/food safety, and, to a lesser extent, finance and market governance—while also documenting meaningful differentiation. The infrastructure-centric cluster emphasizes logistics and market facilities coupled with compliance; the standards-centric cluster highlights regulatory alignment and certification capacity; the governance/finance cluster foregrounds incentives, structure, and regulatory discipline; and the structural-transformation cluster situates midstream upgrading within broader economy-wide trajectories.

4. CANONICAL POLICY RECOMMENDATIONS: ANALYTICAL SYNTHESIS

This section presents the results of the systematic analysis of policy recommendations extracted from the academic and applied literature on the agrifood Hidden Middle. It synthesizes the recurrent policy orientations that emerge from the corpus of 3,552 recommendations identified in the 568 reviewed publications authored by the 17 most influential researchers in the field. The analysis moves from a descriptive overview—showing how canonical recommendations are distributed across categories and subcategories within the typology developed for this study—to a substantive interpretation of their content and policy implications. By examining which policy domains and instruments appear most frequently, and how they cluster conceptually, this section seeks to elucidate the prevailing consensus, the areas of divergence, and the implicit theory of change that underpin the international research agenda on midstream transformation.

4.1. Descriptive overview by category

The analytical process described in the methodological section produced a total of over one

hundred canonical policy statements that appeared recurrently—each mentioned at least five times—across the corpus of 3,552 recommendations extracted from the 568 reviewed publications. These canonical recommendations were subsequently organized according to the typology of policy interventions developed in this study, which groups recommendations under fifteen thematic categories and their corresponding subcategories. The resulting distribution, summarized in Annex 2 (Table of Canonical Recommendations by Category and Subcategory), provides a descriptive profile of the thematic areas most frequently addressed in the literature on the agrifood Hidden Middle.

A first observation concerns the high concentration of recommendations in a few thematic domains. The categories of Skills and Institutional Capacity (Midstream) and Standards, Quality, and Food Safety (SPS/TBT) together account for more than 550 mentions, reflecting the central importance attributed to regulatory harmonization, laboratory infrastructure, and food-safety agencies in enabling midstream upgrading. Closely following are Industrial and Territorial Policy (Clusters), particularly references to Agro-Industrial Parks and Zones and Public-Private Partnerships for Midstream Infrastructure, with more than 450 combined mentions. These categories indicate a clear emphasis on industrial organization and spatial clustering as key instruments to strengthen midstream competitiveness and reduce logistical costs.

A second group of themes, with medium levels of recurrence, includes Urban and Territorial Food Systems (227 mentions), Trade Facilitation (Midstream-relevant) (328 mentions, primarily related to tariff structures and processing incentives), and Infrastructure and Equipment (Midstream) (290 mentions distributed across subcategories such as wholesale and retail markets, cold chain, and logistics corridors). These areas highlight the structural concern of the literature with physical connectivity, logistics, and market infrastructure as essential determinants of efficiency and resilience in food systems.

A third set of categories, though less frequent, retains strategic significance for the analytical agenda. Finance and Risk for the Midstream (97 mentions) and Inclusion and Formalization (109 mentions) capture the policy community's focus on financial de-risking, regulatory simplification, and equitable participation of MSMEs, women, and youth. The presence of Governance and Public-Private Coordination (92 mentions) and Public Demand and Procurement (58 mentions) underscores the perceived importance of collective action and institutional alignment for sustaining investment and innovation in the midstream.

Finally, a smaller yet conceptually coherent group of categories—such as Digitalization and Data, Resilience and Business Continuity, Environmental Sustainability (Midstream), and Processing and Value Addition—represent emerging or cross-cutting priorities. Their lower frequency does not imply marginality but rather reflects the relative novelty of these policy areas within the evolving literature since 2015.

Table 4. Number of Canonical Recommendations Mentioned by Subcategory

Category	Subcategory	Mentions
Aggregation & Vertical Coordination	Contracts & Buyer–Supplier Governance	66
	Warehouse Receipt Systems (WRS)	8
Digitalization & Data	B2B Platforms & Smart Logistics	19
	Digital Traceability, e-Permits & e-Invoicing	19
Environmental Sustainability (Midstream)	Energy/Water Efficiency & Effluents	55
	Loss Reduction & By-product Valorization	95
Finance & Risk for the Midstream	Credit, Guarantees & Blended Finance	55
	Insurance & Price-Risk Management	13
	Working Capital, Factoring & Trade Finance	29
Governance & Public-Private Coordination	Decentralization & Role of Local Governments	25
	Multi-Stakeholder Councils & Task Forces	67
Inclusion & Formalization (Midstream)	Formalization & Regulatory Compliance	53
	SMEs, Women & Youth Participation	56
Industrial & Territorial Policy (Clusters)	Food/Agro-Industrial Parks & Zones	342
	Public-Private Partnerships (PPP) for Midstream Infra	116
Information, Monitoring & Evaluation	Market Intelligence, MIS & Dashboards	35
Infrastructure & Equipment (Midstream)	Cold Chain & Refrigerated Logistics	63
	Logistics Hubs, Corridors & Distribution	51
	Road Connectivity for Midstream Corridors	34
	Storage, Silos & Collection Centers	20
	Wholesale & Retail Markets (upgrading/formalization)	122
Market Regulation & Competition	Competition Policy & Antitrust Enforcement	22
	Licensing & Permitting Simplification	99
	Wholesale Price Transparency & Market Information	94
Processing & Value Addition	Hygiene, GMP & Plant Conditions	21
	Plant & Equipment Upgrading	8
Public Demand & Procurement	Institutional Procurement for Midstream	58
Resilience & Business Continuity	Disaster-Risk Management for Storage/Processing	17
	Essential Services & Continuity of Markets/Logistics	68
Skills & Institutional Capacity (Midstream)	Strengthening Standards & Food-Safety Agencies	368
	Technical Training for Plant & Logistics	93
Standards, Quality & Food Safety (SPS/TBT)	Inspection, Laboratories & Metrology	8
	Standards & Technical Regulations (harmonization)	202
Trade Facilitation (Midstream-relevant)	Customs, Border SPS & Clearance Times	26
	Tariff Structure & Incentives for Processing	302
Urban & Territorial Food Systems	City-Region Logistics Planning & Intermediate Nodes	227

Note: This table includes only those canonical policy recommendations that appear more than five times in the corpus. As a result, the total number of recommendations represented here amounts to 2,956, equivalent to 83% of the 3,552 recommendations identified in the full dataset. This threshold was applied to emphasize patterns of recurrent policy guidance within the literature while minimizing the influence of isolated or unique statements.

Overall, the distribution of canonical recommendations reveals a clear orientation of the research community toward institutional and infrastructural enablers of midstream performance, rather than toward isolated farm-level or consumer-level measures. The emphasis on standards, logistics, spatial clustering, and finance suggests a shared analytical conviction: that the development of the Hidden Middle depends on reducing systemic transaction costs and establishing reliable, rule-based coordination mechanisms among midstream actors. This quantitative profile provides the empirical foundation for the interpretative synthesis that follows.

4.2. Interpreting Canonical Recommendations

The purpose of this analysis is not to restate the classification typology but to identify the underlying policy orientation that emerges when the most recurrent recommendations are read comparatively. The canonicals constitute a corpus of actionable statements that, when aggregated, reveal a consistent set of priorities across authors and contexts. Rather than advancing generic claims such as “increase investment” or “enhance competitiveness,” these recommendations identify specific instruments and institutional arrangements designed to reduce transaction costs, mitigate risks, and improve coordination within the midstream segment of agrifood value chains.

For analytical clarity, the recommendations are organized according to three tiers of salience, reflecting the frequency with which they appear across the dataset. The first tier encompasses high-frequency recommendations that define a shared front line of intervention. The second-tier groups enabling conditions that consolidate or sustain these first-line measures. The third-tier includes recurrent but context-dependent propositions that gain importance in specific value chains or national settings. This stratification facilitates a systematic reading of the evidence while avoiding normative hierarchies.

4.2.1. Tier 1 Priorities: The Core Agenda

The most frequently cited canonical recommendations delineate a coherent policy agenda focused on four interrelated domains: (i) access to finance for MSMEs operating in midstream activities; (ii) investment in logistics and processing infrastructure; (iii) strengthening of food safety, quality, and traceability standards; and (iv) development of market information and coordination mechanisms. These domains are consistently framed as complementary, not as substitutes, suggesting that effective interventions depend on addressing multiple constraints simultaneously.

A central element concerns financial access and risk-sharing mechanisms tailored to the investment profiles of midstream enterprises. The literature consistently recommends instruments such as dedicated credit lines, partial guarantee schemes, and blended-finance structures designed to reduce the cost of capital for upgrading assets such as storage facilities, processing equipment, refrigeration, and compliance infrastructure. The focus lies on financial products with maturities aligned to asset life and repayment capacities, ensuring that credit translates into tangible productivity and quality gains rather than short-term liquidity.

A second cluster of recommendations emphasizes the development of the logistics and processing backbone. Inadequate cold storage, unreliable power supply, and deficient first- and last-mile connectivity are repeatedly identified as bottlenecks that erode the effectiveness of both upstream and downstream interventions. Many canonical statements propose the modernization of wholesale markets and their recognition as essential services within national food security strategies. The underlying rationale is that logistical continuity is a precondition for efficient value transmission and for resilience under conditions of disruption.

The third domain centers on standards, food safety, and traceability as strategic levers of competitiveness. Canonicals in this group emphasize that policy reforms must couple harmonization—particularly at regional and international levels—with compliance enablement. The latter requires strengthening national testing and certification systems, expanding technical assistance for MSMEs, and facilitating access to finance to meet compliance costs. Standards are thus understood not as regulatory barriers but as gateways to higher-value markets, provided that small and medium processors can realistically adhere to them.

Finally, the literature highlights the role of market information and coordination mechanisms in reducing transaction costs along fragmented supply chains. Platforms for disseminating information on prices, quality, and availability; booking and routing systems for logistics; and light contractual intermediation are proposed as tools that improve market transparency, mitigate hold-up risks, and stabilize flows of goods. Together, these four thematic areas constitute a policy package that underpins the midstream transformation agenda. The literature indicates that, when implemented jointly—rather than as isolated projects—they generate synergistic effects that reinforce overall system performance.

4.2.2. Tier 2 Priorities: Enabling Conditions for Sustainability

The second tier of canonical recommendations identifies the institutional and organizational conditions that allow midstream improvements to persist over time. A first concern relates to the business environment and formalization processes. Excessive regulatory complexity, high compliance costs, and uncertain contract enforcement are described as structural

obstacles that discourage investment and innovation among MSMEs. The literature thus advocates for administrative simplification, transparent rules, and graduated compliance mechanisms that enable progressive formalization without imposing disproportionate burdens.

A second set of recommendations focuses on technological innovation and capability development. The emphasis lies on practical, midstream-specific skills such as food safety management, quality control, lean processing, inventory systems, and digital recordkeeping. Digitalization, in this perspective, is not an end in itself but a means to reduce operational costs and information asymmetries. Several authors emphasize the importance of integrating training and technology transfer into commercial relationships, particularly through logistics providers, buyers, and service firms.

A third priority concerns aggregation and market-access mechanisms. Canonicals point to the creation of collection centers, aggregation hubs, and supplier-development programs that connect small producers with processors and traders, thereby increasing volumes and predictability in supply. These mechanisms reduce the coordination failures that typically discourage financial institutions from lending to midstream actors. Complementarily, a smaller group of recommendations addresses risk management and resilience, calling for the inclusion of insurance, stabilization funds, and crisis protocols to maintain operational continuity during systemic disruptions. In combination, these enablers strengthen the durability and institutionalization of Tier 1 outcomes.

4.2.3. Tier 3 Priorities: Contextual Levers

The third tier includes recurrent but context-sensitive areas of intervention. Among them, trade facilitation and competition policy emerge as relevant in contexts where cross-border perishable trade or market concentration generates significant inefficiencies. Inclusion and employment—particularly gender- and youth-focused programs—are recurrent where labor market transitions and entrepreneurship policies intersect with midstream upgrading. Finally, data and digital systems—for example, electronic traceability and logistics routing tools—are recognized as valuable when their cost-effectiveness and complementarity with other investments are clearly established. These recommendations acquire higher salience in specific regional or product contexts but remain integral to the broader ecosystem of midstream strengthening.

4.3. From Individual Measures to Integrated Policy Bundles

A central insight derived from the canonical corpus is that the effectiveness of interventions depends less on individual instruments than on their integration into coherent policy bundles. The literature converges on five such bundles, each representing a set of complementary measures that reinforce one another.

The first bundle relates to finance for midstream upgrading, combining credit lines, guarantees, and blended mechanisms targeted to investments in cold chain, processing, and quality systems. The second corresponds to logistics and processing infrastructure, emphasizing reliable power, storage, and transport connectivity as foundational public goods. The third pertains to standards, compliance, and traceability, linking harmonization with the institutional capacity required for enforcement and adoption. The fourth encompasses information and coordination platforms, which increase transparency and reduce transaction costs along the chain. Finally, the fifth addresses business environment, skills, and inclusion, ensuring that enterprises possess the regulatory and human capabilities necessary to sustain competitiveness. In practice, policy initiatives often combine two or more bundles, as isolated interventions tend to generate limited or temporary effects.

4.4. Convergences and Tensions

Across the literature, several points of convergence stand out. There is broad agreement on the need to treat midstream upgrading as a systemic challenge, in which access to finance, infrastructure, standards, and information are mutually dependent. Similarly, there is consensus that regulatory and standards-related reforms must be accompanied by compliance support—testing facilities, certification services, technical assistance, and financial instruments—to prevent exclusionary effects. Finally, there is a shared understanding that interventions should target the midstream explicitly, rather than diluting resources in generic SME or rural development programs.

At the same time, the canonicals reveal areas of tension that are conceptually and operationally significant. A first concern is the balance between risk mitigation and market discipline: while guarantees and concessional financing are widely recommended, the literature warns of potential distortions if they are not carefully targeted and time-bound. A second tension arises between speed and institution-building: while short-term measures (such as classifying logistics as essential infrastructure) can ensure continuity, sustainable impact requires regulatory reform and the strengthening of public institutions. A third tension involves digital ambition versus economic return, reflecting the need to prioritize technologies that demonstrably reduce transaction costs rather than those adopted for their novelty.

4.5. Implications for Policy and Practice

Taken together, the canonical recommendations articulate a coherent and empirically grounded vision of how to enhance the Hidden Middle. Governments and development partners are encouraged to design programs as integrated bundles built around a clear cost-reduction and risk-reduction rationale. Financial interventions should be explicitly linked to adoption outcomes—such as the installation of equipment, achievement of certification, or implementation of traceability systems—while public resources should focus on creating

or expanding the public goods that private actors cannot provide alone, including laboratories, certification infrastructure, and market information systems.

Implementation sequencing should favor feasibility over idealized linearity. In most cases, upgrading the logistical backbone and improving access to finance represent necessary starting points, to be followed by compliance enablement and information systems, and later by broader improvements in business environment and skills. Monitoring frameworks should likewise align with the literature's implicit theory of change, tracking measurable indicators such as reductions in logistics costs and spoilage, increased certification rates among MSMEs, higher utilization of credit lines and guarantees, and improved reliability of supply relationships.

Ultimately, the collective findings underscore that strengthening the Hidden Middle is not a matter of isolated investments but of coordinated interventions that lower the costs of investing, complying, and coordinating within the value chain. The canonical recommendations, as summarized in Annex 2 reveal a remarkable convergence around this integrated approach—a policy architecture that combines financial access, infrastructural adequacy, institutional capability, and coordination efficiency as the principal levers of midstream transformation.

5. CONVERGENCES AND DIVERGENCES WITH INTERNATIONAL ORGANIZATIONS

This section contrasts the priorities that emerge from the canonical recommendations synthesized in the literature review with the strategic emphases and operational portfolios of 14 major development institutions. On the literature side, recurrent prescriptions cluster around an integrated package that couples midstream finance with logistics and processing infrastructure, standards and compliance capacity, information/coordination mechanisms, and a supportive business environment and skills base. These elements are advanced not as isolated interventions but as mutually reinforcing bundles aimed at reducing transaction costs, de-risking investment, and improving coordination among midstream actors.

On the institutional side, the comparative assessment of 14 organizations shows uneven but discernible engagement with midstream upgrading. A small group treats the midstream as a primary lever—either through infrastructure-led, territorially anchored programs or through SME-centric capacity building—while most agencies reference midstream needs but continue to prioritize upstream production or generic enablers.

5.1. Areas of convergence

Three domains reveal clear alignment between the scholarly canon and institutional action:

I. Territorial and infrastructural anchoring. The literature places sustained emphasis on logistics backbones (storage, cold chain, reliable power, corridors) and on spatial clustering (parks, zones, hubs) as first-line measures that compress distances and concentrate services. This logic is mirrored in institutional portfolios where infrastructure-led programs—e.g., special agro-industrial processing zones and corridor investments—are the primary vehicle for midstream upgrading, particularly among multilateral banks.

II. Compliance capacity and standards systems. Canonical recommendations repeatedly call for coupling standards harmonization with practical compliance support (laboratories, inspection, certification services) to avoid exclusionary effects. Institutions increasingly incorporate standards, food safety, and traceability within midstream programs and knowledge outputs, even if depth varies by agency.

III. SME-oriented professionalization paired with finance. The literature’s “finance + capability + market linkages” bundle is a recurring prescription. A subset of institutions operationalizes exactly this approach—most explicitly Agriterra (and in parts IFAD and Practical Action)—through cooperative/SME governance upgrades, bankable plans, and buyer/finance connections.

5.2. Structural divergences and persistent gaps

Despite these overlaps, four systematic gaps remain between what the literature prioritizes and what institutions commonly fund or measure:

I. Midstream centrality versus adjunct treatment. The canonical corpus argues for targeting the midstream explicitly rather than diluting resources in generic SME or rural development agendas. Yet, across institutions, midstream components are often secondary within broader value-chain or enabling-infrastructure projects; budgets, more than project counts, reveal the modest priority midstream still receives in many agencies.

II. From rhetoric to allocation. Institutions that “recognize” the midstream in strategies do not necessarily allocate commensurate resources, whereas outliers (AfDB, World Bank, Agriterra) align discourse with sizeable midstream spending or SME-centric execution.

III. Compliance enablement at scale. The literature underscores the need to pair regulatory reforms with adoption support—testing, certification, TA, and financing—to prevent exclusion. Institutional portfolios reference these functions but less frequently

finance the full, recurring operational costs (O&M of labs, metrology services, data systems) necessary for durable compliance by MSMEs.

IV. Systematic evidence on outcomes. Canonicals assume monitoring of concrete midstream performance metrics (loss reduction, utilization, reliability, certification uptake). While some institutions—especially the World Bank—document measurable effects from infrastructure and midstream services, many others remain at the diagnostic/design stage with sparse impact evaluation.

5.3. Alignment with the literature’s “policy bundles”

Reading institutional practice against the five bundles distilled from the canon yields a mixed picture:

- **Finance for midstream upgrading.** Guarantees, credit lines, and blended instruments targeted to cold chain, processing, and quality systems are central in the literature. Institutions increasingly reference blended finance and working-capital solutions, but SME de-risking via operational data (e.g., traceability and QA records) remains emergent rather than standard practice.
- **Logistics and processing infrastructure.** This bundle shows the strongest convergence: hubs, corridors, and clustered assets are now common features of leading institutional approaches. The inclusion risk flagged by the institutions assessment—assets without structured SME on-ramps—is precisely the concern raised in the literature’s emphasis on governance rules and access mechanisms.
- **Standards, compliance, and traceability.** Both literatures agree on its centrality; the gap lies in sustained financing for compliance services and measurable uptake among MSMEs.
- **Information and coordination platforms.** The empirical case for MIS, booking/routing tools, and light intermediation appears in the canon as a cost-reduction mechanism along fragmented chains. Institutions cite digitalization and logistics platforms, but often without rigorous tracking of transaction-cost reductions or finance unlocked.
- **Business environment, skills, and inclusion.** The literature prioritizes administrative simplification, progressive formalization, and practical midstream skills; inclusion is treated as structural (roles, asset access, fee policies), not merely participatory. Institutional practice is uneven: SME-builders (e.g., Agriterra) align closely, whereas many agencies keep these elements peripheral to infrastructure or policy reforms.

5.4. Implications for design and sequencing

The comparative reading implies a pragmatic synthesis. Where institutions concentrate on territorially anchored infrastructure, the literature suggests codifying SME access rules (bookable capacity, shared services, targeted working capital) as funding covenants to ensure inclusion and utilization. Conversely, SME-centric programs should internalize the literature's call for risk infrastructure—basic digital traceability and QA data that lenders can underwrite—so that professionalization translates into finance and market access. Finally, monitoring should shift from activity counts to midstream performance indicators (losses, uptime, throughput, certification rates, supplier reliability), consistent with the canonical theory of change.

The strongest opportunities for alignment map neatly onto the literature's Tier-1 and Tier-2 priorities:

- Hubs that include, by design, pair physical assets with enforceable SME on-ramps and results-linked finance.
- **Compliance that endures:** fund lab/inspection O&M and certification services as public goods with measurable MSME uptake.
- **Finance de-risked by data:** require minimal digital records (intake, temperatures, QA) to crowd-in inventory/receivables finance.
- **Administrative simplification and progressive formalization:** reduce fixed compliance costs that deter MSME upgrading.

In aggregate, the institutions most closely aligned with the literature are those that (a) treat midstream as the lever—either through corridor/zone strategies or SME-centric capability building—and (b) operationalize the full bundle, not only assets but also compliance services, data-enabled finance, and inclusion mechanisms. Where midstream remains adjunct, investment and operational detail lag behind rhetoric. The comparative analysis points to a practical next step: braid territorial infrastructure with SME on-ramps and risk infrastructure, and track what matters for midstream performance.

6. EVIDENCE ON WHAT WORKS IN THE HIDDEN MIDDLE

The analysis presented in this document consolidates a broad consensus among the leading authors working on agrifood systems regarding the type of actions and instruments required to strengthen midstream segments. These recommendations describe in detail how to improve logistics, storage, processing, and coordination functions, and why these interventions are central to achieving more competitive, inclusive, and resilient food systems. Yet, despite this conceptual and policy clarity, the question remains as to what actually works in practice, under what circumstances, and with what specific outcomes.

This section explores whether the recommendations identified in the academic literature are supported by solid empirical evidence capable of answering those questions. In particular, it examines if the interventions most frequently discussed—such as investments in

infrastructure, cold storage, warehouse receipt systems, or the development of food-safety and quality standards—have been evaluated through rigorous causal methods and what those evaluations reveal about their effectiveness, limitations, and contextual dependencies.

The discussion that follows takes selected cases as reference points to illustrate the distance between the density of recommendations and the scarcity of robust evidence. These cases show that, while the literature reflects a high degree of consensus and operational feasibility, empirical confirmation of impact remains limited. The section proceeds by reviewing the domains where the evidence base is strongest—such as rural roads and electrification—and those where it is weakest—financial and market instruments, cold-chain investments, and standards enforcement—highlighting what can be learned from the few existing evaluations and what remains to be tested.

6.1. Recommendations vs. Evidence

6.1.1. Evidence on enabling infrastructure

The largest and most consistent body of evidence concerns public investments in infrastructure, especially rural roads and electrification. Across contexts, these interventions show positive effects on household income, market access, and non-farm employment. Yet even in this relatively mature field, very few evaluations follow the causal chain far enough to capture midstream outcomes. The improvements in transport connectivity documented in countries such as India, Nepal, Mozambique, and Bangladesh are clearly associated with better price integration and higher rural incomes, but almost none of the studies measure effects on the performance of storage facilities, wholesale markets, or processing plants—the very spaces that sustain midstream activity.

A similar pattern emerges for rural electrification. Multiple systematic reviews confirm its relevance for productivity, education, and gender outcomes, and several identify links between electrification and the emergence of small non-farm enterprises, including agro-processing and commerce. Nonetheless, these effects are highly uneven and often depend on complementary factors such as credit availability, reliable power supply, and technical support. In this sense, electrification appears as a necessary but not sufficient condition for midstream upgrading. The literature reviewed in this document repeatedly underscores the role of energy reliability in enabling cold-chain development, processing capacity, and compliance with food-safety standards; yet the empirical record that quantifies such impacts remains remarkably thin.

6.1.2. Financial and market instruments

Beyond infrastructure, the available evidence includes a smaller but insightful set of evaluations focused on financial and market-organization instruments. Among them, warehouse receipt systems stand out as one of the few interventions directly connected to

midstream functions. The documented experiences, mostly from West and East Africa, show that when these systems operate effectively—providing collateralized storage linked to credit and market services—they can improve marketing behavior, stabilize prices, and increase sales volumes for small traders. However, the number of studies remains small, and almost all evaluate programs that combine several components (inputs, training, and storage), making it difficult to isolate the specific contribution of the warehouse mechanism. In most cases, impacts on overall efficiency, value addition, or resilience of midstream actors are inferred rather than measured.

Other financial tools such as credit guarantees, blended-finance schemes, and risk-management instruments, which occupy a central place in the recommendations synthesized earlier, have been even less frequently subjected to rigorous evaluation. The empirical record confirms their relevance for investment and liquidity in general terms but offers little evidence on their capacity to expand midstream enterprise activity or improve coordination within value chains. This absence contrasts sharply with the high frequency with which such instruments appear in the policy corpus analyzed in this study, suggesting a wide gap between the consensus of ideas and the corpus of evidence.

6.1.3. Facilities, standards, and compliance systems

Equally limited is the evidence base regarding investments in storage, cold-chain facilities, or food-safety systems—domains that figure prominently in the policy typology presented earlier. The review found virtually no impact evaluations that measure the cost-effectiveness or welfare outcomes of cold-storage or refrigerated-logistics interventions. Existing studies tend to approach these elements tangentially, often as part of broader infrastructure or supply-chain programs. While the narrative of efficiency and loss reduction associated with cold-chain expansion is well established in the literature, empirical verification remains anecdotal.

The same holds for the development and enforcement of standards and technical regulations. Evaluations of trade and regulatory reforms frequently document improvements in export performance or consumer safety, but the specific midstream effects—on compliance costs, firm competitiveness, or SME participation—are rarely isolated. Strengthening national standards bodies, laboratories, and inspection systems is a recurrent recommendation in this document; yet these areas remain almost untested in the impact-evaluation literature. Where evidence exists, it points to the importance of institutional capacity and coordination rather than to direct causal estimates of welfare or productivity gains.

6.2. Cross-cutting patterns and implications

Taken together, the evidence reviewed reveals a clear asymmetry. The interventions that dominate the academic and policy debate around the Hidden Middle are precisely those for

which rigorous causal evidence is weakest. Infrastructure and enabling investments have been extensively evaluated but without explicit attention to midstream nodes; financial, logistical, and regulatory measures are widely promoted yet rarely tested. This imbalance limits our ability to assess which combinations of instruments yield sustained improvements in midstream performance, inclusion, and resilience.

At the same time, several lessons emerge from the few cases that do provide measurable results. First, bundling matters: interventions that integrate infrastructure with finance, training, or governance components tend to produce stronger and more consistent outcomes. Second, context matters: positive effects depend heavily on local institutional quality, complementary markets, and the capacity of actors to coordinate. Third, measurement matters: most evaluations focus on household or production-side indicators, leaving aside the specific metrics that would capture midstream transformation—such as storage utilization, logistics efficiency, loss reduction, or enterprise upgrading.

The implications are straightforward. The conceptual and operational consensus that emerges from the literature synthesized in this document is not yet matched by an equally robust empirical foundation. Development agencies and research programs aiming to operationalize midstream transformation will need to incorporate evaluation frameworks capable of tracking midstream-specific outcomes and testing alternative design combinations. Expanding the geographical scope of evaluations—particularly in Latin America and Asia—and embedding rigorous impact measurement into ongoing programs are essential steps to bridge the current divide between policy plausibility and demonstrated effectiveness.

In sum, the available evidence confirms the feasibility and strategic relevance of investing in the Hidden Middle, but it also reminds us that we still know too little about what works, under what conditions, and for whom. Building that evidence base is the next frontier for both research and policy practice, and a necessary complement to the consensus documented throughout this report.

ANNEXES

Annex 1. Technical Overview of Procedures

Stage	Procedure / Tool	Main Operations
1. Author identification	Manual + citation network check	Validation of initial ToR list; identification of three additional authors through thematic search (Google Scholar, Scopus) and co-authorship networks.
2. Publication compilation	Manual retrieval + metadata structuring	Automated scraping and manual download of bibliographic records; consolidation into a master Excel database ($\approx 1,500$ entries).
3. Relevance filtering	Keyword dictionary + manual validation	Filtering abstracts using curated <i>Hidden Middle</i> dictionary; verification through contextual reading; retention of ≈ 550 relevant publications.
4. Snippet extraction	Text-mining scripts (Python/GROBID)	Automated parsing of PDFs to extract conclusion/policy sections; normalization into a structured snippet database ($\approx 6,800$ fragments).
5. Policy recommendation extraction	Rule-based classifier + LLM assessment + manual check	Identification of prescriptive statements (verbs such as <i>promote, invest, support, strengthen</i>); deduplication; thematic filtering to 3,500 valid items.
6. Typology construction	Iterative coding + semantic clustering	Inductive category creation; use of co-occurrence and thematic proximity; hierarchical structure (categories/subcategories).
7. Canonical policy generation	Text similarity analysis + expert validation	Clustering of equivalent recommendations; selection of representative (“canonical”) formulations; frequency tabulation per subcategory.

Annex 2. Canonical Recommendations, by Category and Subcategory

Category	Subcategory	Canonical Policy	Mentions
Aggregation & Vertical Coordination	Contracts & Buyer–Supplier Governance	Governments should create policy environments that promote vertical coordination between farmers, traders, and processors through contract farming.	43
		Governments should support contract-enforcement mechanisms to strengthen reliability and fairness in buyer–supplier relationships.	13
		Policymakers should promote aggregation, logistics coordination, and access to high-value markets for smallholders through partnerships with SMEs and value-chain actors.	10
	Warehouse Receipt Systems (WRS)	Governments should develop warehouse receipt systems linked to functional commodity exchanges to improve access to finance for grain traders.	8
Digitalization & Data	B2B Platforms & Smart Logistics	Governments must promote inclusive digitalization to ensure SMEs and cooperatives can access online logistics and payment platforms.	19
	Digital Traceability, e-Permits & e-Invoicing	Governments should promote digital technologies and precision agriculture tools that enhance traceability, food safety, trade finance, and automation of contracts along value chains.	19
Environmental Sustainability (Midstream)	Energy/Water Efficiency & Effluents	Governments should encourage sustainable midstream operations that reduce greenhouse gas emissions, food loss, and waste in processing, storage, and transport.	55
	Loss Reduction & By-product Valorization	Governments should repurpose agricultural subsidies toward R&D, inspection, and midstream infrastructure supporting sustainable value-chain transformation.	72
		Governments should create fiscal incentives or co-financing for firms implementing robust sustainability certification with traceable benefits to producers.	23
Finance & Risk for the Midstream	Credit, Guarantees & Blended Finance	Governments should expand financial inclusion and fintech solutions to ease access to credit for agribusiness SMEs and value-chain investors.	55
	Insurance & Price-Risk Management	Policymakers should promote risk-management instruments (e.g., insurance, hedging) for feed and energy input markets.	13
	Working Capital, Factoring & Trade Finance	Governments should expand access to finance and guarantee mechanisms for SMEs to strengthen their capacity to support small-scale producers.	29
	Decentralization & Role of Local Governments	Policymakers should improve regional coordination among local governments to address fragmented governance and strengthen rural–urban service and trade linkages.	25

Governance & Public-Private Coordination	Multi-Stakeholder Councils & Task Forces	Governments should support cooperatives to facilitate collective marketing, credit access, and joint investment in equipment, thereby improving economies of scale and quality control.	43
		Governments should integrate certification oversight into national value-chain governance to ensure transparency and avoid duplication across standard systems.	18
		Authorities should facilitate innovation and knowledge-sharing across value-chain actors through multi-stakeholder platforms.	6
Inclusion & Formalization (Midstream)	Formalization & Regulatory Compliance	Governments should promote formalization as a driver of upgrading in agricultural value chains, enabling firms to access contracts, credit, and technologies.	25
		Policymakers should ensure that regulatory approaches and certification schemes include support measures for smallholders to prevent exclusion from sustainable trade.	12
		Governments should enforce labor and environmental standards in processing and sourcing operations to mitigate adverse social outcomes of private regulation.	10
		Policymakers should promote transparent, evidence-based standard-setting processes to balance efficiency, equity, and competitiveness.	6
	SMEs, Women & Youth Participation	Policymakers should support women's participation in food processing and nonfarm enterprises through targeted education and finance programs.	56
		Governments should promote youth participation and training in agri-food entrepreneurship and machinery services to address rural aging.	16
		Governments should promote inclusive policies recognizing SMEs' employment role in midstream segments of food systems.	15
		Authorities should support inclusive participation of smallholders and poor households in formal midstream activities through improved access to markets and credit.	7
Industrial & Territorial Policy (Clusters)	Food/Agro-Industrial Parks & Zones	Governments should implement policies to help asset-poor farmers and microenterprises gain the capacity to participate in changing food markets.	122
		Policymakers should enhance coordination among agriculture, trade, and industry ministries to advance agro-processing transformation.	75
		Governments should promote regional agro-industrial corridors and parks to cluster processing, logistics, and service investments.	53
		Policymakers should develop policies linking innovation hubs, research institutes, and the private sector to commercialize agrifood technologies.	21

		Polymakers should repurpose agricultural subsidies toward R&D, inspection, control systems, and rural infrastructure to improve midstream productivity and sustainability.	15
		Governments should institutionalize policy-monitoring systems to assess distributional impacts of agricultural subsidy repurposing and processing reforms.	14
		Governments should invest in postharvest infrastructure (storage, grading, and transport) to reduce potato losses and stabilize supply.	8
		Polymakers should promote domestic agro-processing industries for import-substitution crops such as rice and tomatoes.	8
		Governments should invest in data collection on nitrogen losses and environmental impacts of fertilizer use to inform regulatory design.	7
		Polymakers should integrate climate and biodiversity considerations into agricultural trade policy to ensure environmentally optimal outcomes.	7
		Polymakers should invest in climate-resilient logistics and transport systems to secure long-distance maize flows between regions.	6
		Polymakers should support irrigation infrastructure and cold-chain logistics to expand high-value horticultural processing opportunities.	6
	Public-Private Partnerships (PPP) for Midstream Infra	Governments should promote inclusive contract-farming and supplier-development programs linking smallholders to processors and retailers.	42
		Polymakers should foster public-private partnerships to scale sustainable infrastructure and value-chain logistics.	32
		Governments should support Productive Alliances linking smallholders with processors and exporters through co-financing and technical assistance.	14
		Polymakers should align rural infrastructure investments (roads, electricity, storage) with measures that improve smallholders' market access and resilience.	12
		Governments should coordinate multi-sectoral investment frameworks aligning SME finance, extension, and infrastructure development.	10
		Governments should support innovative blended-finance mechanisms to mobilize capital for food-system transformation, including impact investment.	6
Information, Monitoring & Evaluation	Market Intelligence, MIS & Dashboards	Governments should support data collection and research on trader networks, warehousing, and logistics markets to inform midstream policy design.	35

Infrastructure & Equipment (Midstream)	Cold Chain & Refrigerated Logistics	Governments should invest in cold storage, milling, and transport infrastructure to strengthen post-farmgate value chains and reduce food losses.	55
		Governments should invest in milk collection centers and cold-chain infrastructure to reduce spoilage and improve quality along dairy value chains.	8
	Logistics Hubs, Corridors & Distribution	Governments should invest in logistics and cold-chain infrastructure connecting rural assembly markets to urban wholesale and retail centers.	38
		Authorities should facilitate logistics for essential agricultural inputs and outputs during crises to keep supply chains functioning.	13
	Road Connectivity for Midstream Corridors	Governments should invest in rural infrastructure (roads, electricity, storage) to strengthen rural-urban linkages and midstream logistics.	34
	Storage, Silos & Collection Centers	Governments and donors should invest in storage and bagging facilities to reduce product loss and improve midstream efficiency in fertilizer distribution.	20
	Wholesale & Retail Markets (upgrading/formalization)	Governments should invest in infrastructure and services that improve market access for SMEs—roads, digital services, and wholesale markets—to enhance agrifood employment conditions.	54
		Governments should encourage digitalization and logistics innovation in retail and distribution to reduce transaction costs and expand consumer access.	29
		Governments should support mechanization and equipment-rental markets to facilitate small-scale processing and logistics services.	20
		Governments should improve storage and transport infrastructure at primary marketing centers to reduce post-harvest quality deterioration and transaction costs.	11
		Governments should improve data systems for quantitative assessment of different value chain segments to prioritize midstream efficiency improvements.	8
Market Regulation & Competition	Competition Policy & Antitrust Enforcement	Governments should regulate the behavior of dominant incumbents in agri-food markets to prevent underinvestment in innovation and to protect suppliers and SMEs.	22
	Licensing & Permitting Simplification	Governments should promote competition among input suppliers and streamline regulation to reduce price dispersion and inefficiency.	75
		Regulators should facilitate standardization and certification frameworks for midstream actors (processors, traders, logistics firms) to ensure market efficiency.	11
		Governments should reform price regulations in the coffee sector to balance market oversight with flexibility that allows certification schemes to reward sustainable practices.	7
		Policymakers should ensure that safety and traceability incentives also reach small and medium processors to prevent market exclusion.	6

	Wholesale Price Transparency & Market Information	Governments should promote transparency in contractual arrangements between technology suppliers, financial institutions, and farms to ensure equitable benefit sharing and risk distribution.	66
		Policymakers should implement non-distortionary foodgrain market interventions (e.g., transparent procurement, open market sales, improved stock management) to maintain competition while ensuring stability.	28
Processing & Value Addition	Hygiene, GMP & Plant Conditions	Policymakers should promote local manufacturing of seeds, agro-inputs, and cold-storage facilities to improve value-chain efficiency.	21
	Plant & Equipment Upgrading	Governments should incentivize processors to invest in upstream supplier development (training, certification, and equipment leasing) to ensure stable, high-quality supply.	8
Public Demand & Procurement	Institutional Procurement for Midstream	Policymakers should implement value-based public procurement systems that stimulate sustainable practices among processors and wholesalers.	43
		Policymakers should ensure that government payments to parastatals and private enterprises target upgrading of midstream value-chain infrastructure.	15
Resilience & Business Continuity	Disaster-Risk Management for Storage/Processing	Governments should reinforce investment in resilient food-system infrastructure, including storage, logistics, and processing facilities, to withstand recurring trade and climate shocks.	17
	Essential Services & Continuity of Markets/Logistics	Governments should promote integrated crisis-response policies linking finance, logistics, and energy to sustain agri-food value-chain resilience.	53
		Governments should ensure continuity of agri-food value-chain operations during political and economic crises by easing transport restrictions, stabilizing fuel prices, and facilitating safe food trade.	15
Skills & Institutional Capacity (Midstream)	Strengthening Standards & Food-Safety Agencies	Governments should strengthen analysis of producer, wholesale, and retail markets, processing, and trade logistics to design coordinated policies that improve food prices, diet diversity, and consumer trust in food markets.	96
		Policymakers should promote coherence between public norms and private standards to enhance decent employment outcomes in agrifood value chains.	40
		Governments should strengthen farm–processor contracts and collective marketing mechanisms that reward milk quality and hygiene compliance.	35
		Policymakers should create market incentives and enforce food-standard regulations that promote efficient and inclusive midstream development.	28
		Governments should provide technical and financial assistance to food-processing SMEs to improve production efficiency, safety, and marketing capacities.	24

		Governments should enhance coordination among agriculture, commerce, and health ministries to maintain agri-food system functionality.	18
		Governments should monitor and evaluate certification schemes to ensure that social and labor standards are enforced effectively and reach vulnerable workers.	15
		Governments should strengthen programs that enhance youth employment in downstream and midstream agrifood sectors, including manufacturing and processing.	15
		Policymakers should promote accountability and coordination across government levels to ensure food system resilience and continuity during shocks.	15
		Policymakers should promote investment in feed, veterinary, and extension services to increase milk productivity and quality.	13
		Policymakers should enforce health and labor standards to improve working conditions in food manufacturing and logistics.	12
		Authorities must ensure women's access to productive technologies, advisory services, finance, energy, and safe transport to participate effectively in food value chains.	10
		Governments should expand data collection and monitoring of SME performance, gender equity, and environmental impacts in aquatic food chains.	7
		Governments should integrate social protection programs into broader development plans to foster inclusive recovery of food supply chains.	7
		Governments should strengthen the capacity of laboratories and accreditation bodies to issue internationally recognized certificates for agri-food exports.	7
		Policymakers should support training and capacity building by processors and retailers to improve compliance with private standards and enhance supplier competitiveness.	7
		Universities and agricultural colleges should regularly review and update extension curricula to reflect evolving agri-food value-chain challenges, including processing, marketing, and finance.	7
		Governments should strengthen formal and informal enforcement institutions to improve contract reliability and reduce holdup risks between suppliers and processors.	6
		Policymakers should foster collaboration between academia, regulators, and the private sector for continuous innovation in food safety.	6
	Technical Training for Plant & Logistics	Governments should enhance vocational and business training for rural entrepreneurs in agrifood processing and services.	66
		Development partners should support training programs to build managerial and technical capacity of SME owners in processing, logistics, and marketing.	19

		Polymakers should incentivize universities to partner with agrifood enterprises for practical training and internship placements.	8
Standards, Quality & Food Safety (SPS/TBT)	Inspection, Laboratories & Metrology	Polymakers should invest in modern testing, inspection, and traceability systems to monitor food quality and safety.	8
	Standards & Technical Regulations (harmonization)	Governments should develop and enforce food quality and safety standards to support domestic market growth and consumer protection.	82
		Regulators should promote certification systems for ecological and organic agricultural products to provide price premiums and stimulate sustainable production.	26
		Governments should enforce milk quality and hygiene standards through the Dairy Development Authority while incentivizing compliance with price premiums for quality.	18
		Governments should monitor and regulate wholesale and retail markets and processing clusters for health and hygiene compliance.	15
		Governments should strengthen oversight of Voluntary Sustainability Standards (VSS) to reduce implementation failures and promote accountability of certificate operators.	14
		Governments should expand quality-assurance infrastructure (e.g., Coffee Liquoring Unit) to maintain consistency in certified exports.	13
		Governments should encourage the use of improved drying and preservation equipment to ensure food-safety compliance in small-scale processing.	8
		Governments must integrate pesticide monitoring and regulation into national food safety and agrifood system policies.	7
		Governments should enforce food-safety standards for fermented maize products to ensure compliance with national and international aflatoxin limits.	7
		Governments should ensure that post-harvest loss reduction policies balance quantity and quality objectives, prioritizing food safety and efficiency along the chain.	6
		Polymakers should establish national standards and inspection protocols for WRS facilities to guarantee quality, quantity, and safety of stored commodities.	6
Trade Facilitation (Midstream-relevant)	Customs, Border SPS & Clearance Times	Governments should coordinate cross-border and domestic transport regulations to minimize disruptions in agricultural trade and ensure continuity of food shipments.	20
		Governments should allow movement of seasonal and migrant agricultural labor to prevent disruptions in harvesting, processing, and logistics.	6

Tariff Structure & Incentives for Processing	Governments should align trade, fiscal, and regulatory policies to improve competitiveness of processed-food exports.	66
	Policymakers should promote local food processing industries to reduce dependency on imported processed foods and strengthen domestic value addition.	31
	Governments should promote diversified value-chain investments to stimulate employment across upstream input supply, processing, and transport services.	28
	Authorities should support SMEs in midstream sectors—processing, logistics, and wholesale—to expand value addition and employment opportunities.	25
	Governments should create incentives for private sector participation in logistics, processing, and wholesale distribution.	23
	Policymakers should reform trade policies to reduce export restrictions and import barriers that amplify global price volatility in processed food markets.	23
	Governments should facilitate foreign direct investment (FDI) in agri-food processing by establishing one-stop investment services and SME linkage programs.	16
	Governments should promote trader–farmer contracting models to stabilize maize supply and improve price predictability.	15
	Governments should support export-oriented food-processing industries through trade facilitation and quality certification.	15
	Governments should facilitate access to finance for SMEs engaged in processing, trucking, and warehousing activities.	12
	Policymakers must prioritize investment in export logistics to reduce marketing costs and facilitate integration into regional and global value chains.	11
	Authorities should enhance midstream trade resilience by supporting informal traders’ transition into formal export channels through training and simplified licensing.	8
	Governments should avoid export restrictions on staple foods and maintain open trade channels to ensure supply-chain stability.	8
	Policymakers should evaluate the distribution of price premiums along supply chains to guarantee fair benefit sharing among farmers, processors, and retailers.	8
	Policymakers should encourage modern “dedicated wholesalers” and contract farming schemes that integrate smallholders into efficient midstream channels.	7
	Governments should use economywide modeling tools (e.g., CGE, RIAPA) to identify synergies and trade-offs among value chains and guide inclusive investment decisions.	6

Urban & Territorial Food Systems	City-Region Logistics Planning & Intermediate Nodes	Governments should prioritize investment in rural infrastructure and logistics to connect production areas to urban markets, facilitating transformation of staple food systems.	153
		Governments should integrate transport and logistics support into emergency-response plans for agri-food value chains.	38
		Governments should maintain open and safe trade and transport corridors for food products to stabilize prices and sustain midstream operations during crises.	12
		Governments should invest in data systems to better monitor transformations in food markets, trade logistics, and processing sectors that shape dietary outcomes.	11
		Governments should facilitate credit and venture funding for agri-food start-ups providing digital or logistics services to processors and retailers.	7
		Federal and state governments, in partnership with development organizations and cooperatives, should establish village-level RPC (Reusable Plastic Crate) rental and distribution centers to improve farmers' access to affordable postharvest packaging technologies.	6



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