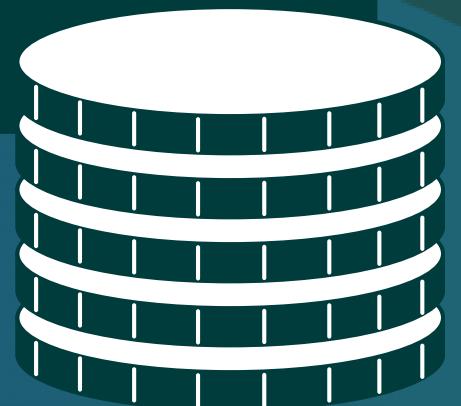




TradeKE Insights



exports vs imports X



Problem Statement



Kenya faces persistent trade deficits and economic vulnerabilities due to heavy reliance on imported manufactured goods and petroleum products while depending on a narrow range of agricultural exports. This study analyzes Kenya's import-export patterns from 2020-2024 to identify structural trade imbalances, assess the impact of global economic shocks (including COVID-19), and recommend strategies for improving trade competitiveness and reducing external dependencies.

Kenya's trade landscape has undergone significant transformation between 2019 and 2024, marked by a persistent and widening trade deficit that has more than doubled from \$4.4 billion to over \$10 billion. This comprehensive analysis reveals critical patterns in import dependency, export diversification challenges, and emerging opportunities for economic resilience.

This report synthesizes trade data from credible sources to provide actionable insights for policymakers, business leaders, and development partners seeking to enhance Kenya's trade competitiveness and economic sustainability through evidence-based decision making.



Research Questions

- Quantify Kenya's trade deficit trends and underlying drivers
- Identify import substitution opportunities and value addition potential
- Analyze seasonal trade patterns and COVID-19 recovery dynamics
- Develop strategic recommendations for trade balance improvement
- Assess export diversification and competitiveness opportunities

Analysis Timeframe & Coverage

- Period: 2019 - 2024
- Geographic Scope: Republic of Kenya vs global scope
- Trade Partners: Global analysis

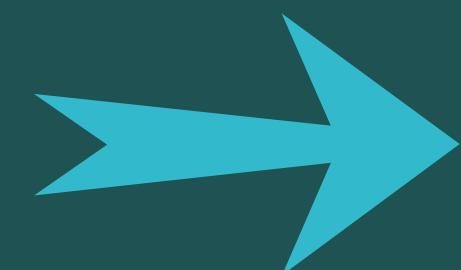




Data Prep

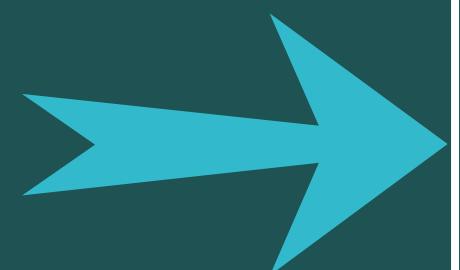
1. Data Input

- Raw CSV file processing and validation
- Schema verification for data integrity
- Tech Stack: Excel, Python, CSV Parser



2. Data Cleaning

- Prepare Data for Analysis
- Missing value imputation strategies
- Categorical variable encoding
- Outlier detection and handling
- Tech Stack: Pandas, NumPy

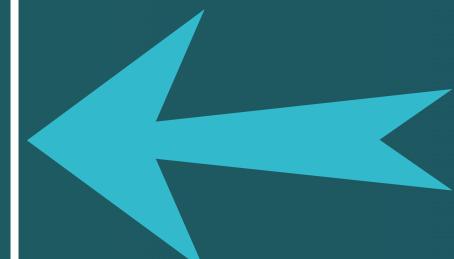


3. Data Storage

- Persist Clean Data
- Relational database schema design
- Optimized data insertion with indexing
- Tech Stack: MySQL, Excel

5. Visualization

- Interactive Dashboard Creation
- Dynamic chart generation
- Real-time filtering capabilities
- Tech Stack: Tableau



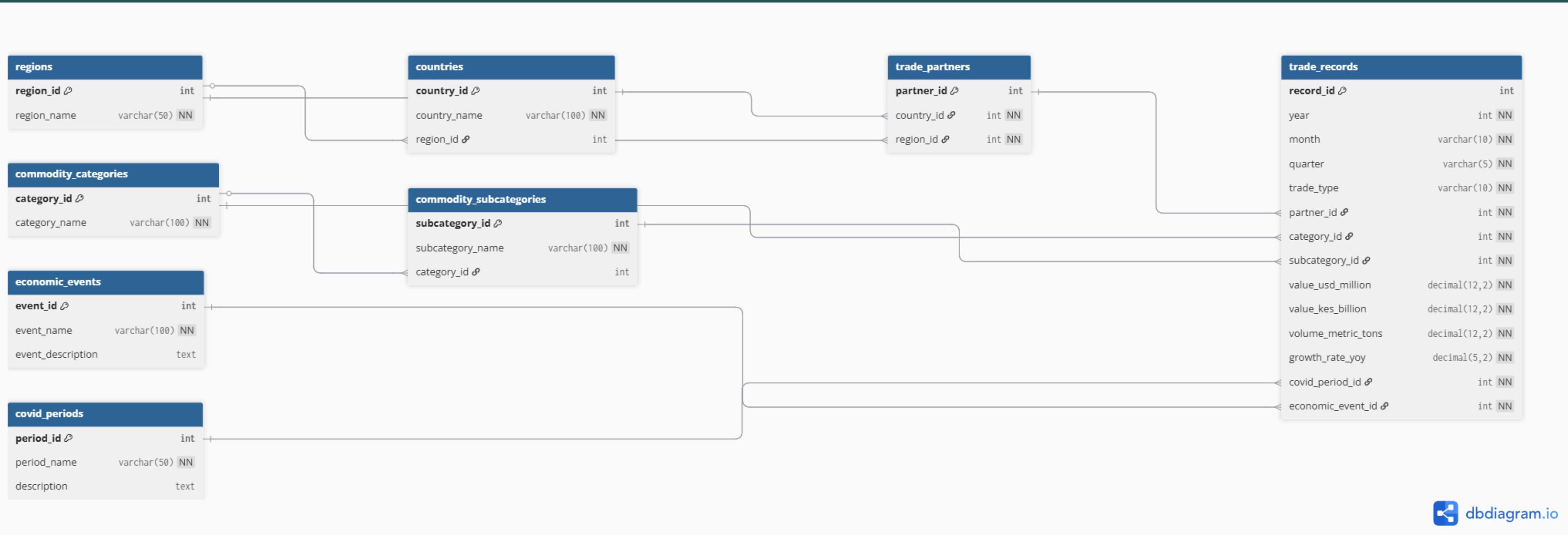
4. Data Transformation

- Analytics-Ready Processing
- Complex SQL queries and aggregations
- Feature engineering for model preparation
- Tech Stack: SQL, Pandas,





ER.Diagram





SQL Implementation

```
CREATE TABLE regions ( -- region_id INT PRIMARY KEY,  
-- region_id INT AUTO_INCREMENT PRIMARY KEY,  
-- region_name VARCHAR(50) NOT NULL UNIQUE,  
-- region_id INT, -- FOREIGN KEY (region_  
  
CREATE TABLE commodity_categories (  
-- category_id INT AUTO_INCREMENT PRIMARY KEY,  
  
CREATE TABLE commodity_subcategories (  
-- subcategory_name INT AUTO_INCREMENT PRIMARY KEY,  
-- category_id INT FOREIGN KEY (category_id) NUL  
-- REFERENCES commodity_categories (category_id:category_id)  
  
CREATE TABLE economic_events (  
-- event_id INT AUTO_INCREMENT PRIMARY KEY,  
-- event_name VARCHAR(100)  
  
CREATE TABLE trade_periods (  
-- period_id INT AUTO_INCREMENT PRIMARY KEY,  
-- period_name VARCHAR(50) NOT NULL UNIQUE,  
-- description TEXT  
  
CREATE TABLE trade_partners (  
-- partner_id INT AUTO_INCREMENT PRIMARY KEY,  
-- country_id INT NOT NULL,  
-- region_id INT NOT NULL;
```

Sample Queries Analysis

1. Find a product (subcategory) that is both an import and an export

```
SELECT s.subcategory_name,  
       SUM(CASE WHEN tr.trade_type = 'Import' THEN tr.value_usd_million ELSE 0 END)  
             AS total_import_value_usd  
       SUM(CASE WHEN tr.trade_type = 'Export' THEN tr.value_usd_million ELSE 0 END)  
             AS total_export_value_usd  
  FROM trade_records tr  
 JOIN commodity_subcategories s ON tr.subcategory_id = s.subcategory_id  
 GROUP BY s.subcategory_name
```

2. Identify which region receives the most exports

```
SELECT r.region_name,  
       SUM(tr.value_usd_million) AS total_exports  
  FROM trade_records tr  
 JOIN commodity_subcategories s ON tr.subcategory_id = s.subcategory_id  
 WHERE tr.trade_type = 'Export'  
 GROUP BY r.region_name  
 ORDER BY total_exports DESC  
 LIMIT 1
```

3. Identify which month in 2024 had the highest export of cut flowers

```
SELECT tr.month,  
       SUM(tr.value_usd_million) AS total_exports  
  FROM trade_records tr  
 JOIN commodity_subcategories s ON tr.subcategory_id = s.subcategory_id  
 WHERE tr.trade_type = 'Export'  
   AND s.subcategory_name = 'Cut Flowers'  
   AND tr.year = 2024
```



Visualisations...



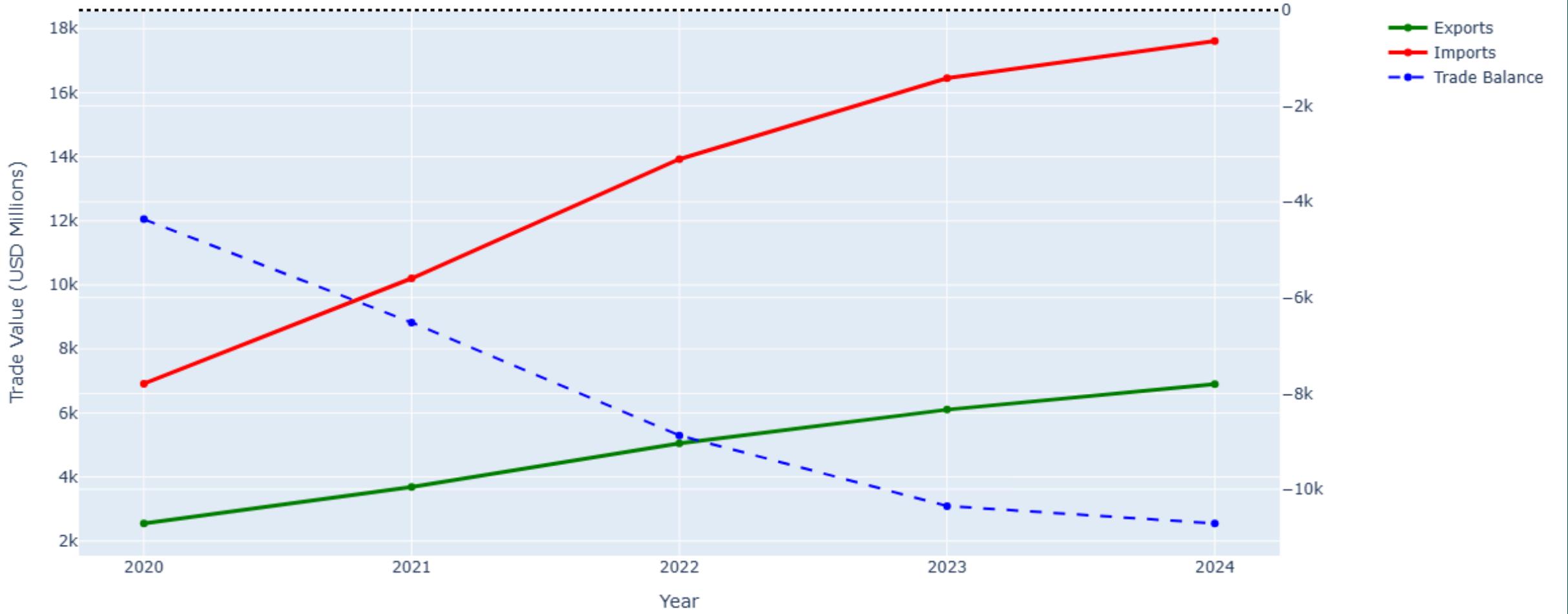
from insights to impact





Trade Balance

Kenya Monthly Trade Balance Trend (2020-2024)



RECOMMENDATIONS

"**SHORT-TERM (1-2 years):** - Accelerate agricultural value addition and expand market diversification beyond traditional routes - Leverage favorable trade agreements - maximize EU trade deal benefits and pursue pending US agreement - Focus on export quality premiums for higher-value agricultural products

MEDIUM-TERM (3-5 years): - Import substitution strategy - develop domestic manufacturing capacity - Enhance export diversification beyond agricultural commodities - Strengthen regional trade partnerships in East and Central Africa

LONG-TERM STRATEGIC: - Industrial transformation toward higher value-added exports - Infrastructure development to reduce export costs and enhance competitiveness"

INSIGHTS

- Kenya's trade deficit reached \$1.1 billion in December 2024, reflecting the persistent import-export gap.
- Tea exports achieved record earnings of Kshs 180.57 billion in 2023 (31% increase), contributing to gradual export growth.
- However, the goods trade deficit is projected to widen to 10.8% of GDP, the widest since 2018. By August 2024, tea exports had already surpassed 2023's total by Sh21 billion, reaching Sh127 billion.

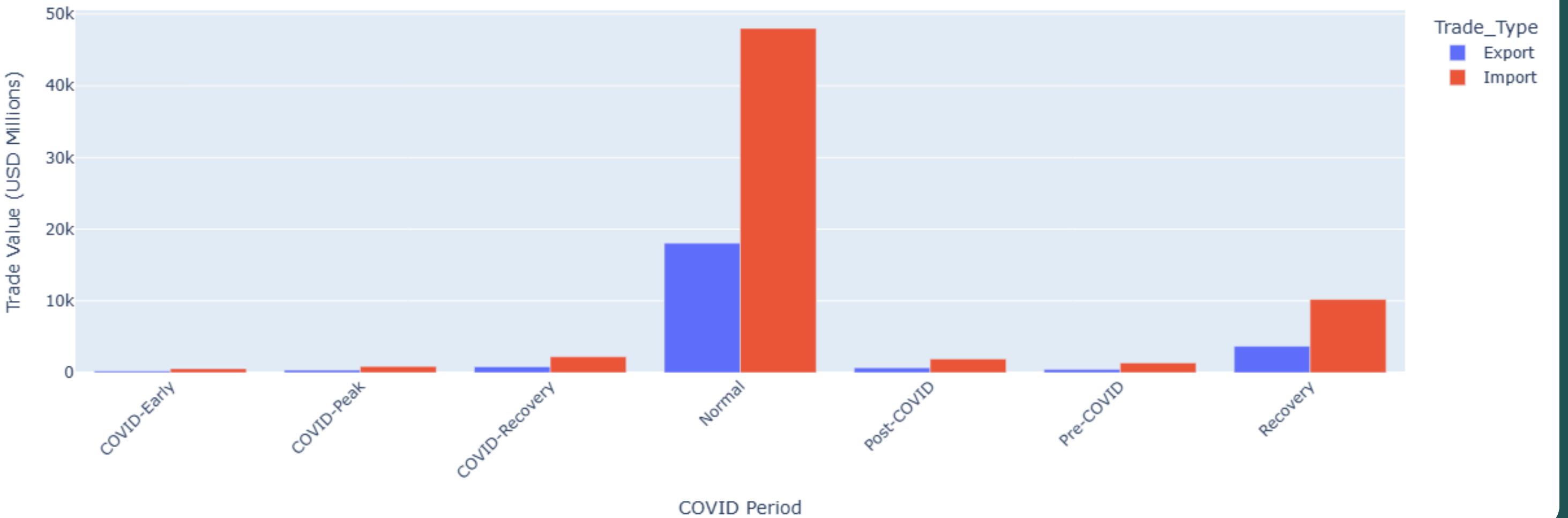
This trend is driven by several key factors:

- Kenya imports all its petroleum requirements, with 90% being refined products (petrol, diesel, kerosene), creating a substantial fuel import bill that widens the deficit.
- Trade deficits are largely driven by increased expenditure on manufactured materials and industrial goods imports, including machinery orders, as Kenya's manufacturing sector relies heavily on imported raw materials and equipment.



COVID 19 Periods

Trade Impact Across COVID-19 Periods



RECOMMENDATIONS

IMMEDIATE CRISIS RESPONSE

- Diversify supply chain sourcing countries
- Build domestic manufacturing capacity
- Enhance digital trade platforms

POST-PANDEMIC RECOVERY

- Leverage African Continental Free Trade Area
- Invest in resilient technology solutions
- Rebuild tourism with safety protocols

LONG-TERM RESILIENCE

- Create strategic reserves for critical imports and develop supply chain early warning systems
- Build collaborative trading partner networks
- Strengthen local essential sector production

INSIGHTS

- "Kenya's trade was severely disrupted during COVID-19, with imports reducing by 15-23% and exports declining by 25-35% during the pandemic's peak periods."
- The dramatic difference between 'Normal' and COVID periods reflects the shutdown of manufacturing industries dependent on industrial supplies and the suspension of international travel that severely impacted the accommodation and restaurant sectors.
- Trade relationships recovered relatively swiftly by June 2020, following a similar trajectory through end-2020, but saw another decline in early 2021 due to rising COVID-19 cases and social distancing requirements.
- The recovery period shows gradual restoration of trade volumes, though supply chain disruptions continued to impact Kenya's trade performance.
- Despite depth of the economic crisis, regional trade in East Africa showed significant resilience from May 2020 onwards, contributing to the overall recovery trajectory."



TradePartners



INSIGHTS

- "Kenya's trade is heavily skewed toward Asia, with China and India accounting for 53% of major partnerships. This concentration stems from China's Belt and Road Initiative, which has reshaped sub-Saharan Africa through strategic infrastructure investments, trade agreements, and economic diplomacy since the 2000s."
- The UAE has leapfrogged India to become Kenya's second-largest source market due to soaring oil prices, as Kenya imports costly petroleum products.
- China's dominance reflects Kenya's role as a pivotal maritime BRI location, with Chinese state-owned and private firms establishing extensive infrastructure, trade, and manufacturing projects.
- Meanwhile, Kenya exports primarily to East African neighbors (Uganda, Tanzania) leveraging regional integration, and to European markets (Netherlands, UK) through established colonial-era trade links and recent EU trade agreements.
- This creates a structural imbalance - large import dependencies on manufactured goods and energy from Asia/Middle East versus smaller regional agricultural and raw material exports."

RECOMMENDATIONS

- REDUCE DEPENDENCY: Diversify suppliers beyond China/India to Japan, South Korea, Vietnam and ASEAN countries
- STRENGTHEN REGIONAL TRADE: Maximize AfCFTA benefits and boost exports to East African neighbors (Uganda, Tanzania)
- EXPAND EUROPEAN MARKETS: Leverage EU trade deal beyond current Netherlands/UK partnerships
- DEVELOP MANUFACTURING HUB: Position Kenya as regional value-added production center
- BALANCE PARTNERSHIPS: Maintain flexible relationships between Eastern and Western trading blocs
- ENERGY TRANSITION: Reduce UAE petroleum dependency through renewable energy development
- CREATE SPECIAL ZONES: Establish targeted economic zones for specific regional export markets"



Trading Partners

Trading Partner Concentration Analysis



INSIGHTS

- Kenya exhibits severe trade concentration risk, with the top 5 trading partners (China, India, UAE, Uganda, Netherlands) accounting for approximately 80% of total trade value.
- This concentration stems from Kenya's role as a regional trade hub under China's Belt and Road Initiative, which has intensified economic relationships with Asian partners.
- The 80% threshold concentration in just 5 partners creates significant vulnerability to external shocks, currency fluctuations, and geopolitical tensions.
- Kenya's participation in regional trade blocs such as the East African Community and bilateral arrangements aims at trade diversification, but the concentration pattern persists due to Kenya's import dependency on manufactured goods from Asia and petroleum from the Middle East.
- The steep cumulative curve indicates that beyond the top 5 partners, remaining trading relationships contribute minimally to overall trade volume, highlighting the need for broader market diversification to reduce economic vulnerability.

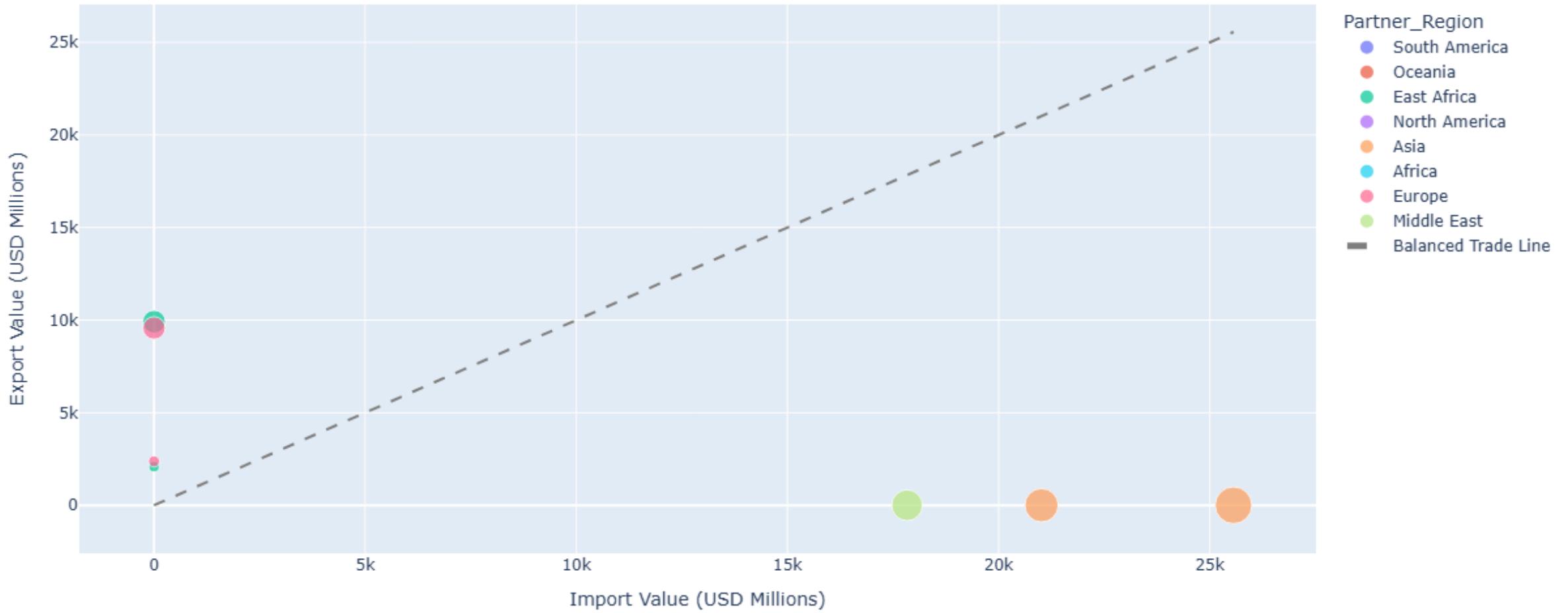
RECOMMENDATIONS

- DIVERSIFICATION IMPERATIVE: Reduce top-5 concentration through targeted market expansion
- GEOGRAPHIC REBALANCING: Increase trade with African, European, and American partners to reduce Asian dependency
- SECTOR DIVERSIFICATION: Develop new export products to access untapped markets beyond current partner base
- REGIONAL INTEGRATION: Leverage AfCFTA to distribute trade risk across 54 African markets
- CONTINGENCY PLANNING: Create alternative supply chains for critical imports to manage concentration risks
- MONITOR CONCENTRATION: For instance setting maximum thresholds (no partner >25%, top-3 <60%) and track quarterly"



Import - Export

Import vs Export Dependency by Trading Partner



INSIGHTS

- "Kenya exhibits extreme trade dependency patterns - massive import relationships with Asian partners (China, India, UAE) clustered on the import axis, while export relationships concentrate with East African neighbors and European markets on the export axis."
- This polarization stems from Kenya's role as a regional manufacturing and trade hub, where the country imports crude petroleum, chemicals, manufactured goods, machinery, and transportation equipment primarily from Asia, while exporting agricultural products, processed goods, and re-exports to regional markets.
- Kenya achieved a record \$1.2 billion trade surplus with Africa in 2023, with Tanzania becoming Kenya's largest East African market, overtaking Uganda.
- However, Kenya runs severe deficits with major Asian suppliers, creating the structural imbalance visible in this chart where no major partner approaches the balanced trade line."

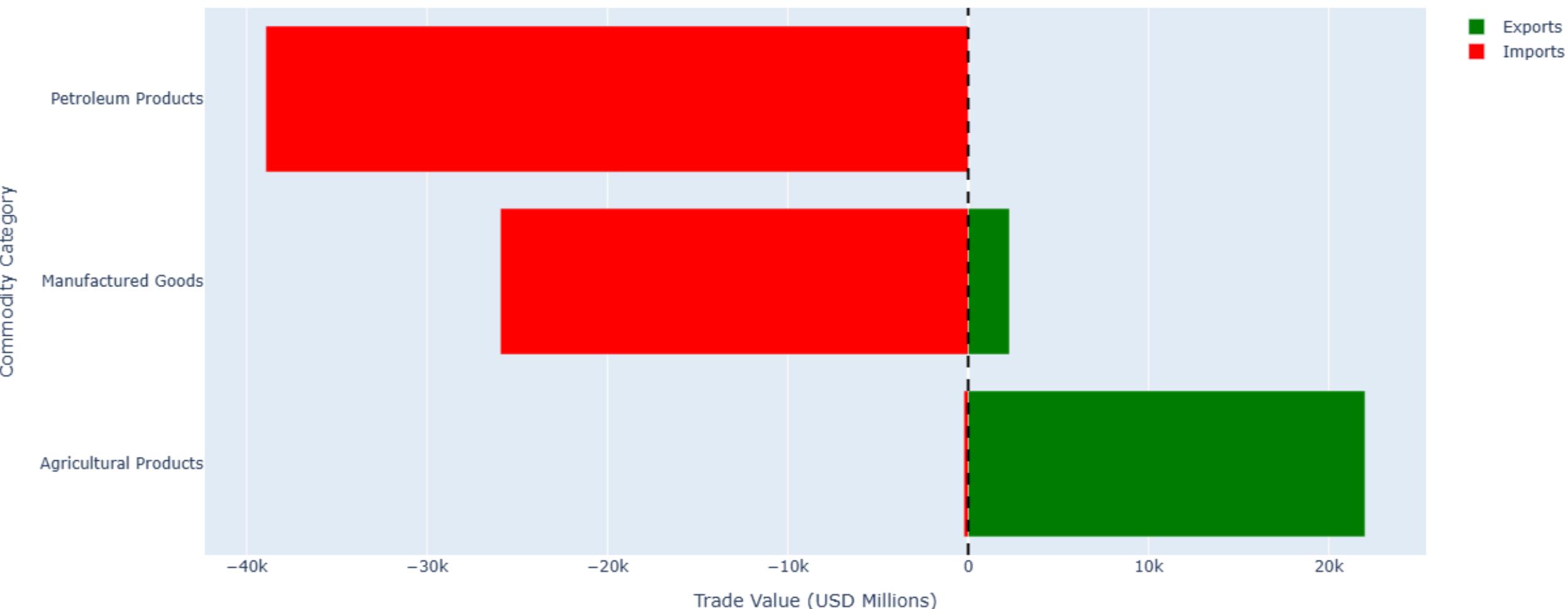
RECOMMENDATIONS

- DEVELOP TWO-WAY TRADE: Convert one-way relationships into balanced partnerships by identifying export opportunities to current import partners
- REGIONAL VALUE CHAINS: Leverage Africa trade surplus (\$1.2bn in 2023) to expand manufacturing for Asian markets
- IMPORT SUBSTITUTION: Reduce Asian import dependency by developing domestic production in key categories
- STRATEGIC POSITIONING: Use Kenya's regional hub status to facilitate triangular trade relationships
- NEGOTIATE BALANCE: Include export promotion clauses in import agreements with major Asian partners
- MONITOR DEPENDENCIES: Track import-export ratios and set targets to move partners closer to balanced trade line



Commodity Analysis

Exports vs Imports by Commodity Category



INSIGHTS

- "Kenya exhibits stark commodity-based trade imbalances that explain the overall deficit structure.
- Petroleum products create the largest deficit with zero domestic production, as Kenya's oil import bill reached Sh575.5 billion in 2024 despite declining by 8.1%.
- The country imports all petroleum requirements with 90% being refined products.
- Manufactured goods show severe import dependency with minimal export capacity, as trade deficits widen largely on increased expenditure on manufactured materials.
- However, agricultural products represent Kenya's competitive advantage, generating substantial export surpluses through tea, coffee, and horticultural products. Tea exports alone achieved record earnings of Ksh 180.57 billion in 2023, demonstrating Kenya's agricultural export strength.
- This commodity pattern reveals that Kenya's trade deficit stems from structural dependencies on imported energy and manufactured goods, partially offset by agricultural export competitiveness."

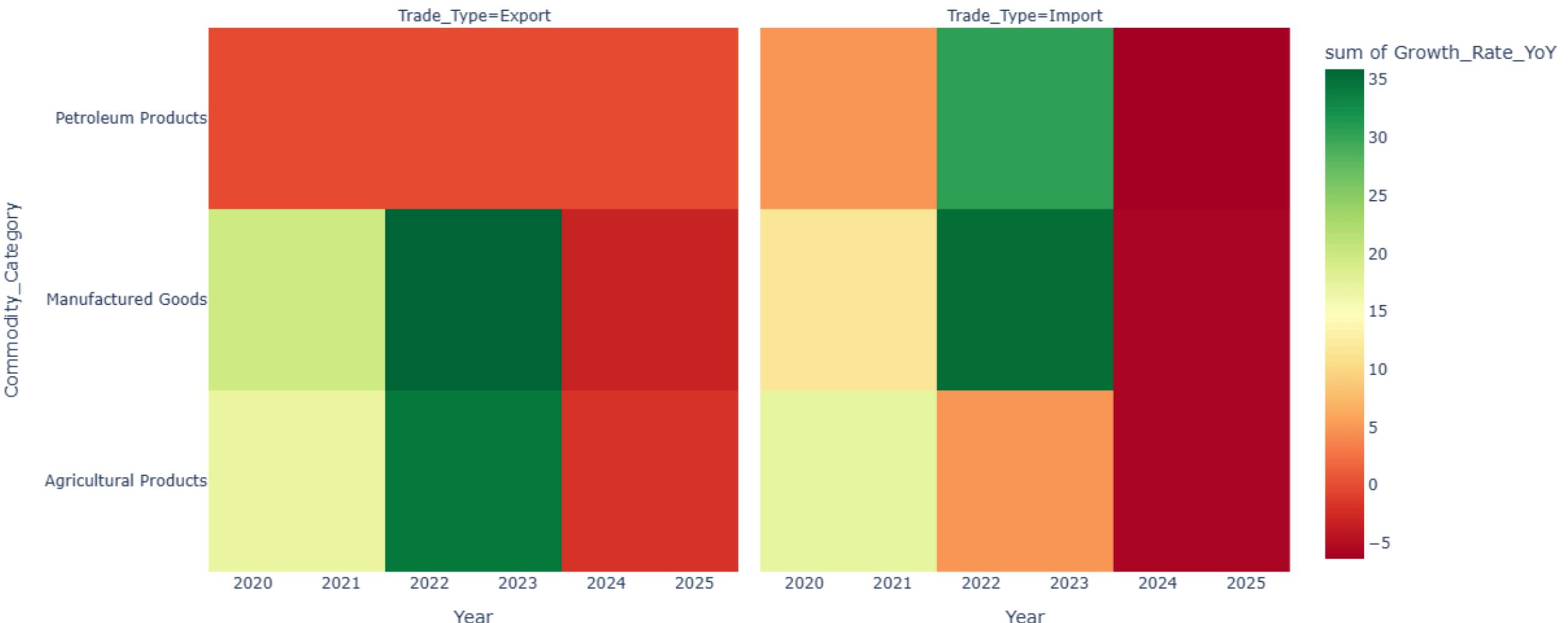
RECOMMENDATIONS

- ENERGY TRANSITION: Accelerate renewable energy adoption to reduce petroleum import dependency of Sh575.5 billion annually
- DOMESTIC REFINING: Develop local petroleum refining capacity to add value and reduce refined product imports
- MANUFACTURING DEVELOPMENT: Implement import substitution for key manufactured goods through targeted industrial policy
- VALUE-ADDED AGRICULTURE: Expand processing of agricultural exports to capture higher margins and reduce raw material dependence
- INDUSTRIAL DIVERSIFICATION: Develop manufacturing exports in sectors where Kenya has regional competitive advantages
- GREEN ENERGY MANUFACTURING: Position Kenya as regional hub for renewable energy equipment production
- REGIONAL VALUE CHAINS: Integrate into East African manufacturing networks to reduce import costs



Commodity-wise Growth

Annual Growth Rates by Commodity Category



INSIGHTS

- Kenya's commodity growth patterns reveal significant volatility driven by external shocks and recovery cycles. Agricultural exports experienced exceptional growth in 2022-2023, with tea exports achieving record earnings of Kshs 180.57 billion in 2023 (31% increase) due to increased volumes and favorable exchange rates.
- However, agricultural export growth faces challenges from climate variability, global price fluctuations, and exchange rate volatility that particularly impacts coffee exports to European markets.
- Import growth shows high volatility across all categories, reflecting Kenya's susceptibility to global supply chain disruptions, energy price shocks, and currency fluctuations.
- The declining growth rates in 2024-2025 depict economic headwinds from inflation, high interest rates, and reduced consumer demand affecting both export competitiveness and import capacity.

RECOMMENDATIONS

- AGRICULTURAL RESILIENCE:** Develop climate-smart agriculture and irrigation systems to reduce weather-related volatility in export growth
- CURRENCY HEDGING:** Implement financial instruments to protect exporters from exchange rate volatility impacts
- SUPPLY CHAIN EFFICIENCY:** Invest in logistics infrastructure to maintain export competitiveness during global disruptions
- IMPORT OPTIMIZATION:** Develop strategic procurement policies to smooth import growth volatility and reduce costs
- MANUFACTURING SCALING:** Accelerate industrial development to capture higher and more stable manufactured export growth
- REGIONAL INTEGRATION:** Leverage AfCFTA to create more predictable growth patterns through regional trade stability

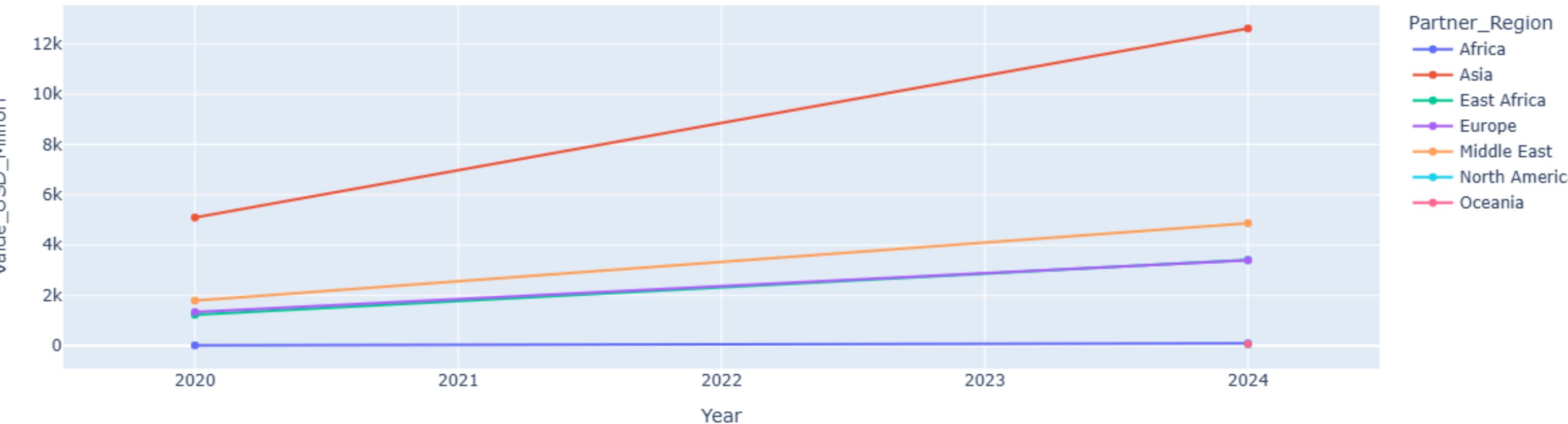


INSIGHTS

- Kenya's regional trade patterns reveal a decisive shift toward Asian markets during the 2020-2024 period, with Asia showing the steepest growth trajectory from post-COVID recovery.
- This growth reflects Kenya's increasing integration with Asian supply chains, driven by China's BRI infrastructure investments and rising import dependency on manufactured goods and machinery.
- East Africa remains Kenya's strongest export region despite slower growth, benefiting from regional integration efforts and Kenya's role as a regional hub.
- Despite challenges like climate events and conflicts, East Africa remains the fastest-growing region in Africa, with Kenya maintaining its position as one of the best performing economies in sub-Saharan Africa.

Region-wise Growth

Regional Trade Growth: 2020 vs 2024



RECOMMENDATIONS

- BALANCE ASIAN DEPENDENCY: While leveraging Asian growth, develop export capabilities to create two-way trade relationships
- ACCELERATE EAST AFRICA INTEGRATION: Maximize the region's fastest-growing status by expanding manufacturing for regional markets
- STRENGTHEN EUROPEAN PARTNERSHIPS: Build on steady European growth through value-added agricultural exports and EU trade agreements
- DIVERSIFY MIDDLE EAST RELATIONS: Beyond petroleum imports, explore renewable energy cooperation and services exports
- REVITALIZE NEGLECTED MARKETS: Develop strategies for North America and Oceania where Kenya has untapped potential



Conclusion

Strategic Opportunities

Agricultural Value Addition

Processing raw exports could increase unit values by 400-600%, transforming Kenya into a regional agro-industrial hub.

Import Substitution

\$2.1 billion potential savings through domestic rice and sugar production, creating 500,000+ jobs in rural areas.

Regional Trade Leadership

AfCFTA implementation could position Kenya as the manufacturing hub for East Africa's 300+ million consumers.

Critical Risks

Debt Sustainability

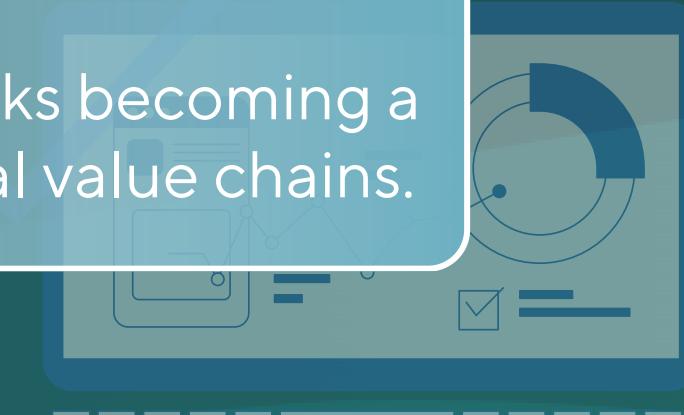
Persistent trade deficits strain foreign reserves and increase external debt vulnerability to currency fluctuations.

Import Dependency

2:1 import-export ratio creates exposure to global supply chain disruptions and commodity price volatility.

Industrial Competitiveness

Without rapid industrialization, Kenya risks becoming a permanent raw material exporter in global value chains.





Strategic Recommendations

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Phased approach to address trade imbalances and economic vulnerabilities

Immediate Actions (0–12 months)

Import Substitution

- Launch rice production incentives targeting 50% self-sufficiency within 12 months
- Revitalize sugar factories in Nyanza and Western regions
- Establish emergency grain reserves to reduce wheat import dependency

Trade Finance & Policy

- Implement strategic import tariffs on non-essential manufactured goods
- Launch export credit guarantee scheme for SME manufacturers
- Negotiate bilateral trade agreements with Uganda and Tanzania

Medium-term (1–3 years)

Industrial Development

- Establish agro-processing SEZs in coffee and tea regions
- Launch textile manufacturing hubs targeting export markets
- Develop pharmaceutical manufacturing to serve East African market

Value Addition

- Target \$150/kg unit values for processed coffee exports
- Expand cut flower varieties and cold chain infrastructure
- Develop leather processing from raw hide exports

Long-term Vision (3–5 years)

Economic Diversification

- Achieve \$20B total exports by 2030
- Reduce trade deficit to <\$3B
- Manufacturing to comprise 30% of exports

Regional Leadership

- Become regional hub for processed goods
- Lead East African value chain integration
- Establish AfCFTA trade corridor

Technology & Innovation

- Digital trade platform for SME exports
- Block chain supply chain traceability
- Green industrialization for sustainability





Data Sources

WITS - World Integrated Trade Solution

Relief Web

UN Comtrade

KenTrade

Trading Economics

kIPPRA



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Thank You!



from insights to impact



By Chelah