

Assessing Agri-Food Policies for Food Security: A Systematic Literature Review of Implementation Performance and Influencing Factors

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Abstract

Policies aimed at increasing agri-food production and self-sufficiency are critical strategies for achieving food security, aligned with the United Nations Sustainable Development Goal 2. This systematic review assessed the status, performance, and influencing factors in the implementation of agri-food policies. A comprehensive search was conducted across nine online databases, covering studies and grey literature from 2016 to August 2024. Studies of any design that examined agri-food policies, including implementation processes and shaping factors, were included. Quality appraisal was performed, and key information was systematically extracted and organized. Factors affecting implementation - barriers and enablers - were categorized into overarching themes using NVivo software. Findings revealed significant gaps between intended policy objectives and actual outcomes, varying performance across political, economic, social, and environmental contexts. The most frequently cited barriers included Weak Administrative Measures (28 studies), Economic Challenges (22 studies), Poor Governance (17 studies), Technical Gaps (17 studies), and Policy Inconsistencies (15 studies). Enablers were less frequently discussed, with key examples being Availability of Adequate Resources (6 studies), Effective Extension Services and Technology (5 studies), and Strong Institutional Capacity (4 studies). In conclusion, Effective policy implementation requires addressing these barriers, reinforcing enablers, prioritizing institutional support, and enhancing stakeholder engagement, particularly through incentive-based policy tools.

Keywords: Agri-Food Policy, Self-Sufficiency, Food Security, Policy Implementation, Barriers, Enablers, Systematic Literature Review

Introduction

The sustainable availability of food and eradicating hunger represent an ongoing challenge for humanity to secure their food needs. Securing food needs is always at the forefront of national food security agendas, particularly in developing nations worldwide, because it is one of the United Nations Sustainable Development Goals (UNSDGs), as the second

Sustainable Development Goal (SDG 2) emphasizes the importance of achieving the goal of zero Hunger, achieving food security, improve nutrition, and promoting sustainable agriculture by 2030 (UN, 2022, 2024). This requires maximizing agricultural productivity and introducing sustainable food production systems that are resilient to climate change and other expected disruptions. Thus, addressing food insecurity is one of each country's primary responsibilities.

According to a United Nations (UN) report about the state of food and nutrition in the world in 2022, the world is significantly far away from its goal of ending hunger, food insecurity, and malnutrition in all its forms by 2030. The report showed that 828 million people experienced hunger in 2021, with more than half of them in Asia (425 million), and more than one-third of them in Africa (278 million) (Sachs, Kroll, Lafortune, Fuller, & Woelm, 2022). Further, cereal grain represents the most important food security component in most different regions of the world. According to the FAO, food security currently depends on the increased production of three cereals: wheat, rice, and maize (FAO, 2017; Grote, Fasse, Nguyen, & Erenstein, 2021). This underscores the importance of designing suitable policies that promote increased food production, availability, and sustainability and engaging relevant institutions to support their implementation to achieve these objectives.

Policy implementation research gained significance from the mid-1970s until the early 1970s. The process of policy implementation has been defined by numerous scholars from various perspectives. The founding fathers of the implementation process highlighted that policy implementation is the carrying out of a basic policy decision, which involves translating policy decisions (goals and objectives) into on-the-ground actions, often supported by statutes (Mazmanian & Sabatier, 1981; Pressmann & Wildavsky, 1973). Although the necessity for policy implementation to bridge the gap between policy objectives, anticipated outcomes, and intended impact consequences becomes more widely acknowledged, the process itself is dynamic, complex, and problematic, and it is still not fully understood (Bullock & Lavis, 2019; Osmani, Kolaj, Borisov, & Arabska, 2022). The context of policy implementation is now recognized to be more complex than previously understood. Therefore, studying agri-food policy implementation is vital because it provides insights into how policy objectives are translated into practice, addressing real-world challenges in agriculture and ensuring that intended outcomes are achieved.

Agri-food policies implementation is the cornerstone for achieving sustainable development, alleviating food insecurity, and fostering economic growth. Thus, studying their implementation is crucial as it impacts various stakeholders and addresses multiple dimensions of food security and agricultural development. Assessing implementation performance helps evaluate the effectiveness of agri-food policies in achieving their desired outcomes such as ensuring stable food supplies and reducing vulnerabilities to external shocks, mitigating risks associated with geopolitical disruptions, promoting economic growth, and advancing environmental sustainability (Barel-Shaked & Buda, 2024; Basset, 2024; Bastidas-Orrego, Jaramillo, Castillo-Grisales, & Ceballos, 2023; Walls et al., 2018).

Furthermore, agri-food policies play pivotal role in achieving UN Sustainable Development Goals (SDGs), particularly in addressing poverty, hunger, and environmental sustainability. For example, SDG 2 focuses directly on food security and sustainable

agriculture, while many other goals are interconnected with food systems (Brooks, 2016; Guiné et al., 2021). Agriculture is also central to poverty reduction (SDG 1), water management (SDG 6), sustainable consumption (SDG 12), climate action (SDG 13), and ecosystem protection (SDG 15) (Brooks, 2016). Scholars have highlighted the need to restructure to align with SDGs, emphasising sustainable management of agricultural systems and social welfare schemes, this can be obtained by examining their implementation (Priyadarshini & Abhilash, 2020). Likewise, Movilla-Pateiro, Mahou-Lago, Doval, and Simal-Gandara (2021) argue that achieving sustainable food production requires restructuring agri-food policies in both developed and developing countries. Therefore, studying the performance of agri-food policy implementation is essential for ensuring effective policy formulation, implementation and alignment with the SDGs.

Likewise, the study of the implementation and effectiveness of agri-food policies is of great significance, as it impacts various stakeholders, including governments, farmers, consumers, and society at large. For governments and policymakers, such studies can inform the development of more effective and targeted policies that address unique challenges and opportunities within specific contexts (Asirvatham, Demi, & Ezezika, 2022; Lencucha, Pal, Appau, Thow, & Drope, 2020). Additionally, understanding the factors that facilitate or hinder successful policy implementation helps policymakers review and design agri-food policies that better align with the needs of the food system (Caldwell, Smith, & Johnson, 2021; Ezezika, Mendez, & Thompson, 2021; Resnick, Haggblade, Babu, Hendriks, & Mather, 2018). Examining these issues and considering context-specific factors is crucial for improving agri-food policy implementation and scaling up successful interventions, particularly in developing and least-developed countries.

Generally, studying the performance of agri-food policy implementation is vital due to its comprehensive impact on food security, environmental sustainability, and socio-economic development. It is particularly crucial for government policymakers and other stakeholders, as it provides a roadmap for improving implementation outcomes, developing effective strategies that promote sustainable agricultural practices, enhancing food security, driving accountability, and fostering innovation. Moreover, it highlights the importance of addressing complex challenges, ensuring sustainable growth, and promoting equity across the agricultural sector. Understanding these dynamics is essential for building resilient food systems capable of meeting the needs of diverse populations in an increasingly interconnected world.

Although many studies have been conducted to examine agri-food policy implementation, there has been limited effort to review and synthesize these studies' results systematically. This study can provide a clear view of the implementation of agri-food policy for policymakers, practitioners, and academicians. Therefore, to gain a deep understanding of past studies investigating the implementation of agri-food policies, this study adopted a Systematic Literature Review (SLR) approach to explore the status of the implementation process of agri-food policies. This approach systematically collects, analyses, and synthesizes all the previous literature and provides the state of research in this domain.

This study aims to provide a thorough understanding of the status and performance of the implementation process of agri-food policies and examine the potential implications for

the future of global food security. To achieve this goal, this study addresses the following research questions:

RQ1. What are the status and trends in the studies examining the implementation of agri-food policies?

RQ2 What is the focus of research addressing the implementation of agri-food policies?

RQ3.What are the factors (barriers and enablers) affecting the implementation of agri-food policies?

Through reviewing existing research, identifying gaps in knowledge, and offering evidence-based insights, this study will contribute to developing informed strategies that enhance resilience, improve productivity, and ensure the sustainability of agri-food production worldwide. Addressing these questions can help us better understand the status of agri-food policy implementation and provide guidance to government institutions responsible for supporting the implementation of agri-food policies to attain food security, particularly for policymakers and practitioners. The Findings from this review can help in the development and implementation of policies aimed at increasing the local production of agri-food production for each country.

The Review Methodology

A systematic review is a process of identifying, evaluating, and interpreting all available research relevant to research questions, areas of study, or rising phenomena of interest (Kitchenham & Charters, 2007). To answer the above questions, this study utilizes a systematic literature review (SLR) adapted from Kitchenham and Charters guidelines which involve three main phases: Phase 1: Development of the Review Protocol, Phase 2: Conducting the Review, and Phase 3: Synthesis of Data and Findings. Each stage has certain activities, these activities are: (1) identifying research questions, (2) developing review protocol, (3) identifying the inclusion and exclusion, (4) search strategy (5) the selection process (5) performing quality assessment process, and (6) data extraction and synthesis.

Eligibility Criteria

The purpose of identifying eligibility criteria is to ensure that the selected studies are relevant and related to the study's purpose. The primary study selection process was determined based on specific criteria for inclusion and exclusion to ensure that only pertinent studies were used. Accordingly, this study set specific criteria. Table 1 demonstrates a summary of the eligibility criteria.

Table 1
Summary of Inclusion/Exclusion Criteria

Criteria	Inclusion	Exclusion
Study Domain	within the agri-food policy implementation domain.	Not related to the research domain.
Time Range	published between January 2016 and August 2024.	outside the research period
Language Choice	English language.	Not in the English language
Availability Choice	Available in full-text research.	Not available in full - text.
Types of Literature	Journal articles, conference papers, Working papers, and thesis	Duplicated studies

Thus, the studies that met these inclusion and exclusion criteria summarised in Table 1 were eligible for this review.

Data Sources and Search Strategy

A comprehensive search of pre-literature was conducted. The search focused on agri-food policy implementation objectives, performance, and factors affecting their implementation (barriers or enablers). Based on the recommendations of Webster and Watson (2002), the researcher did not limit the search process to a specific set of journals; instead, several online databases were used to cover a broad range of academic publications.

The search strategy, as depicted in Fig.1, comprises two stages: the automatic stage and the manual stage. First, an automatic search was used to expand the review, so numerous studies were included to gain a broad perspective. The following databases were searched: ISI Web of Science, Scopus—Elsevier, Springer Link, Emerald, Sage Journals, Wiley Online Library, and Taylor and Francis. Then, Google Scholar was also searched. These databases are considered relevant and provide high-impact factor publication.

The keywords and strings, that were developed to conduct the search process are: ("Agri-food security" OR "Agri-food self-sufficiency" OR "Agricultural food security" OR "Agricultural food self-sufficiency" OR "Cereal crop self-sufficiency" OR "Staple food self-sufficiency") AND ("Policy implementation" OR "Policy execution" OR "Policy practice ")

Then a manual search was used on the primary study references, to ensure that the systematic research is comprehensive and relatively complete as recommended by (Kitchenham & Charters, 2007). End Note was used to manage and organize all search results, allowing for the easy removal of duplicate studies.

Study Selection Process

The purpose of the study selection process is to identify the studies that are related to the research questions of the review. Hence, in this study, after searching the all-sources database presented above by using the defended search string, the initial search identified 605 studies from the automatic search stage. Out of these 605 studies, 93 were duplicated and were removed. The remaining 512 studies were checked against the criteria of inclusion

and exclusion (title, abstract, and full-text screening) by using a toll-gate approach, as stated by (Nidhra, Yanamadala, Afzal, & Torkar, 2013). First, 408 studies were excluded based on titles, abstracts, and keyword reviews, and 104 studies remained. Then, after applying full-text screening (exclusion upon full text), 65 studies were further excluded, thus the remaining 39 studies were the result of the first stage (automatic search).

After that, all 39 remaining studies were screened using the "pearl-growing" technique, so three additional relevant studies were also retrieved. Subsequently, these three studies were addressed with the same inclusion and exclusion processes, resulting in only one study fulfilling all the criteria. Accordingly, the pre-final set of primary studies was 40 studies.

Quality Assessment (QA)

It is crucial to apply quality assessment(QA) to assess the quality of the selected primary studies through a checklist of questions to decide the overall quality of the selected studies to determine the confidence in the credibility of a particular identified study (Kitchenham & Charters, 2007). Thus, this study applied the five-quality assessment schema inspired by (Nidhra et al., 2013). This process has three levels of quality schema (high, medium, or low); any primary study that scored less than (6) was excluded. These five questions are as follows: QA1. Are the topics addressed in the paper related to our review? QA2. Is the context of the research described in the paper? QA3. Is the methodology of research clearly explained in the paper? QA4. Is the data collection method described in the paper? QA5. Is the data analysis accurate and explained in the paper?

Accordingly, these QA criteria were applied to these 40 studies. Subsequently, five studies were excluded as they scored low quality, thus, 35 studies were identified as primary studies and formed the basis for the subsequent review steps.

Data Extraction and Synthesis Process

According to the study objectives, the key information and concepts from the included studies were carefully reviewed to determine their suitability in addressing the research questions without interpretation by the researcher. The extracted information includes the year of publication, study location, socio-economic group, research method, data sources, sampling techniques, data collection method, and data analysis as presented in Appendix B. Further, it also includes the agri-food policy examined, the study's objectives, the factors that influence the implementation process, and the recommendations made to improve policy implementation. Then NVivo software was used to analyze the factors affecting the implementation utilizing a thematic analysis approach. Figure 1 depicts the different procedures of the SLR according to the main reference guidelines.

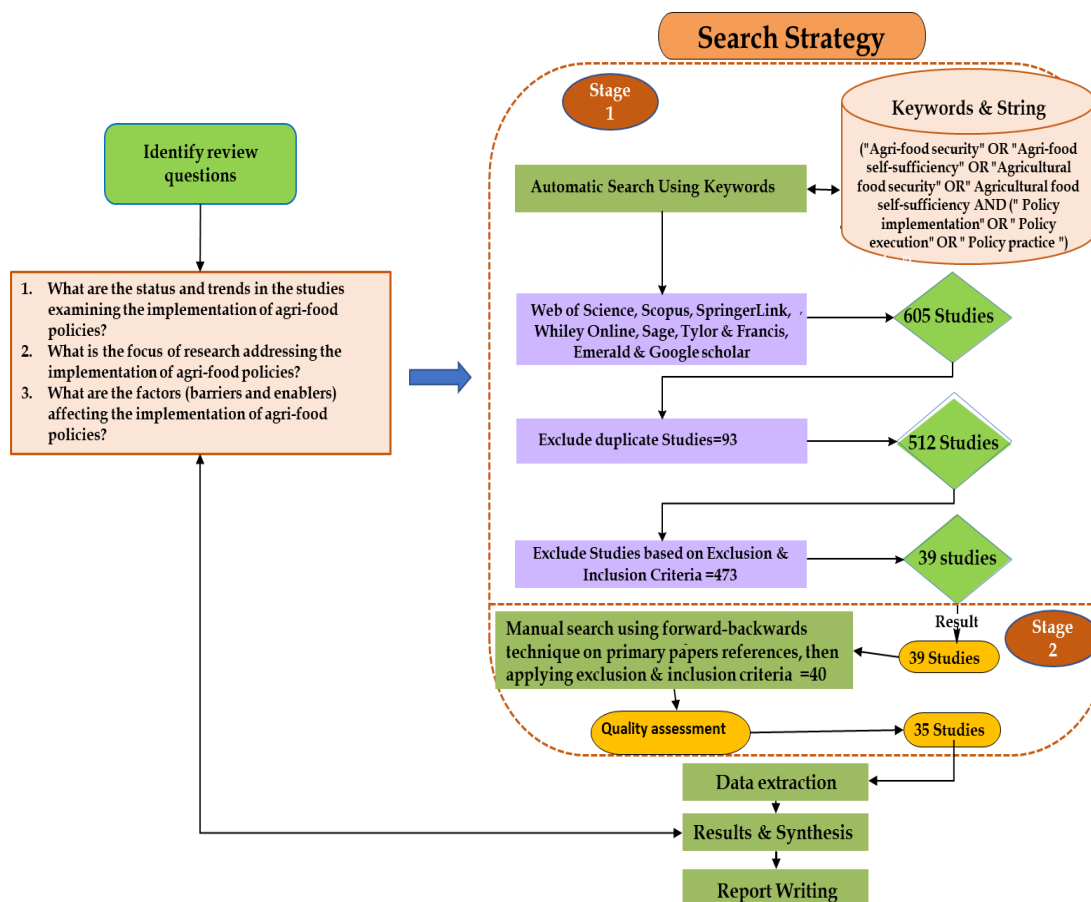


Figure 1 The Systematic Literature Review (SLR) procedures

The Review Results and Discussion

The principal objectives of conducting this SLR are to investigate the performance of agri-food policy implementation and identify the factors that affect the implementation process of agri-food policies in previous research that could help in gaining a deep understanding to overcome the gap between domestic agri-food production and consumption to achieve food security.

The findings of the review are presented in three sections. The first section is about the status and trends of studies examining the implementation of agri-food policies. It encompasses study descriptors such as publication year, study location, socio-economic status, and methodologies employed. The subsequent sections provide literature classification, including study objectives, the implementation performance, factors affecting the implementation, and how to address implementation issues.

The Status and Trends of the Selected Primary Studies

The distribution of the 35 selected primary studies examining the implementation of agri-food policies throughout the years shows a gradual decrease in publication numbers for the topic since 2021. As shown in Figure 2, the publication numbers are four, seven, four, four, six, five, two, two, and one studies for 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, and 2024, respectively with notice that the publication for the year 2024 is until August 2024.

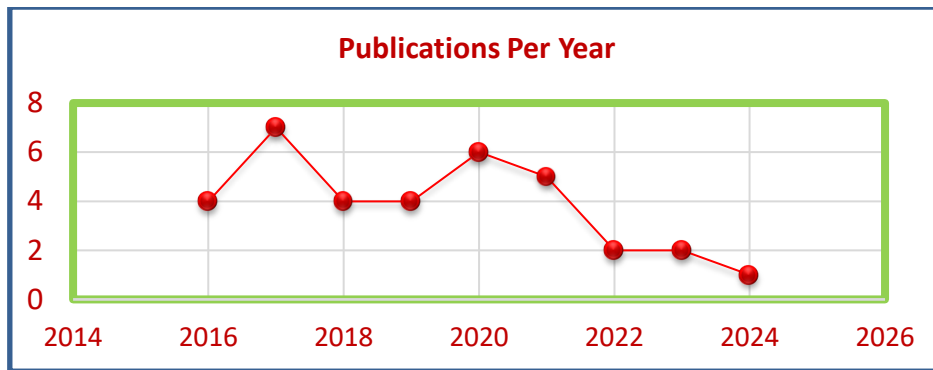


Figure 2 Distribution of the selected primary studies per Year

Concerning the disruption of the primary studies based on socioeconomic category, as seen in Figure 3, the findings showed that 25 studies, representing 71% of the total, were conducted in developing nations. Eight studies came from the least developed nations (i.e., 23%) and just two from developed countries (i.e., 6%). These results demonstrated that research on the issues related to the implementation of agri-food policies was more interesting in developing countries. This indicates that the issue is a more critical problem in developing and least-developed countries, especially in the African and Southeast Asian countries.

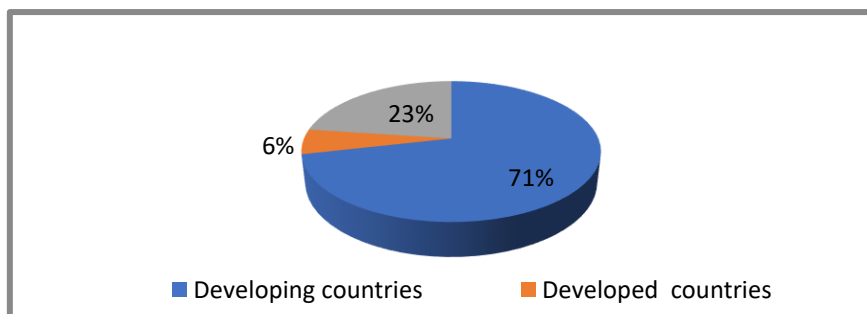


Figure 3 Distribution of the selected primary studies per Socio-Economic Group

Moreover, the result shows that the number of studies carried out in African countries is 17, which represents 47%, with only two studies from Sudan, compared to 13 studies carried out in Southeast Asia, which represents 36%, with eight studies from Indonesia. Three studies from Central America and the Caribbean, represent 8%, two studies from Europe, represent 6%, and only one from the Middle East, represents 3%, as shown in Figure 4.

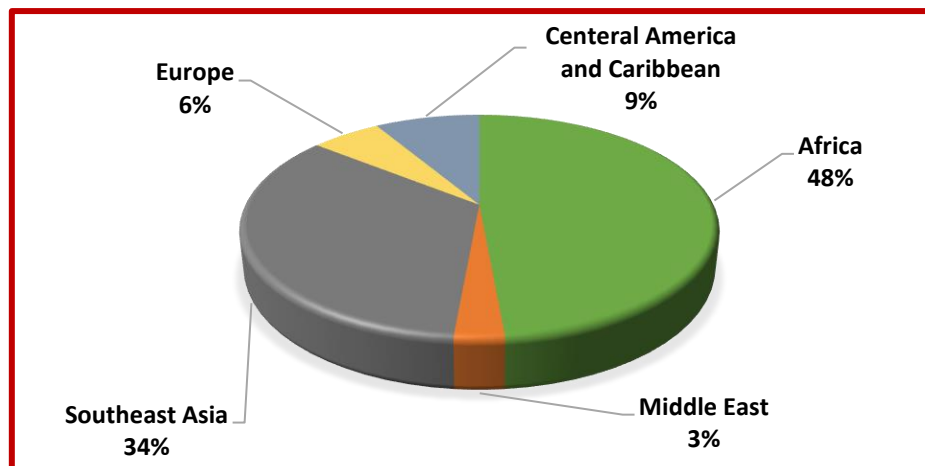


Figure 4 Distribution of the selected primary studies per region

The primary studies included in the research predominantly used a qualitative approach. Out of the 35 studies, 15 reported using a qualitative approach, representing 43% of the total, with eight studies utilizing a case study design. While seven reported using a mixed method approach, representing 20%. Additionally, six studies used a quantitative approach, making up 17% of the total, and seven studies were review articles, also representing 20%. Overall, 80% of the selected primary studies were empirical studies, while the remaining 20% were review studies.

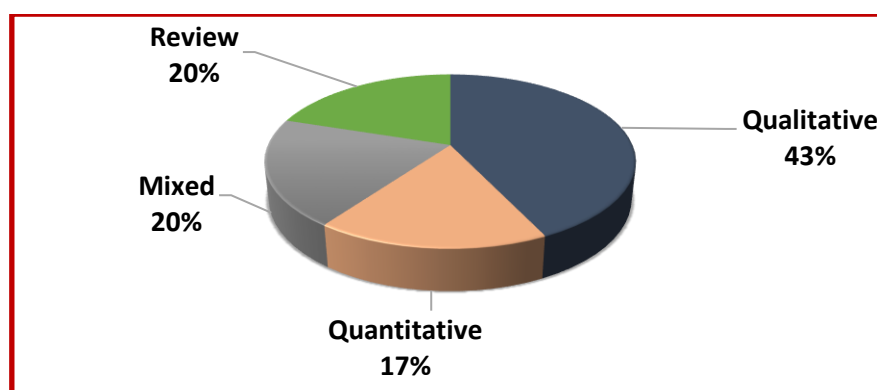


Figure 5 Primary studies research methods approach distributions

These results suggest that the qualitative method approach is more appropriate for gaining an in-depth understanding of the challenges and enablers that were encountered during the implementation processes of agri-food policies and programs.

Most of the qualitative method studies of the SLR primary studies dominantly employed interviews combined with other techniques such as focus group discussions, document reviews, and field observations to get primary data from the participants. Out of the 35 primary studies selected, interviews were reported in 19 studies, with 16 combined with other methods, and three studies reported interviews only. Hence, the SLR stressed the importance of using interviews in conjunction with document reviews and/or focus group discussions to examine the implementation of agri-food policies. Thus, in policy research, it is crucial to incorporate document reviews alongside interviews.

Regarding the participants, the targeted population included agricultural policy implementation actors from relevant government institutions, such as policymakers, top managers, government officials from different levels, farmers and their associations, relevant business industries, and academicians. The majority of the qualitative studies utilized the quad-helix approach as a network to select the participants from various stakeholders. Those stakeholders included representatives from relevant government institutions, industry, academicians, and civil society (farmers) who were involved in the implementation of the respective policy. This approach ensured that the primary data was from multiple perspectives.

Regarding the theoretical framework to conduct the study, the SLR results revealed no dominant theoretical frameworks within the primary studies, which indicated that flexibility depends on the main objectives of each study.

The Objectives of Studies Addressing Agri-food Policy Implementation

Concerning the research objectives, SLR revealed that numerous research efforts have primarily focused on policy implementation to address the agri-food policy risks. Most of the selected primary studies have focused on investigating implementation challenges and barriers. The result showed that 28 primary studies were conducted to investigate the obstacles encountered during the implementation process, which accounted for 80% of the selected studies. Additionally, two studies examined the enablers that enhance implementation, and five studies investigated the factors affecting implementation in general, which accounted for 6% and 14% respectively, as illustrated in Figure 6.

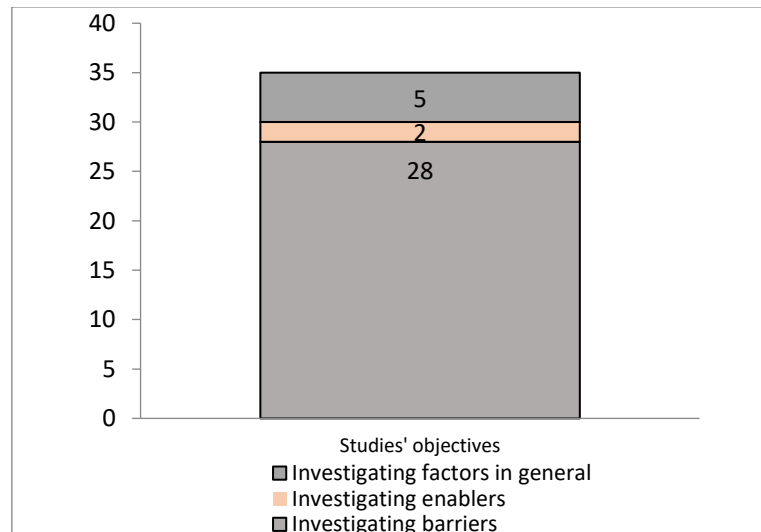


Figure 6 Studies' objectives in the selected Primary studies

According to the SLR results, it should be noted that none of the primary studies had the objective of developing a framework to enhance effective implementation. Further, all studies only provided recommendations to address the factors either barriers or enablers that influence the implementation of the respective policies. Moreover, none of them developed a framework to enhance implementation.

Performance and Factors Affecting Agri-Food Policy Implementation

The SLR results showed that all the agri-food policies examined were government national policies, intended to increase agricultural food production, eradicate hunger, and reduce poverty to attain food security. Further, three main concepts about food policies appeared: food self-sufficiency, food reliance, and food sovereignty. Most of the selected primary studies agree that food self-sufficiency is one of the policy solutions for achieving food security and strengthening national sovereignty by increasing crop productivity and cultivated area, which leads to increasing total agri-food production.

Further, the results showed implementation gaps as there is a gap between the intended policy objectives and the actual outcomes of the implementation process that vary according to the prevailing political, economic, social, and environmental conditions. Figure 7 explains that the common constraining factors influencing the implementation of agri-food policies in most countries, regardless of their socio-economic status are weak administrative measures, economic difficulties, poor governance, inconsistency of the policies and plans, technical gaps, lack of awareness about the policy, weak policy incentive tools and foreign constraints. On the other hand, the key enabling factors are allocating adequate financial resources, extension services and technology, and good institutional capacity.

According to the SLR results, most factors that affected the implementation fall within the scope of the Sabatier and Mazmanian approach. It is noted that several factors combine to determine the actual effects that led to efficient implementation outcomes, which are categorized into five main factors: clear and consistent objectives and directives at all levels; human capital (skills, ability, and competence); sufficient financial resources allocated to implementation; stakeholder support; and the administrative structures and regulations to support the implementation (Sabatier & Mazmanian, 1995).

Moreover, the majority of identified barriers that hinder the implementation processes fall within the scope of the implementation traps as developed by Althaus, Bridgman, and Davis (2018). They classified these implementation traps into different categories. These categories include incomplete specification of objectives, conflicting objectives within or between policies, conflicting directives from agencies or senior officials, limited competence of agencies tasked with implementation; incentive failures, inadequate resources to support implementation, poor coordination and communication with different stakeholders, policy setting shortcomings such as complicated setting or too many interacting policy instruments; and poor design of the implementation strategy. Further, some barriers can also be classified as knowledge issues, as defined by Patton, Sawicki, and Clark (2015), such as insufficient or poor understanding of the policy issue and inappropriate policy incentive tools.

These results revealed that agri-food is an important subject that governments in all countries need to produce for their citizens as one of their human rights. This shows that governments in all countries feel the need and have responsibilities to be agri-food self-sufficient to attain food security. Additionally, the results demonstrate that food self-sufficiency, food reliance, and food sovereignty are important strategies for achieving food security. This result is in line with Baer-Nawrocka and Sadowski (2019) study. According to their study, there are three main types of agri-food policy solutions aimed at attaining food security: food self-reliance, food self-sufficiency, and food sovereignty. Thus, these agri-food policy solutions

demonstrate a nation's political sovereignty, independence, and national power that would allow a nation-state to pursue an autonomous and dynamic foreign policy in the global system. Therefore, food policy implementation is of critical importance to the success of governments.

Additionally, the results showed that there are implementation gaps that vary according to the prevailing political, economic, social, and environmental conditions. Thus, the factors that influence the implementation also vary according to the conditions mentioned. This result is consistent with some studies which showing that implementing public policies is generally more difficult, as many nations face policy implementation failure for different reasons (Anthopoulos, Reddick, Giannakidou, & Mavridis, 2016; Dambazau, Krishnankutty, & Ajitha, 2021). Therefore, understanding the context in which policies are being implemented is critical to identifying and addressing factors affecting the implementation.

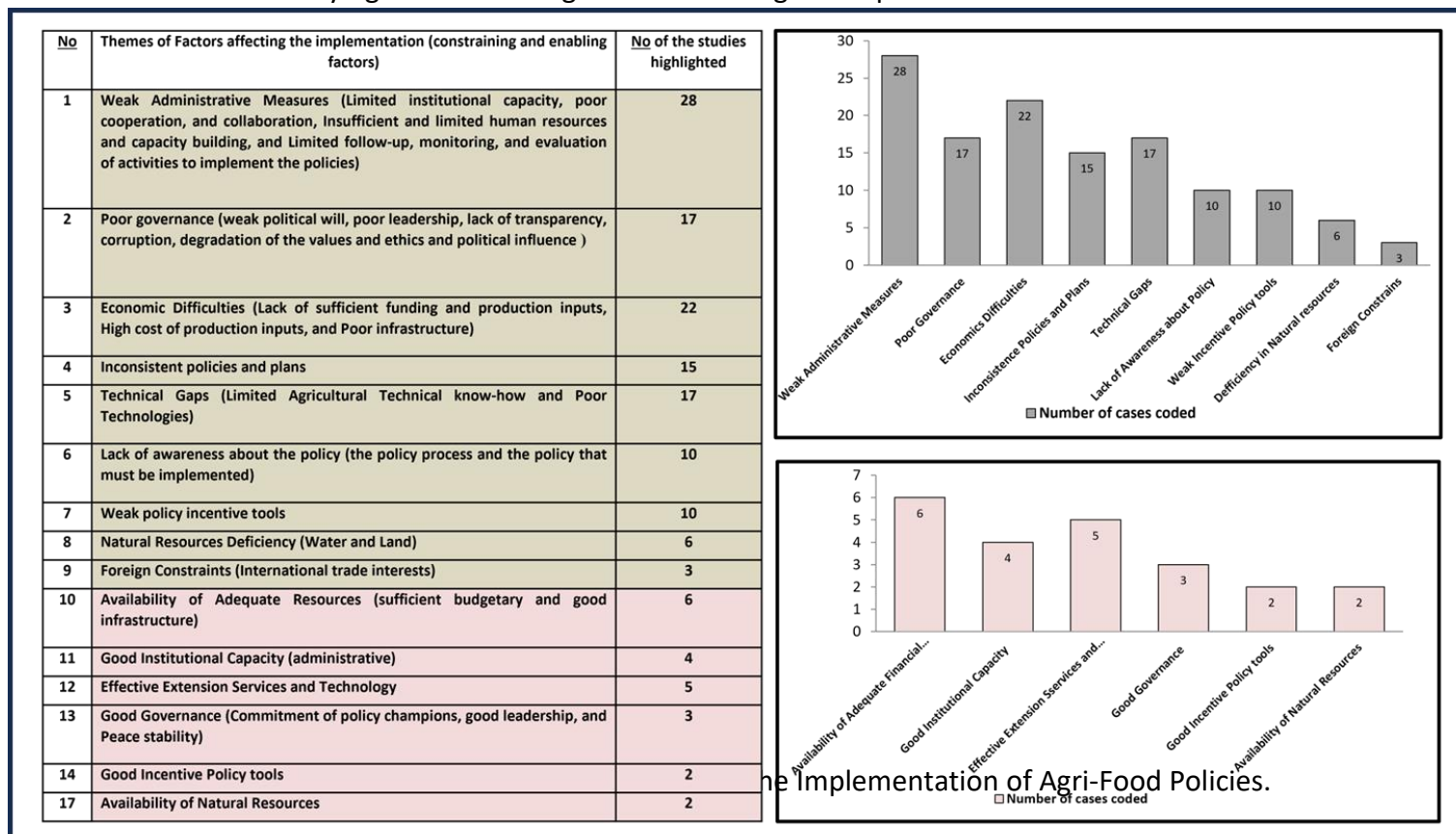


Table 2

Review of the studies 'objective, performance, and factors affecting implementation, and Recommendations

No	location & Author	Study Objective	Factors affecting the implementation process	Recommendations to improve implementation
1	Zambia (Kalaba, 2016)	To identify obstacles to the implementation of agricultural policy, aiming at increasing food production and enhancing food security (national policy)	<ul style="list-style-type: none"> - The policy implementation deficits are prevalent. - The main barriers are Limited institutional capacity, inadequate legal framework, unfavourable political influences, insufficient finance, poor inter-sectoral coordination, and land ownership problems. 	<ul style="list-style-type: none"> - Suggested recommendations to address the barriers that hinder the implementation.
2	Malawi (C. M. Masangano et al., 2016)	To examine the implementation performance of DAESS policy for promoting agricultural production (national policy)	<ul style="list-style-type: none"> - The policy is not fully implemented in some areas. - The challenges facing implementation are limited knowledge regarding the concept of the policy, limited technical know-how to guide implementation, poor harmonization and coordination, and weak administrative structures. 	<ul style="list-style-type: none"> - Suggested recommendations to address the challenges facing the implementation process
3	South Africa (Shonhai, 2016)	To explore the implementation process of Indigenous Knowledge Systems (IKS) policy to attain food sovereignty in the agriculture sector (national policy)	<ul style="list-style-type: none"> - The implementation faces many challenges. - The Key challenges facing the implementation are land scarcity, lack of agricultural machinery, lack of service delivery due to the economic situation and corruption, insufficient funds (water for irrigation, seeds), lack of interest in agriculture among the youth, poor Consultation during the planning stage, and marketing challenges. 	<ul style="list-style-type: none"> - Suggested recommendations to address the challenges facing the implementation process
4	Uganda (Chemutai, 2016)	To analyze the implementation of the National Food Policy, National Food and Nutrition Strategy, and National Development Plan concerning the capacity of institutions, funding, accountability, and participation (national policies)	<ul style="list-style-type: none"> - The effective and efficient implementation results from the "will" of politicians, institutions, and bureaucrats. - There are barriers to implementation, including inadequate political will among politicians, institutions, and bureaucrats, massive corruption among politicians and implementers, limited allocation of resources, poor institutional capacity, and 	<ul style="list-style-type: none"> - Suggested recommendations to address the challenges facing the implementation process

			inappropriate coordination and legal framework.	
5	Malawi (C. Masangano, Kambewa, Bosscher, & Fatch, 2017)	To examine the implementation performance of the DAESS program for promoting agricultural production (national policy)	<ul style="list-style-type: none"> - Implementation with limited success. - The key challenges facing implementation are shortages of skilled staff and labourers, poor technologies, weak decentralization of services, and poor coordination. 	<ul style="list-style-type: none"> - Suggested recommendations to address the challenges facing the implementation process
	Nigeria (Ambali & Murana, 2017)	To analyze the challenges facing Agricultural Policies before and after independence, including some agricultural food production policies aimed at ensuring food security and self-sufficiency in basic staples such as wheat (national policies)	<ul style="list-style-type: none"> - There is a significant gap between the expected outcomes and the actual results of policy implementation. - The implementation Challenges are: lack of interaction between stakeholders, insufficient technical advisory and extension services, low budget allocated for the agricultural sector, mismanagement and shortage of funds to implement specific policies or programs, inadequate monitoring, and evaluation of programs and projects, role conflict between different programs, inconsistency and incompatibility of policies and programs, high-cost of production inputs, and short duration of agricultural policies and programs. 	<ul style="list-style-type: none"> - Suggested recommendations to address the challenges facing the implementation process
7	Eritrea (Tesfagabir, 2017)	To examine the implementation of the Eritrean Food Self-Reliance Policy (EFSRP) (national policy)	<ul style="list-style-type: none"> - There are many challenges facing the implementation. - The main challenges are Shortages of material supplies (pesticides, fuel, fertilizers, hybrid seeds, and machinery), national service difficulties due to the government's low-level bureaucrats, inappropriate government land-tenure policy that discourages farmers from taking care of their farms as their own (policies inconsistency), water irrigation difficulties, and lack of understanding of how the government operates the policy. 	<ul style="list-style-type: none"> - Suggested recommendations to address the challenges facing the implementation process
8	Indonesia (Adrianto & Baharuddin, 2017)	To understand the implementation of food security and to examine the factors that hamper the effectiveness of it is implementation (national policy)	<ul style="list-style-type: none"> - The implementation of the food security policy has not been effective due to external factors and internal factors. - The factors that hinder the implementation are the lack of support facilities and infrastructures, which greatly affects the performance and effectiveness of existing agricultural extension activities, poorly managed institutional conditions of farmers' organizations, lack of human resources owned by farmers' organizations, and the lack of private and government involvement in the application of agricultural technology. 	<ul style="list-style-type: none"> - Suggested recommendations to address the factors hindering the implementation

9	Brunei Darussalam (Kamarulzaman, 2017)	To identify implementation issues and challenges for Brunei's rice agricultural programs regarding the self-sufficiency goal (national policy)	<ul style="list-style-type: none"> - Implementation was successful to a certain extent. - The implementation challenges are poor irrigation and drainage system, poor farm management due to inadequate knowledge and skills, lack of knowledge of diseases and pests' control, inadequate farm equipment (trans-planters and combine harvesters), limited manpower, the government's late payments for agricultural production and poor-quality soil. 	<ul style="list-style-type: none"> - Suggested recommendations to address the challenges facing the implementation process
10	Saint Lucia (Saint Ville, Hickey, & Phillip, 2017)	To investigate the influence of stakeholder interactions on the implementation of National Agricultural Policy 2009–2015 which includes national food security objectives (national policy)	<ul style="list-style-type: none"> - Stakeholder interactions negatively influence policy implementation. - The main limitations are Lack of proper coordination and collaboration in the implementation process; absence of a coordinating, implementing, and monitoring body; limited capacity, and management difficulties. 	<ul style="list-style-type: none"> - Suggested recommendations to address the limitation of stakeholder interactions that negatively affected the implementation process
11	Norway (Forbord & Vik, 2017)	Among other objectives, is to investigate the main Obstacles facing agricultural food production policy in the grain production system (national policy).	<ul style="list-style-type: none"> - Some barriers are impeding the implementation of food production policies. - The most obstacle factors are the lack of suitable agricultural land and the shortage of workers to work on the farms. 	<ul style="list-style-type: none"> - Suggested recommendations to address the barriers that impede the implementation.
12	Zambia (Resnick et al., 2018)	To examine the factors that shape the effectiveness of policy implementation during the implementation stage (Agricultural Input Subsidies Policy and food security policy) (national policies).	<ul style="list-style-type: none"> - Many factors influence the effectiveness of the implementation of the policies. - The factors that affect policy implementation are budgetary resources, institutional capacity (technical and administrative), the implementation veto players, and the commitment of policy champions. 	<ul style="list-style-type: none"> - Suggested recommendations to strengthen the factors that influence the effectiveness of the implementation
13	Nigeria (Letswa, 2018)	To examine the challenges facing the implementation of the National Fertilizer Distribution Policy, aiming to increase production and enhance food security (national policy)	<ul style="list-style-type: none"> - Many challenges have affected the implementation. - The major causes of these challenges are Corruption, bureaucracy, and the absence of an effective government. 	<ul style="list-style-type: none"> - Suggested recommendations to address the challenges facing the implementation process
14	Kenya (Mohammed, 2018)	To examine the factors that influence the implementation of Sustainable Food Security Policy Programs (national policy)	<ul style="list-style-type: none"> - The factors significantly influencing the implementation are Peace and stability which enables the local community to engage in production activities, the education level, because well-educated individuals can use modern technological methods in production that add value, crop diversity system (depending on more than one crop), 	<ul style="list-style-type: none"> - Suggested recommendations to strengthen the factors influence the effectiveness of the implementation

			and integrated water system such as harvesting water projects, using modern irrigation technology, exploring underground water and preservation of water catchment areas.	
15	Cuba (McPherson, 2018)	To evaluate how different power-sharing arrangements impact the implementation of food security policy goals to achieve food sovereignty (national policy)	<ul style="list-style-type: none"> - Power-sharing arrangements significantly impacted the implementation process. - The implementation of the Food self-sufficiency policy is significantly impacted by the government leadership's tendency to favor international trade and centralized control of agricultural resources. This limits the full potential of small-scale farmers to produce food, restricts domestic producers from fully participating and benefiting in the national economy, and leaves Cuba's food systems exposed and vulnerable to international markets. 	-
16	Malawi (Hunga & Culas, 2019)	To analyse the impact of Malawi's national agricultural policies implementation on crop productivity and food security status.	<ul style="list-style-type: none"> - The Implementation has not achieved the policy objectives. - Challenges facing the implementation are lack of technology development; lack of investment and emphasis on agricultural research; lack of policy consistency. 	- Suggested recommendations to address the challenges facing the implementation process
17	Indonesia (Alwi, Aslinda, & Susanti, 2019)	To examine the performance of the implementation of food security policy (national policy), among others	<ul style="list-style-type: none"> - Weak Food policy implementation performance. - The obstacles affecting the performance of the implementation are the ineffective cross-sector collaboration process due to ineffective Leadership, Lack of political commitment indicated by the low budget allocated for program activities, and inadequate accountability strategy. 	- Suggested recommendations to address the obstacles facing the implementation process
18	China (Xie & Wu, 2019)	To investigate the implementation of the Cultivated Farmland fallow policy for ensuring food security (national policy)	<ul style="list-style-type: none"> - The implementation faces several practical problems: - Problems facing implementation are the farmers' lack of awareness about the policy and weak farmers' willingness due to inappropriate policy incentives that did not encourage farmers. 	- Suggested recommendations to address the problems facing the implementation process
19	Malta (Guzel, 2019)	To evaluate the implementation of the National Rural Development Program with a focus on organic farming for achieving food security objectives (national policy)	<ul style="list-style-type: none"> - The policy program was not implemented successfully as planned. - The causes of weak implementation are the small capacity of the unit, the lower priority of the sector in comparison with the others, the proposed instruments are not enough to reach the targets indicated by the policy, insufficient budget, and a lack of communication between the authorities and the target group. 	- Suggested recommendations to address the causes of poor implementation process
20	Ghana		- The successful implementation is influenced by the	- Suggested recommendations to

	(Arko, 2020)	To investigate the factors influencing the implementation of specific agricultural policy programs (CODAPEC program) (national policy)	five tested factors: adequate technical know-how (skilled farmers), farmers' active participation in the education farming program, sufficient supply of resources, managerial supervision (administrative capacity and strong leadership), and Clear and consistent objectives.	strengthen the factors that led to successful implementation
21	Kenya (Munene, 2020)	To investigate the barriers to implementing agricultural food and nutrition policies (national policies).	<ul style="list-style-type: none"> - Some barriers hinder the successful implementation of food and nutrition policies. - The main barriers that hinder the effective implementation are weak government's political commitment to long-term solutions, inadequate budgetary allocations, inconsistent linkages from one regime to another, and lack of policy coherence in addressing food insecurity due to differing priorities among successive government administrations. This has been a major weakness in attaining food security. 	<ul style="list-style-type: none"> - Suggested recommendations to address the barriers hindering the implementation process
22	Sudan (Mohamed & Mohamed, 2020)	To evaluate and assess the implementation of agricultural production policies, aiming at achieving food security and self-sufficiency in Sudan (national policies)	<ul style="list-style-type: none"> - The implementation faces challenges. - The implementation outcomes and efficiency are often obstructed by the different Interests, varying priorities, the power and influence of different stakeholders, and the lack of necessary skills among government staff regarding properly analyzing and implementing policies in the agricultural sector. 	<ul style="list-style-type: none"> - Suggested recommendations to address the challenges facing the implementation process
23	Nepal (Khanal et al., 2020)	To evaluate the challenges in achieving the goals of National Agricultural Development Strategies (ADS), intending to increase food production to ensure food security (national policy)	<ul style="list-style-type: none"> - Some constraints are hindering the achievement of the National Agricultural Development Strategies goals. - The main constraints include a lack of appropriate approaches in designing agricultural policies, plans, and programs, limited capacity building, contradictory legislative provisions, weak coordination between key stakeholders, and limited monitoring, evaluation, and analysis of policy activities. 	<ul style="list-style-type: none"> - Suggested recommendations to address the constraints hindering the implementation process
24	China (Qian, Ito, & Zhao, 2020)	To evaluate the impact of the agricultural subsidy policy (incentive policy tool) on increasing self-sufficiency rates and improving food security (national policy)	<ul style="list-style-type: none"> - The price support policies (incentive policy tools), play a significant role in improving food security by increasing productivity thus enhancing self-sufficiency rates and stocks-to-use ratios. 	<ul style="list-style-type: none"> - Suggested recommendations to strengthen the incentive policy tool because it plays a significant positive role in the implementation
25	Nicaragua (Schiller, Klerkx, Poortvliet, & Godek, 2020)	To examine barriers to the implementation of ago-ecological transition policy programs in National	<ul style="list-style-type: none"> - Some barriers are hindering the implementation. - The main barriers are a Lack of proper guidance or leadership, 	<ul style="list-style-type: none"> - Suggested recommendations to address the barriers hindering the implementation process

		policies (Government – National policies, ie Agricultural policies, food self-sufficiency policy, Food and Nutritional Security and Sovereignty policy) (national policies)	insufficient resources, and an undeveloped market.	
26	Nigeria (Ajitha, Krishnankutty, & Dambazau, 2021)	To investigate factors affecting the outcome of wheat production policy implementation	<ul style="list-style-type: none"> - Two main constraining factors affecting the outcomes of the respective policy: The major internal social factors: Non-adoption of recommended agronomic practices; and the knowledge level of the farmers, which led to low productivity. - The major external social factors are consumer food habits, demand for convenience, low produce prices, high input costs, Lack of adequate extension personnel, and Lack of certified seed. - The Political factors: Social security issues, inconsistent government policies, the role of the publication media; the influence of the milling industries, international trade interests, and a lack of political will which led to difficulties in implementation. 	- Suggested recommendations to address the constraining factors that affected the implementation process
27	Five West African countries (ECOWAS) (Bamoi & Yilmaz, 2021)	To examine the factors affecting the effectiveness of the implementation of agricultural policies (national policies)	<ul style="list-style-type: none"> - The agricultural policies implemented have not reached their goals in terms of achieving food security. - The main constraining factors affecting the effective implementation are insufficient human resources (the personnel allocated for the conception and the follow-up of the policies), inappropriate policy strategies and instruments, weak agricultural research and extension services, external pressures and influences, and regional interface conditions to obtain funds. This funding tool is inappropriate for financial autonomy and political sovereignty risk. 	- Suggested recommendations to address the constraining factors that affected the implementation process
28	Indonesia (Yumaiza, Evi Satispi, Rahmat Salam, & Tuti, 2021)	To evaluate the implementation of the Sustainable Food Garden (P2L) program, which aims to improve Food Security (national policy)	<ul style="list-style-type: none"> - The implementation faces several obstacles. - The main obstacles are limited human resources, difficulties due to climate factors during the dry season, high production costs due to lack of water, weak competitiveness in terms of commodity prices resulting in unprofitability, plant pests, and commodity yields that are not market-oriented resulting in no economic feasibility. 	- Suggested recommendations to address the obstacles facing the implementation process
29	Nepal (Shrestha, 2021)	To explore the challenges facing	- The current subsidy and grant programs for agriculture	- Suggested recommendations to

		effective implementation of agricultural support policies to increase production and achieve food self-sufficiency in Nepal (national policies)	development to increase productivity do not address the real issues of needy farmers. - Ineffective implementation is due to several reasons: bureaucratic hurdles, corruption, lack of transparency, poor governance, institutional failures in combating corruption corruptions, and degradation of ethical and financial standards (nepotism and favouritism). This includes the support of fake farmers by political leaders and the bribery of government officials.	address the challenges facing the implementation process
30	Iran (Dezhman & Daneshfard, 2021)	To investigate the obstacles to implementing agriculture and rural development policies that aim at ensuring food security and self-sufficiency in basic food by increasing domestic agricultural production (national policies)	- Obstacles to implementation exist in three main areas: barriers related to the nature of policies, structural obstacles, and barriers related to operators and users. - The most important obstacles are the priority of organizational interests over the realization of program goals, a centralized bureaucratic structure, inappropriate incentive tools, and neglecting land management in rural development policies.	- Suggested recommendations to address the obstacles facing the implementation process
31	Indonesia (Romadi, 2022)	To investigate the factors affecting farmers' motivation in implementing the rice planting system, aiming to increase rice self-sufficiency and ensure national food security (national policy)	- The factors significantly affecting farmers' motivation to implement the planting system are internal and external. - Internal factors that have significant effects are: Education level (the higher the level of education of farmers, the higher the motivation to use hybrid rice seeds in their farming business), farmland area (the wider the cultivated land, the greater potential yield). - External factors are the availability of adequate capital, intensity of extension services, and availability of labour.	- Suggested recommendations to strengthen
32	Indonesia (Wati, Azizah, & Sari, 2022)	To investigate the reasons behind the successful implementation of the Rice self-sufficiency policy during the New Order era (national policy)	- During the New Order era, the Rice self-sufficiency policy achieved its goals. - The reasons that facilitate achieving rice self-sufficiency are: using strategies of the Green Revolution (changing the traditional farming system), utilizing the Agriculture Intensification System (using a small agricultural area), and Farmers' Guidance (using recommended extension services).	- Suggested recommendations to strengthen the reasons behind the successful implementation
33	Sudan (Ibrahim & BaQutayan, 2023)	To investigate the implementation of the wheat self-sufficiency policy, and to identify obstacles facing its implementation	- There is a gap in the implementation process of the wheat self-sufficiency policy. - The main obstacles facing the implementation are ineffective administrative measures, poor planning, technical risks, weak policy	- Suggested recommendations to address the obstacles facing the implementation process

			incentive tools, high production costs, financial difficulties, weak governance, and foreign constraints	
34	Indonesia (Rusliyadi, 2023)	To analyze the implementation of the Food Self Sufficiency Village Programme (DMP Programme)	<ul style="list-style-type: none"> - In general, there are problems in the implementation. - The prevailing problems faced in implementation include misuse of budget funds, lack of information and socialization programs, inconsistency with other programs, and the lack of effective evaluation performed at the provincial and regency levels. 	<ul style="list-style-type: none"> - Suggested recommendations to address the problems facing the implementation process
35	Indonesia (Saa, 2024)	To evaluate and assess the effectiveness of the agricultural policy program in boosting local food production and its overall contribution to sustainable food security (National program)	<ul style="list-style-type: none"> - The policy program has moderate effectiveness. - This increase is driven by providing technical assistance, agricultural inputs particularly seeds and fertilizers, and irrigation infrastructure development. - Significant challenges remain, including a limited budget, inadequate infrastructure, limited market access, insufficient support extension services for farmers, which hinder the full optimization of the program's benefits, and Lack of coordination among government, NGOs, and the private sector. 	<ul style="list-style-type: none"> - Suggested recommendations to address the challenges facing the program process and strengthen the driving factors

Conclusion and Implications

This study provides an overview of the trend of agri-food policies, objectives performance, and main factors (barriers and enablers) that impacted their implementation by setting three review questions. A systematic review approach was used to answer these review questions. The review included studies between 2016 and August 2024. After performing multiple processes, 35 studies were selected, while the rest were eliminated from the review as they did not fulfil the inclusion criteria or the quality level.

Although achieving food security is central to the SDG2 goal, it is also connected with many UNSDGs (Brooks, 2016; UN, 2022, 2023, 2024). First, it is deeply intertwined with poverty reduction (SDG1), as improving agricultural food productivity and production can reduce poverty rates. Further, increasing the food security rate by increasing agri-food production is an important dimension of good health and well-being (SDG3), as ensuring access to diverse, nutritious food supports better health outcomes. Moreover, climate action (SDG13) aims to strengthen resilience and adaptive capacity in food production systems, to mitigate climate impacts, as climate change is a major threat to sustainable agri-food production. Thus, food security is the main goal of agri-food policy solutions, it is a multifaceted issue that touches upon several dimensions of sustainable development.

Consequently, Investigating the implementation of agri-food policies is essential to ensure that policies achieve their intended outcomes, such as boosting food security, eradicating poverty, and promoting sustainability. It reveals gaps between policy design and practice and allows adaptation to local conditions and evolving global dynamics. Policy implementation is a multifaceted process that requires careful planning, coordination, and adaptation. Ultimately, understanding the nuances of policy implementation strengthens the agricultural

sector and contributes to broader socioeconomic development goals. Overarching, it is crucial to address the constraining factors that hinder the implementation and strengthen the enabling factors that can facilitate it. This can be done by developing a framework that includes suitable strategies and policy incentive tools to improve the effectiveness of policy implementation processes, achieve successful outcomes that increase agri-food production, and promote food security.

This review study is strengthened by including quantitative, qualitative, and review studies, offering a more comprehensive understanding of the factors that influence the implementation of agri-food policies worldwide. Thus, this research will help expand the existing knowledge on agri-food policy and its implementation, especially in developing and least-developed countries, like Africa. Further, the results will help researchers, policymakers, and practitioners to build novel theory-based interventions to support agri-food policy implementation.

Despite its attempt to provide a body of knowledge that is as comprehensive as possible, this review has some serious limitations. For instance, only documents written in English were included, besides including review articles and theses. The initial search led to some results in other languages, that could be highly relevant for this review but were excluded. Furthermore, it's important to note that many of the selected primary studies are qualitative studies that commonly use thematic analysis, so the coding of the factors might be limited by how the primary studies were interpreted and analysed. As a result, the review may have been more likely to capture the primary factors that impact policy implementation, rather than all possible factors.

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