iktva Forum & Exhibition 2025

Information Technology

Workshop

Business Opportunities

14th January 2025

IT Workshop

Innovating for the Future

This presentation may contain certain forward-looking statements. All statements other than statements relating to historical facts are, or may be deemed to be, forward-looking statements. Forward-looking statements include, but are not limited to, statements related to future events or to the company's future financial or operating performance such as the company's expectations and projections regarding its growth, initiatives and strategies, capital expenditures and investments, customer and partner relationships, major projects and product development. These statements may generally, but not always, be identified by the use of words such as "target," "goal," "aim," "believe," "expect," "commit," "anticipate," "intend," "estimate," "should," "will," "shall," "may," "likely," "plan," "strategy," "initiative," "project," "outlook" or similar expressions, including variations and the negatives thereof.

Forward-looking statements reflect the company's expectations, beliefs, estimates, forecasts, projections and assumptions, only as of the date such statements are made, and are subject to known and unknown risks, uncertainties and other important factors beyond the company's control that could cause the company's actual results, performance or achievements to be materially different from the expected results, performance, or achievements expressed or implied by such statements. Factors that could cause actual results to differ materially from the company's expectations include, among other things, the following: global supply, demand and price fluctuations of oil, gas and petrochemicals; global economic conditions; competition in the industries in which the company operates; climate change concerns, weather conditions and related impacts on the global demand for hydrocarbons and hydrocarbon-based products; risks related to the company's ability to successfully meet its ESG targets, including its failure to fully meet its GHG emissions reduction targets by 2050; conditions affecting the transportation of products; operational risk and hazards common in the oil and gas, refining and petrochemicals industries; the cyclical nature of the oil and gas, refining and petrochemicals industries; political and social instability and unrest and actual or potential armed conflicts in the MENA region and other areas; natural disasters and public health pandemics or epidemics; the management of the company's growth; the management of the company's subsidiaries, joint operations, joint ventures, associates and entities in which it holds a minority interest; exposure to inflation, interest rate risk and foreign exchange risk; risks related to operating in a regulated industry and changes to oil, gas, environmental or other regulations that impact the industries in which the company operates; legal proceedings, international trade matters, and other disputes or agreements; and other risks and uncertainties that could cause actual results to differ from the forward-looking statements in this presentation, as set forth in the latest periodic reports filed by the Saudi Arabian Oil Company ("Aramco") with the Saudi Exchange. For additional information on the potential risks and uncertainties that could cause actual results to differ from those presented please see Aramco's most recent annual periodic report filed with the Saudi Exchange and any subsequent filings thereto.

We undertake no obligation to update or revise any forward-looking statement, whether as a result of new information, future events or otherwise. All subsequent written and oral forward-looking statements attributable to us or to persons acting on our behalf are expressly qualified in their entirety by this cautionary statement.

aramco iktva Forum & Exhibition 2025

Workshop Agenda

No.	Title of the Investment Opportunity	Presenters
-	Opening remarks	Fares Alotaibi
1	DC Power Equipment	Badr Aljehani
2	Battery Storage Systems	Abdullah Alharbi
3	Internet of Things	Rosa Rubui
	Break	
4	Cybersecurity	Maha Aldhamadi
5	Cloud Computing	Salma Alali
6	Data Center Services	Maram Alotaibi
	Break	
7	Network Switches	Fares Alotaibi
8	Routers	Rotana Mashat
9	Optical Fibers	Hisham Bin Dayel
10	Microwave Communication Dish	
-	Closing remarks	Fares Alotaibi

Innovating for the Future

iktva Program Overview (1/2)

The In-Kingdom Total Value Add (iktva) program is designed to drive increased investment, economic diversification, job creation, and workforce development within the Kingdom

Saudi Aramco aims to achieve 70% localization of all spending

iktva in Procurement

- **2000+** Service contracts
- **290+** Corporate purchase agreements

Business Opportunities

- **12** Sectors
- **210** Business Opportunities
- **$28 bn** Annual Market Size

Anchor Projects

6 Anchor projects

- IMI
- SPARK
- Tuwaiq

Local Workforce Development

- **16** National training centers
- **90+** Programs

Innovating for the Future

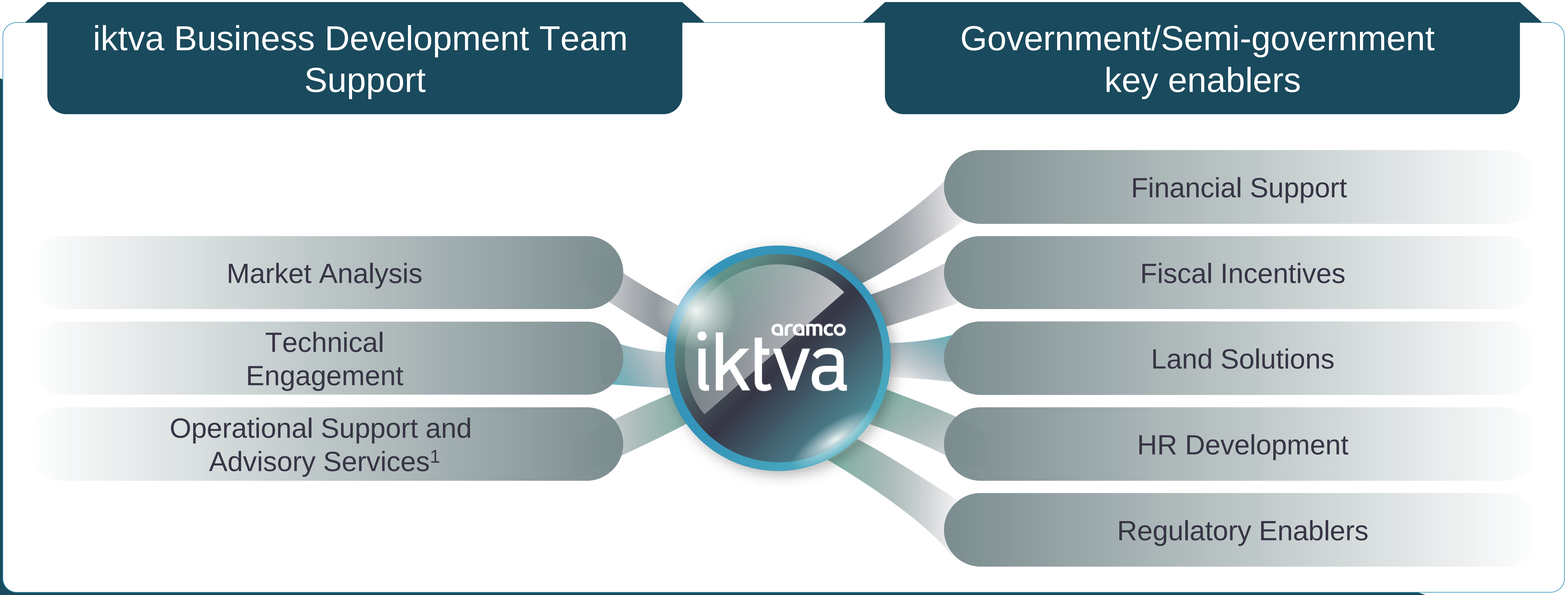
Note: IMI = International Maritime Industries; SPARK = King Salman Energy Park

IT Workshop

iktva Forum & Exhibition 2025

iktva Program Overview (2/2)

Non-exhaustive



IT Workshop

Innovating for the Future

1. Includes broad range of support services provided by the team: user requirements, advisory on available financial and fiscal incentives, guidance on localization process in line with local regulations and standards, action plan development etc.

Why invest in KSA?

Non-exhaustive

Strong GDP growth and healthy economy	Big market and game-changing opportunities	Government incentives and enablers	Ease of doing business	Strategic global location	Favorable demographics
Top 20 economies globally	**5** Special Economic Zones drive innovation	**$1.3T+** invested in private sector by 2030	one of world's most rewarding tax systems	**12-15%** of global trade passes via Red Sea	**17%** population growth from 2013-2023
GDP growth among highest projected in 2025 in top economies	**6** giga projects driving urbanization and industry	**5.7%** contribution of FDI to GDP by 2030	**Top 5** in the MENA region for ease of doing business	KSA container ports are among the most efficient globally	**67%** of population below the age of 35

Innovating for the Future

Note: FDI = Foreign Direct Investment
Source: IMF; MISA; Vision 2030 Key Performance Indicators; Shareek Program; World Bank

aramco iktva Forum & Exhibition 2025

IT Market Overview

KSA IT

$10218MM

15% CAGR[1]

2024 KSA market size for opportunities in today's workshop

Ten opportunities to be discussed today

1	DC Power Equipment
2	Battery Storage Systems
3	Internet of Things
4	Enterprise Cybersecurity
5	Cloud Computing
6	Data Center Services
7	Network Switches
8	Routers
9	Optical Fiber
10	Microwave Communication Dish

1. 5-year forecasted KSA CAGR (2024-2029)

How do we define what is an opportunity?

1 Growing market

High growth high spend markets

2 Limited local players & import driven

Markets with few local contributors and high import resilience

3 Technological & labor feasibility

Markets with accessible or standardized technology and available skilled labor

aramco iktva Forum & Exhibition 2025

DC Power Equipment

Badr Al-Jehani

IT Workshop

Innovating for the Future

aramco iktva Forum & Exhibition 2025

Opportunity profile – DC Power Equipment

1

KSA demands scalable DC Power solutions ensuring uninterrupted operations and support growing digital and industrial ecosystem

Types

Rectifier

Inverter

UPS

2

DC Power Equipment market is substantial with significant growth prospects, and KSA holds the largest share in the region

$187MM — Estimated 2024 KSA market size

20% — Forecasted KSA 5-year CAGR

3

Attractive investment opportunities in the DC Power Equipment value chain

KSA value chain opportunities

- Design & Development
- Mfg.
- Lifecycle management

KSA enablers

- Guaranteed export credits
- Corporate tax exemptions
- Labor upskilling support

Innovating for the Future

Source: Coherent market insights; Precedence search; TeachSci Research; Mordor intelligence; Team analysis

IT Workshop

aramco iktva Forum & Exhibition 2025

DC Power Equipment categories for localization

Non-exhaustive

Rectifier[1]

Inverter[2]

Uninterruptible Power Supply (UPS)[3]

Applications

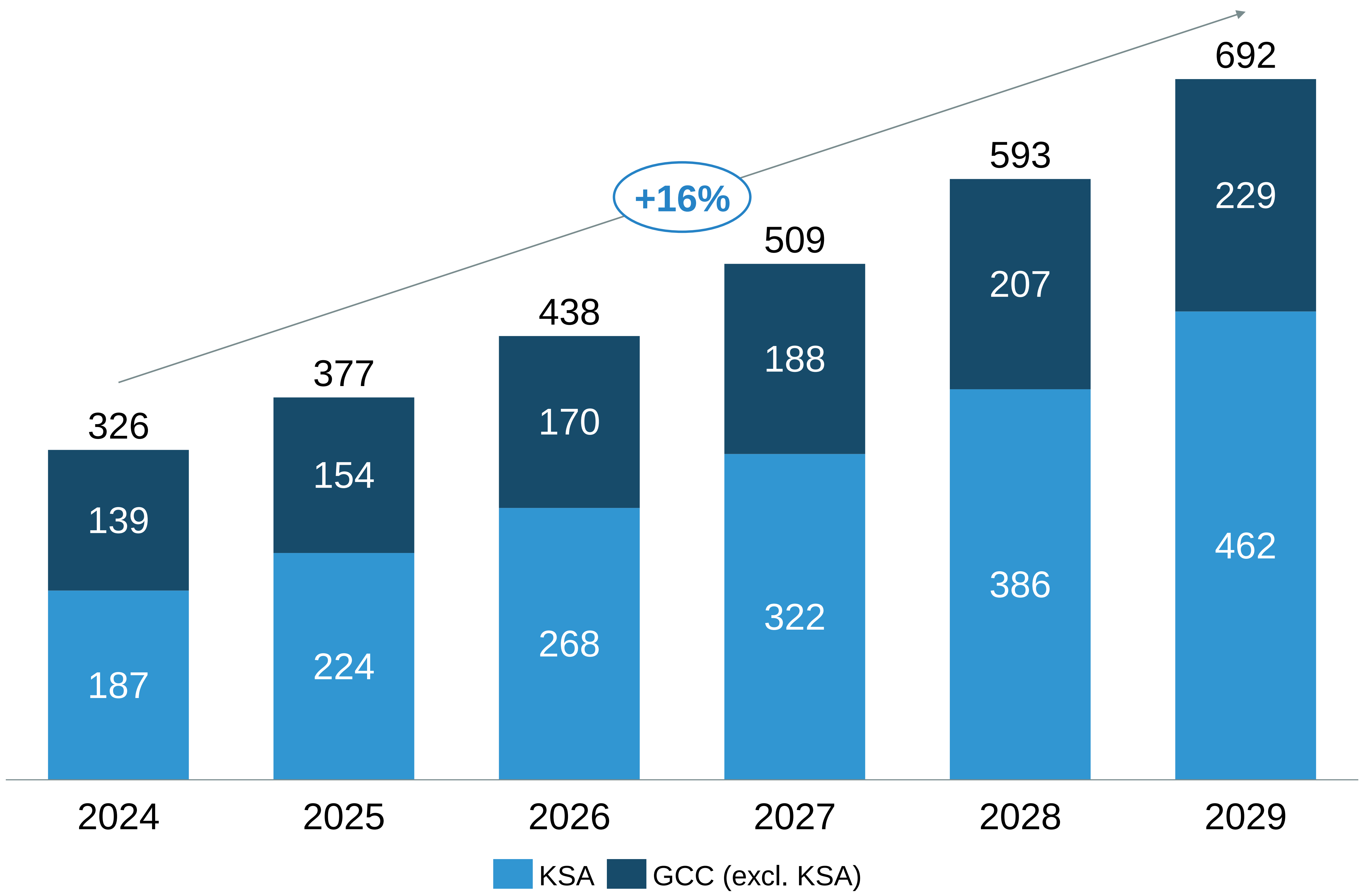
Rectifier	Inverter	UPS
• DC power supply units • Battery charging • HVDC transmission	• Renewable energy system • Electrical vehicles • Telecommunications	• IT and data centers • Healthcare equipment • Critical infrastructure

Aramco material numbers 1. 6000009240 2. 6000000852 3. 6000011555
Aramco standards: SAES-T-151 SAES-P-103 ; Aramco Material Specifications: 17-SAMSS-514; 17-SAMSS-516
Source: Team analysis

aramco iktva Forum & Exhibition 2025

DC Power Equipment demand, customers, and drivers

Forecasted GCC DC Power Equipment market 2024-2029 ($MM)



Typical customers in KSA

- Oil & Gas facilities
- IT and data centers
- Energy and utilities

KSA demand drivers

- Industrial Expansion: Key sectors like oil, gas, telecom, and transport rely on DC power for critical operations
- Growing Data Centers and IT needs: Increasing demand for reliable power systems in data centers and IT facilities
- Renewable energy growth: Rising solar and wind projects require DC equipment for storage and grid integration

Innovating for the Future

Source: Coherent market insights; Precedence search; TeachSci Research; Mordor intelligence; Team analysis

aramco iktva Forum & Exhibition 2025

Value chain and key localization opportunities

	Design & Development	Manufacturing & assembly	Sales and distribution	Lifecycle management
Local saturation	Few players	Few players	Multiple players	Few players
Current KSA value chain	Design and development of DC power equipment is dependent on international manufacturers	Assembly activities are moderately localized	Well-established network with multiple players, including local distributors	Few players offer lifecycle management. Potential to provide advanced services, such as predictive maintenance using IoT, disposal and recycling
Key success factors	High-tech components[1] are imported	Manufacturing of critical components[2] is largely dependent on imports		
	Opportunity	Opportunity		Opportunity
Technology	Design software (e.g., PCB, CAD software), IoT integration platforms	Additive manufacturing (3D printing), automated quality inspection, SMT assembly		IoT (smart sensors), predictive maintenance ML algorithms
Labor	Engineers (electronics, mechanical), testing technicians	Electrical, mechanical instruments and quality assurance engineers		Maintenance technicians, software engineers

Innovating for the Future

Note: 1 Control boards, power semiconductors, firmware. 2. Semiconductors, advanced PCBs etc.
Source: Team analysis

aramco iktva Forum & Exhibition 2025

Battery Storage Systems

Abdullah Al-Harbi

IT Workshop

Innovating for the Future

Opportunity profile–Battery Storage

1
KSA needs battery storage to boost ICT, and provide backup power for industry and infrastructure

Types


Lead Acid


Nickel-Cadmium


Lithium-ion

2
Battery Storage market is sizeable with forecasted growth

$140MM — Estimated 2024 KSA market size

36% — Forecasted KSA 5-year CAGR

3
Attractive investment opportunities in the Battery Storage value chain

KSA value chain opportunities

- Design & Development
- Manufacturing & Assembly
- Lifecycle management

KSA enablers

- Investment Grants
- Corporate tax incentives
- Labor upskilling support

Innovating for the Future

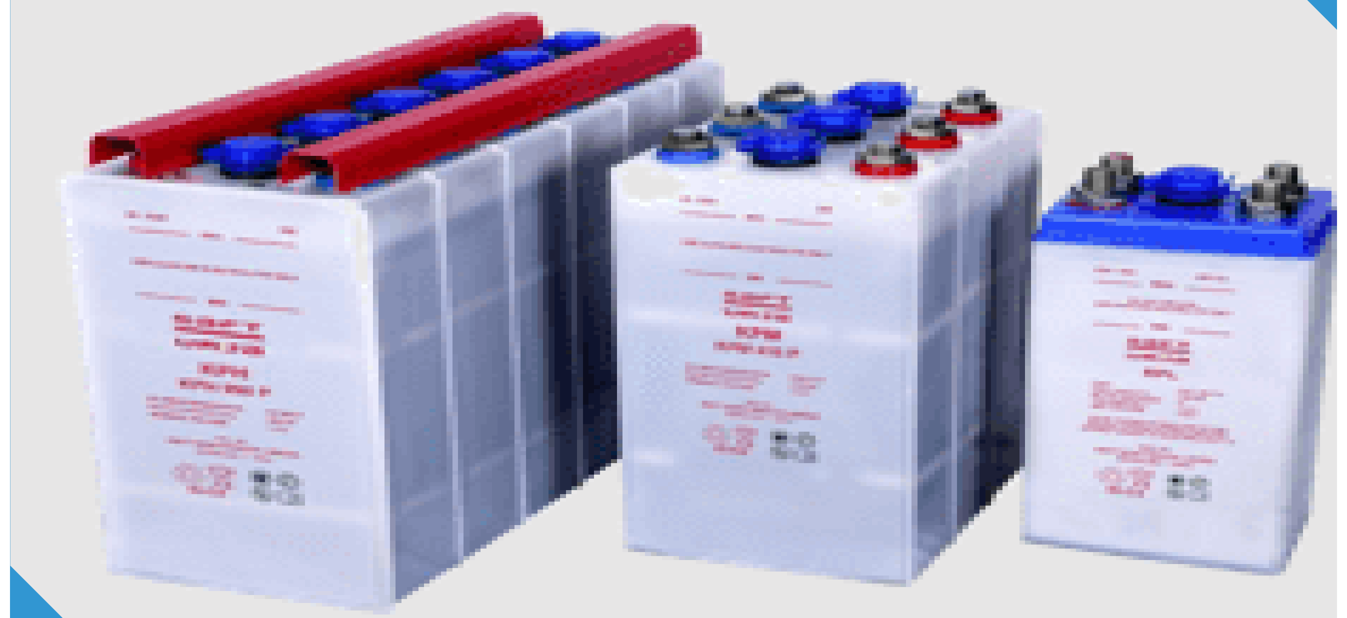
Source: Grand view research; Credence research; Team analysis

BESS localized categories

Non-exhaustive

Lead Acid Batteries

Nickel-Cadmium Batteries



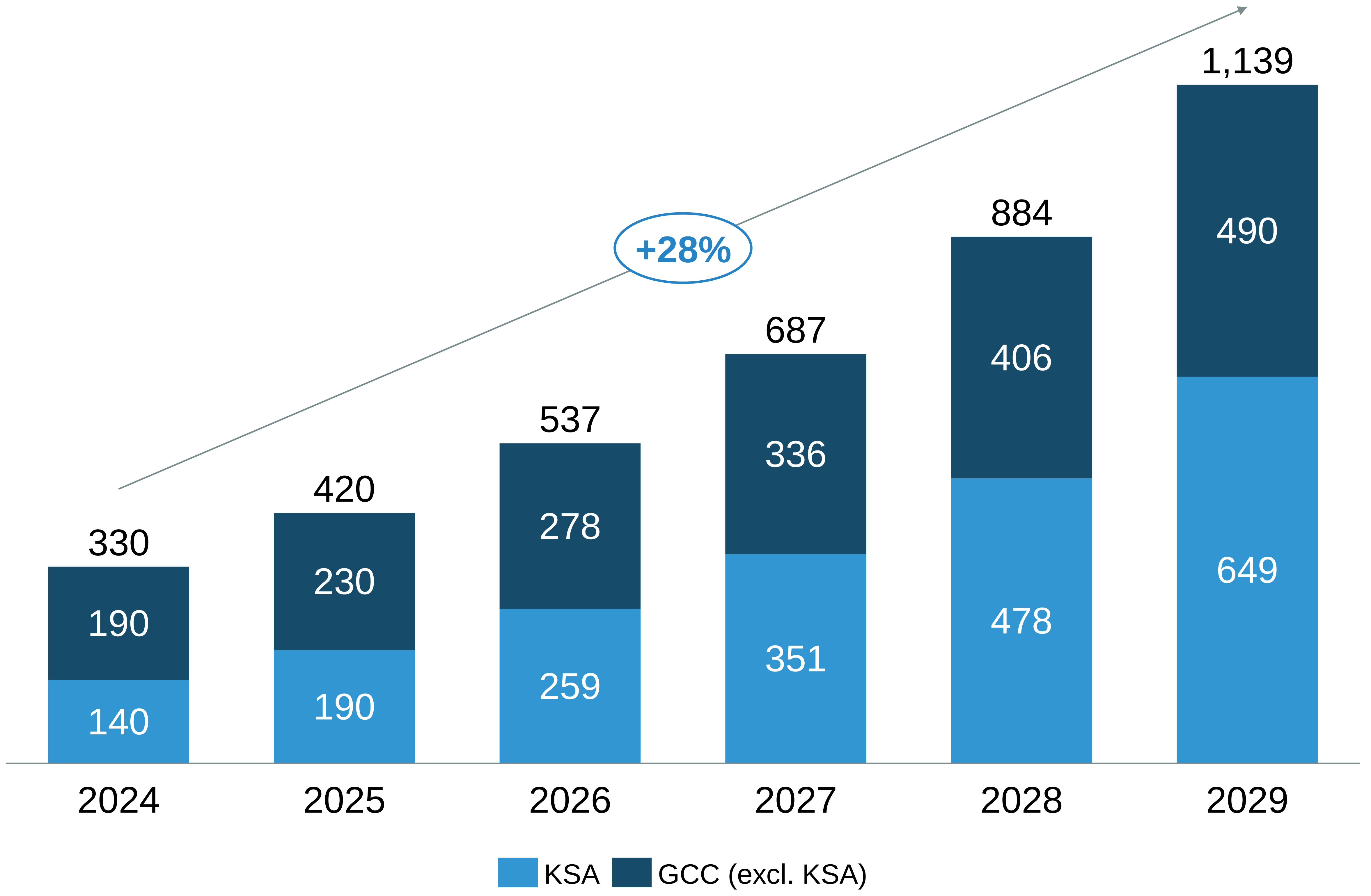
Lithium-ion Batteries

Applications	Lead Acid Batteries	Nickel-Cadmium Batteries	Lithium-ion Batteries
Applications	• Backup power (UPS, telecom, etc.) • Off-grid renewable energy storage	• On-grid utility energy storage • Portable devices	• Electric vehicles • Emergency systems

Lead Acid Batteries 9COM#6000000951 | 9COM#6000001075 ; Nickel-Cadmium Batteries 9COM#6000001076 ; Lithium-ion Batteries 9COM#1001545025
Saudi Aramco Engineering Standards: SAES-T-151; SAES-P-103; Saudi Aramco Material Specification: 17-SAMSS-511
Source: Team analysis

Battery Storage demand, customers, and drivers

Forecasted GCC Battery Storage market 2024-2029 ($MM)



Innovating for the Future

Typical customers in KSA

- Industrial facilities
- Transportation and logistics
- Power generation facilities

KSA demand drivers

- Renewable projects: Large-scale solar and wind initiatives like NEOM require battery storage for energy reliability and grid integration
- Industrial growth: Expanding sectors require backup and storage
- Grid stability: Batteries help balance supply and prevent outages

Source: Grand view research; Credence research; Team analysis

aramco iktva Forum & Exhibition 2025

Value chain and key localization opportunities

	Design & Development	Manufacturing & assembly	Sales and distribution	Lifecycle management
Local saturation	Few players	Few players	Multiple players	Few players
Current KSA value chain	Opportunity to establish design and R&D to optimize battery storage systems for KSA needs	Existing assembly for lead-acid batteries Limited manufacturing and assembly of lithium-ion batteries No local supply chain of critical components[1]	Distribution network for battery storage solutions is expanding with local players to provide after-sales services such as technical support and maintenance	No large-scale recycling facilities exist in KSA, presenting an opportunity to localize battery recycling and refurbishment
Key success factors	Opportunity	Opportunity	Opportunity	Opportunity
Technology	R&D centers and innovation hubs, digital transformation	Battery cells and components manufacturing, battery pack assembly	Local distribution networks, localized product offerings	Recycling technologies for material recovery[2]
Labor	Talent development, Government and industrial support	Specialists in battery pack design, thermal management	Incentives for local suppliers, export hub	Recycling technicians, maintenance engineers for battery diagnostics and servicing

Innovating for the Future

1. Electrodes, separators, electrolytes; 2. Pyrometallurgy and hydrometallurgy
Source: Team analysis

IT Workshop

iktva Forum & Exhibition 2025

Investment opportunity and enablers

Key enablers in KSA to drive success

Investment Grants: R&D project financing from KACST for target sectors including electrical systems

Corporate tax incentives: Tax exceptions on earning from exports

Labor upskilling support: Qualified talent pool for IT field, coming from NIT

Where is the opportunity

Design & development — Localize design and R&D of battery storage systems to meet local requirements

Manufacturing & Assembly — Localize production of lithium-ion batteries, and critical components such as electrodes, separators and electrolytes

Lifecycle management — Establish battery recycling and refurbishment facility

IT Workshop

Innovating for the Future

Note: NIT = National Information Technology Academy
Source: NIT; Local Content & Government procurement authority; Team analysis

aramco iktva Forum & Exhibition 2025

Internet of Things

Rosa Rubui

IT Workshop

Innovating for the Future

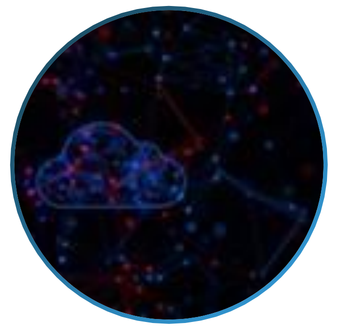
Opportunity profile–Internet of Things (IoT)

1
KSA needs localization of IoT devices to support rapid digitalization across the Kingdom

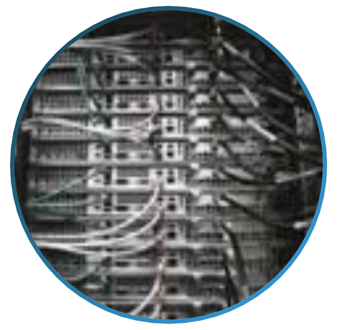
Types

IoT Sensors

IoT Connectivity



Cloud Connectivity



Others[1]

2
IoT market is sizeable with strong forecasted growth

$1620MM — Estimated 2024 KSA market size

14% — Forecasted KSA 5-year CAGR

3
Attractive investment opportunities in the IoT value chain

KSA value chain opportunities

- R&D
- Suppler & Ecosystem Mfg.
- OEM Mfg.

KSA enablers

- Corporate tax exemptions
- Subsidized loans
- Accelerated licensing and setup

Innovating for the Future

Source: Statista; Team analysis

aramco iktva Forum & Exhibition 2025

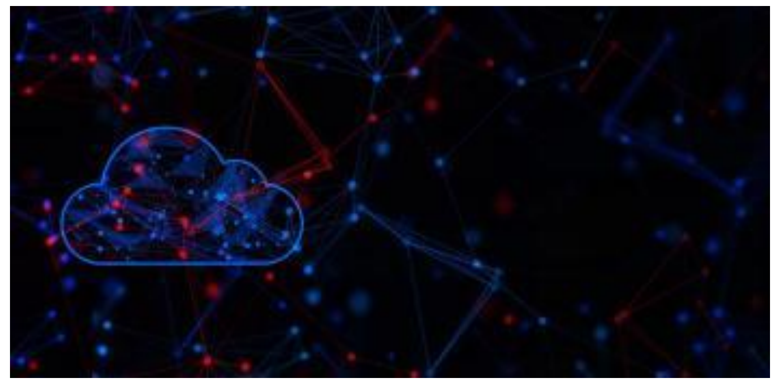
Internet of Things devices and potential use case overview

Non-exhaustive

Devices

IoT sensors
- Non-intrusive
- Power harvesting
- Analytics

IoT Connectivity
- Lorawan, Industrial WiFi
- Bluetooth, RFID, etc.



Cloud connectivity
- In-kingdom CITC approved cloud
- On premises

Edge Devices, Routers, Repeaters, Gateway

Potential use cases

Monitoring, Performance Detection, and Prediction for:

- Irrigation
- Water consumption and leakage
- Parking
- Power consumption
- Worker safety

Source: Expert inputs; Team analysis

aramco iktva Forum & Exhibition 2025

Use case: Smart Water Conservation

Applications

- Irrigation system automation and management
- Water consumption and leakage monitoring
- Smart BTU monitoring for HVAC systems

Benefits

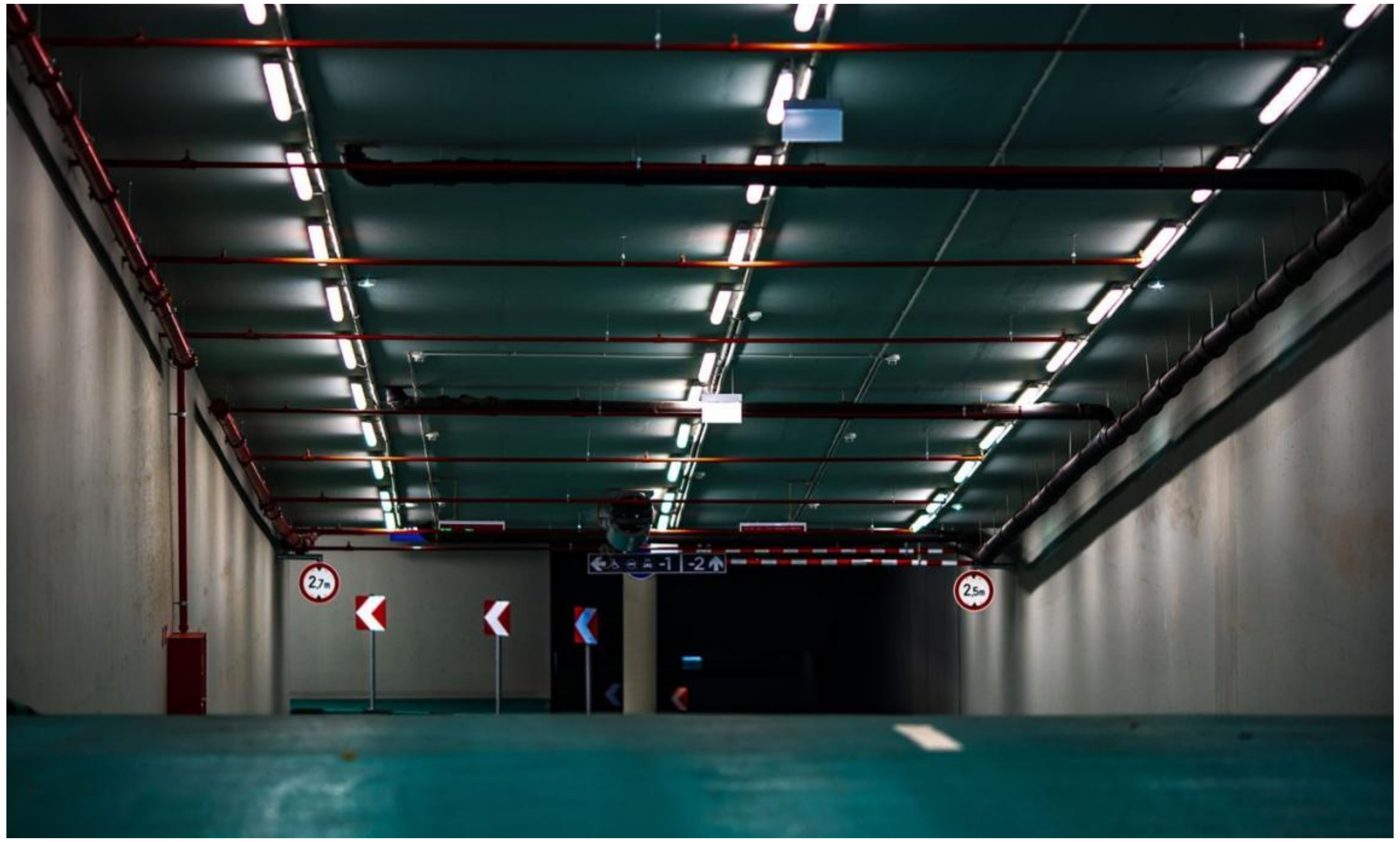
- Support scalability and maintainability
- Aid circular economy (limit water waste)

Innovating for the Future

Source: Expert inputs; Team analysis

aramco iktva Forum & Exhibition 2025

Use case: Facility Management and Power Optimization



Applications

- Fully automated smart parking (incl. empty space detection, violation identification)
- Power consumption management with smart metering

Benefits

- Improve ease-of-use for everyday facilities
- Aid circular economy (reduce power waste, emissions from stationary vehicles)

Innovating for the Future

Source: Expert inputs; Team analysis

aramco iktva Forum & Exhibition 2025

Use case: Industrial Worker Safety

Applications

- Location tracking (10,000+ sensors in SAO)
- SoS functionalities (10,000+ sensors in SAO)
- Gas detection (4000+ sensors in SAO)
- Zoning (3500+ sensors in SAO)
- Remote monitoring (1500+ sensors in SAO)

Benefits

- Support scalability and maintainability
- Aid circular economy

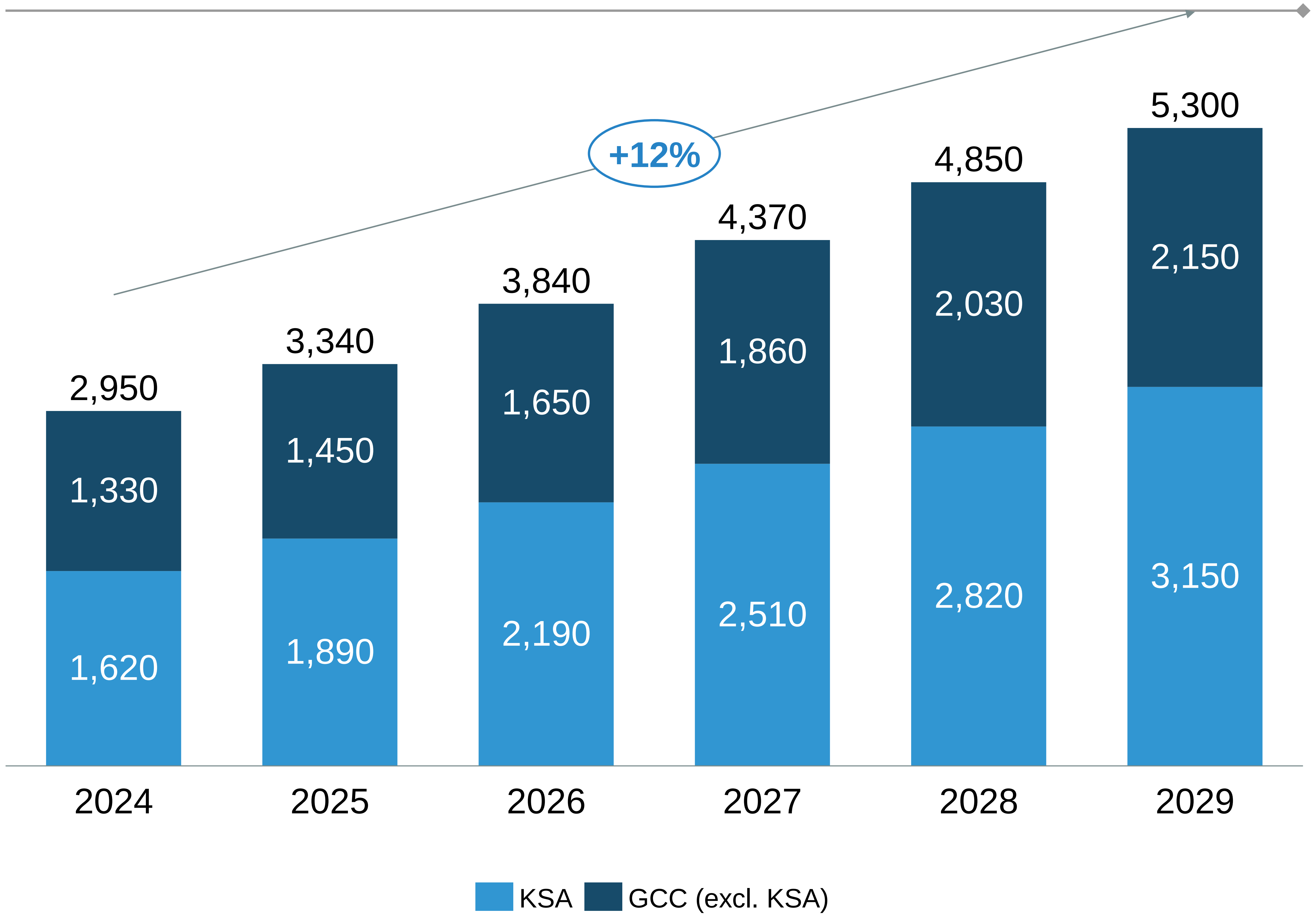
Innovating for the Future

Source: Expert inputs; Team analysis

aramco iktva Forum & Exhibition 2025

Internet of Things demand, customers, and drivers

Forecasted GCC IoT market 2024-2029 ($MM)



Typical customers in KSA

- Oil & Gas
- Manufacturing
- Energy and utilities

KSA demand drivers

- Technological Growth: Expansion of e-governance and smart city projects like NEOM drives data service demand
- Industry 4.0: Additional IoT devices required due to KSA push towards industrial digitalization requires additional IoT components

Innovating for the Future

IT Workshop

Source: Statista; Team analysis

aramco iktva Forum & Exhibition 2025

Value chain and key localization opportunities

	R&D	Supplier & Ecosystem Manufacturing	OEM Manufacturing	Deployment & Management
Local saturation	Few players	Few players	Few players	Many players
Current KSA value chain	Conduct R&D for IoT tailored to local product and service needs	Suppliers and Ecosystem to contribute towards hardware components for wider IoT device manufacturing process	Opportunity to manufacture specific IoT solutions for applications such as: • Smart water conservation • Facility management • Industrial worker safety	Several service players to deploy IoT devices, provide monitoring and analytics services
Key success factors	Opportunity	Opportunity	Opportunity	Opportunity
Technology	Prototyping tools, software labs available	SMT equipment, precision CNC machines available for import	CNC machines, testing equipment available for import	
Labor	Data scientists, software engineers available	Hardware engineers, technicians available	Production engineers, technicians available	

Innovating for the Future

Note: IoT = Industrial Internet of Things; Surface Mount Technology; CNC = Computer Numerical Control
Source: Team analysis

Investment opportunity and enablers

Non-exhaustive

Key enablers in KSA to drive success

Corporate tax incentives: Custom duty exemption on materials, machinery & equipment for industrial establishments

Subsidized loans: Land and Loan program in KSA provides integrated solutions for land allocation with financial assistance

Accelerated licensing and setup: Streamlined setup and licensing process with investor support through MISA

Where is the opportunity

R&D: Design and build KSA-tailored IoT solutions accounting for industry demands and local environment

Supplier & Ecosystem Mfg.: Establish manufacturing for high-tech IoT device components

OEM Mfg.: Localize industry-tailored software and hardware IoT solutions

Innovating for the Future

Note: Detailed list of all enablers in the backup; NIT = National Information Technology Academy
Source: NIT; Local Content & Government procurement authority; Team analysis

aramco iktva Forum & Exhibition 2025

Cybersecurity

Maha Al-Dhamadi

IT Workshop

Innovating for the Future

Opportunity profile - Cybersecurity

1 Cybersecurity market is sizeable with forecasted growth

$2.4B — Estimated 2024 KSA market size

11% — Forecasted KSA 5-year CAGR

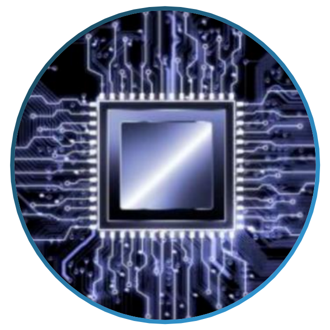
2 Demand Drivers of the Cybersecurity market in the KSA

KSA Demand Drivers

- Digital Transformation
- Critical Infrastructure Protection

3 Attractive investment opportunities in the Cybersecurity industry

Types



AI & ML

IoT

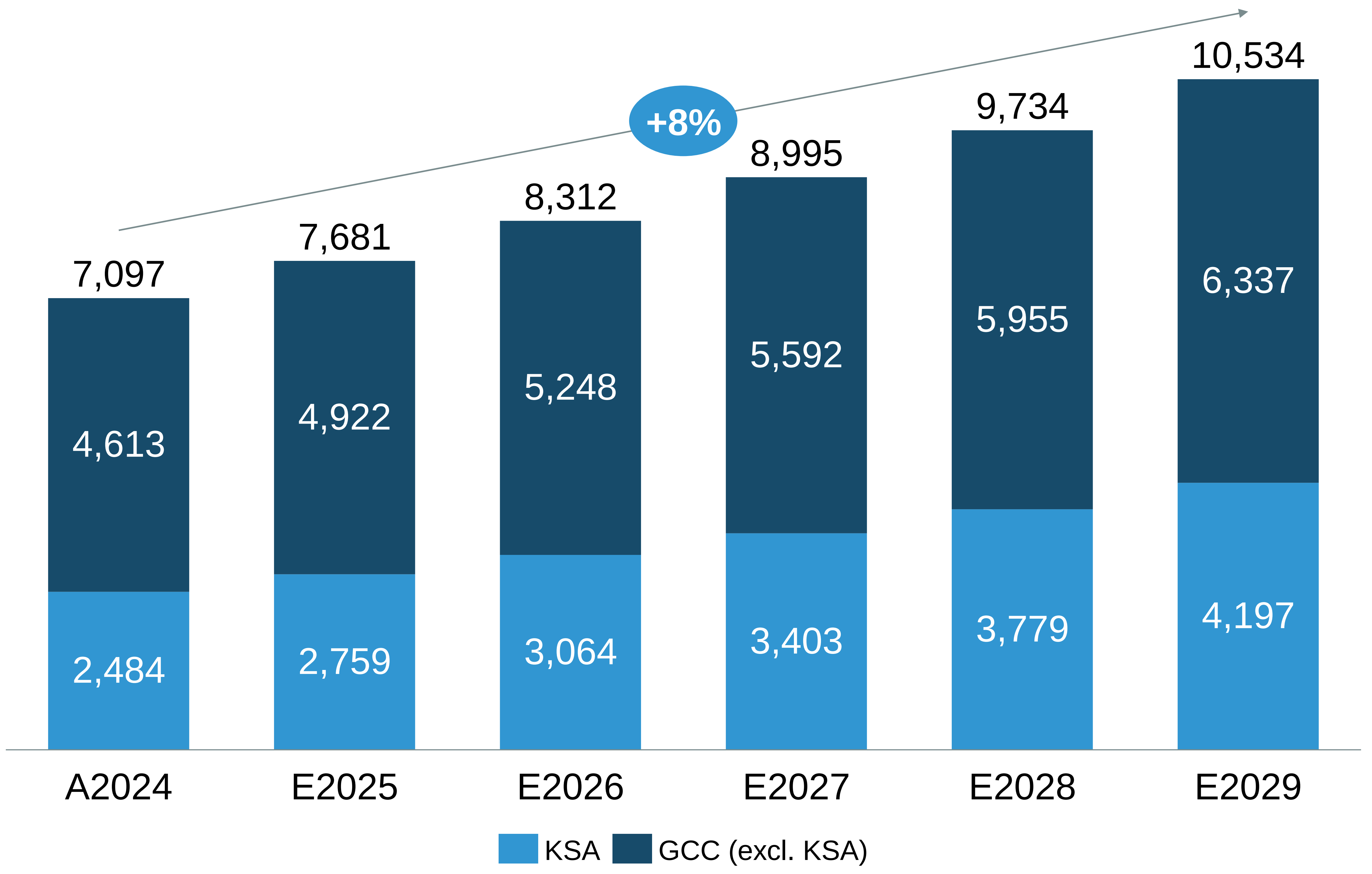
Cloud Security

Source: Market Insights; BCG & IDC report; Expert interviews; Team analysis

aramco iktva Forum & Exhibition 2025

Cybersecurity market, customers, and demand

Forecasted GCC Enterprise Cybersecurity market 2024-2029 ($MM)



Innovating for the Future

Typical customers in KSA

- Oil & Gas facilities
- Telecommunications companies
- Power energy generators

KSA demand drivers

- Critical Infrastructure Protection: Safeguarding vital sectors like oil, gas, and energy against cyber threats
- Digital Transformation: Increased reliance on cloud computing, IoT, and digital services heightens vulnerability to attacks
- Regulatory Requirements: Compliance with national cybersecurity frameworks and data protection laws drives demand

Source: Market Insights; BCG & IDC report; Expert interviews; Team analysis

Cybersecurity Industry Top Threats

90% Of organizations have experienced a **Cloud Security breach**

$1.3 trillion The estimated global cost of **AI-powered attacks** by 2025

70% Of organizations use **IoT devices** in their operations

$1.5 trillion The estimated global cost of **IoT security breaches** by 2025

61% Of organizations have experienced a data breach caused by a **third-party vendor**

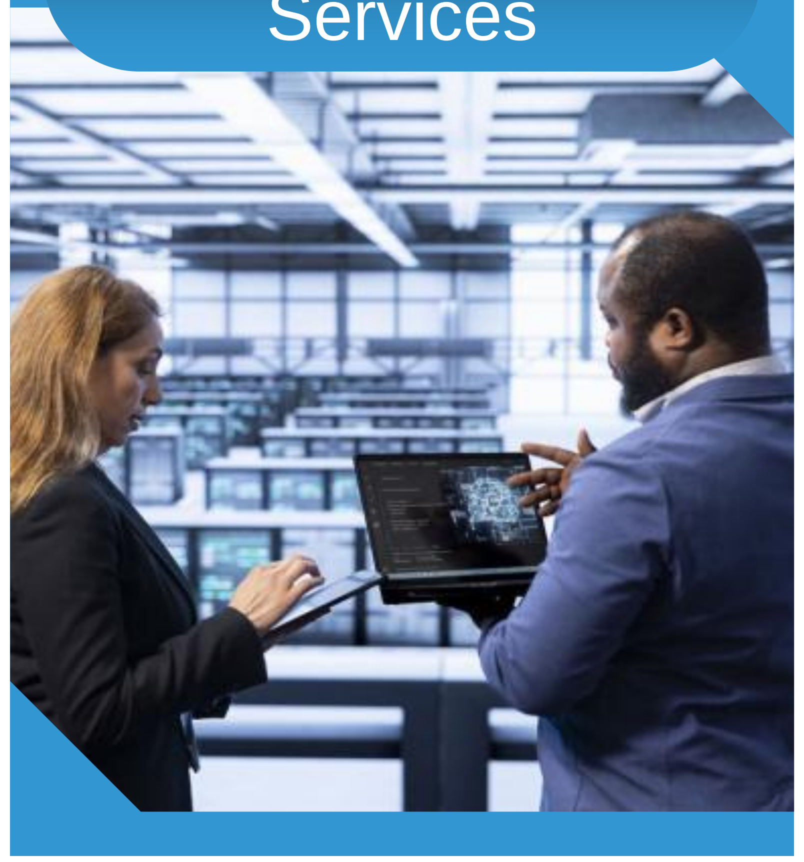
$1.2 million The average cost of a **third-party** data breach.

Cybersecurity - Global Industry Market Forecast

Cloud Security

The cloud security market is forecasted to grow to $13.4 billion by 2027, at a CAGR of 13.4%.

Managed Security Services



The managed security services market is forecasted to grow to $43.8 billion by 2027, at a CAGR of 13.6%.

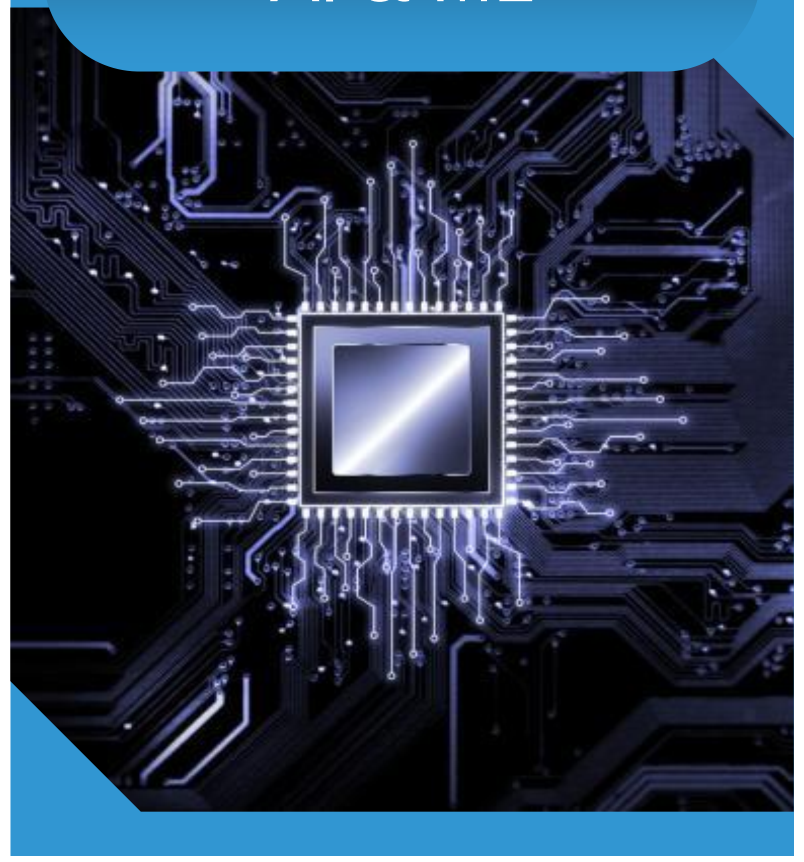
cybersecurity awareness & training

The cybersecurity awareness and training market is forecasted to grow to $2.5 billion by 2027, at a CAGR of 14.1%.

IoT

The IoT security market is forecasted to grow to $38.7 billion by 2027, at a CAGR of 20.6%.

AI & ML



The AI-powered cybersecurity market is forecasted to grow to $4.5 billion by 2027, at a CAGR of 25.1%.

Innovating for the Future

Source: MarketsandMarkets

Value chain and key localization opportunities

	Risk Management and Strategy Management	Implementation and Solutions Development	Monitoring and Incident Response
Local saturation	Few players	Many players	Few players
Current KSA value chain	KSA companies rely heavily on global consultancies for cybersecurity risk assessments and strategy development	Implementation is dominated by global vendors. Some local system integrators manage deployment but depend on imported technologies	Partly localized through MSSPs but advanced threat response still relies on global expertise
Key success factors	Opportunity		Opportunity
Technology	Risk assessment tools GRC platforms		Security Information and Event Management Systems
Labor	Cybersecurity consultants, analysts to use scanning tools		Security engineers, SOC analysts

Innovating for the Future

GRC= Governance, risk and compliance platforms; MSSPs= Managed Security Service Providers; SOC = Security Operations Centers
Source: Team analysis

aramco iktva Forum & Exhibition 2025

Saudi Aramco Cybersecurity Compliance Certification (CCC) Program

To ensure secure engagement with the vendors and address one of the challenging risks, supply chain cybersecurity risk, Saudi Aramco has established the Cybersecurity Compliance Certification program.

- Elevate cybersecurity posture of Saudi Aramco third parties
- Improve overall cyber resilience of the energy supply chain and ecosystem
- Ensure secure engagement before conducting business with Saudi Aramco
- Building local capacity and expertise in cybersecurity advisory and audits
- Contributing to local cybersecurity business opportunities and job creation

aramco iktva Forum & Exhibition 2025

Saudi Aramco Cybersecurity Compliance Certification Program

1

The certificate must be obtained by vendors that are registering with Saudi Aramco and aiming to have business engagement.

2

The obtained certification varies from general cybersecurity requirements to advance cybersecurity level requirements

3

Obtained from a list of Authorized Audit Firms/Certification Bodies & Renewed every 2 years

aramco iktva Forum & Exhibition 2025

Saudi Aramco Cybersecurity Compliance Certification Program

14 Authorized Audit Firms

3 ICS Certification Bodies

Innovating for the Future

Localizing cybersecurity is not just a business opportunity, but a chance to build a safer, more resilient future.

aramco iktva Forum & Exhibition 2025

Cloud Computing

Salma Alali

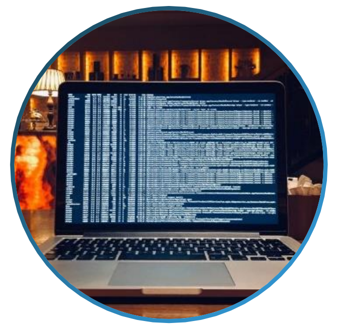
IT Workshop

Innovating for the Future

Opportunity profile – Cloud Computing

1
KSA needs Cloud Computing to realize Vision 2030 initiatives

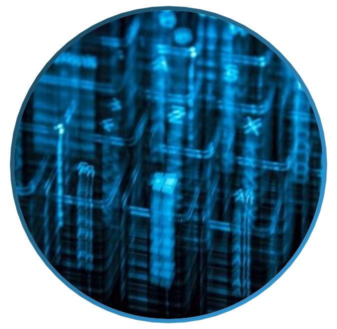
Types



SaaS

PaaS

IaaS



QaaS

2
Cloud Computing market is sizeable with forecasted growth

$4040MM – Estimated 2024 KSA market size

17% – Forecasted KSA 5-year CAGR

3
Attractive investment opportunities in the Cloud Computing value chain

KSA value chain opportunities

- Hardware
- System integration
- Software
- Support services

KSA enablers

- Investment Grants
- Corporate tax incentives
- Labor upskilling support

Source: Mordor intelligence; Team analysis

aramco iktva Forum & Exhibition 2025

Cloud Computing categories for localization

Non-exhaustive

Software-aaS

Platform-aaS

Infrastructure-aaS

Quantum-aaS

	Software-aaS	Platform-aaS	Infrastructure-aaS	Quantum-aaS
Applications	• Productivity tools (MS 365) • CRMs • eLearning platforms	• Application Development • IoT Development • ERP Integration	• Website Hosting • Gaming Servers • Virtual Desktop Infra.(VDI)	• Portfolio optimization • Pharmaceuticals research • Data analysis

IT Workshop

Innovating for the Future

Source: Team analysis

A Quick Glimpse Into The Cloud

aramco iktva

Cloud service Models

SaaS — Software-as-a-service

PaaS — Platform-as-a-service

IaaS — Infrastructure-as-a-service

QCaaS — Quantum Computing as-a-service

Traditional IT	IaaS	PaaS	SaaS	QCaaS
Applications	Applications	Applications	Applications	Applications
Data	Data	Data	Data	Data
App Servers	App Servers	App Servers	App Servers	App Servers
Middleware	Middleware	Middleware	Middleware	Middleware
O/S	O/S	O/S	O/S	O/S
Virtualization	Virtualization	Virtualization	Virtualization	Virtualization
Servers	Servers	Servers	Servers	Servers
Storage	Storage	Storage	Storage	Storage
Networking	Networking	Networking	Networking	Networking
Datacenter	Datacenter	Datacenter	Datacenter	Datacenter

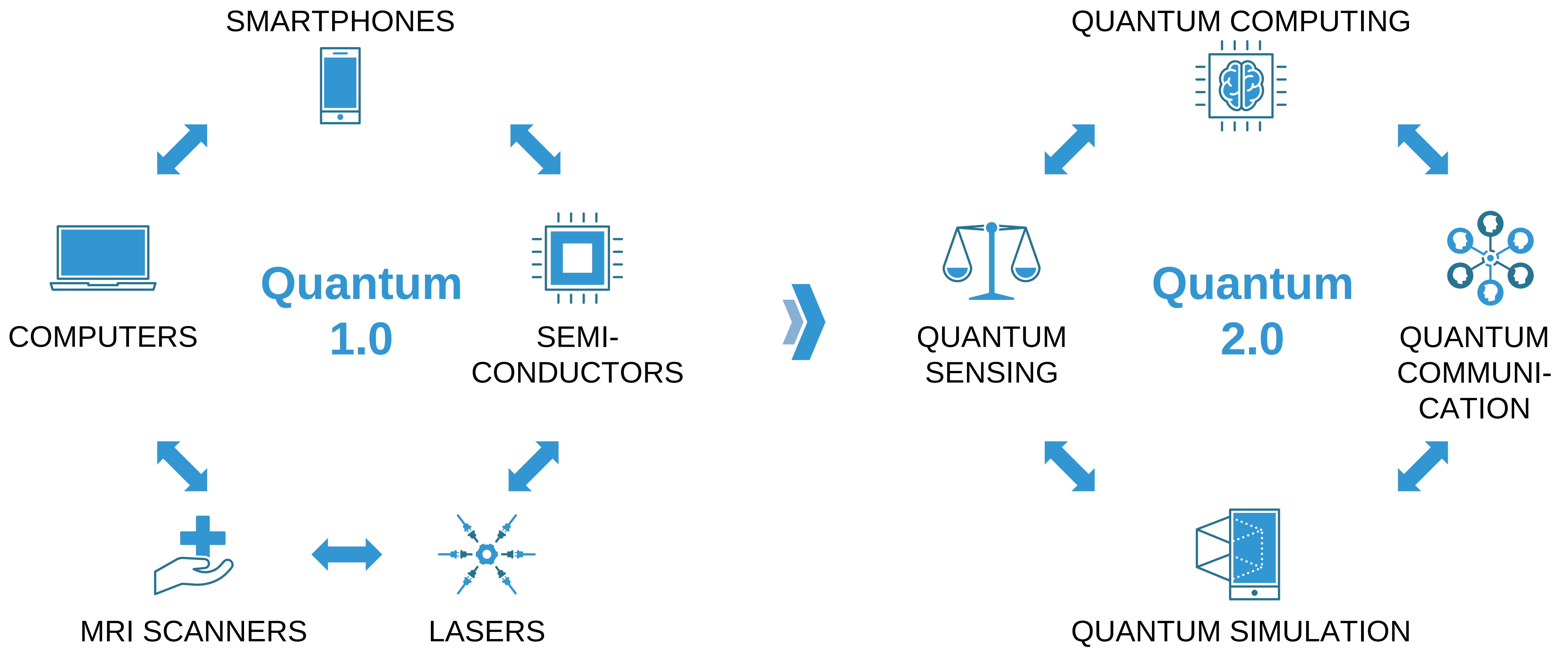
Managed by the Organization Managed by the Cloud Provider

IT Workshop

aramco iktva Forum & Exhibition 2025

Quantum Technology

Advanced technology leveraging quantum mechanics to process information at
atomic and subatomic levels



First quantum revolution introduced rules that govern physical reality

We are in the second quantum revolution, applying these rules to create new technologies

Quantum Technology

Quantum Computing

- Nonclassical computers outperforming supercomputers for certain tasks
- Using properties of quantum physics to store data and perform computations

Machine Learning · Optimization Problems · Simulation Materials

Quantum Communication

- Using Quantum properties to create secure communication network
- Detecting interception or eavesdropping

Cybersecurity · Quantum Key Distribution · Quantum Internet

Quantum Sensing

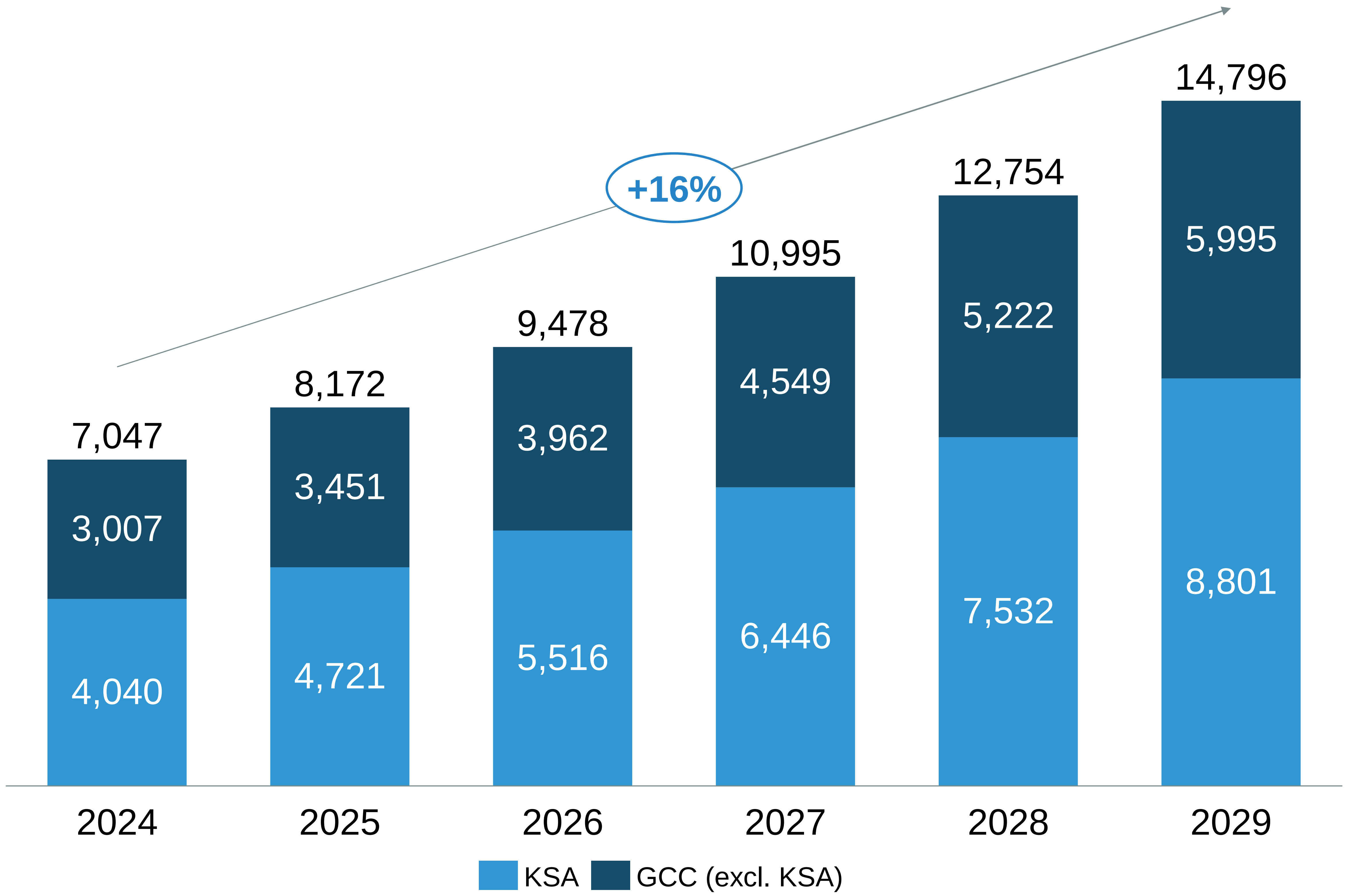
- Utilizing nature of sensitivity of subatomic particles
- Providing higher accuracy and performance than conventional sensors

Navigation Systems · Imaging Radar

aramco iktva Forum & Exhibition 2025

Cloud Computing demand, customers, and drivers

Forecasted GCC Cloud Computing market 2024-2029 ($MM)



Typical customers in KSA

- Healthcare
- Transportation and logistics
- Public Sector

KSA demand drivers

- Consumer Industry trends: Growth of e-commerce and sectors reliant of this tools
- Regulatory Frameworks: Policies that encourage public and private sectors to prioritize cloud adoption (Cloud 1st Policy)
- Investment in infrastructure: New government projects such as NEOM demand advanced IT Infrastructure such as cloud

Innovating for the Future

Source: Mordor intelligence; Team analysis

aramco iktva Forum & Exhibition 2025

Value chain and key localization opportunities

	Hardware	Connectivity/ System Integration	Software/Platform	Support Services
	Few players	Mixed	Mixed	Many players
Local saturation / Current KSA value chain / Key success factors	Heavy reliance on imports for high-performance servers, storage systems and networking hardware Opportunity	Strong fiber-optic network backbone established Expand services for IT system integration, CDNs and PoPs in KSA Opportunity	Currently supplied by global players Limited local expertise in developing proprietary cloud platform Opportunity	Basic operations and maintenance partly localized Opportunity to localize advanced monitoring, cybersecurity, and lifecycle management
Technology	HPC components, storage systems, SMT lines	Data center equipment for hosting CDN/PoP	AI and analytics engines, cloud orchestration tools[1]	Cybersecurity tools, AI for maintenance
Labor	Electrical and mechanical engineers, assembly line technicians	System architects, integration developers, DevOps engineers	Cloud Architects, DevOps engineers, Data scientists	Cybersecurity analysts, data center operators

Innovating for the Future

1. Tools like Kubernetes and OpenStack; HPC = High-performance computing components like processors; SMT = Surface-Mount Technology; CDN = Content Delivery Network; PoP = Point-of-Presence

Source: Team analysis

aramco iktva Forum & Exhibition 2025

Investment opportunity and enablers

Key enablers in KSA to drive success

Investment Grants: Financial support for R&D projects in target sectors, including technology

Corporate tax incentives: Tax exemptions on income generated from exports

Labor upskilling support: Development of a qualified talent pool in the IT sector, with contributions from institutions such as NIT

Where is the opportunity

Hardware	Localize server and storage assembly
Sys. integration	Expand integration services and CDN/PoP
Software/ Platform	Create localized SaaS tailored for government, healthcare other sectors
Support	Localize advanced cybersecurity, AI-driven monitoring

Note: Detailed list of all enablers in the backup; NIT = National Information Technology Academy; CDN = Content Delivery Network; PoP = Point-of-Presence
Source: NIT; Local Content & Government procurement authority; Team analysis

aramco iktva Forum & Exhibition 2025

Data Center Services

Maram Al-Otaibi

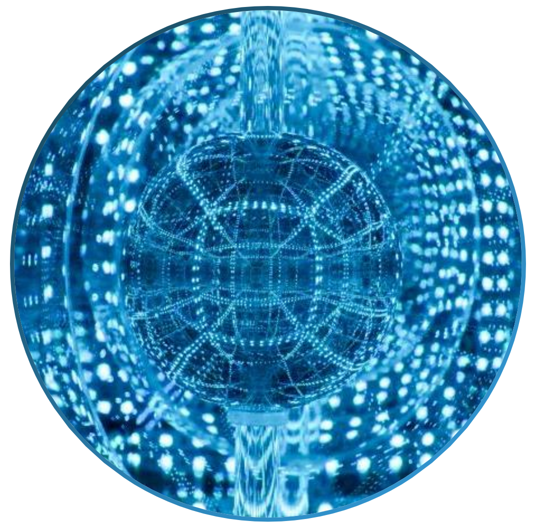
IT Workshop

Innovating for the Future

Opportunity profile–Data Center Services

1

KSA's industrial growth and digital transformation are driving demand for data center services to support IT infrastructure, localized data storage, and advanced technologies



Data Center Construction

IT collocation management services

2

Data Center Services market is sizeable with forecasted growth

$769MM – Estimated 2024 KSA market size

23% – Forecasted KSA 5-year CAGR

3

Attractive investment opportunities in the Data Center services value chain

KSA value chain opportunities

- Construction
- Physical infra.
- Support services

KSA enablers

- Cost of electricity and power tariffs
- Subsidized loans
- Corporate tax exemptions

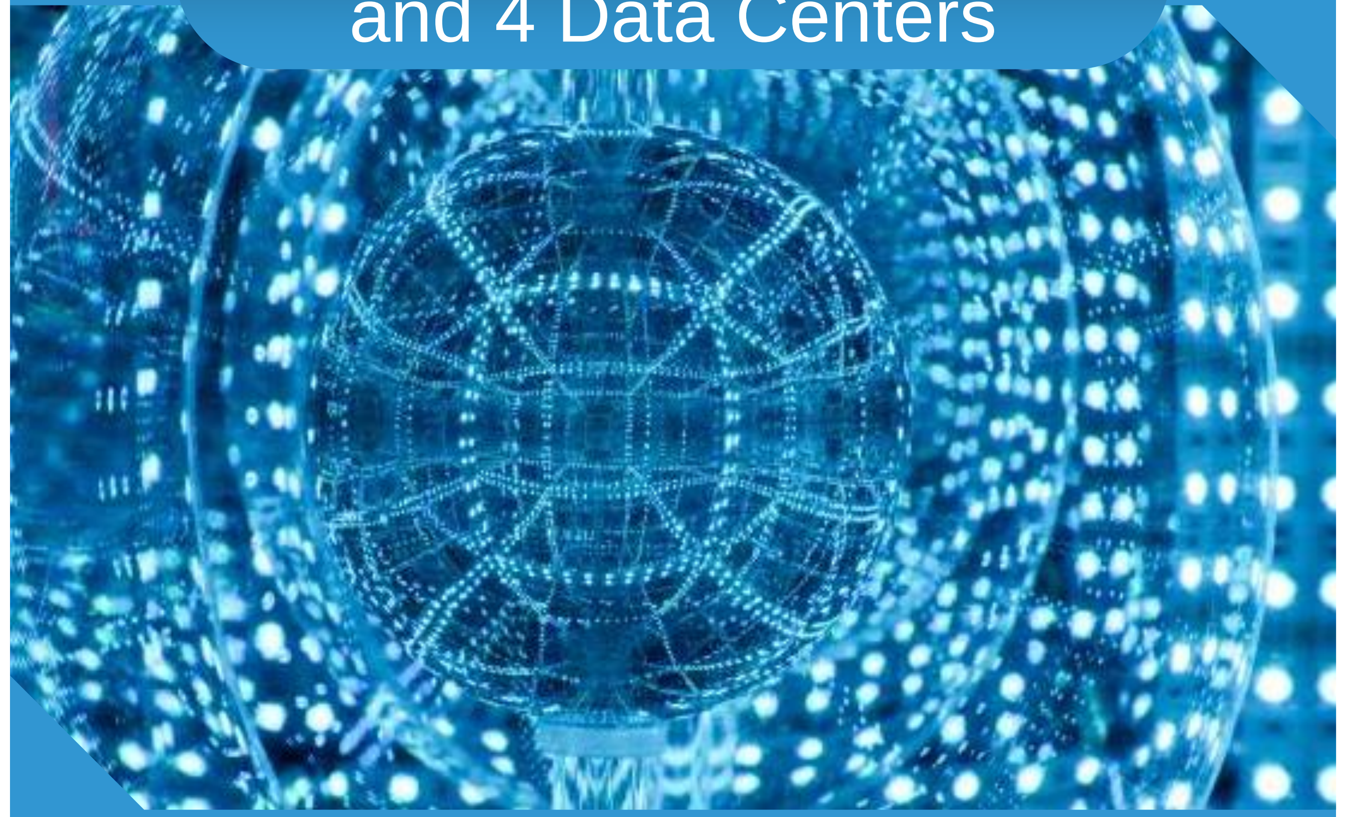
Source: Statista; Mordor intelligence; Invest Saudi Team analysis

aramco iktva Forum & Exhibition 2025

Key commercial activities for the Data Center Services

Non-exhaustive

Construction of Tier 3 and 4 Data Centers



- Ensure high availability, fault tolerance, and redundancy for critical industries and large-scale digital infrastructure

IT Colocation Management Services

- Provide scalable, secure infrastructure and management for hosting IT equipment in shared data center facilities

Innovating for the Future

Source: Team analysis

aramco iktva Forum & Exhibition 2025

Data Center for AI

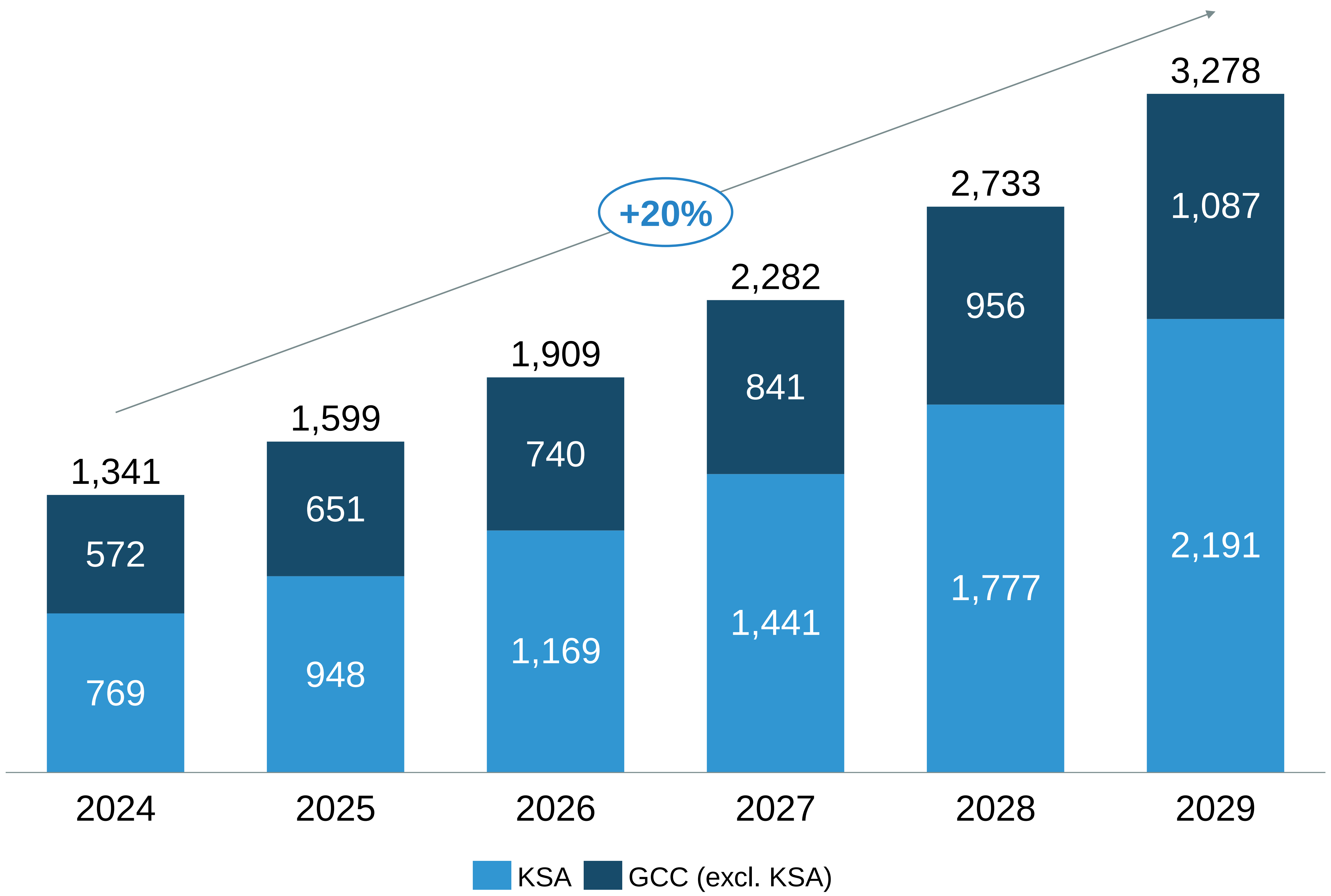
	Traditional	VS	AI
Hardware	CPUs		GPUs, Specialized AI processors
Example Energy Consumption	Simple Google query–0.3 watt-hour		AI query–2.9 watt-hour
Rack Density (KW/rack)	5-20 (Air Cooling is sufficient)		40-140 (Requires Liquid Cooling)
IT Capacity (MW)	5-15		30-100
Data Center Total Capacity (MW)	10-25		60-200

Innovating for the Future

aramco iktva Forum & Exhibition 2025

Data Center Services demand, customers, and drivers

Forecasted GCC Data Center Services market 2024-2029 ($MM)



Typical customers in KSA

- Government and Public sector
- E-commerce platforms
- Cloud Service providers

KSA demand drivers

- Technological Growth: Expansion of e-governance and smart city projects like NEOM drives data service demand
- Population Trends: A young, tech-savvy population boosts demand for digital services
- Industry 4.0: IoT, AI, and ML in manufacturing and healthcare require advanced data solutions

IT Workshop

Innovating for the Future

Source: Statista; Mordor intelligence; Invest Saudi; Team analysis

aramco iktva Forum & Exhibition 2025

Value chain and key localization opportunities

	Construction	Physical Infrastructure	Connectivity	Support Services
	Few players	Few players	Many players	Few players
Local saturation Current KSA value chain Key success factors	Tier 3 and 4 data centers are being constructed, presenting an opportunity to implement advanced energy-efficient systems	Multiple local suppliers provide cabinets, enclosures, and basic cooling systems High-tech equipment and precision cooling units are mostly imported	KSA has a well-developed fiber-optic network, primarily driven by major telecom providers	Basic operations and maintenance are partly localized, but advanced monitoring, cybersecurity, and lifecycle management rely on global expertise and imports.
	Opportunity	Opportunity		Opportunity
Technology	Building Information Modelling (BIM), energy efficient systems[1]	Wafer processing, SMT (Surface-Mount technology)		Cybersecurity tools, AI for maintenance
Labor	Construction engineers, architects, specialists in modular techniques	Electrical engineers, assembly and testing technicians		Cybersecurity analysts, data center operators

Innovating for the Future

1. Modular cooling infrastructure

Source: Team analysis

aramco iktva Forum & Exhibition 2025

Investment opportunity and enablers

Non-exhaustive

Key enablers in KSA to drive success

Cost of electricity and power tariffs : Competitive electricity tariffs in Saudi Arabia provide companies with low operational costs

Subsidized loans: Land and Loan program in KSA provides integrated solutions for land allocation with financial assistance

Corporate tax incentives: Custom duty exemption on materials, machinery & equipment for industrial establishments

Where is the opportunity

Construction	Design and build energy-efficient facilities with advanced systems (e.g., smart power management)
Physical Infrastructure	Establish manufacturing for high-tech equipment
Support services	Localize support services for: maintenance, cybersecurity and AI-driven monitoring

Innovating for the Future

Note: Detailed list of all enablers in the backup; NIT = National Information Technology Academy
Source: NIT; Local Content & Government procurement authority; Team analysis

aramco iktva Forum & Exhibition 2025

Network switch

Fares Al-Otaibi

IT Workshop

Innovating for the Future

aramco iktva Forum & Exhibition 2025

Opportunity profile – Network Switch

1
Network Switches needed to meet demand from networking expansion


Unmanaged


Lightly managed


Fully managed

2
Network Switch market is sizable with significant growth prospects

$129MM — Estimated 2024 KSA market size

7% — Forecasted KSA 5-year CAGR

3
Attractive investment opportunities in the Network Switch value chain

KSA value chain opportunities

- Raw materials
- Design & Manufacturing

KSA enablers

- Financial support programs available
- Favorable tax legislation
- Widely available technical labor

IT Workshop

Innovating for the Future

Source: Cognitive; TechNavio; Argaam; Team analysis

aramco iktva Forum & Exhibition 2025

Network switches categories for localization

Unmanaged

Lightly managed

Fully managed

	Unmanaged	Lightly managed	Fully managed
Applications	• Plug and play, no configuration required • Small networks or consumer use	• Configurable for simpler setups needing VLANs or QoS • Medium-to-large enterprise networks • Includes Layer 3 switches	• Fully configurable for complex setups • Medium-to-large enterprise networks • Includes Layer 3 switches

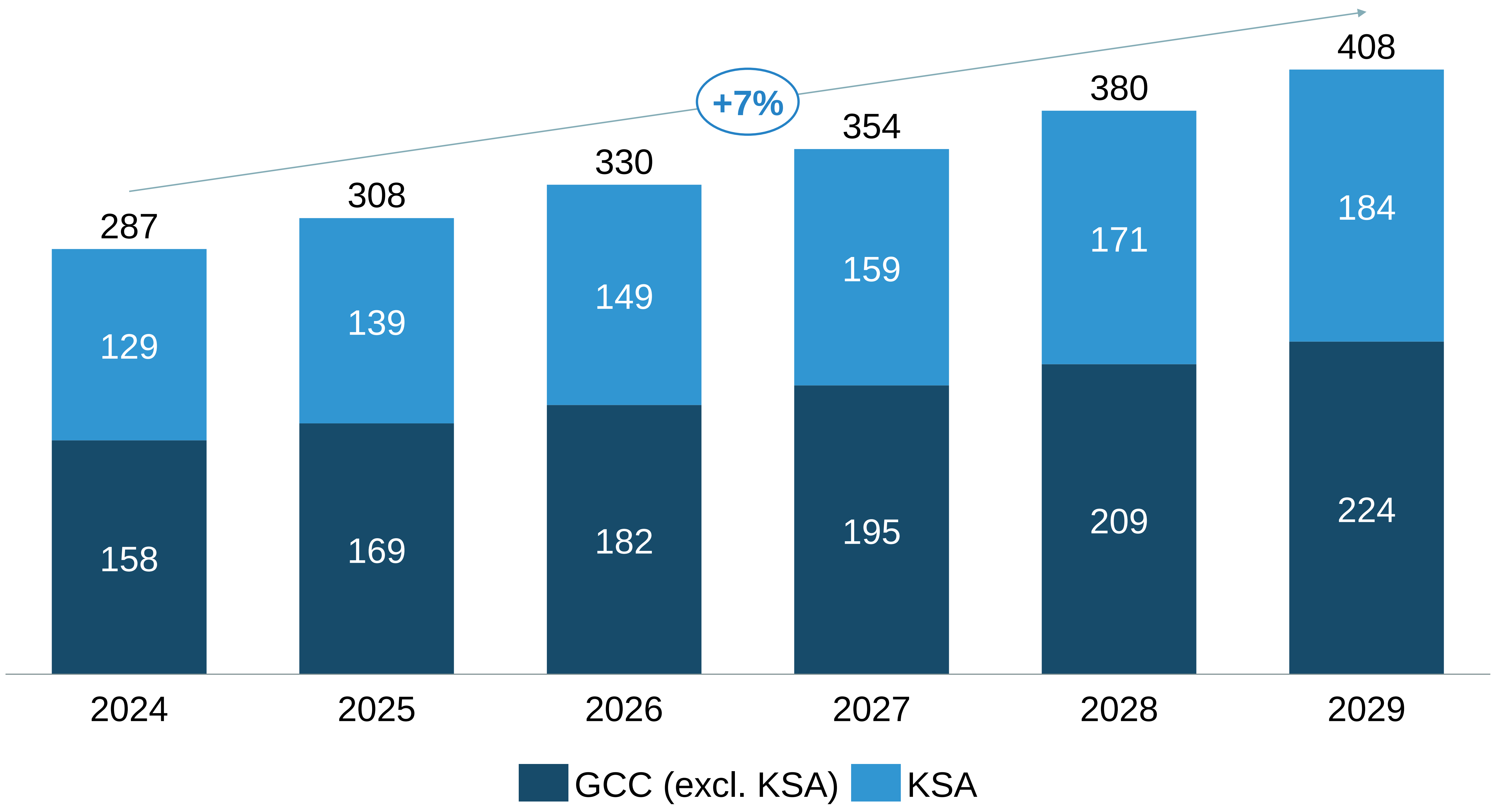
Innovating for the Future

Note: Power over Ethernet (PoE) and bandwidth are key considerations for all categories of switches; VLAN = Virtual Local Area Network; Qos = Quality of Service
Source: Cognitive; TechNavio; Team analysis

aramco iktva Forum & Exhibition 2025

Network switches demand, customers, and drivers

Forecasted KSA and rest of GCC MCD market 2024-2029 ($MM)



Typical customers in KSA

- Telecommunications
- Enterprises and data centers
- Government
- Oil & Gas

Key KSA demand drivers

- Expansion of oil and gas activities: Further network switches needed to match communication and data transfer needs from additional O&G drilling sites
- 5G Rollout: Additional network switches required to support 5G network expansion

Innovating for the Future

Note: O&G = Oil & Gas
Source: Cognitive; TechNavio; Argaam; Team analysis

aramco iktva Forum & Exhibition 2025

Value chain and key localization opportunities

	Raw Materials	Manufacturing & Assembly	Lifecycle Management
Local saturation	Few players	Few players	Many players
Current KSA value chain	Opportunity to manufacture PCB and electronic components – e.g., integrated circuits	Opportunity to produce network switches – incl. SMT, through-hole technology application, assembly, and testing	Installation and maintenance of network switches offered locally by existing players
	Opportunity	Opportunity	
Key success factors			
Technology	PCB fabrication, component manufacturing equipment	SMT machines, wave soldering equipment, automated optical inspection systems, functional test systems	
Labor	Electronic engineers, technicians	Test and process engineers, technicians	

Innovating for the Future

Note: PCB = Printed Circuit Board; SMT = Surface Mount Technology
Source: Cognitive; TechNavio; Argaam; Team analysis

aramco iktva Forum & Exhibition 2025

Investment opportunity and enablers

Financial enablers: SIDF working capital and CAPEX loans up to 75% of setup costs[1]

Tax exempt exports: Export revenue is not subject to tax

Widely available specialized labor: NCTC provides machinists, maintenance technicians, and equipment operators who can support manufacturing

Where is the opportunity

Raw material
Manufacture PCB and electronic components – e.g., integrated circuits

Manufacturing & Assembly
Produce network switches – incl. SMT, through-hole technology application, assembly, and testing

IT Workshop

Innovating for the Future

1. Includes specialized equipment procurement and facility setup; Note: PCB = Printed Circuit Board; SMT = Surface Mount Technology
Source: Cognitive; TechNavio; Argaam; Team analysis

aramco iktva Forum & Exhibition 2025

Routers

Rotana Mashat

IT Workshop

Innovating for the Future

aramco iktva Forum & Exhibition 2025

Opportunity profile - Routers

1

Routers needed to meet demand from private and commercial customers

Home routers

Enterprise routers

Industrial routers

2

KSA routers market is sizable with significant growth prospects

$70MM Estimated 2024 KSA market size

10% Forecasted KSA 5-year CAGR

3

Attractive investment opportunities in the routers value chain

KSA value chain opportunities

- Raw materials
- Manufacturing
- Lifecycle Management

KSA enablers

- Access to CAPEX financing programs
- Skilled visa processing for expats with technical expertise
- Tax credits on R&D investments to encourage local innovation

IT Workshop

Innovating for the Future

Source: Allied Market Research; Cognitive Market Research; Team analysis

aramco iktva Forum & Exhibition 2025

Routers categories for localization

	Home routers	Enterprise routers	Industrial routers
			
Applications	• Designed for consumer use, supporting smaller device counts • Often include features like parent controls and guest networks	• Advanced routers for businesses supporting VPNs, multiple connections, enhanced security	• Made for harsh environments like factories or outdoor setups • Support IoT and M2M (Machine-to-Machine) communication • E.g., Edge & Core Industrial Routers

Innovating for the Future

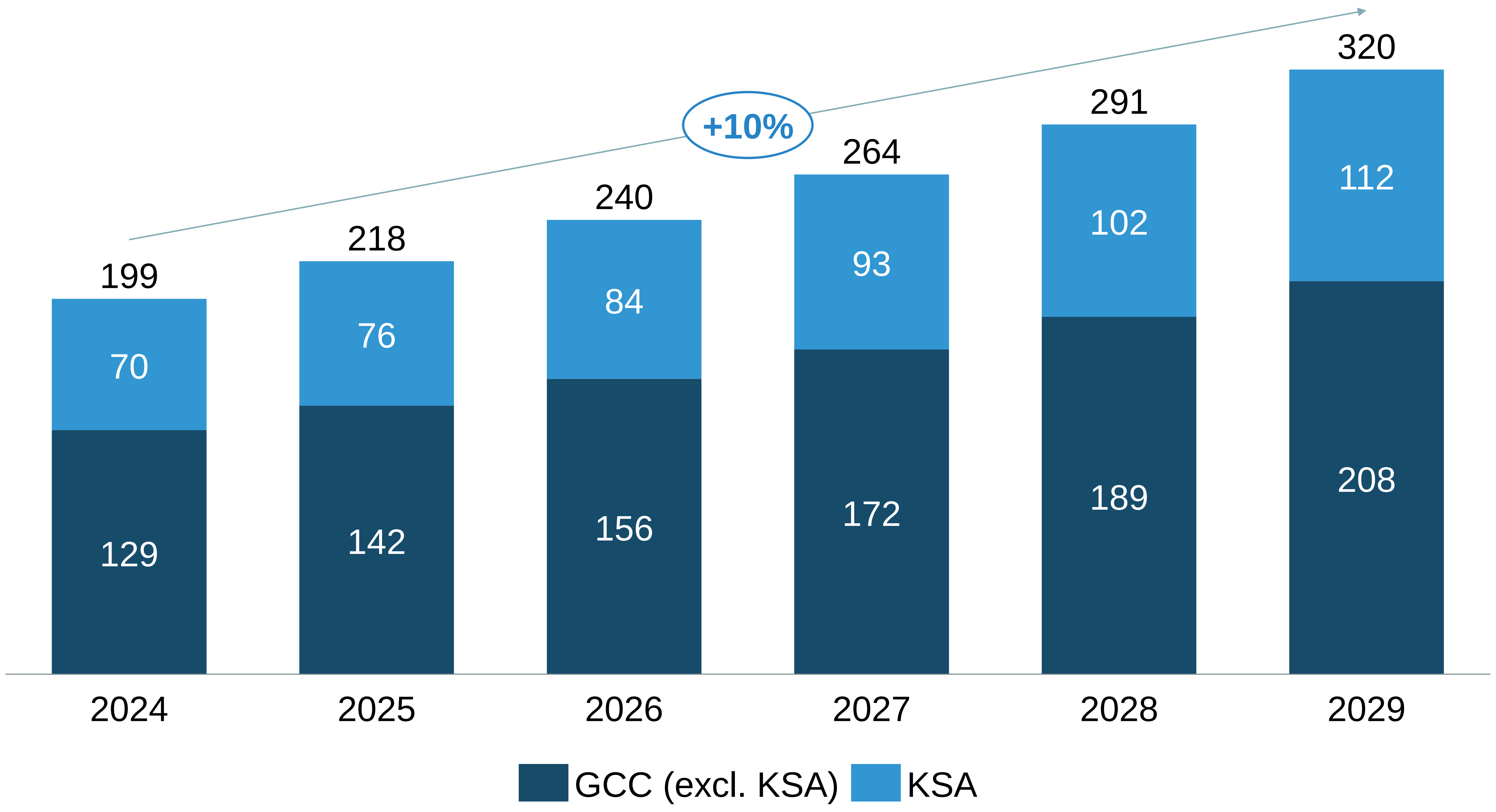
Note: Note: Power over Ethernet (PoE) and bandwidth are key considerations for all categories of switches; Edge and Core routers are primarily targeted towards Medium to ISP Level applications; ISP = Internet Service Provider

Source: Allied Market Research; Cognitive Market Research; Team analysis

aramco iktva Forum & Exhibition 2025

Routers demand, customers, and drivers

Forecasted KSA and rest of GCC router market 2024-2029 ($MM)



Typical customers in KSA

- Residential
- Enterprises
- Telecommunications
- Industrial

Key KSA demand drivers

- 5G Rollout: Introduction of 5G networks drives demand for high-performance routers capable of handling increased data speeds and connectivity requirements
- Government Programs: Vision 2030 emphasizes digital transformation across various sectors, driving need for advanced networking solutions to support new technologies and services

IT Workshop

Innovating for the Future

Source: Allied Market Research; Cognitive Market Research; Team analysis

aramco iktva Forum & Exhibition 2025

Value chain and key localization opportunities

	Raw Materials	Intermediate Processes	Manufacturing & Assembly	Lifecycle Management
Local saturation	Many players	Few players	Few players	Few players
Current KSA value chain	Raw materials such as metals, plastics, silicon, and rare earth elements provided by multiple suppliers	Produce components such as connectors and interfaces, power supply units, and antennas	Localize manufacturing of routers (incl. WiFi extenders)	Grow lifecycle management services such as installation, repair and recycling of routers
Key success factors		Opportunity	Opportunity	Opportunity
Technology		Wire bonding, injection molding machinery	SMT assembly line, AOI systems, testing equipment, robotic assembly lines	Diagnostic and testing equipment
Labor		R&D specialists, electrical engineers, material scientists	R&D specialists, product designers, mechanical and electrical engineers	Skilled technicians and mechanical engineers

Innovating for the Future

Note: SMT = Surface Mount Technology; AOI = Automated Optical Inspection
Source: Allied Market Research; Cognitive Market Research; Team analysis

IT Workshop

aramco iktva Forum & Exhibition 2025

Investment opportunity and enablers

Key enablers in KSA to drive success

Financial enablers: Access to CAPEX financing programs from SIDF to purchase production equipment and machinery

Skilled visa processing: MHRSD facilitates hiring expats with technical expertise via streamlined visa processes

Corporate tax reduction: Tax credits on R&D investments to encourage local innovation capabilities for specialized production

Where is the opportunity

Intermediate Processes
Produce components such as connectors and interfaces, power supply units, and antennas

Manufacturing & Assembly
Localize manufacturing of routers (incl. WiFi extenders)

Lifecycle Management
Grow lifecycle management services such as installation, repair and recycling of routers

Innovating for the Future

Note: SIDF = Saudi Industrial Development Fund; MHRSD = Ministry of Human Resource and Social Development
Source: Allied Market Research; Cognitive Market Research; Team analysis

aramco iktva Forum & Exhibition 2025

Optical Fiber

Hisham Bin Dayel

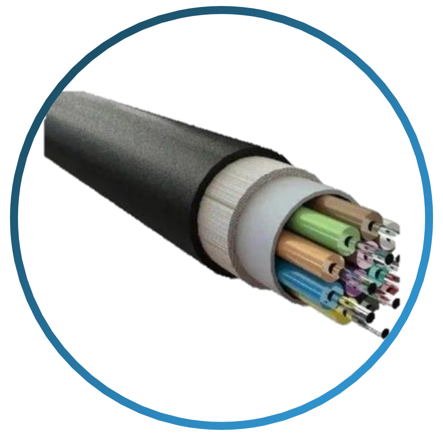
IT Workshop

Innovating for the Future

Opportunity profile – Optical fiber

1
Optical fiber in need to enable existing digital & infra. transformations

Single-mode fiber



Multimode fiber

2
Optical fiber is a sizeable market with moderate growth

$689MM Estimated 2024 KSA market size

8% Forecasted KSA 5-year CAGR

3
Attractive investment opportunities for optical fiber value chain

KSA value chain opportunities

- Raw materials
- Design & Manufacturing

KSA enablers

- Regional land and loan programs
- Custom duty exemptions on machinery and equipment
- Subsidized industrial training programs

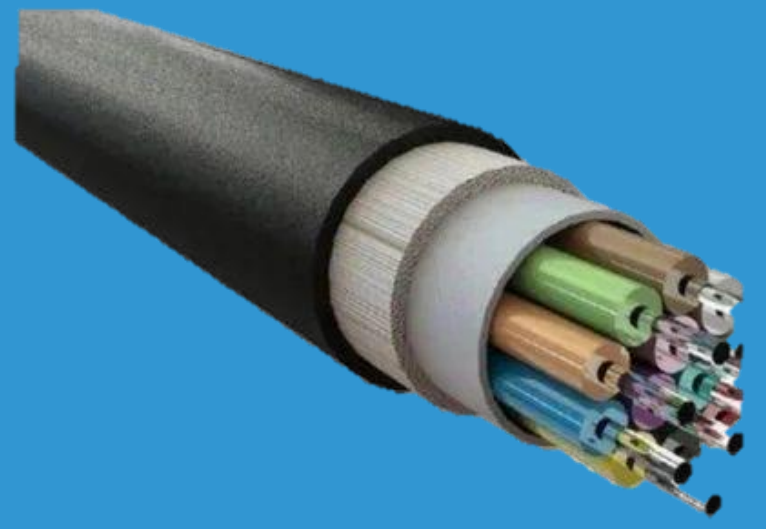
Source: Grandview; IMARC; Expert interviews; Team Analysis

aramco iktva Forum & Exhibition 2025

Potential optical fiber categories for localization

Single-mode fiber

Multimode fiber



Applications

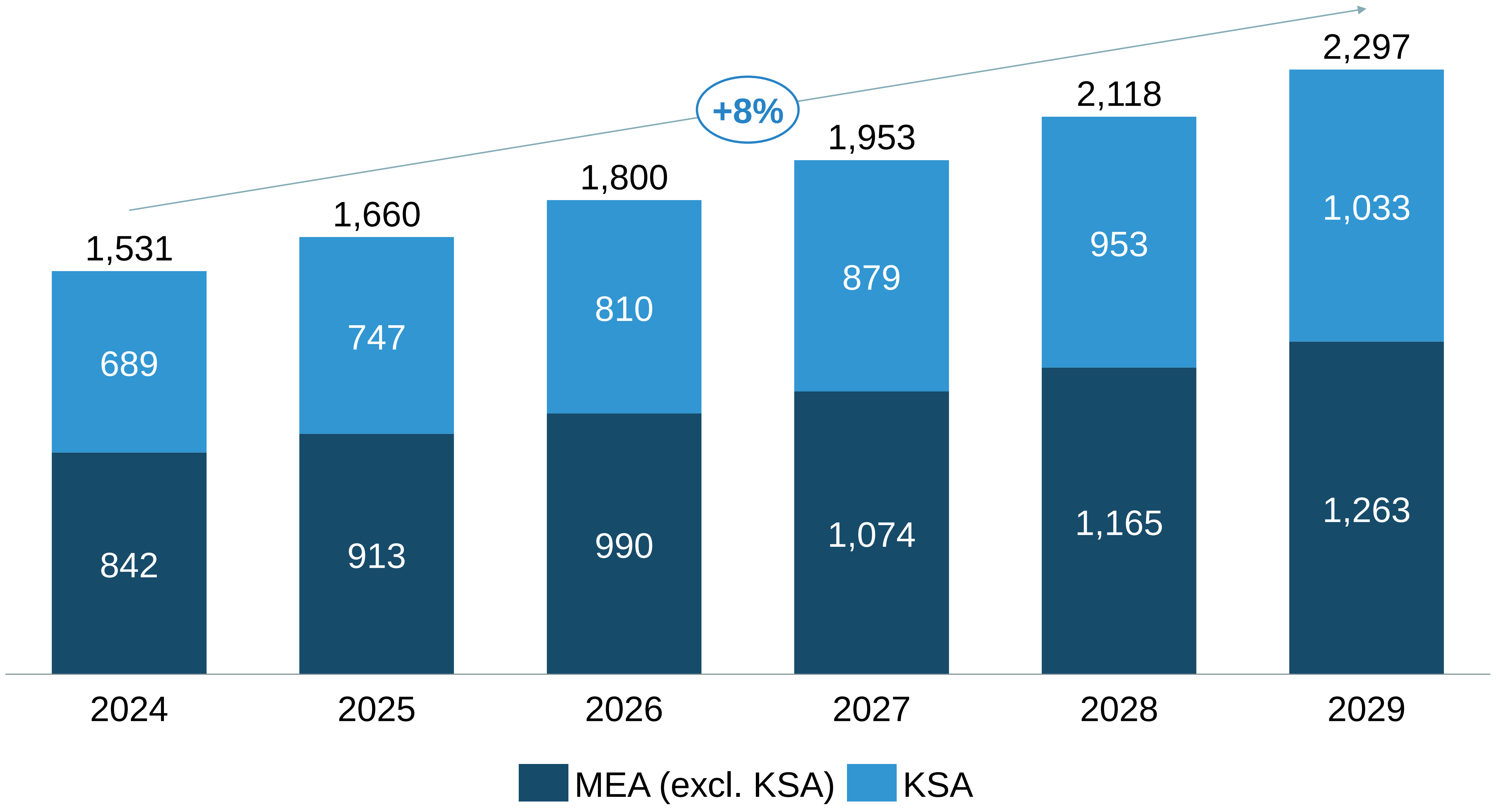
	Single-mode fiber	Multimode fiber
Applications	• Communication networks • Fiber-to-the-Home deployment • Submarine cables • Oil & gas pipeline monitoring	• Local area networks (LAN) • Short distance automation and control system • Medical imaging system • Building automation systems

Source: Grandview; IMARC; Expert interviews; Team Analysis

aramco iktva Forum & Exhibition 2025

Optical fiber demand, customers, and drivers

Forecasted KSA and rest of GCC optical fiber market 2024-2029 (Million USD)



Typical customers in KSA

- Telecommunications
- Commercial & residential real estate
- Oil & Gas
- Critical infrastructure[1]

Key KSA demand drivers

- Industry demand: Growth of 5G network is expected to drive the demand for optical fiber, backbone for building the needed infrastructure
- Government Programs: Ongoing megaprojects such as Qiddiya and NEOM utilizes optical fiber networks for enhanced connectivity , IoT applications, and data transfer

Innovating for the Future

1. Defense, aerospace, hospitals, transportation hubs, data centers

Notes: IoT = Internet of things

Source: Grandview; IMARC; Expert interviews; Team analysis

aramco iktva Forum & Exhibition 2025

Value chain and key localization opportunities

	Raw Materials	Manufacturing & Assembly	Lifecycle Management
Local saturation	Few players	Few players	Many players
Current KSA value chain	Opportunity to localize the production and sourcing of essential raw materials[1]	Opportunity to localize manufacturing of fiber core, preform, sleeving process and optical fiber drawing	Installation and maintenance of optical fibers currently done locally by existing players
	Opportunity	Opportunity	
Key success factors			
Technology	High purity chemical vapor deposition technique, thermal refining process	Advance process control systems, high precision fiber drawing towers, diameter monitoring systems, S-Z stranding machines	
Labor	Chemical engineers with expertise in refining high purity materials	Process technicians, fiber drawing technicians, material scientists for testing coating materials	

Innovating for the Future

1.Including but not limited to silicon tetrachloride and germanium tetrachloride

Source: Grandview; IMARC; Expert interviews; Team Analysis

aramco iktva Forum & Exhibition 2025

Investment opportunity and enablers

Key enablers in KSA to drive success

Financial enablers: Regional land and loan programs from SIDF and industrial land authorities for plant setup

Customs enablers: Custom duty exemptions from MoCI on machinery and equipment for establishment of optical fiber manufacturing

Human capital enablers: NITI offers specialized courses covering intermediate processes and manufacturing

Where is the opportunity

Raw material
Establish facility to produce raw materials such as silicon tetrachloride and germanium tetrachloride

Manufacturing & Assembly
Setup manufacturing plants for production of fiber core, preform, sleeving process and optical fiber drawing

1. Includes specialized equipment procurement and facility setup

Note: SIDF = Saudi Industrial Development Fund; MoCI = Ministry of Commerce and Industry; NITI = National Industrial Training Institute

Source: Grandview; IMARC; Expert interviews; Team Analysis

aramco iktva Forum & Exhibition 2025

Microwave Communications Dish

Hisham Bin Dayel

IT Workshop

Innovating for the Future

aramco iktva Forum & Exhibition 2025

Opportunity profile – Microwave Communication Dish (MCD)

1

MCD needed to meet demand from private and commercial customers

Low Frequency
(L-band, S-band)

Mid Frequency
(C-band, X-band)

High Frequency
(Ku-band, Ka-band)

2

KSA MCD market is sizable with significant growth prospects

$90MM – Estimated 2024 KSA market size

9% – Forecasted KSA 5-year CAGR

3

Attractive investment opportunities in the MCD value chain

KSA value chain opportunities

- Raw materials
- Design & Manufacturing

KSA enablers

- Financial support programs available
- Favorable tax legislation
- Widely available technical labor

IT Workshop

Innovating for the Future

Source: Future Market Intelligence; Allied Market Research; Databridge; Grandview; Mordor Intelligence; Team analysis

aramco iktva Forum & Exhibition 2025

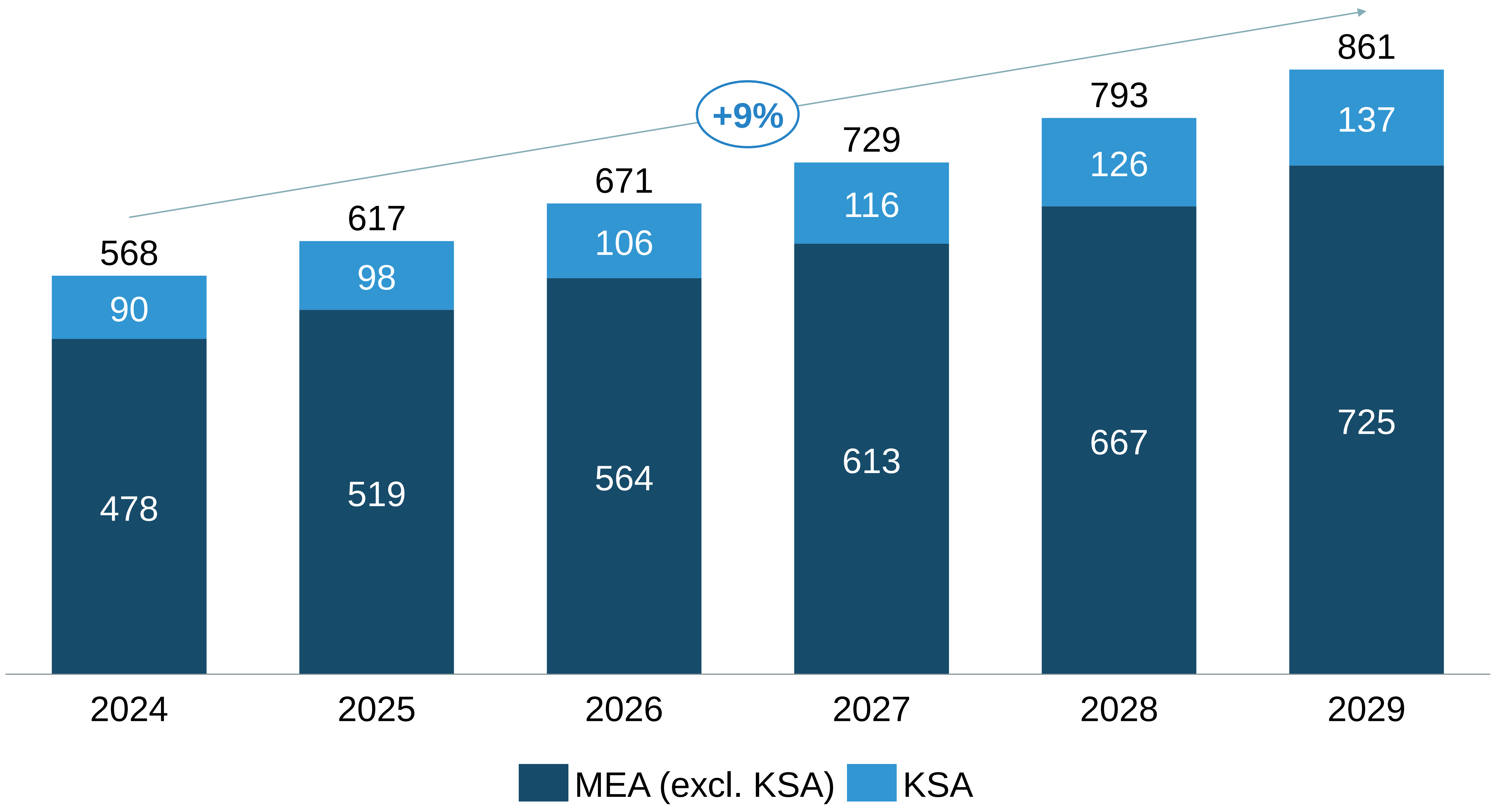
MCD categories for localization

	Low Frequency	Mid Frequency	High Frequency
			
Applications	• Low bandwidth, long distance communication • Satellite and maritime communications	• Moderate range and bandwidth • Broadcasting and satellite link usage (e.g., Telecommunications backhaul, offshore O&G communication)	• High bandwidth for data-intensive applications • Modern satellite internet and high-resolution broadcasting

Source: Future Market Intelligence; Allied Market Research; Databridge; Grandview; Mordor Intelligence; Team analysis

MCD demand, customers, and drivers

Forecasted KSA and rest of MEA MCD market 2024-2029 ($MM)



Typical customers in KSA

- Telecommunications
- Government & Defense
- Oil & Gas
- Media & Broadcasting

Key KSA demand drivers

- Expansion of oil and gas activities: Further microwave communications dishes needed to match communication and data transfer needs from additional O&G drilling sites
- 5G Rollout: Additional microwave communications dishes required to support high speed, low latency 5G networks as backhaul solutions

Note: O&G = Oil & Gas
Source: GSMA Intelligence; Aramco; Future Market Insights; Allied Market Research; Databridge; Grandview; Mordor Intelligence; Team analysis

aramco iktva Forum & Exhibition 2025

Value chain and key localization opportunities

	Raw Materials	Manufacturing & Assembly	Lifecycle Management
Local saturation	Few players	Few players	Many players
Current KSA value chain	Opportunity to manufacture feed horns and radomes, expand advanced RF production	Opportunity to produce microwave communications dishes – incl. reflector production, subcomponent assembly	Installation and maintenance of MCDs offered locally by existing players
	Opportunity	Opportunity	
Key success factors			
Technology	Precision electronics equipment, composite molders	Assembly and RF testing equipment, coating machines	
Labor	Machinists, fabrication specialists	Assembly specialists, RF engineers, coating technicians	

Source: Future Market Insights; Allied Market Research; Databridge; Grandview; Mordor Intelligence; Team analysis

aramco iktva Forum & Exhibition 2025

Investment opportunity and enablers

Financial enablers: SIDF working capital and CAPEX loans up to 75% of setup costs[1]

Tax exempt exports: Export revenue is not subject to tax

Widely available specialized labor: NCTC provides machinists, maintenance technicians, and equipment operators who can support manufacturing

Where is the opportunity

Raw material
Manufacture feed horns and radomes, expand advanced RF production

Manufacturing & Assembly
Produce microwave communications dishes – incl. reflector production, subcomponent assembly

1. Includes specialized equipment procurement and facility setup

Source: Future Market Insights; Allied Market Research; Databridge; Grandview; Mordor Intelligence; Team analysis

Please direct Business Opportunities inquiries below:

We invite you to engage with us and send us your Expression of Interest by scanning the QR code or visiting:

Website: https://iktva.sa/english/opportunities/opportunity-submission-form

Email: local-content@Aramco.com

aramco iktva Forum & Exhibition 2025

Thank You

IT Workshop

Innovating for the Future