

Beyond the Import-Cost Wedge: Rice Import Affordability, Domestic Competitiveness, and Stewardship-Oriented Value-Chain Upgrading in Rwanda

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Abstract

Purpose: This study examines Rwanda's import-affordability paradox: why imported rice can remain price-competitive or quality-attractive despite freight, duties, VAT, border handling, corridor transport, and the country's landlocked geography. **Design/methodology:** The paper uses a structured secondary-data and document-analysis design, combining official trade and price statistics, EAC tariff information, Rwanda customs and VAT guidance, IFPRI rice-market evidence, FAO postharvest evidence, WITS/WTO product data, and peer-reviewed literature on import-parity pricing, value chains, quality, and industrial policy. Rice is treated as the principal empirical case, while palm oil, sugar, cement, and wooden furniture serve as comparator illustrations rather than full sectoral case studies. **Findings:** The evidence shows that apparent import affordability is not explained by low taxes or cheap transport. Imported rice can remain competitive when exporter-side scale, milling capacity, input depth, trade-finance systems, tariff-origin filters, grade discipline, and quality signals exceed Rwanda's import-cost wedge. Domestic rice loses quality-adjusted competitiveness when smallholder scale, postharvest losses, weak grading, milling inefficiencies, costly finance, limited market intelligence, and fragmented coordination raise the cost per reliable unit. Recent IFPRI evidence further shows strong Tanzanian wholesale-price pass-through to both imported Tanzanian and locally produced Rwandan rice in Kigali markets. **Originality/value:** The study develops an integrated import-affordability framework linking import-parity pricing, domestic cost stacking, quality-adjusted competitiveness, institutional price transmission, and stewardship-oriented industrial policy. It argues that Rwanda's durable rice competitiveness requires productivity, postharvest upgrading, quality assurance, residue valorization, market intelligence, and consumer-welfare safeguards rather than import restriction alone.

Keywords: rice import affordability; Rwanda domestic competitiveness; import-parity pricing; rice value-chain upgrading; postharvest loss reduction; stewardship economics; consumer-sensitive industrial policy.

1. Introduction

1.1 Background and rationale

Rwanda's development model combines deliberate state capacity, domestic market recapture, regional integration, and strategic openness to international trade (Government of Rwanda, 2020; MINICOM, 2015, 2017, 2024). This combination creates a real policy tension. Imports protect households and firms from scarcity by expanding access to food, industrial inputs, medicines, fuel, equipment, and consumer goods. Yet the same imports can discipline or displace domestic producers when local supply is more expensive, less consistent, or perceived to be lower in quality. The relevant question is therefore not whether imports are good or bad. The sharper question is why imports can remain competitive after taxes, freight, handling charges, exchange-rate costs, and retailer margins have already been included in the final price.

The question is economically important because Rwanda is landlocked. Trade depends heavily on road and air corridors, with maritime access routed mainly through Mombasa and Dar es Salaam (ITA, 2026b). This geography should, in principle, raise the delivered cost of imports. Yet recent trade and price-index data are consistent with the market observation that imported rice, palm oil, sugar, cement, furniture, and other consumer or industrial goods can still compete strongly against domestic alternatives (NISR, 2026a; Republic of Rwanda Embassy in Zimbabwe, 2026; WITS, 2026a). The paradox is not that imports face no costs. The paradox is that foreign production and supply-chain advantages may be large enough to absorb those costs and still reach Rwandan consumers at attractive price-quality points.

Recent official trade statistics confirm the importance of the issue. In 2024Q4, Rwanda's formal goods imports were estimated at US\$1,629.39 million, compared with domestic exports of US\$677.45 million and re-exports of US\$177.29 million (National Institute of Statistics of Rwanda [NISR], 2025a). A Government of Rwanda

communication citing Trade and Industry Performance 2024 data reported that Rwanda's top ten imported products exceeded US\$1.95 billion in 2024, equal to 28.4 percent of total merchandise imports, with rice, cane or beet sugar, palm oil, cement, and frozen fish among the leading items (Republic of Rwanda Embassy in Zimbabwe, 2026). These are not marginal goods. They influence food security, household welfare, construction costs, agro-processing, and industrial policy.

Rice is the empirical anchor of this article because it is simultaneously an agricultural crop, a processed staple, a consumer-welfare issue, a postharvest-management challenge, and a practical test of whether domestic value-chain upgrading can reduce import dependence without harming affordability. Rwanda has invested in marshland irrigation, cooperative rice production, milling capacity, and national rice-development planning. However, the National Rice Development Strategy II acknowledges that domestic production remains insufficient to meet national demand and that the supply gap is filled mainly through imports from Asia and Tanzania (Coalition for African Rice Development [CARD], 2021). Publicly reported 2024 figures indicate that rice imports reached about US\$317 million and roughly 509,000 tonnes, illustrating the scale of import exposure (Republic of Rwanda Embassy in Zimbabwe, 2026).

The rice case also links the import-affordability debate to postharvest and residue valorization. Rice straw, husks, bran, and broken rice are not peripheral waste streams. They are part of the economic system that determines the net cost of local rice. If residues are poorly valorized, farmers, cooperatives, and millers lose potential energy savings, soil-amendment benefits, feed inputs, compost, biochar, briquette markets, and other circular-economy opportunities. If residues are transformed into productive inputs or revenue streams, domestic rice can reduce its net cost and strengthen its competitiveness against imports. This framing is consistent with Rwanda-based circular agriculture evidence showing that circular production depends on stakeholder coordination,

farmer awareness, waste-stream management, and practical adoption capacity, and with recent rice-biomass literature showing that rice husk and straw can support energy, bio-based products, circular-economy applications, and environmental gains (Jose et al., 2025; Sangwa et al., 2023).

The normative frame of this article is stewardship economics. In this study, stewardship does not mean protecting local production at any cost; it means governing markets, productive capacity, and ecological resources in a way that preserves household dignity, rewards responsible production, and prevents wasteful or extractive policy. The biblical language of stewardship joins productive care of creation with concern for vulnerable households: humanity is placed in the garden “*to work it and watch over it*” (Genesis 2:15, Christian Standard Bible, 2017), economic power must not be used to oppress the poor (Proverbs 22:16), and resources should not be wasted once provision has been made (John 6:12, Christian Standard Bible, 2017). This ethical frame is consistent with development thinking that treats economic progress as the expansion of real capabilities rather than the mere growth of output (Sen, 1999). The paper therefore evaluates import affordability not only as a price puzzle, but as a stewardship question: how can Rwanda build domestic rice capability without making poorer consumers carry avoidable price burdens?

1.2 Problem statement

Rwanda's import-affordability paradox can be stated simply: why do some imported products appear cheaper, more available, more standardized, or better value than domestic substitutes after observable import costs are included? Public debate often reduces the explanation to unfair foreign competition, excessive taxation, weak consumer patriotism, cheap foreign labor, or domestic inefficiency. Each explanation may contain partial truth, but none is sufficient by itself. A defensible scholarly account must separate the landed import cost from the domestic value-chain cost and then adjust both for quality, reliability, consumer trust, and institutional price transmission.

The paradox is especially consequential in rice. The EAC Common External Tariff classifies rice as a sensitive item, with a statutory rate of 75 percent or US\$345 per metric tonne, whichever is higher (East African Community [EAC], 2022). However, the effective import burden can differ from the statutory rate because Rwanda participates in the EAC Customs Union, applies rules of origin for qualifying partner-state goods, and may use stays of application or duty remission for strategic food products (International Trade Administration [ITA], 2026a; Rwanda Revenue Authority [RRA], n.d.). A simple reading of the statutory tariff therefore risks overstating the actual protection enjoyed by domestic producers.

Domestic production is also not automatically cheaper because it is local. Local rice production and processing may carry costs from small plot sizes, seasonal liquidity pressure, irrigation maintenance, drying, aggregation, milling recovery, storage, packaging, electricity, working capital, and delayed sales. FAO's Rwanda Post-Harvest Management Strategy identifies high postharvest losses, limited affordable technologies, inadequate market access, fragmented interventions, finance constraints, rural infrastructure gaps, and high production and transport costs as barriers to agricultural commercialization (Food and Agriculture Organization of the United Nations [FAO], 2024). Similar logic applies beyond rice: furniture workshops may buy boards, fittings, varnish, machinery, and finishing materials in small quantities; cement producers may face clinker, energy, and utilization constraints; palm-oil suppliers may struggle to replicate plantation and refinery scale (CIMERWA Plc, 2025; MINICOM, 2022; Republic of Rwanda Embassy in Zimbabwe, 2026; WITS, 2026a). Proximity to the consumer is not the same as competitiveness.

The unresolved problem is therefore not merely a trade deficit problem. It is a price-formation, quality, and capability problem. A landlocked country can have high logistics costs and still face cheap or attractive imports if foreign producer advantages exceed the import-cost wedge.

Conversely, domestic producers can avoid some border costs and still sell at higher prices if their value-chain cost stack is heavier than the importer's delivered-cost stack.

1.3 Aim, objectives, and research questions

The aim of the study is to explain why selected imported products in Rwanda can appear more affordable or higher-quality than domestic substitutes despite import-related taxes, freight, insurance, and transport costs, and to identify policy and enterprise strategies that strengthen domestic competitiveness without harming consumers.

The study has three objectives. First, it assembles recent secondary evidence on Rwanda's trade structure, price indicators, tariff environment, logistics constraints, product import values, and domestic production constraints. Second, it develops a mechanism-based explanation of the import-affordability paradox using trade theory, import-parity pricing, value-chain analysis, postharvest evidence, and industrial-policy theory. Third, it translates the findings into recommendations for rice, comparator import-competing sectors, and an agriculture master's thesis on rice-residue valorization.

The study is guided by three research questions:

Table 1. Research questions and analytical contribution

Research question	Empirical focus	Analytical contribution
RQ1. What do recent secondary data reveal about Rwanda's import dependence and selected import-competing products?	Formal trade values, selected import values and volumes, local versus imported price indicators, and rice demand coverage.	Defines where the affordability puzzle is large enough to require scholarly and policy attention.
RQ2. Through which mechanisms can imports remain price-competitive or quality-competitive despite tariffs, VAT, transport and related costs?	Import-parity pricing, EAC tariff filters, rice price-transmission evidence, postharvest losses, domestic cost stacking, quality signals, and consumer trust.	Explains the paradox through a quality-adjusted delivered-cost framework rather than through tariffs alone.
RQ3. What policy and enterprise interventions can strengthen domestic competitiveness without transferring excessive costs to consumers?	Rice, palm oil, sugar, cement, furniture, and residue-valorization implications.	Moves from protectionist intuition toward productivity, quality, finance, standards, market intelligence, and consumer-welfare safeguards.

Source: Authors' design.

1.4 Scope, concepts, and product-case logic

The article treats rice as the primary empirical case and uses palm oil, sugar, cement, and selected wooden furniture as comparator illustrations. Rice receives the deepest treatment because it combines a domestic production base, policy sensitivity, high import exposure, recent IFPRI market-monitoring evidence, formal rice-quality standards, and direct relevance to postharvest and residue valorization. Palm oil and sugar are retained as brief food and agro-processing comparators because they appear among Rwanda's high-value import categories and illustrate the role of scale, processing capacity, raw-material depth, and packaging systems. Cement is retained as an industrial comparator because it demonstrates how energy, clinker, utilization, and cross-border logistics can shape import competition.

Wooden furniture is retained as an SME-manufacturing comparator because it highlights design, finishing, imported inputs, warranties, and consumer quality perception. These comparator products are not treated as full sectoral case studies; they are used only to test whether the rice-derived mechanisms plausibly travel beyond rice (CARD, 2021; Republic of Rwanda Embassy in Zimbabwe, 2026; Warner et al., 2025; WITS, 2026a, 2026b).

The term domestic substitute refers to a product produced, processed, or substantially transformed in Rwanda and sold in competition with imported equivalents. In the rice case, the domestic substitute is locally produced and milled Rwandan rice competing with rice imported from Tanzania, Asia,

and other origins. In palm oil and sugar, local production and processing capacity are thinner, so the analysis emphasizes scale gaps, input constraints, and consumer dependence. In furniture, the domestic substitute may be artisan or SME-made furniture competing against standardized imported pieces.

Affordability is understood in quality-adjusted terms. A lower shelf price is one form of affordability, but consumers also consider durability, appearance, cleanliness, packaging, availability, taste, cooking behavior, warranty, after-sales service, brand trust, and the risk of failure. An imported product may therefore be more attractive even if its nominal price is not always lower, because consumers perceive a superior price-quality combination. This distinction is essential for a fair analysis of local products. This quality-adjusted definition is consistent with rice-quality literature showing that consumers and value-chain actors evaluate rice through both intrinsic and extrinsic attributes, including aroma, grain appearance, softness, uniformity, cleanliness, and other context-specific quality signals (Custodio et al., 2019).

1.5 Contribution and significance

The article makes three contributions. First, it advances a rice-centered explanation of Rwanda's import-affordability paradox by showing that the relevant comparison is not between "foreign goods with costs" and "local goods without costs," but between two cost-and-quality systems: import-parity supply chains and domestic value-chain cost stacks. Second, it develops an integrated import-affordability framework that combines import-parity pricing, price transmission, quality-adjusted competitiveness, postharvest economics, and consumer-sensitive industrial policy. Third, it extends stewardship economics into a concrete policy problem by asking how a country can build domestic productive capability without imposing regressive price burdens on households or treating agricultural residues as disposable waste.

The article's practical significance lies in its refusal of two inadequate policy instincts. It rejects

protection without upgrading, because shielding domestic products from competition without improving quality, cost, and reliability risks transferring costs from producers to consumers. It also rejects passive import dependence, because cheap imports can protect short-term consumption while leaving domestic learning, food-system resilience, and value addition underdeveloped. The proposed middle path is consumer-conscious capability building: domestic rice should win market share because it becomes more productive, more reliable, more trusted, and more resource-efficient, not because consumers are denied alternatives

1.6 Structure of the manuscript

Chapter 2 reviews the literature and develops the theoretical framework. Chapter 3 explains the secondary-data methodology. Chapter 4 presents and discusses the findings. Chapter 5 concludes with policy, enterprise, thesis, and future-research recommendations. The appendices provide replication notes and a suggested thesis-extension protocol.

2. Literature Review and Analytical Framework

2.1 Import affordability in small, landlocked economies

The standard intuition is that distance and borders raise prices. This intuition is broadly correct because international trade requires freight, insurance, port handling, border clearance, domestic transport, inventory finance, storage, and wholesaling before goods reach consumers (FEWS NET, 2008; ITA, 2026b). Rwanda's landlocked geography strengthens this logic. ITA (2026b) reports that Rwanda lacks a direct railway link to regional ports, conducts trade mainly by road or air, relies on Mombasa and Dar es Salaam, and faces transport and logistics costs estimated to be more than 30 percent higher than the regional average.

However, high import logistics costs do not imply that imports must always be more expensive

than local products. The final price depends on the full delivered-cost equation. If a foreign producer starts from a much lower factory-gate cost because of scale, technology, input access, specialized labor, and mature logistics, the import can absorb a border and corridor wedge and still remain competitive. A domestic producer may avoid ocean freight and customs duties but still face higher unit costs because production is small, inputs are unreliable, machinery utilization is low, finance is costly, quality failures are common, and distribution is fragmented. This is the core logic of the import-affordability paradox.

2.2 Comparative advantage, scale economies, and productivity heterogeneity

Classical comparative advantage remains relevant because countries differ in relative productivity and opportunity costs. Yet contemporary trade in food, consumer goods, and industrial inputs also reflects scale economies, firm heterogeneity, and product differentiation. Krugman (1980) showed that scale economies and differentiated products can drive trade even among countries with similar factor endowments. Melitz (2003) extended this logic by showing that trade exposure reallocates market share toward more productive firms. Rwanda's domestic producers therefore do not compete against an average foreign producer. They often compete against export-capable firms that have already survived competition in larger domestic or regional markets.

Scale matters because many costs are fixed before a product is sold: machinery, certification, packaging design, quality inspection, branding, management systems, inventory control, and distribution contracts. When output is large, these fixed costs are spread across more units. Rwanda's enterprise structure makes this difficult. Establishment Census 2023 reports that 92.2 percent of enterprises employ fewer than four workers (NISR, 2025b). Such a structure can be entrepreneurial and flexible, but it limits bulk purchasing, mechanization, quality standardization, managerial specialization, and the capacity to spread fixed costs.

2.3 Import-parity pricing, tariff filters, VAT, and price transmission

Import-parity pricing is the immediate economic lens for this study. The relevant import benchmark is not the foreign farm-gate or factory-gate price. It is the foreign-origin price plus insurance, freight, import duty, VAT, port and corridor charges, clearing costs, warehousing, finance, internal transport, wholesaling, and retail margins. A domestic product competes against this import-parity price at the relevant market (FEWS NET, 2008). If the domestic product cannot meet or beat that price after adjusting for quality, consumers and retailers have incentives to choose imports.

Policy filters make the calculation more complex. Rwanda applies the EAC Common External Tariff, with sensitive items above the standard finished-goods band. Rice is listed in the EAC tariff schedule as a sensitive item at 75 percent or US\$345 per metric tonne, whichever is higher (EAC, 2022). However, effective duty may differ from the statutory rate because of stays of application, duty-remission arrangements, and rules of origin for goods qualifying within the EAC Customs Union (ITA, 2026a; RRA, n.d.). Rwanda's standard VAT rate is 18 percent for taxable goods and services supplied domestically or imported (RRA, 2025). The combined effect is product-specific and origin-specific. A product imported from outside the EAC under a sensitive-item rate faces a different cost structure from a product originating in Tanzania or imported under a specific duty adjustment.

Price transmission further complicates affordability. Agricultural markets may transmit price changes asymmetrically because of adjustment costs, market power, policy intervention, information lags, or institutional rigidity (Meyer & von Cramon-Taubadel, 2004). Recent IFPRI evidence on Rwanda's rice sector is especially relevant: Tanzanian wholesale prices have strong immediate effects on both imported Tanzanian rice prices and Rwandan rice prices in the Nyabugogo market, while Rwandan retail prices have little to no effect on Tanzanian wholesale prices (Warner et al.,

2025). This suggests that Rwanda is a price taker in important rice-market segments.

2.4 Domestic value chains, postharvest losses, and rice-residue valorization

Transaction-cost economics helps explain why domestic production can be costly even when labor costs are low. Costs arise from search, bargaining, coordination, storage, enforcement, quality verification, finance, risk, and information (Williamson, 1985). North's (1990) institutional perspective reinforces the point: institutions shape the costs of exchange and the reliability of market transactions. If domestic millers face uncertain paddy quality, irregular supply, delayed payments, weak stock data, and limited working capital, those risks appear in the prices required to remain viable.

Postharvest losses are central to the rice case. FAO (2019) emphasizes that loss reduction requires identifying critical loss points within specific supply chains. Rwanda's Post-Harvest Management Strategy identifies high postharvest losses, limited technologies, finance constraints, inadequate rural infrastructure, market-access problems, and high production and transport costs as barriers to agricultural commercialization (FAO, 2024). Ndindeng et al. (2021) show that rice postharvest losses in Sub-Saharan Africa include both quantitative losses and qualitative value losses, including price discounts linked to broken grain, chalkiness, impurities, and weaker quality attributes.

Rice-residue valorization belongs within this competitiveness discussion. Rice husks can be used for drying fuel, briquettes, gasification, or biochar. Rice bran can support animal feed or oil extraction under appropriate safety and processing conditions. Rice straw can support compost, mushroom substrates, animal bedding, mulch, biochar, and soil-carbon pathways (Jose et al., 2025; Kaniapan et al., 2022). These options are not merely environmental add-ons. If they reduce net energy costs, create by-product revenue, reduce waste-disposal burdens, or strengthen cooperative economies, they can lower the effective cost of domestic rice and improve competitiveness against imports. Rwanda-based circular-agriculture evidence

further suggests that such valorization pathways require institutional support, stakeholder coordination, farmer awareness, and locally feasible adoption models rather than technical possibility alone (Sangwa et al., 2023).

2.5 Global value chains, quality signals, standards, and consumer trust

Global value-chain theory shifts the analysis from production alone to governance, standards, supplier capability, and upgrading. Gereffi, Humphrey, and Sturgeon (2005) argue that value-chain governance depends on transaction complexity, codification, and supplier capabilities. Imported rice, palm oil, sugar, furniture, and cement often arrive through codified systems of grading, packaging, branding, distribution, and trade finance. Domestic products may be local and socially desirable, but if they are inconsistent in grade, finishing, supply timing, packaging, or after-sales reliability, they may lose the consumer's value test.

Quality-adjusted trade theory is also relevant. Hallak (2006) shows that product quality affects the direction of trade. For consumers, affordability includes more than nominal price. Rice buyers may consider aroma, grain length, cleanliness, broken-grain ratio, cooking behavior, and package trust (Codex Alimentarius Commission, 1995/2023; Custodio et al., 2019; Rwanda Standards Board, 2023). Furniture buyers may value surface finishing, design consistency, delivery time, matching sets, warranty, and showroom presentation. Cement buyers may value predictable strength, packaging, and availability. A local product can therefore be cheaper in nominal terms but less attractive in quality-adjusted terms, or more expensive but still chosen if trusted quality is higher.

2.6 Industrial policy, imported inputs, and consumer-conscious protection

Industrial policy is justified when firms underinvest in learning, coordination, technology, standards, and self-discovery. Hausmann and Rodrik (2003) describe development as a process of discovering which activities a country can produce competitively. Rodrik (2004) argues that industrial

policy should be understood less as blanket protection and more as disciplined public-private problem solving. Rwanda's Industrial Policy 2024-2034 follows this broad logic by emphasizing competitiveness, export orientation, value addition, productive jobs, green industrialization, and priority subsectors (Ministry of Trade and Industry [MINICOM], 2024). Recent Africa-focused work on AfCFTA and global value chains similarly argues that regional trade integration must be linked to firm upgrading, special economic zones, technology adoption, and value-added production rather than treated as tariff liberalization alone (Murungu et al., 2025).

The literature on imported intermediate inputs cautions against simple import substitution. Amiti and Konings (2007) found that cheaper imported inputs can raise plant productivity, while Goldberg et al. (2010) found that imported intermediate inputs helped Indian firms expand product scope. For Rwanda, this means domestic competitiveness may require easier access to imported machinery, packaging, boards, fittings, seed, fertilizer, milling equipment, chemicals, and spare parts. Raising the cost of productive inputs while protecting final goods can make domestic firms less competitive. A consumer-conscious industrial policy must therefore distinguish between final consumption imports that compete directly with local goods and productive inputs that help local firms upgrade.

2.7 Theoretical framework: The integrated import-affordability framework

The study integrates comparative advantage, scale economies, import-parity pricing, transaction-cost economics, global value-chain theory, quality-adjusted trade, and industrial-policy theory into an integrated import-affordability framework. The framework begins with exporter-side capability: foreign suppliers may have lower unit costs because of scale, technology, input depth, finance, specialized labor, and established quality systems. These advantages pass through trade-policy and corridor filters: CIF freight, tariffs, VAT, levies, rules of origin, road transport, border handling, storage, and wholesaling. Domestic products avoid some border costs, but they face a domestic value-chain cost stack: small scale, postharvest losses, weak grading, energy costs, finance constraints, machinery limitations, input unreliability, poor finishing, and weak branding. Consumers then apply a value test based on price, quality, reliability, availability, and trust.

The central proposition is this: imported goods appear more affordable than domestic substitutes when exporter-side cost and quality advantages exceed the combined tariff, transport, tax, and distribution wedge, while domestic substitutes are burdened by high unit costs, postharvest and quality losses, weak scale economies, costly finance, or institutional rigidity. The opposite holds when domestic producers reduce their cost stack and raise trusted quality enough to meet or beat import parity.

Table 4. Measured indicators, inferred mechanisms, and evidence boundaries

Analytical element	What is directly measured or documented	What is inferred	Evidence boundary
Import dependence	Formal trade values, reported product import values and volumes, import persistence	The degree to which imports discipline domestic producers	Trade values show exposure, not consumer preference by brand or grade
Import affordability	Indicative unit values, CPI local-versus-imported product categories, tariff and VAT rules	Whether imports appear cheaper or better value in specific retail markets	Retail price gaps require brand-level prices, package size, origin, quality grade, date, and market location

Quality-adjusted competitiveness	Rice-quality standards, rice-quality literature, postharvest loss evidence, consumer-visible quality attributes	The extent to which consumers discount local goods for quality uncertainty	Consumer preference surveys are needed for direct measurement
Domestic cost stacking	Postharvest constraints, enterprise structure, producer-price pressure, working-capital and input-cost evidence	The relative size of the domestic cost penalty versus the import-cost wedge	Firm-level cost accounts and miller procurement data are required for precise estimates
Price transmission	Published IFPRI rice-market evidence using eSoko, WFP, SAS, and survey data	The broader price-taking position of Rwanda in comparable product markets	Strongest evidence is for rice; comparator sectors remain illustrative

Source: Authors’ synthesis based on FEWS NET (2008), FAO (2024), NISR (2025a, 2026a, 2026b), Warner et al. (2025), and the source hierarchy described in Section 3.3.

The framework’s novelty is not that it invents import-parity pricing, value-chain analysis, or industrial policy theory. Its contribution is to connect them in a single rice-centered diagnostic that explains why landlockedness and import costs do not automatically produce domestic competitiveness.

The framework also adds an ethical boundary condition: domestic market recapture is desirable only when it strengthens productive capability without converting vulnerable consumers into involuntary financiers of inefficiency. In this sense, the paper treats competitiveness as a stewardship problem, not merely a cost-minimization problem.

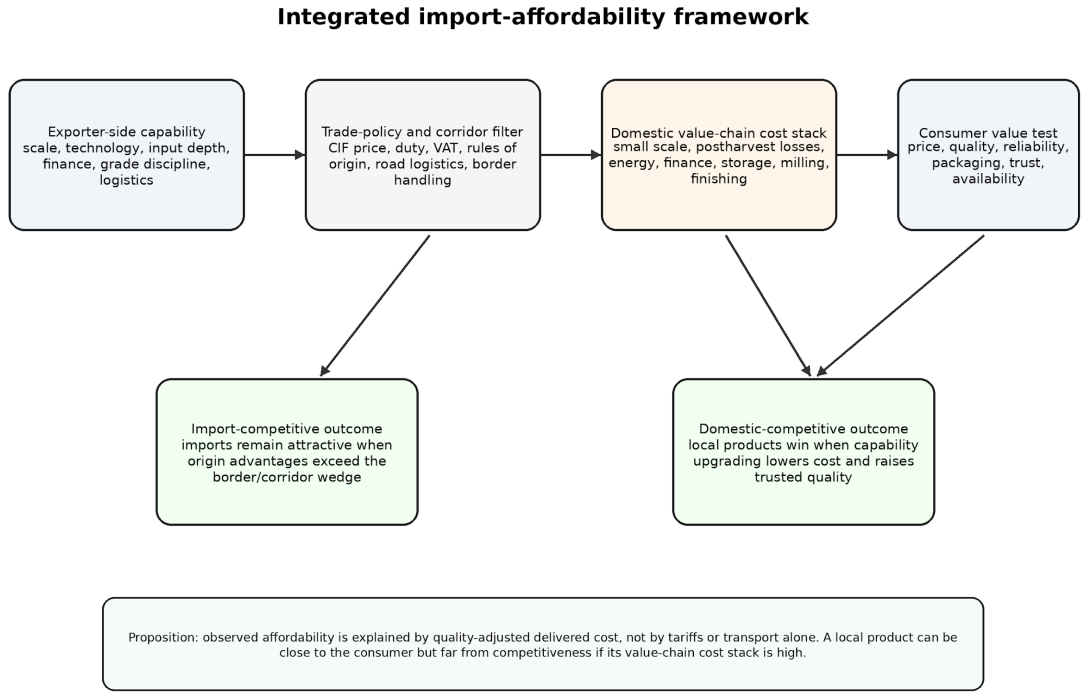


Figure 1. Integrated import-affordability framework. Source: Authors’ synthesis from trade theory, import-parity pricing, transaction-cost economics, global value-chain theory, and Rwanda-specific trade and rice-market evidence.

3. Methodology

3.1 Research design

This article uses a structured secondary-data synthesis and document-analysis design, supported by descriptive calculations and abductive framework building. It is not a primary mixed-methods study, and it does not claim to conduct econometric identification or formal qualitative coding of interview data. The quantitative element consists of descriptive trade values, import volumes, indicative unit values, official price-index indicators, tariff information, and published rice price-transmission results. The qualitative element consists of structured interpretation of policy documents, trade guidance, postharvest literature, rice-quality evidence, value-chain theory, and industrial-policy literature.

The design is appropriate because the research problem is diagnostic rather than causal in the narrow econometric sense. The article asks why imported rice can plausibly remain price-competitive or quality-attractive despite Rwanda's import-cost wedge, and which mechanisms make that outcome possible. The study therefore triangulates multiple secondary sources to build a mechanism-based explanation while clearly distinguishing measured indicators from inferred mechanisms. This approach is consistent with document-analysis and secondary-data research, where credibility depends

on source hierarchy, transparent inclusion criteria, cautious inference, and reproducible calculations (Bowen, 2009; Johnston, 2014; Timmermans & Tavorly, 2012; Yin, 2018).

3.2 Case and product selection

Rice is selected as the principal empirical case using five criteria: the existence of a domestic substitute, high import exposure, policy sensitivity, stronger public evidence than for many other products, and direct relevance to postharvest management and residue valorization. The rice case is therefore capable of carrying the paper's empirical and theoretical weight. The comparator products are deliberately narrower. Palm oil, sugar, cement, and wooden furniture are included as illustrative tests of transferability, not as full sectoral diagnoses. They help examine whether mechanisms observed in rice, especially exporter-side scale, domestic cost stacking, input dependence, quality signaling, and consumer trust, also appear in other import-competing categories.

This design deliberately avoids two errors. It does not generalize from rice to all Rwandan imports as if all products had the same value-chain structure. It also does not treat every comparator as requiring the same level of evidence as rice. The claim is more modest and more defensible: rice provides the principal case, while comparator products show that the framework has plausible relevance beyond one crop and can guide future product-level research.

Table 2. Product cases and rationale

Case	Role in the manuscript	Why it is defensible
Rice	Principal case	Strategic staple; local production exists; imports are large; price-transmission evidence is available; direct link to postharvest management and residue valorization.
Palm oil	Food-processing comparator	Large household and processing input; domestic raw-material base is limited; refinery, packaging, and distribution scale are central to competitiveness.
Cane or beet sugar	Food and industrial comparator	High import value; household and industrial use; illustrates demand gaps and regional/global supply scale.
Cement	Industrial comparator	Domestic production exists, but competitiveness depends on clinker, energy, plant utilization, and cross-border logistics.
Furniture and household durables	SME manufacturing and consumer-quality comparator	Highlights design, finishing, standardization, imported inputs, warranties, catalog distribution, and trust.

Source: Authors' selection logic.

3.3 Data sources and inclusion criteria

Table 3. Secondary data sources and analytical use

Source	Evidence used	Analytical purpose
NISR formal external trade reports	Quarterly import, export, re-export and trade-balance data.	Establishes the macro trade context and Rwanda's structural import dependence.
NISR CPI March 2026 and PPI February 2026	Local versus imported CPI changes; general, local and export PPI changes.	Assesses whether recent aggregate price pressures are consistent with the affordability puzzle.
Republic of Rwanda Embassy in Zimbabwe citing MINICOM Trade and Industry Performance 2024	Top import values and volumes for rice, sugar, palm oil, cement and other products.	Identifies selected product categories and enables indicative unit-value calculations.
EAC CET 2022, ITA 2026 and RRA customs information	Statutory tariffs, sensitive-item treatment, stays of application, duty remission, and EAC origin treatment.	Distinguishes statutory from effective import-cost conditions.
CARD NRDS II and IFPRI Rwanda rice-market policy note	Rice production strategy, import dependence, Tanzanian price pass-through, market monitoring evidence.	Provides core evidence for rice as strategic import dependence and price-taking exposure.
FAO postharvest sources and rice-loss literature	Postharvest constraints, loss-reduction logic, quality and value losses.	Connects domestic affordability to postharvest, quality, and residue-valorization channels.
WITS/UN Comtrade, WTO, World Bank and peer-reviewed literature	Product trade data, theoretical and policy background.	Supports comparator sectors and external validity of the mechanism.

Source: Authors' compilation from public secondary sources listed in the references.

The study applied a source hierarchy. First-priority sources were official national statistics, statutory tariff schedules, customs and VAT guidance, and official policy documents, including NISR, EAC, RRA, MINICOM, CARD, and FAO sources. Second-priority sources were peer-reviewed journal articles and reputable institutional research outputs, including IFPRI, World Bank, WITS/WTO, and peer-reviewed value-chain, trade, postharvest, and rice-quality literature. Third-priority sources were media or industry reports, used only when they reported ministry-linked figures not otherwise available in a public dataset. Such sources are treated as provisional and are not used as the sole basis for policy-heavy conclusions.

Sources were included when they met at least one of four criteria: direct relevance to Rwanda's trade or price context; direct relevance to rice production, rice imports, rice prices, postharvest losses, or residue valorization; relevance to comparator-product import competition; or theoretical relevance to import-parity pricing, value

chains, quality-adjusted trade, industrial policy, stewardship economics, or secondary-data methodology. Sources were excluded if they were not traceable, were not clearly related to Rwanda or the paper's mechanism, duplicated stronger sources, or made numerical claims that could not be interpreted with adequate caution.

The temporal priority was 2024–2026 for current Rwanda trade, price, tariff, and policy evidence; 2019–2026 for rice-market and postharvest evidence; and broader date ranges for foundational theory. Where current product-level figures were available only through government-linked reporting rather than a public raw dataset, the manuscript labels those figures as “reported” or “indicative” and uses them as diagnostic benchmarks rather than definitive retail-price evidence. analysis treats these variables cautiously because official data do not directly measure consumer preferences for all selected pr

3.4 Measures, calculations, and operational definitions

The dependent phenomenon is perceived import affordability and quality competitiveness. Because the paper uses aggregate secondary data, affordability is not measured as a harmonized retail price ratio for every product. It is operationalized through a triangulated set of indicators: import values, import volumes, indicative unit values, import persistence, local-versus-imported CPI movements, domestic producer price pressures, policy filters, and documented constraints in domestic production and postharvest systems.

Indicative unit values are calculated as import value divided by import volume. They are border-level indicators, not retail prices. They exclude domestic wholesale and retail margins after importation and do not adjust for grade, package size, variety, origin, exchange-rate timing, or urban-rural market location. Their purpose is to provide a cautious benchmark showing the scale at which foreign supply enters Rwanda and the approximate landed-cost pressure domestic producers may face.

Quality competitiveness is operationalized through theory-informed indicators: grading, cleanliness, broken-grain ratio, packaging, aroma, cooking behavior, shelf life, finishing, design consistency, warranty, certification, availability, and brand trust. The analysis treats these variables cautiously because official data do not directly measure consumer preferences for all selected products.

3.5 Analytical strategy

The analysis proceeds in five stages. Stage 1 describes Rwanda's recent macro trade and price context. Stage 2 identifies product-specific import values and indicative unit values. Stage 3 examines the rice case in detail, focusing on tariff filters, demand coverage, price transmission, postharvest losses, and residue valorization. Stage 4 compares rice with palm oil, sugar, cement, and furniture to test whether the mechanism travels beyond one crop. Stage 5 derives policy and enterprise

recommendations from the integrated import-affordability framework.

The method is abductive, in the sense that the analysis moves iteratively between theory and empirical patterns to identify the most plausible explanation consistent with the available data (Timmermans & Tavory, 2012). The study does not claim that every imported product is cheaper, nor that imports are always superior. It explains why import affordability can be economically plausible and structurally persistent in selected sectors.

3.6 Validity, reliability, and limitations

Validity is strengthened through triangulation across official national statistics, international databases, policy documents, peer-reviewed literature, and specialized rice-market evidence (Bowen, 2009; Yin, 2018). Reliability is strengthened by transparent product selection, clear definitions, cautious use of reported data, and replicable unit-value calculations. Where data are indirect or source coverage differs, the manuscript uses cautious wording such as reported, indicative, apparent, and consistent with.

The main limitation is the absence of harmonized retail price observations comparing local and imported brands by quality grade, market, and date. Rice evidence is stronger than the other cases because recent IFPRI work provides specific price-transmission analysis. Furniture evidence is conceptually important but less statistically deep because public product-level data are more limited. Future research should therefore add retail price collection, consumer surveys, firm cost studies, and customs microdata.

3.7 Ethical considerations

The study uses public secondary data and does not involve human subjects, personal data, confidential records, or private firm data. A future thesis extension involving interviews with farmers, millers, importers, retailers, or consumers should obtain institutional ethics approval, informed consent, anonymization procedures, and data-protection safeguards before fieldwork begins.

4. Findings and Discussion

4.1 Rwanda is import-dependent but not import-passive

The first finding is that Rwanda's import dependence is large and persistent, but it should not be interpreted as economic passivity. Imports support consumption, production, health, construction, energy, transport, and services (Amiti & Konings, 2007; Goldberg et al., 2010; World Bank, 2020). In 2024Q4, Rwanda's goods imports exceeded domestic exports and re-exports by a large margin, with imports at US\$1,629.39 million, domestic exports at US\$677.45 million, and re-exports at US\$177.29 million (NISR, 2025a). The goods trade deficit in that quarter was therefore substantial. This is expected in a growing,

landlocked, import-dependent economy, but it still reveals the gap between domestic demand and domestic supply across quality, quantity, timing, and product variety.

The policy question is not how to reduce imports mechanically. Some imports are essential for food affordability, industrial inputs, energy, medicines, capital formation, and productive upgrading. The better question is how to distinguish productive imports that strengthen domestic capability from consumption imports that reveal domestic capacity gaps. A mature policy response should reduce unproductive dependence while preserving household welfare and access to productive inputs.

Rwanda formal external trade in goods, 2023Q4-2024Q4

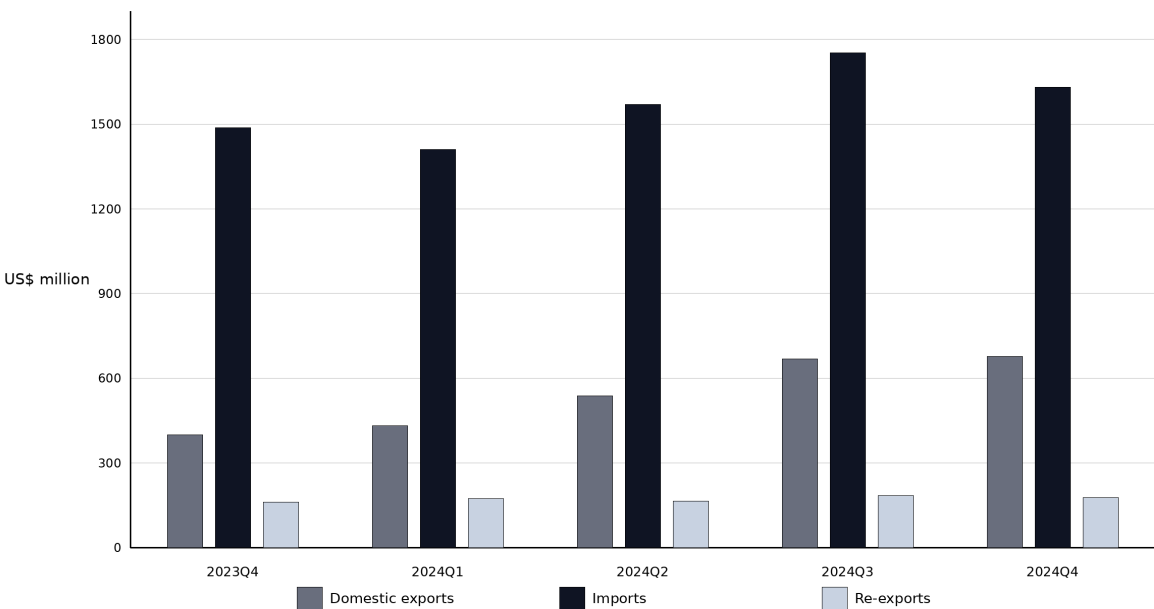


Figure 2. Rwanda formal external trade in goods, 2023Q4-2024Q4. Source: Authors' visualization using NISR Formal External Trade in Goods Report Q4 2024 data.

4.2 Selected import-competing products are economically significant

The selected products are large enough to justify scholarly and policy attention. Ministry-linked 2024 data reported through an official Government of Rwanda mission show that petroleum oils, rice, cane or beet sugar, palm oil,

motor cars, cement, frozen fish, pharmaceutical products, electrical signaling apparatus, and insulated cables were among Rwanda's top imported products. The same report placed rice at about US\$317 million, sugar at US\$238 million, palm oil at US\$207 million, cement at US\$94 million, and frozen fish at US\$92 million (Republic of Rwanda Embassy in Zimbabwe, 2026).

Volume data deepen the point. The same source reported approximate 2024 import volumes of 509,000 tonnes of rice, 308,000 tonnes of cane or beet sugar, 196,000 tonnes of palm oil and fractions, 818,000 tonnes of cement, and 89,000 tonnes of frozen fish. These values and volumes show why the

affordability puzzle cannot be treated as anecdotal. The products sit close to household welfare, food security, construction costs, and domestic industrialization.

Selected Rwanda import-competing products by 2024 import value

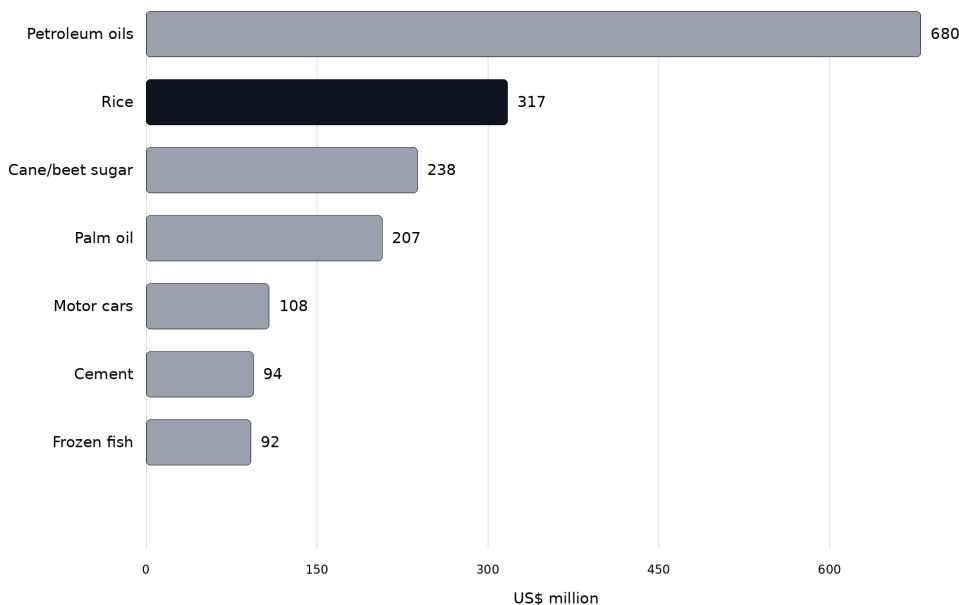


Figure 3. Selected Rwanda import-competing products by 2024 import value. *Source: Authors' visualization using Trade and Industry Performance 2024 data reported by Republic of Rwanda Embassy in Zimbabwe (2026).*

Table 4. Selected import values, volumes, and indicative unit values for Rwanda, 2024

Product	2024 import value (US\$ million)	2024 volume (tonnes)	Indicative unit value (US\$/tonne)	Interpretive relevance
Rice	317.2	508,852	623	Strategic staple; direct local substitute; core case for food affordability, postharvest management and rice-residue valorization.
Cane or beet sugar	238	308,000	773	Food and industrial input; illustrates large demand gaps and regional or global scale advantages.
Palm oil and fractions	207	196,000	1,056	Household cooking and food-processing input; competitiveness depends on raw-material base, refining, packaging and distribution scale.
Cement	94	818,000	115	Industrial comparator; exposes the role of energy, clinker, plant utilization and logistics.
Frozen fish	92	89,000	1,034	Food comparator; useful context but not central because substitute dynamics differ from rice and palm oil.

Source: Authors' calculations from Ministry of Trade and Industry Trade and Industry Performance 2024 data as reported by Republic of Rwanda Embassy in Zimbabwe (2026). Unit values are indicative border-level measures, not retail prices; they should not be interpreted as consumer prices without wholesale, retail, quality, origin, packaging, and market-location adjustments

4.3 Recent aggregate price evidence is consistent with the affordability puzzle

Recent price-index evidence does not prove that every imported product is cheaper than its local substitute, but it is consistent with the broader affordability puzzle. NISR's March 2026 CPI release reports that local products increased by 9.4 percent year-on-year and 1.7 percent month-on-month, while imported products increased by 8.7 percent year-on-year and 0.3 percent month-on-month (NISR, 2026a). In the same period, energy increased strongly, and housing, water, electricity, gas, and other fuels also rose significantly. These indicators matter because many domestic producers absorb energy, transport, rent, and local service costs before their goods reach the shelf.

Producer-price evidence reinforces the domestic cost-pressure channel. NISR's February 2026 PPI release reported a 13.9 percent annual increase in the general PPI, a 12.7 percent increase in local PPI, and a 17.9 percent increase in export PPI. Manufacturing and electricity contributed materially to producer price pressure (NISR, 2026b). This does not prove a direct causal link for rice, furniture, cement, or palm oil individually, but it supports the claim that domestic production costs can rise in ways that reduce the apparent price advantage of local production.

Recent price-pressure indicators relevant to import affordability

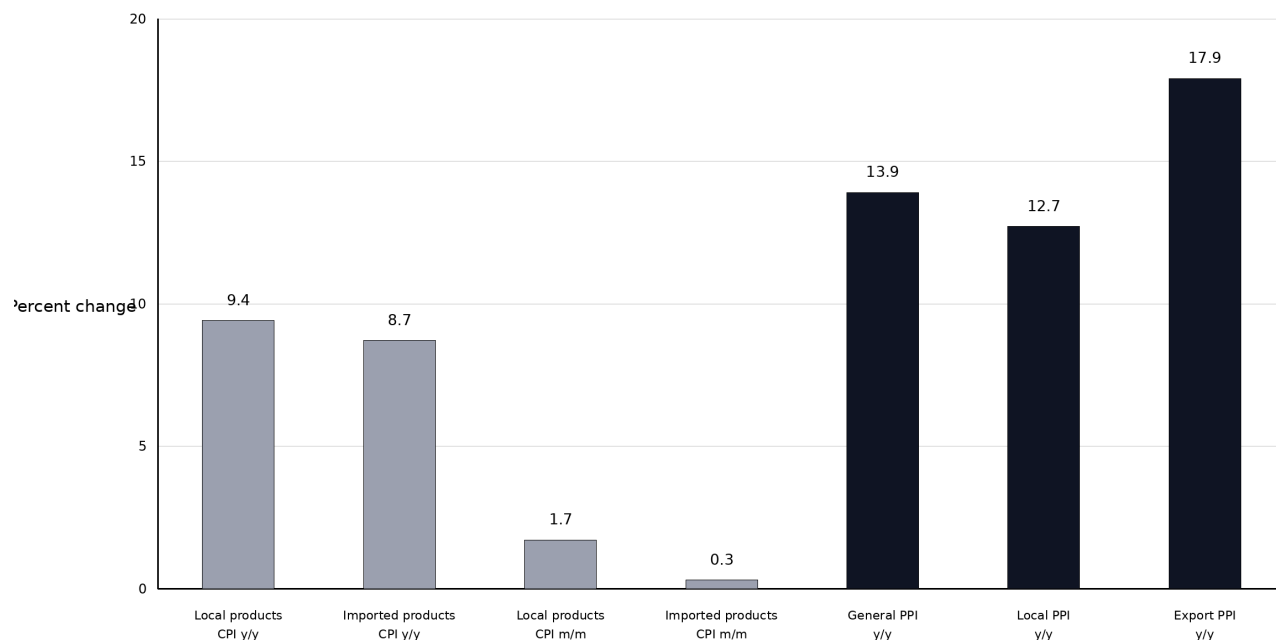


Figure 4. Recent price-pressure indicators relevant to import affordability. Source: Authors' visualization using NISR CPI March 2026 and NISR PPI February 2026 releases.

4.4 Rice is the clearest case of strategic import dependence

Rice is the strongest empirical case because the domestic sector is real, organized, and policy-relevant, yet imports remain dominant. NRDS II recognizes that domestic rice supply does not meet national demand and that the deficit is

filled mainly by imports from Asia and Tanzania (CARD, 2021). Publicly reported ministry-linked 2024 figures indicate rice imports of approximately 508,852 tonnes and US\$317.2 million, while sector reporting states that local production covered about 17 percent of national rice demand (Milling Middle East & Africa, 2025; Republic of Rwanda Embassy in Zimbabwe, 2026; SS Rice News, 2025). Because

the underlying ministry dataset is not reproduced in full in the public reports, these values should be treated as indicative headline figures rather than as a substitute for customs microdata or a full official product-level dataset. The direction of evidence is nevertheless consistent: domestic rice production remains far below national demand, and imported rice remains central to Rwanda's food-affordability and value-chain policy problem.

This dependence has two meanings. First, imports provide consumer access and reduce scarcity risk when domestic supply is insufficient. Second, imports expose domestic farmers, cooperatives, and millers to external price movements that they cannot control. A marginal increase in domestic production will not transform the market unless accompanied by improvements in yield, varieties, postharvest handling, milling recovery, grading, packaging, storage, finance, and distribution.

4.5 Tariffs and transport costs are real but not decisive by themselves

A common objection is that imported goods should be expensive because importers pay duties, VAT, freight, clearing charges, storage, and inland transport. The objection is reasonable, but incomplete. Rice is a sensitive item in the EAC CET, with a statutory rate of 75 percent or US\$345 per metric tonne, whichever is higher (EAC, 2022). Yet effective protection depends on origin, rules of origin, stays of application, duty remission, and policy decisions designed to balance producer protection with consumer affordability. Rwanda Revenue Authority information states that Rwanda applies zero percent import duty on qualifying goods originating from EAC partner states under the customs union framework (RRA, n.d.). ITA (2026a)

also notes that Rwanda uses the EAC tariff framework but may apply stays or duty adjustments for selected products.

The lesson is not that imports are untaxed. It is that the effective import-cost wedge is product-specific and origin-specific. A rice shipment from outside the EAC under the sensitive-item rate faces a different burden from rice that qualifies under EAC origin rules or enters under a specific duty adjustment. If policy analysis compares domestic production with a statutory tariff that does not reflect effective import conditions, it may overestimate the protection domestic producers actually receive.

A simple scenario clarifies why statutory tariffs alone cannot settle the affordability question. The calculation below uses the publicly reported 2024 rice import unit value of approximately US\$623 per tonne as an indicative CIF-style benchmark, then applies alternative duty assumptions, illustrative handling and inland costs, VAT, and sequential wholesale and retail margins. The calculation is not a measured retail price and does not represent a specific shipment, brand, grade, or market. It is a transparent import-parity illustration designed to show how tariff-origin filters can materially change the delivered-cost benchmark. Rwanda Revenue Authority guidance indicates that the basic taxable value of imported goods includes customs value, insurance and freight, services facilitating importation, and customs duty or other fiscal charges other than VAT; Rwanda also applies VAT to taxable imports (RRA, 2025). Rwanda Revenue Authority information on the EAC common market also states that qualifying EAC-origin goods may face zero import duty while still paying domestic taxes such as VAT (RRA, n.d.).

Table 6. Illustrative import-parity scenarios for rice, using a reported 2024 import unit-value benchmark

Scenario	CIF-style benchmark (US\$/t)	Duty assumption	Illustrative handling, inland transport, and finance (US\$/t)	VAT assumption	Indicative delivered value before margins (US\$/t)	Indicative value after 10% wholesale and 10% retail margins (US\$/t)

EAC-origin qualifying rice	623	0%	80	18% on CIF + handling	830	1,004
Non-EAC rice under reduced strategic-food duty	623	45%	80	18% on CIF + duty + handling	1,160	1,404
Non-EAC rice under statutory sensitive-item rate	623	75%	80	18% on CIF + duty + handling	1,381	1,671

Source: Authors' scenario calculation using the reported 2024 rice import unit value from Republic of Rwanda Embassy in Zimbabwe (2026), the EAC rice tariff context in EAC (2022), and Rwanda customs/VAT treatment in RRA (n.d., 2025). The assumptions for handling, inland transport, finance, and margins are illustrative placeholders. They should be replaced with customs declarations, trader accounts, or market-survey evidence in a future econometric or field-based study.

The scenario shows why the same imported product can face very different delivered-cost conditions depending on origin and policy treatment. It also shows why domestic competitiveness cannot be assessed by citing the statutory rice tariff alone. A domestic rice miller may appear protected under the 75 percent sensitive-item rate, but the relevant market benchmark may be closer to a reduced-duty or EAC-origin scenario if actual imports enter under different origin or duty conditions. The policy problem is therefore not simply whether tariffs are high or low; it is whether the effective import benchmark facing domestic producers is understood in real time.

4.6 Price transmission shows Rwanda as a price taker in key rice segments

IFPRI's Rwanda rice-market evidence is the strongest mechanism-level evidence in the merged manuscript. Warner et al. (2025) analyze rice-market dynamics using MINAGRI eSoko market data, WFP Tanzanian wholesale prices, Seasonal Agriculture Survey data, and IFPRI survey evidence. They report that the Tanzanian retail rice premium over Rwandan rice declined from about 50 percent in 2019 to about 20 percent more recently, implying greater substitutability between Tanzanian and Rwandan rice. They also report that Tanzanian wholesale rice prices, measured in U.S. dollars, fell by about 37 percent from October 2023 to August 2024, while Rwandan retail rice prices fell by only 14 percent during the same period.

The pass-through result is especially important. In their Nyabugogo market analysis, previous-period Tanzanian wholesale prices had a 106 percent effect on Tanzanian retail rice prices in Rwanda and an 82 percent effect on Rwandan rice prices. Rwandan retail rice prices, by contrast, had little to no discernible effect on Tanzanian wholesale prices or imported retail prices (Warner et al., 2025). This is a classic price-taking position. Rwanda absorbs external rice-price movements, but local prices do not meaningfully discipline the upstream Tanzanian benchmark. The practical implication is that domestic price-setting and import management require better market intelligence, not only protection.

4.7 Domestic affordability is weakened by postharvest, quality, finance, and scale constraints

The rice affordability problem is not only a farm-production problem. It is a postharvest, quality, finance, and coordination problem. Domestic rice may lose value through poor drying, high moisture, impurities, breakage, weak storage, insufficient grading, poor packaging, and inconsistent supply. These losses reduce quality-adjusted affordability. A kilogram of domestic rice with a high broken-grain ratio, more impurities, uneven moisture, weaker packaging, or uncertain cooking performance is not economically equivalent to a kilogram of imported rice with standardized grade, cleanliness, aroma, and package trust (Codex Alimentarius Commission,

1995/2023; Custodio et al., 2019; Ndindeng et al., 2021).

Working capital is another hidden constraint. Rice mills often need to buy paddy when farmers harvest, but they may sell milled rice over time. If imports arrive at lower prices or consumers prefer imported varieties, millers can be squeezed between producer-price obligations and market realities. Limited working capital can then lead to delayed farmer payments, reduced paddy purchases, or unsold inventory. This is not merely a managerial weakness. It is a coordination problem involving production calendars, price information, import timing, credit, storage, and public policy.

The same cost-stack logic applies to furniture. A local furniture maker may avoid import duty on a finished sofa or table, but may purchase boards, foam, fittings, varnish, handles, adhesives, tools, spare parts, and finishing materials in small quantities. The imported competitor may ship a finished item across long distances, yet manufacture at much larger scale with automated cutting, standardized designs, predictable finishing, and catalog distribution; WITS data show that Rwanda imported wooden furniture categories from multiple external suppliers, including China, the United Arab Emirates, Turkey, South Africa, and Belgium in 2022 (WITS, 2026a, 2026b). Consumers may interpret uniform finishing and showroom presentation as quality. The local product can lose even if it is repairable and technically strong, because the consumer sees more risk in delivery time, finish, warranty, or price transparency. This interpretation is consistent with Rwanda SME evidence showing that informal innovation does not automatically translate into stronger firm performance unless firms also possess absorptive capacity, market linkages, finance, and commercialization infrastructure (Mukasa et al., 2025).

4.8 Comparator illustrations: how far does the rice mechanism travel?

The comparator products suggest that the rice-derived mechanism is plausible beyond rice, but they should not be read as full sectoral diagnoses. Palm oil and sugar illustrate the role of raw-material depth, refinery or processing scale, packaging systems, and bulk logistics. Rwanda's reported import values for these products show that domestic or regional supply does not yet meet demand at competitive scale, but the available public evidence does not permit the same depth of price-transmission analysis as in rice (Republic of Rwanda Embassy in Zimbabwe, 2026). The appropriate inference is therefore modest: these products support the framework's logic of scale, processing capacity, and import dependence, but they require separate product-level studies before strong sector-specific conclusions are drawn.

Cement and wooden furniture illustrate different mechanisms. Cement exposes the importance of clinker, energy, plant utilization, capital intensity, and cross-border logistics, while furniture exposes finishing, design, imported inputs, warranties, and consumer trust. CIMERWA's reporting and industry coverage underline the relevance of clinker and import dependence in cement, while WITS furniture data show that Rwanda imports wooden furniture categories from several external suppliers (CIMERWA Plc, 2025; Global Cement, 2025; WITS, 2026a, 2026b). These comparators therefore sharpen rather than dilute the rice case: across sectors, import affordability is most plausible where foreign scale and quality systems outweigh Rwanda's import-cost wedge, while local producers carry domestic cost stacks that are not visible in a simple tariff comparison.

4.9 Mechanism-based synthesis answering the research questions

Table 5. Cross-case mechanism synthesis

Mechanism	Rice evidence	Comparator evidence	Policy implication
Exporter-side scale and specialization	Tanzania and Asian exporters can benefit from larger production systems, milling	Palm oil, sugar, cement, and furniture exporters benefit from plantation/refinery scale, factory	Rwanda must reduce domestic unit costs through scale, clusters, machinery, quality

	capacity, and established trading networks.	production, bulk procurement, and catalog distribution.	systems, and coordinated supply.
Trade-policy and origin filters	Rice statutory CET is high, but effective conditions vary by origin, EAC rules, and policy adjustments.	Finished goods, inputs, and regional products face different effective cost burdens.	Policy must distinguish statutory tariffs from effective protection and avoid raising productive input costs.
Domestic cost stacking	Smallholder scale, postharvest losses, milling inefficiency, finance, storage, and grading raise local rice costs.	Furniture workshops, processors, and manufacturers face energy, imported-input, machinery, finance, and quality costs.	Capability upgrading must address whole value chains, not only farm-gate or factory-gate output.
Quality-adjusted consumer value	Imported rice may compete through aroma, cleanliness, grading, and package trust.	Furniture, cement, and packaged foods compete through finish, warranty, uniformity, packaging, and reliability.	Local products need standards, certification, warranties, branding, and visible quality assurance.
Asymmetric price transmission	Tanzanian wholesale prices strongly influence rice prices in Rwanda, while Rwandan prices have little upstream effect.	Comparator sectors likely face similar price-taking pressures where Rwanda is small relative to regional/global suppliers.	Create market-intelligence systems and adjust import management to regional price movements.

Source: Authors' synthesis based on CARD (2021), EAC (2022), FAO (2024), Ndindeng et al. (2021), Republic of Rwanda Embassy in Zimbabwe (2026), RRA (n.d., 2025), Warner et al. (2025), WITS (2026a, 2026b), and the theoretical literature reviewed in Chapter 2.

4.10 Discussion: stewardship, consumer welfare, and disciplined industrial upgrading

The findings support the integrated import-affordability framework. Imported rice remains competitive not because geography and import costs disappear, but because foreign production systems can enter Rwanda with scale, milling, quality, finance, and market-depth advantages large enough to absorb the import-cost wedge. Domestic rice, by contrast, may avoid some border costs while carrying a heavy internal cost stack: postharvest losses, uneven grading, costly finance, weak stock information, milling inefficiency, and fragmented coordination. The paradox is therefore not irrational. It reveals a structural asymmetry between mature supply systems abroad and capability-building systems at home.

The stewardship question is how policy should respond to that asymmetry. A purely protectionist response risks turning poorer households into involuntary financiers of weak domestic capability. A purely liberal response risks protecting short-term affordability while allowing domestic learning,

food-system resilience, and rural value addition to stagnate. A stewardship-oriented response must hold consumer dignity, producer capability, and creation care together. Consumers should not be forced to pay more for unreliable goods; producers should not be abandoned to compete against mature supply chains without support for upgrading; and agricultural residues should not be treated as valueless waste when they can reduce energy costs, support soil systems, and create circular-economy value.

This argument reframes industrial policy as a moral and institutional discipline rather than as a slogan. The appropriate test is not whether a product is local, but whether public support helps the activity reduce unit costs, improve quality, increase reliability, deepen skills, protect poorer consumers, and move toward competitive independence. Where support produces learning and measurable improvement, it can be justified as stewardship-oriented capability building. Where support merely shelters high-cost production and shifts the burden to consumers, it becomes a regressive transfer disguised as patriotism.

Policy choice matrix for import-competing products

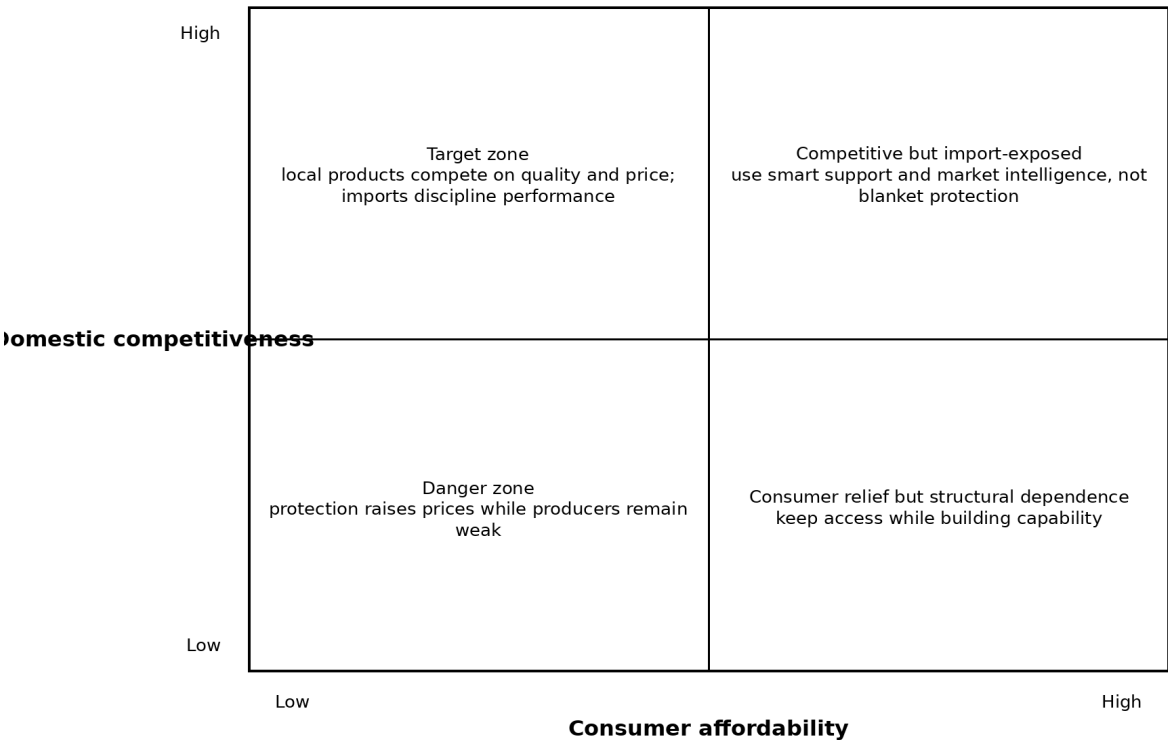


Figure 5. Policy choice matrix for import-competing domestic products. Source: Authors' construction.

4.11 Rice-residue valorization as an ethical innovation pathway

Rice-residue valorization should be treated as part of the competitiveness agenda rather than as an environmental appendix. Husks, straw, bran, and broken rice can affect miller economics, farmer incentives, energy use, waste management, soil-amendment pathways, and circular value-chain performance. The evidence reviewed in this article does not prove that residue valorization will by itself close the local-import competitiveness gap. It shows something more precise: if residue pathways reduce drying or milling energy costs, create by-product revenue, reduce waste-disposal burdens, or strengthen cooperative coordination, they can lower the effective cost of domestic rice and improve the ethical quality of value-chain upgrading.

This is also where stewardship economics becomes operational. Creation care is not only a matter of preserving land in the abstract; it includes governing

by-products, wastes, and production residues responsibly. Ethical innovation therefore requires business models that are technically feasible, economically viable, environmentally sound, and institutionally coordinated. In the rice sector, this means testing residue pathways not only for environmental promise but for their effects on farmer income, miller liquidity, household food affordability, and domestic rice reliability.

5. Policy Implications and Conclusion

5.1 Policy implications

The evidence points to one central policy implication: Rwanda should not treat import restriction as a substitute for domestic capability building. Rice competitiveness depends on productivity, postharvest systems, milling recovery, quality assurance, finance, storage, market intelligence, and consumer trust. A tariff can change

the price benchmark, but it cannot by itself create reliable grading, reduce broken-grain losses, improve milling efficiency, lower working-capital costs, or persuade consumers that local rice offers

better value. Policy should therefore focus on reducing the domestic cost stack while protecting poorer households from avoidable food-price burdens.

Table 7. Prioritized policy and enterprise actions for stewardship-oriented rice competitiveness

Time horizon	Responsible actors	Priority action	Stewardship rationale
Immediate	MINAGRI, MINICOM, NISR, RRA, millers, import authorities	Build a rice market-intelligence dashboard integrating eSoko prices, customs data, WFP regional prices, miller stocks, import licenses, and wholesale-retail observations	Reduces delayed response to regional price movements and protects both consumers and producers from avoidable policy blindness
Immediate	MINAGRI, RAB, cooperatives, millers	Strengthen drying, moisture testing, grading, storage, and transparent paddy-quality standards	Reduces quality losses and improves trust in local rice
Medium term	Development finance institutions, banks, millers, cooperatives	Create seasonal working-capital instruments tied to verified stocks, purchase contracts, and transparent repayment schedules	Reduces delayed farmer payments and unsold-stock pressures
Medium term	MINICOM, RSB, millers, cooperatives, retailers	Develop quality-differentiated Rwandan rice brands with visible grading, trusted packaging, and consumer-facing standards	Competes on value and reliability rather than patriotic appeal
Medium term	MINICOM, RRA, EAC policy actors	Review productive input costs for machinery, packaging, spare parts, seeds, fertilizer, and milling equipment	Prevents import substitution from being undermined by high input costs
Long term	RAB, universities, private firms, cooperatives, local authorities	Test rice-residue business models for husk energy, briquettes, biochar, compost, mushroom substrates, animal bedding, and bran valorization	Converts waste into cost reduction, environmental stewardship, and potential by-product revenue
Continuous	Cabinet-level economic policy actors, consumer agencies, NISR	Monitor consumer-price effects of protection, quotas, stays of application, and public procurement	Prevents industrial policy from becoming a regressive burden on poorer households

Source: Authors' synthesis from the findings and from policy and empirical evidence in CARD (2021), FAO (2024), MINICOM (2024), Ndindeng et al. (2021), Republic of Rwanda Embassy in Zimbabwe (2026), RRA (n.d., 2025), Sangwa et al. (2023), Warner et al. (2025), and World Bank (2020).

5.2 Enterprise implications

Domestic firms should treat imports as benchmarks, not merely as threats. Rice processors should benchmark imported rice on cleanliness, broken-grain percentage, aroma, cooking behavior, package integrity, weight accuracy, shelf stability, and retail availability. Furniture producers should benchmark imported products on finish, design

consistency, modularity, warranty, delivery time, price transparency, and catalog presentation. Producer associations can reduce costs through collective input procurement, shared machinery, quality testing, common branding, and pooled market information. For millers and cooperatives, the priority is not only to produce more rice, but to

produce a more predictable and trusted quality-adjusted unit.

5.3 Conclusion

Rwanda's import-affordability paradox is best understood as a comparison between two systems. Imported rice can remain competitive when foreign scale, milling capacity, quality systems, trade finance, and tariff-origin filters outweigh Rwanda's import-cost wedge. Domestic rice can remain expensive or less attractive when postharvest losses, weak grading, costly finance, milling inefficiencies, limited market intelligence, and fragmented coordination raise the cost per trusted unit. The policy lesson is therefore not that imports are good and local production is weak, nor that imports are bad and local production should be protected at any cost. The lesson is that domestic competitiveness must be earned through capability, quality, reliability, and consumer trust.

The article's stewardship contribution is to insist that food affordability, producer upgrading, and ecological responsibility must be held together. A just policy does not ask vulnerable households to subsidize inefficiency through higher food prices. A wise policy also does not abandon domestic rice producers to mature foreign supply systems without

support for learning, finance, postharvest improvement, and quality upgrading. The most defensible path is disciplined capability building: reduce the domestic cost stack, improve quality-adjusted value, valorize residues where viable, and keep consumer welfare at the center of industrial policy.

5.4 Future research

Future research should directly measure the local-import retail price gap for rice by collecting brand-level prices across markets, dates, origins, grades, package sizes, and quality attributes. A stronger empirical test would combine eSoko prices, customs microdata, WFP Tanzanian wholesale prices, miller stock data, and consumer surveys to estimate import-price pass-through, asymmetric adjustment, and willingness to pay for local versus imported rice. Product-level work should also test rice-residue valorization as an economic variable by estimating whether husk energy, briquettes, compost, biochar, mushroom substrates, animal bedding, or bran valorization reduce net processing costs or increase farmer and miller income. Such research would move the present diagnostic framework toward a directly testable rice-competitiveness model.

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Appendix A. Replication and evidence-boundary notes

The indicative import unit values reported in the article were calculated as reported import value divided by reported import volume. Rice: US\$317.2 million divided by 508,852 tonnes is approximately US\$623 per tonne. Sugar: US\$238 million divided by 308,000 tonnes is approximately US\$773 per tonne. Palm oil: US\$207 million divided by 196,000 tonnes is approximately US\$1,056 per tonne. Cement: US\$94 million divided by 818,000 tonnes is approximately US\$115 per tonne. These figures are indicative border-level measures derived from publicly reported Trade and Industry Performance 2024 figures. They must not be interpreted as retail prices, welfare measures, or quality-adjusted consumer prices.

The calculations are used only to establish the scale of import exposure and to provide approximate import-parity benchmarks. Direct testing of the local-import affordability gap would require brand-level retail prices, origin, grade, package size, market location, date of observation, exchange-rate timing, wholesale and retail margins, quality characteristics, and consumer preference measures. For rice, the most important additional variables would include broken-grain ratio, moisture content, cleanliness, aroma, cooking behavior, packaging integrity, and whether the product is local, Tanzanian, Asian, or another origin. The article therefore explains mechanisms and plausibility rather than estimating definitive product-level retail price gaps.