

Drilling

Oilfield Services Workshop

Business Opportunities

13th January 2025

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.

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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% local content



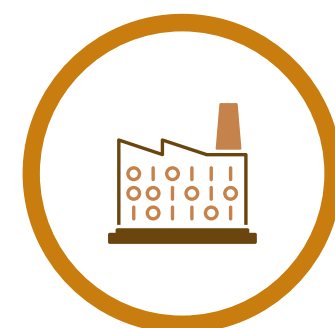
iktva in Procurement

2000+

Service
Contracts

290+

Corporate
Purchase
Agreements



Business Opportunities

12

Sectors

210

Business
Opportunities

\$28 bn

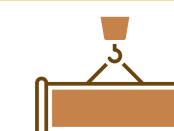
Annual
Market
Size



Anchor Projects



IMI



SPARK



Tuwaiq

6 Anchor projects



Local Workforce Development

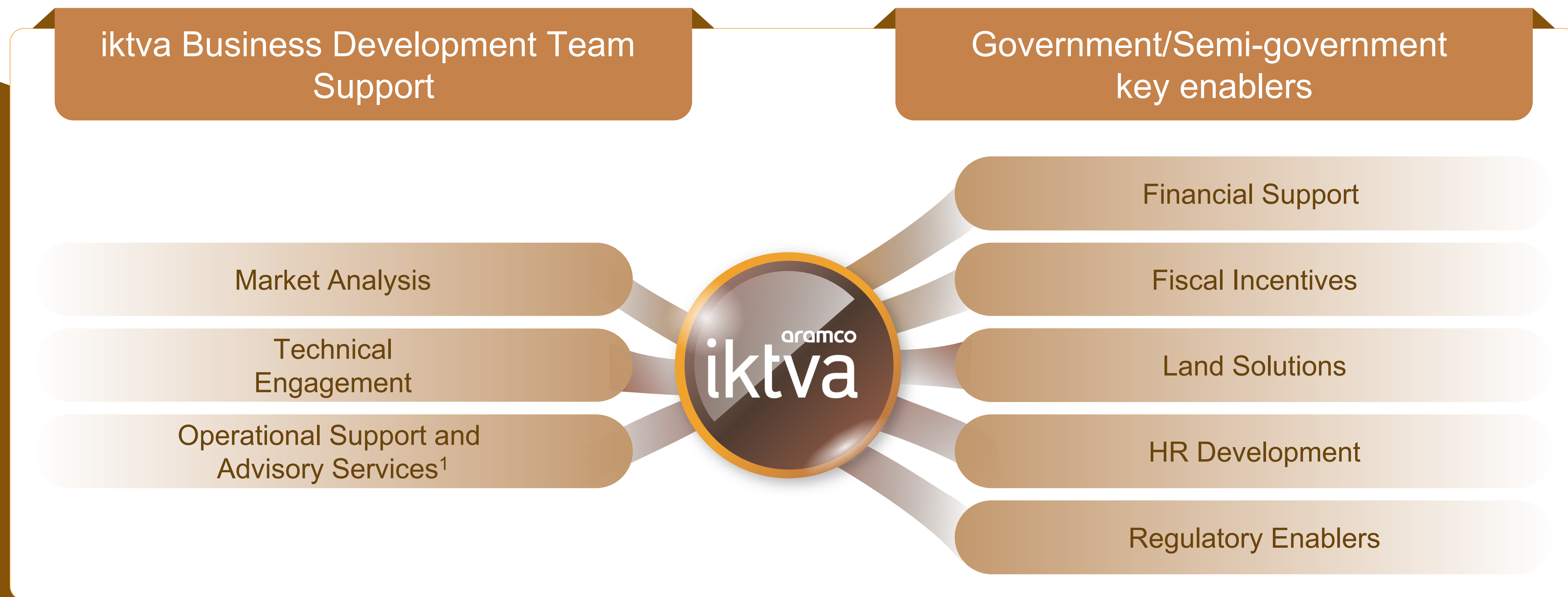
16

National
Training Centers

90+

Programs

Catalyzing Supply Chains



Catalyzing Supply Chains

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

Catalyzing Supply Chains

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

Oilfield Services Market Overview

KSA oilfield services market snapshot

\$1903MM
7% CAGR¹

2024 KSA market size for opportunities
in today's workshop

Eight opportunities to be discussed today

- 1 Underbalanced Coiled Tubing Drilling
- 2 Coiled Tubing
- 3 Directional Drilling
- 4 Tubular Running Services
- 5 Wellbore Cleanout
- 6 Mud Engineering Services
- 7 Artificial Lift Systems
- 8 Artificial Lift Systems Cable

How do we define what is an opportunity?



Growing market

High growth high spend markets



Limited local players & import driven

*Markets with few local contributors
and high import resilience*



Technological & labor feasibility

*Markets with accessible or
standardized technology and
available skilled labor*

Underbalanced Coiled Tubing Drilling (UBCTD)

Abdulrahman Al Mudhafar

Opportunity profile – Underbalanced Coil Tubing Drilling (UBCTD)

1

KSA in high need of UBCTD to realize ongoing O&G expansion

2

UBCTD is a growing service subset of the overall Coiled Tubing market

3

Attractive investment opportunities for the UBCTD value chain

Key categories



Brief

- Drilling with coiled tubing in a pressure-controlled environment where wellbore pressure is maintained lower than formation pressure
- Surface flow package to handle hydrocarbon at surface

560

Estimated 2024 KSA market size (\$MM)

12%

Forecasted 5-year CAGR

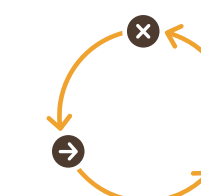
KSA value chain opportunities



R&D



Ecosystem
Mfg.



Lifecycle
Mgmt.

KSA enablers

- Preference for local manufacturing supporting local content goals
- Saudization and tax benefits in special economic zones
- Favorable labor and utilities rates
- Competitive taxes

Catalyzing Supply Chains

Underbalanced Coiled Tubing Drilling Technical Overview

UBCTD Rig



UBCTD component examples:

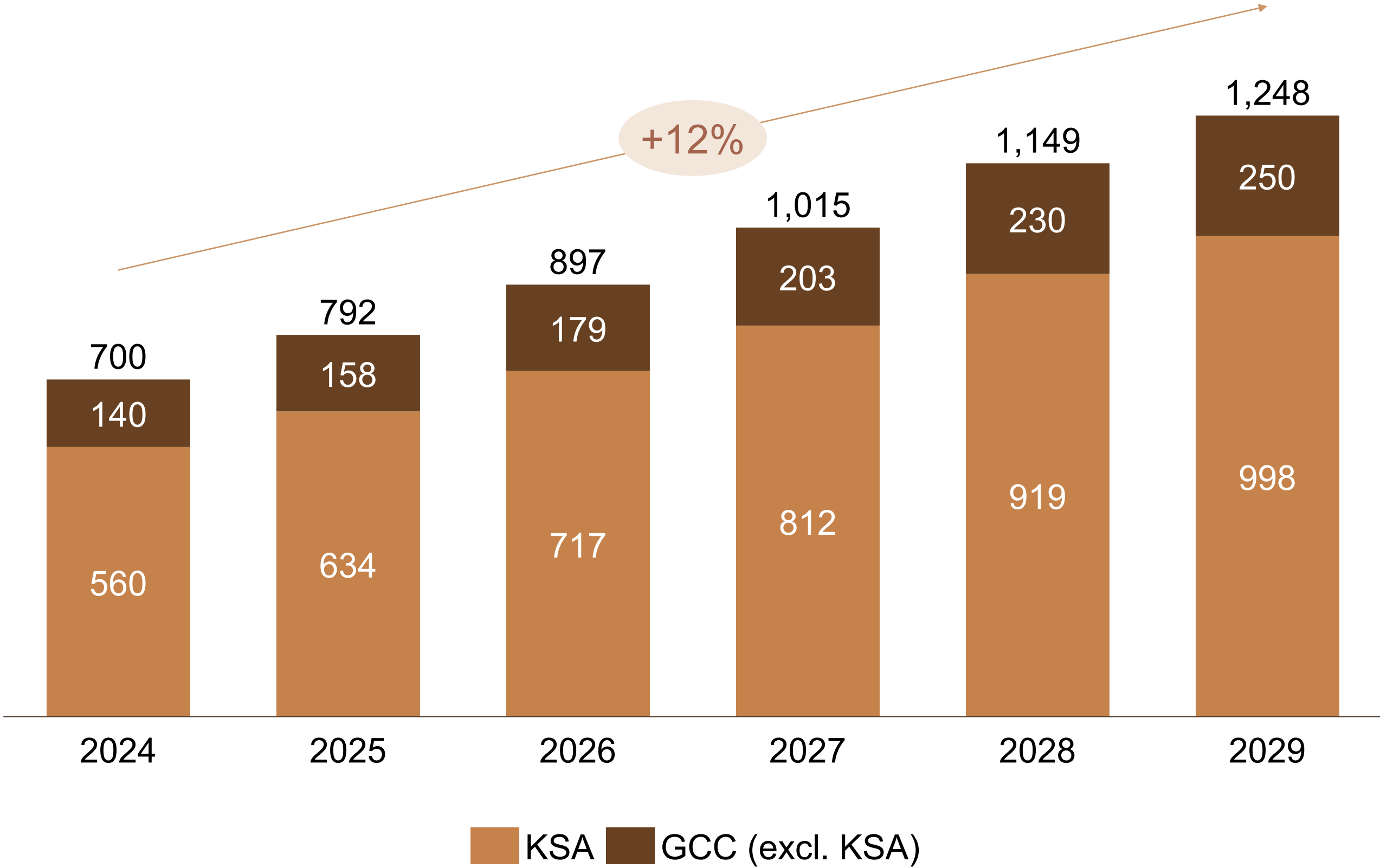
- 2-3/8" Coiled Tubing Reel
- HP Separator
- LP Separator
- Fluid Pumps
- Condensate Vessels
- Production Lines and Choke Lines

- UBCTD Service provider to drill under-balance wells
- Manufacturing components of UBCTD rig



Underbalanced Coiled Tubing demand, customers, and drivers

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



Typical UBCTD customers in KSA



Gas producers

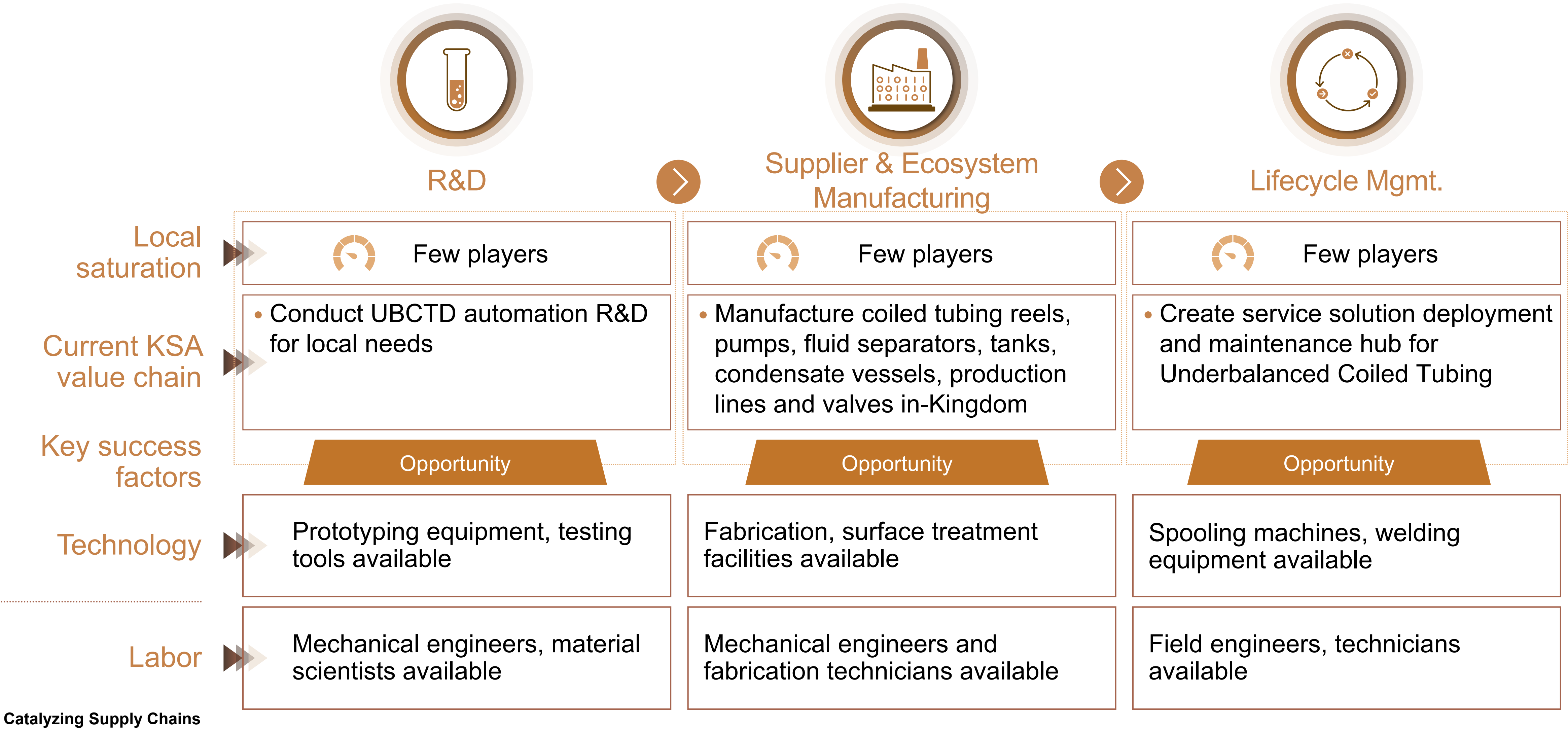
Key KSA demand drivers

- **Rise in upstream activity:** Bolstered upstream activities requires additional UBCTD implementations
- **Completions complexity increase:** Boost in complex well completions increases need for UBCTD to preserve formations and maximize productivity

Catalyzing Supply Chains

Note: \$MM = USD Millions
Source: Aramco; Industry data; Press releases; Team analysis

Value chain and key localization opportunities



Coiled Tubing

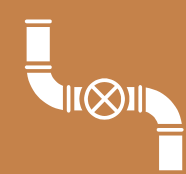
Abdulrahman Al Mudhafar

Opportunity profile – Coiled Tubing

1

KSA in high need of Coiled Tubing to realize ongoing O&G expansion

Key specifications



Tubing diameter

1-1/4", 1-1/2", 1-3/4", Up to 2-7/8"



Work pressure

5,000 PSI, 10,000 PSI, 15,000 PSI

2

Coiled Tubing is a growing market, KSA has the largest regional share

59

Estimated 2024 KSA market size (\$MM)

3%

Forecasted 5-year CAGR

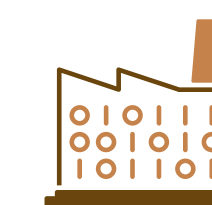
3

Attractive investment opportunities for the Coiled Tubing value chain

KSA value chain opportunities



R&D



OEM Mfg.

KSA enablers

- Preference for local manufacturing supporting local content goals
- Saudization and tax benefits in special economic zones
- Favorable labor and utilities rates
- Competitive taxes

Catalyzing Supply Chains

Note: \$MM = USD Millions
Source: Aramco; Grandview; Press releases; Team analysis

Coiled Tubing technical overview

Tubing diameter



1-1/4", 1-1/2", 1-3/4", Up to 2-7/8"

Work pressure

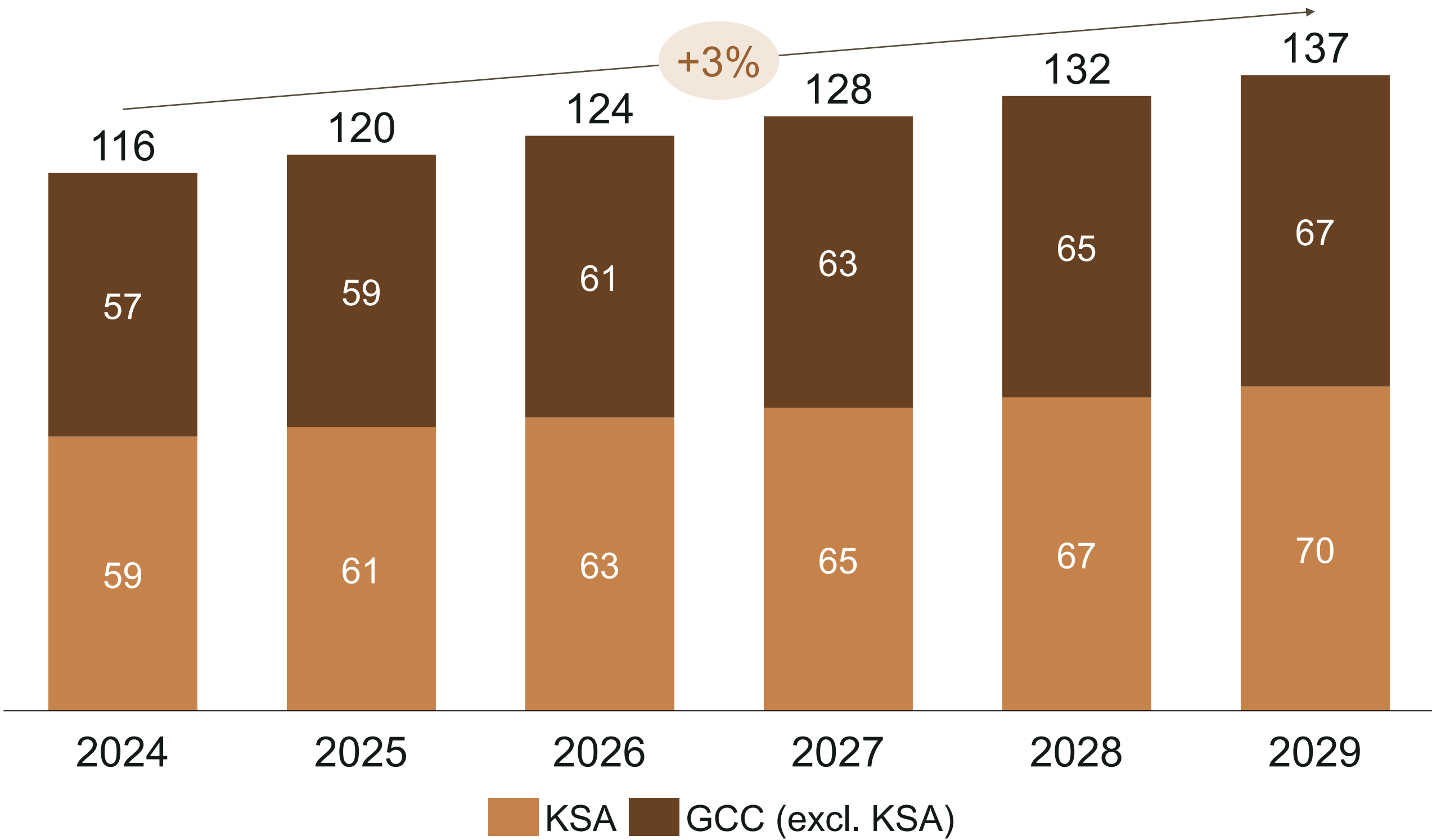


5,000 PSI, 10,000 PSI, 15,000 PSI



Coiled Tubing demand, customers, and drivers

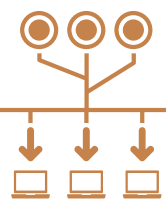
Forecasted KSA and rest of GCC Coiled Tubing market 2024-2029 (\$MM)



Typical Coiled Tubing customers in KSA



Coiled Tubing Service providers



Underbalanced Coiled Tubing (UBCTD) Service providers

Key KSA demand drivers

- **Rise in gas & upstream activities:** Rise in gas & upstream activities require further use of coiled tubing
- **Increase in UR drilling and longer laterals:** Rise in UR drilling and longer laterals requires use of coiled tubing for increased flexibility in complex well geometries

Catalyzing Supply Chains

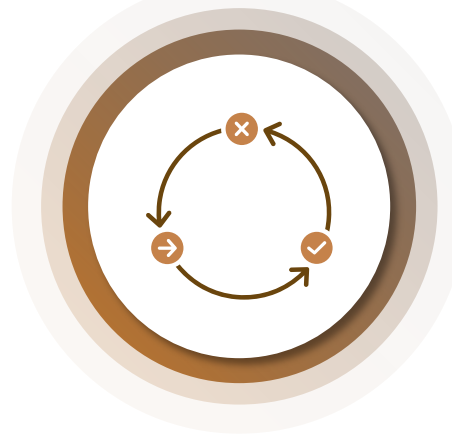
Note: \$MM = USD Millions
Source: Aramco; Grandview; Press releases; Team analysis



Value chain and key localization opportunities



R&D



Lifecycle Mgmt.



Local saturation



Few players

Current KSA value chain



- Conduct Coiled Tubing R&D for local needs

Key success factors

Opportunity

Technology



Metallurgical lab tools, prototyping equipment available

Labor



Mechanical engineers, material scientists available



Few players

- Manufacture coiled tubing reels in-Kingdom

Opportunity

Fabrication, surface treatment facilities available

Mechanical engineers and fabrication technicians available

Catalyzing Supply Chains

Directional Drilling

Abdullah Al Dossary

Opportunity profile – Directional Drilling

1

KSA in high need of Directional Drilling to realize ongoing O&G expansion

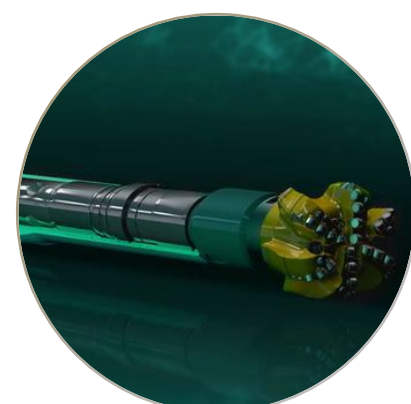
2

Directional Drilling is a growing market, KSA has the largest regional share

3

Attractive investment opportunities for the Directional Drilling value chain

Key categories



Mud Motors



Rotary Steerable System (RSS)



Logging While Drilling (LWD)



Measurement While Drilling (MWD)

880

Estimated 2024 KSA market size (\$MM)

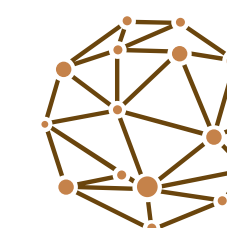
5%

Forecasted 5-year CAGR

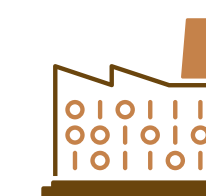
KSA value chain opportunities



R&D



Ecosystem Mfg.



OEM Mfg.

KSA enablers

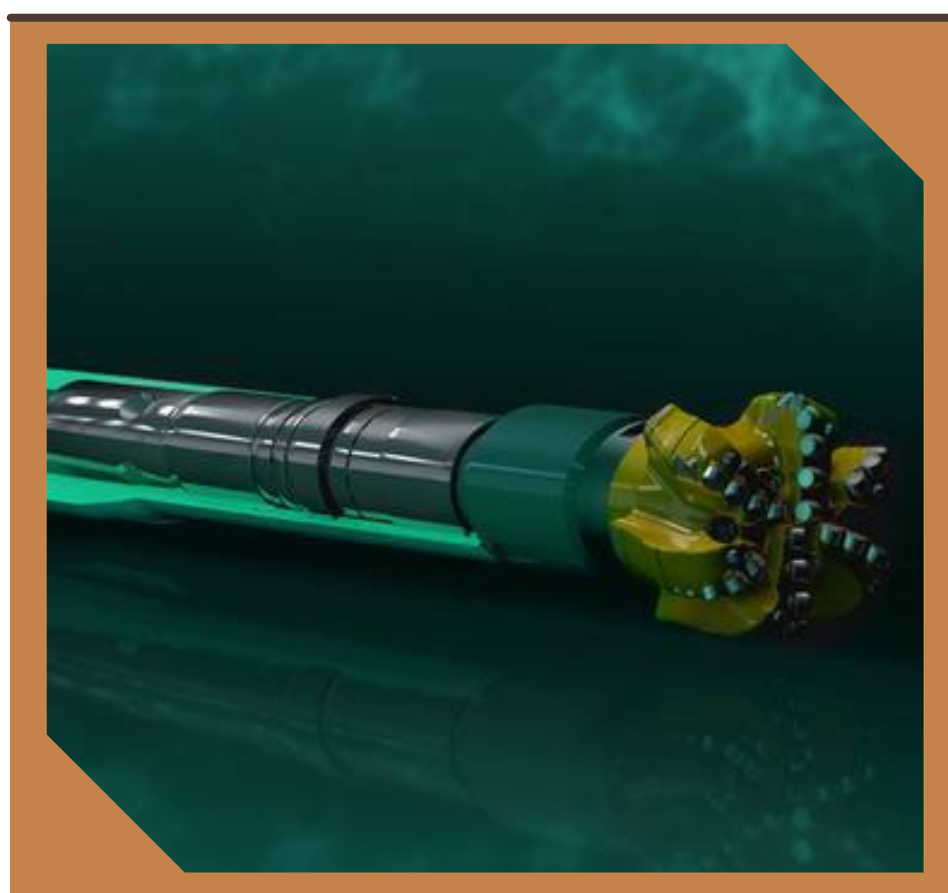
- Financing available (SIDF)
- Competitive taxes
- Benefits in industrial parks with OSS services access, Saudization waivers
- Skilled labor for component manufacturing from SADA

Catalyzing Supply Chains

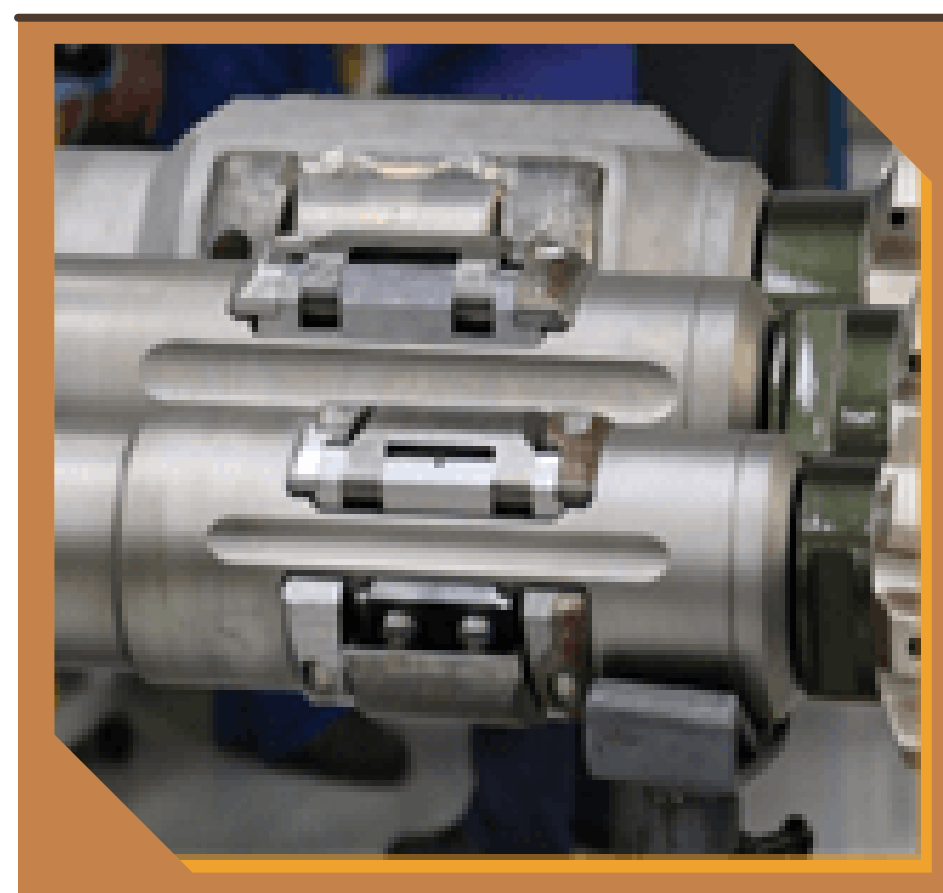
Note: \$MM = USD Millions; SIDF = Saudi Industrial Development Fund; OSS = One Stop Shop; SADA = Saudi Arabian Drilling Academy
Source: Aramco; Mordor Intelligence; Press releases; Team analysis

Potential Directional Drilling localized components

Mud
Motors



Rotary Steerable System
(RSS)



Logging While Drilling
(LWD)



Measurement
While Drilling (MWD)



Applications

- Wellbore deviation
- Sliding drill mode
- Kick-off operations

- Continuous rotation & steering
- Extended-reach, horizontal, and multilateral wells

- Formation evaluation
- Geo-steering & well placement

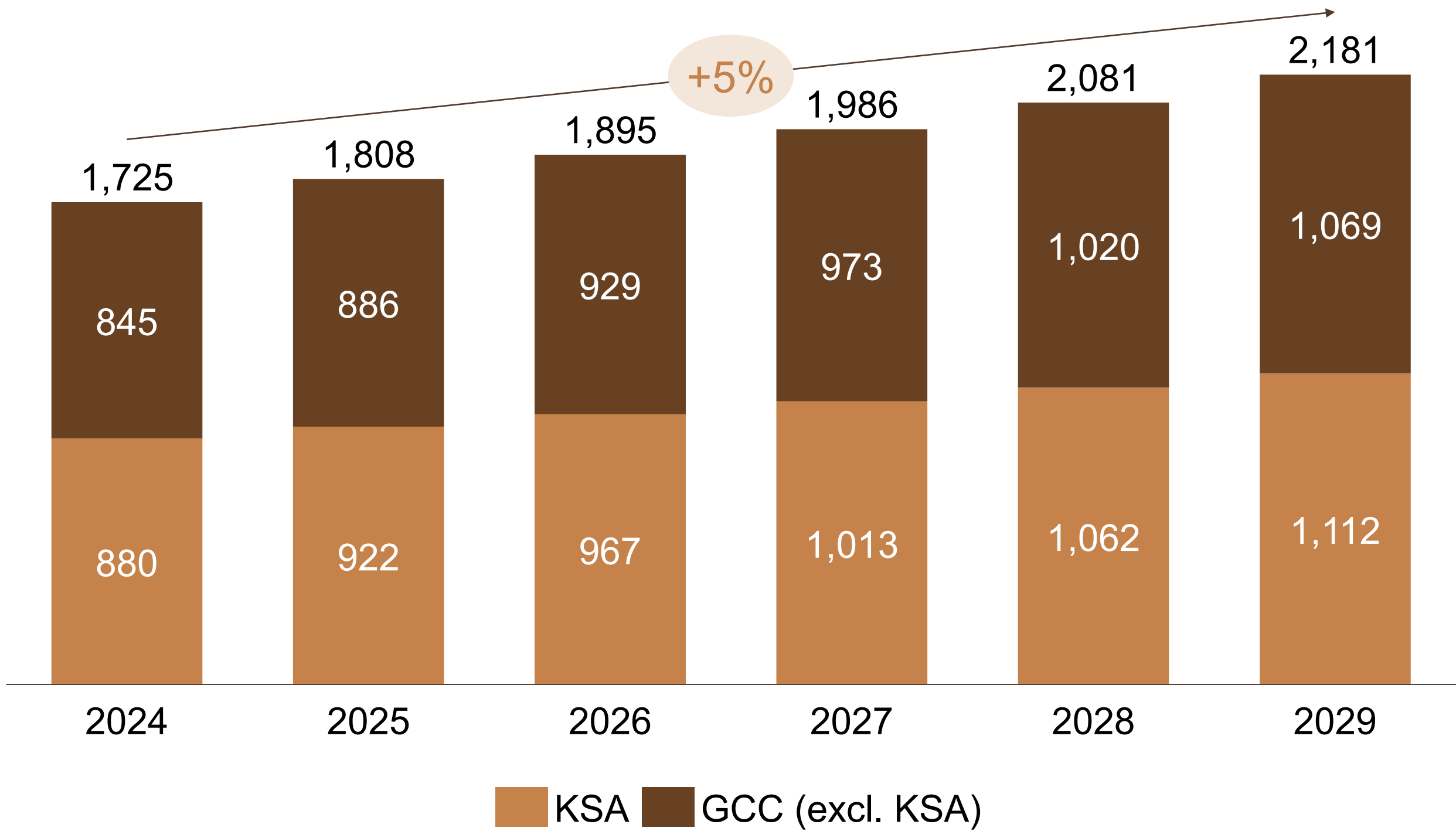
- Real-time trajectory monitoring
- Tool-face orientation & real-time communication

Catalyzing Supply Chains

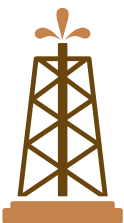


Directional Drilling demand, customers, and drivers

Forecasted KSA and rest of GCC Directional Drilling market 2024-2029 (\$MM)



Directional Drilling customers in KSA



Oil producers



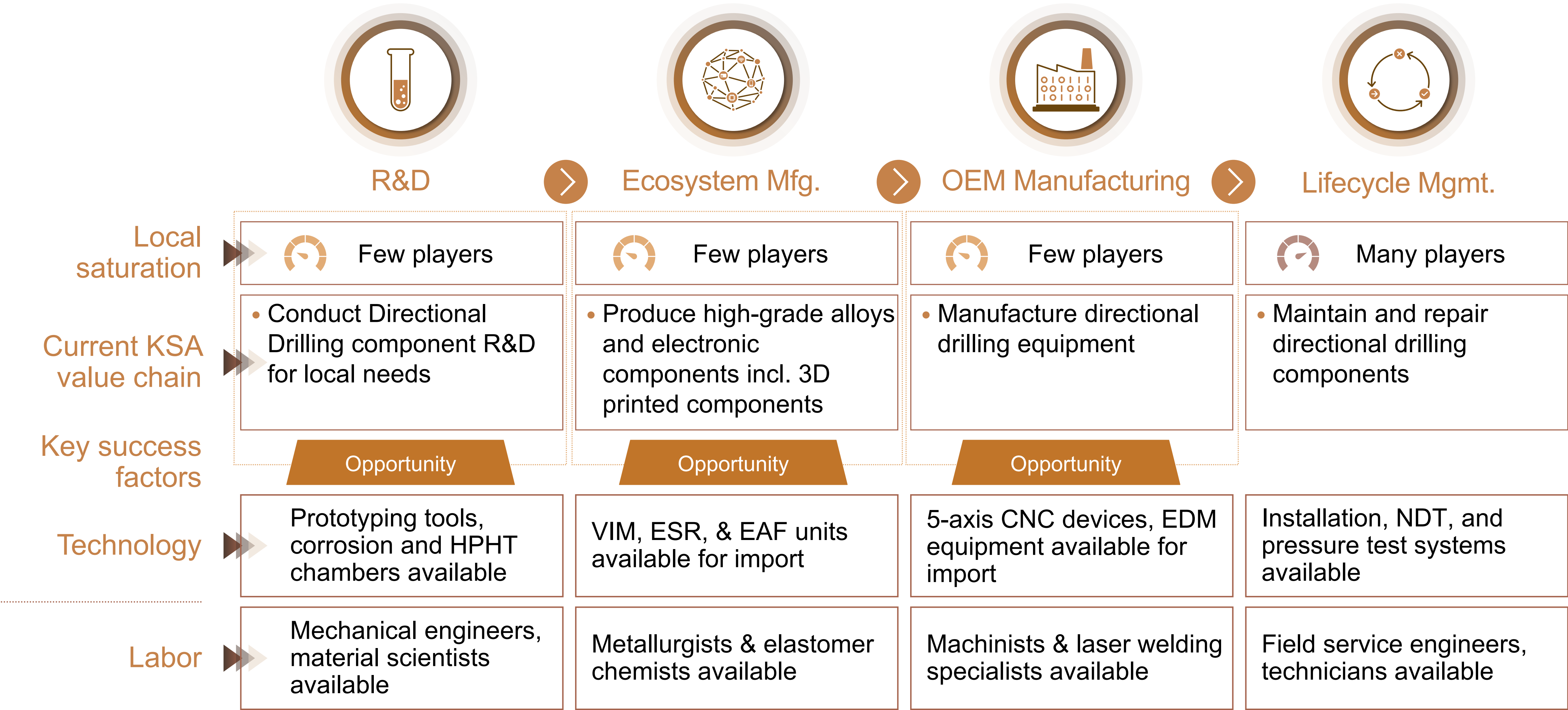
Gas producers

Catalyzing Supply Chains

Note: \$MM = USD Millions; UR = Unconventional Resources
Source: Aramco; Mordor Intelligence; Press releases; Team analysis



Value chain and key localization opportunities



Catalyzing Supply Chains

Note: VIM = Vacuum induction melting furnace; ESR = Electroslag remelting; EAF = Electric Arc Furnace; CNC = Computer numerical control; EDM = Electrical discharge machining; NDT = Non-Destructive Testing; HPHT = High Pressure, High Temperature
Source: Aramco; Mordor Intelligence; Press releases; Team analysis

Tubular Running Services (TRS)

Faris Al Khrboush

Opportunity profile – Tubular Running Services (TRS)

1

KSA in high need of TRS to realize ongoing O&G expansion

2

TRS is a growing market, KSA has the largest regional share

3

Attractive investment opportunities for the TRS value chain

Key categories



Running tools



Automation and analytics



Pipe handling equipment

120

Estimated 2024 KSA market size (\$MM)

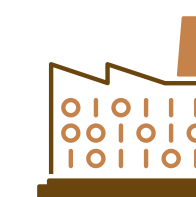
5%

Forecasted 5-year CAGR

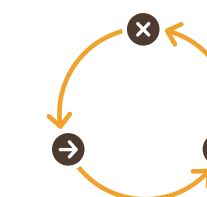
KSA value chain opportunities



R&D



Service Equipment Mfg.



Lifecycle Mgmt.

KSA enablers

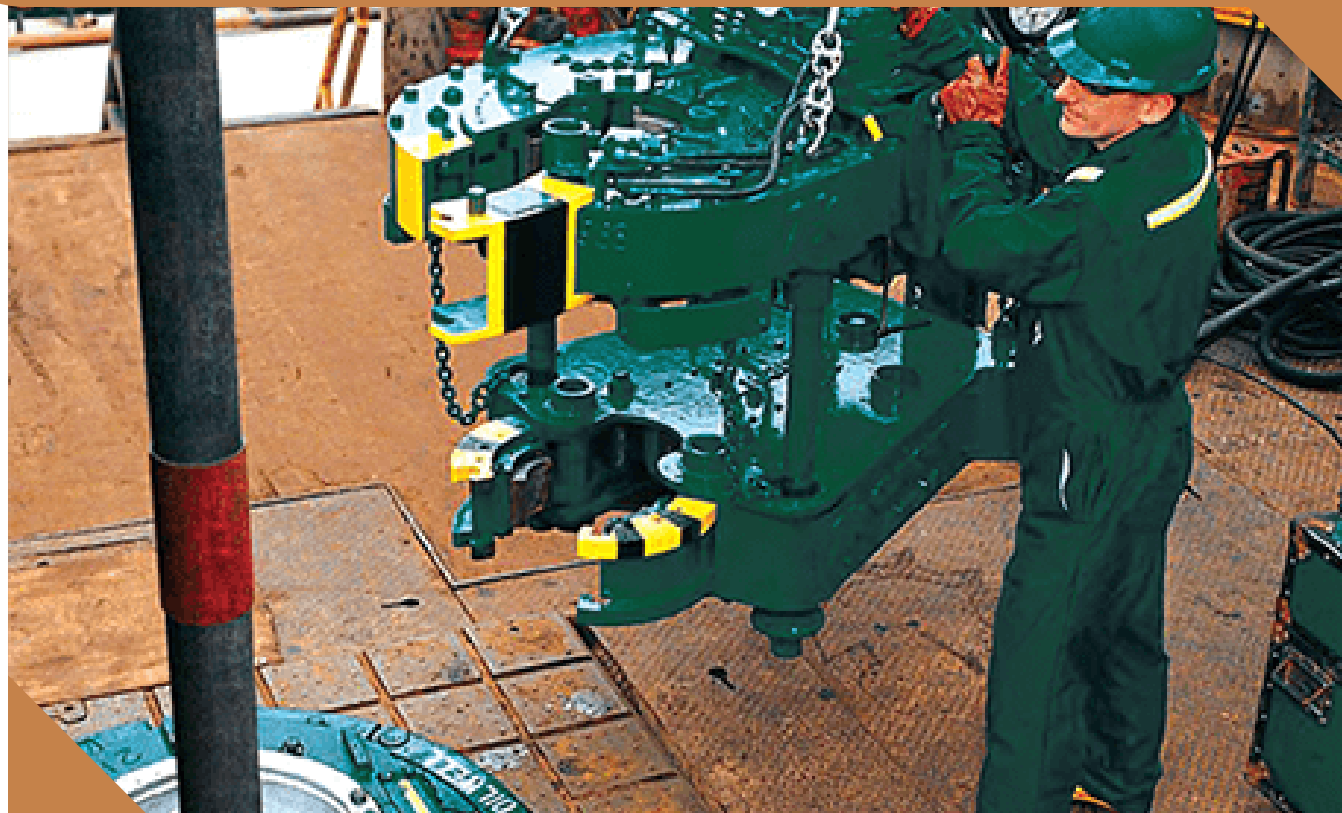
- Financing available (SIDF)
- Competitive taxes
- Benefits in industrial parks with OSS services access
- Skilled labor for component manufacturing from SADA

Catalyzing Supply Chains

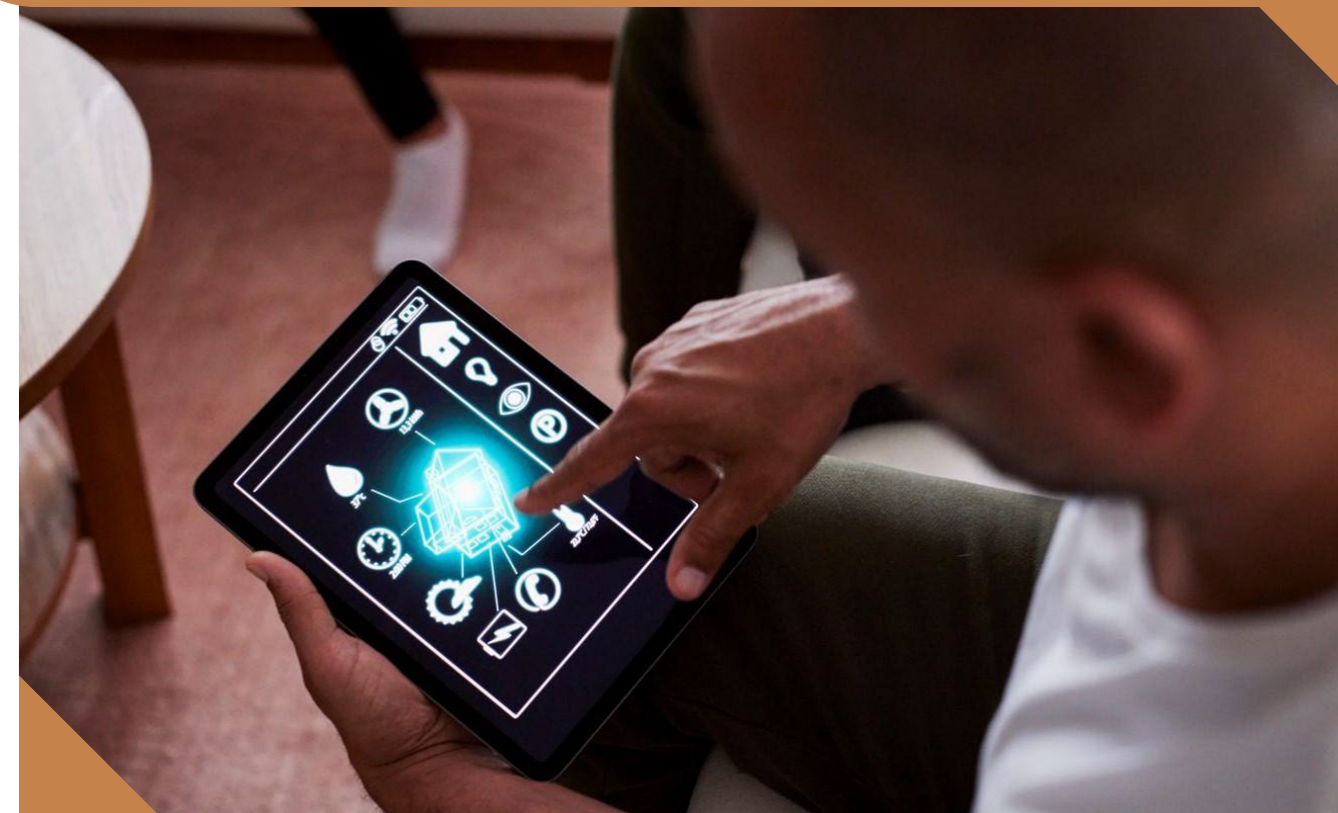
Note: \$MM = USD Millions; SIDF = Saudi Industrial Development Fund
Source: Aramco; Press releases; Mordor Intelligence; Team analysis

Potential Tubular Running Services localized categories

Running Tools



Automation and Analytics



Pipe Handling Equipment



- Casing Running Tool (CRT)
- Casing Drive System (CDS)
- Flush-Mounted Spider (FMS)
- Make-up tongs

- Torque-turn recorder
- AI-backed data collection system

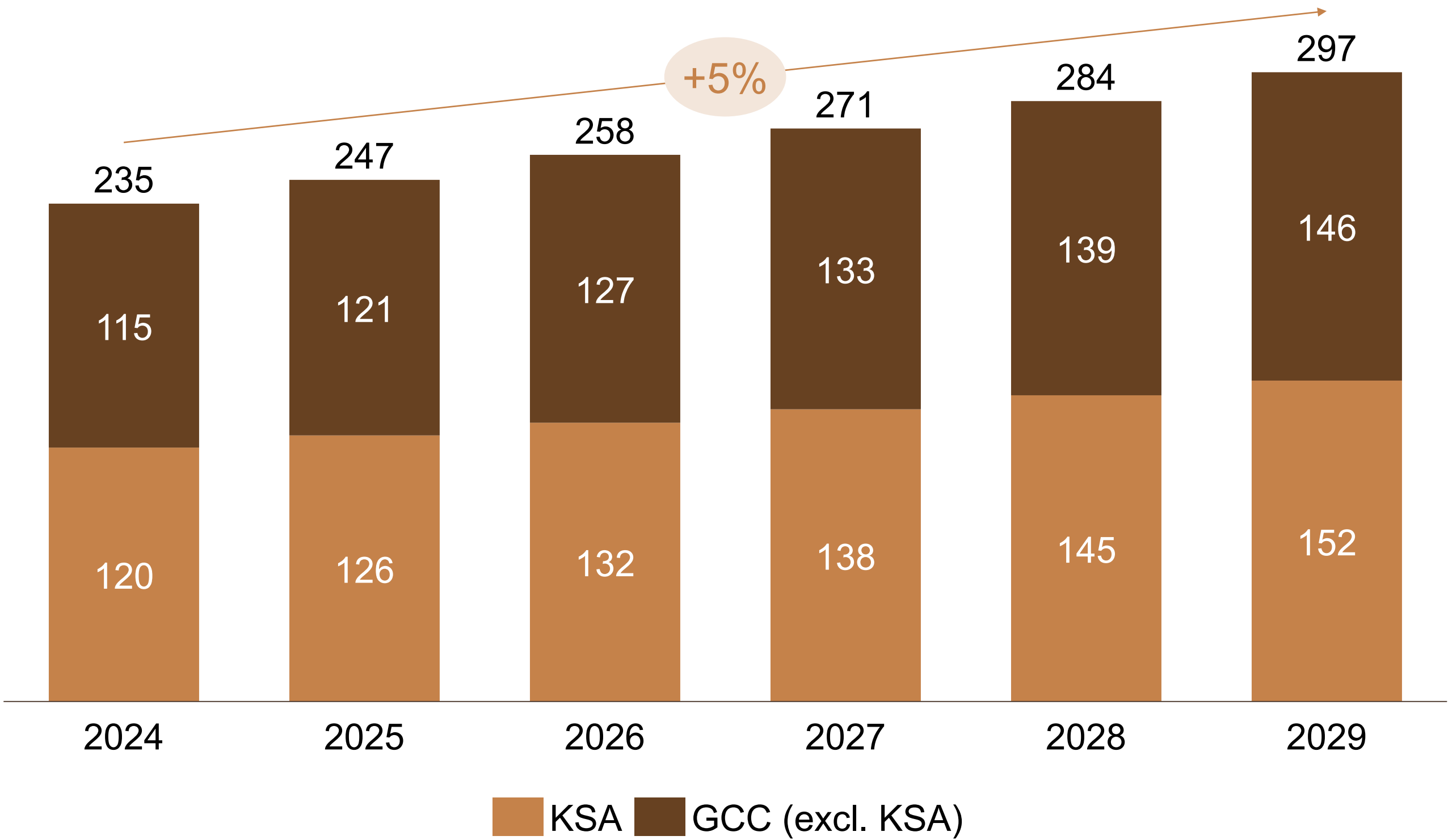
- Pipe elevators
- Pick-up slings
- Safety nubbins

Catalyzing Supply Chains

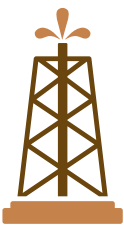


Tubular Running Services demand, customers, and drivers

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



Typical TRS customers in KSA



Oil producers



Gas producers

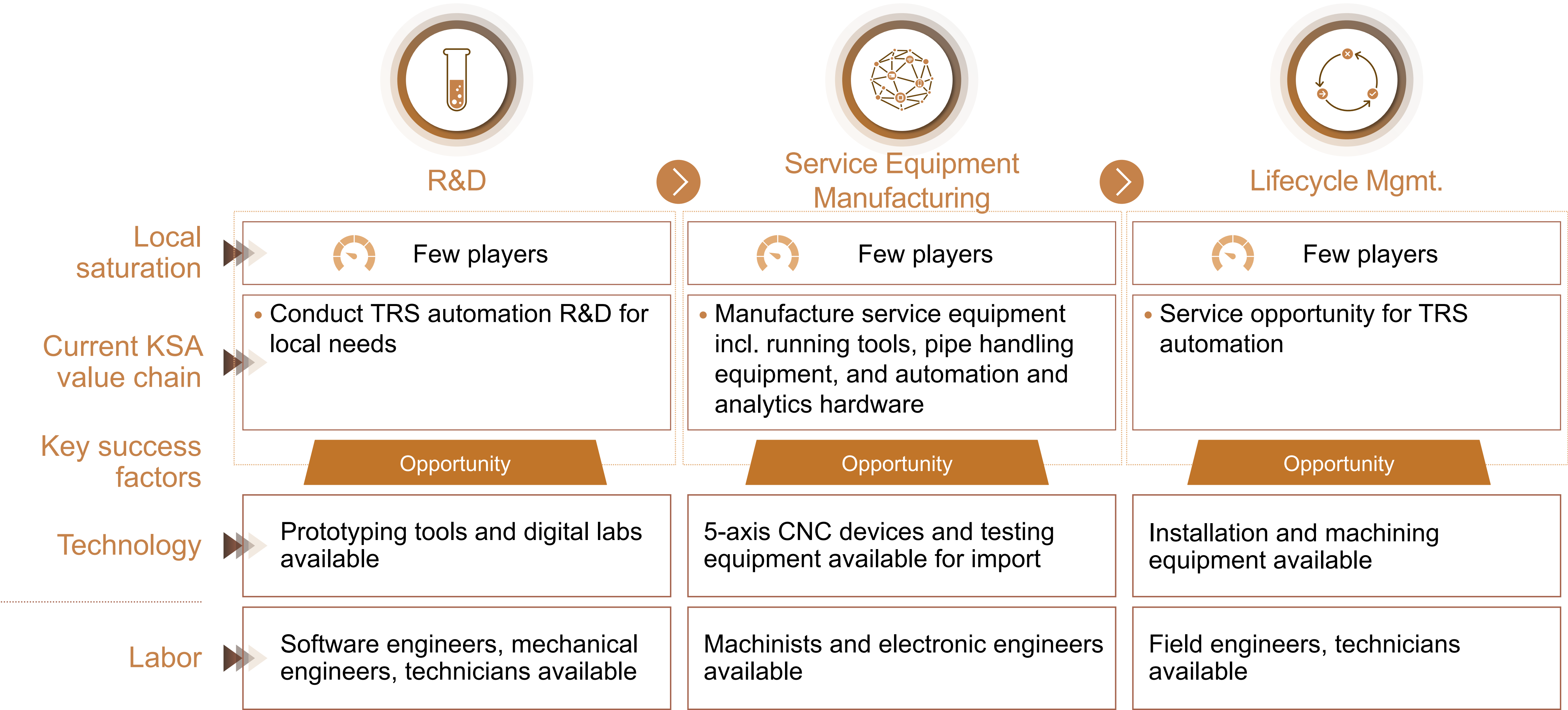
Key KSA demand drivers

- **Rise in deep well drilling:** Rise in deeper well drilling requires additional tubular running services
- **In-Kingdom digitalization drive:** Increase in use of AI and operations digitalization to prevent business disruptions bolsters need for automation and analytics components and services

Catalyzing Supply Chains

Note: \$MM = USD Millions
Source: Aramco; Press releases; Mordor Intelligence; Team analysis

Value chain and key localization opportunities



Catalyzing Supply Chains

Note: VIM = Vacuum induction melting furnace; ESR = Electroslag remelting; CNC = Computer numerical control; HPHT = High pressure, high temperature
Source: Aramco; Press releases; Mordor Intelligence; Team analysis

Wellbore Cleanout

Atallah Al Harbi

Opportunity profile – Wellbore Cleanout

1

KSA in high need of Wellbore Cleanout to realize ongoing O&G expansion

Key required tools¹



Negative Test Packer



Circulation Sub



BOP Jetting Tools



Scrapers

2

Wellbore cleanout is a growing market, KSA has leading regional share

82

Estimated 2024 KSA market size (\$MM)

5%

Forecasted 5-year CAGR

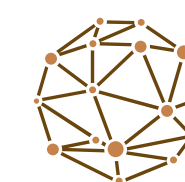
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Attractive investment opportunities for the Wellbore Cleanout value chain

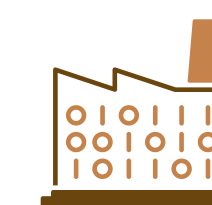
KSA value chain opportunities



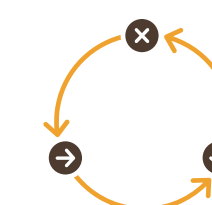
R&D



Ecosystem Mfg.



OEM Mfg.



Lifecycle Mgmt.

KSA enablers

- Preference for local manufacturing supporting local content goals
- Available financing (SIDF)
- Benefits in industrial parks
- Competitive taxes

Catalyzing Supply Chains

1. Additional tools listed on technical overview slide; Note: \$MM = USD Millions; SIDF = Saudi Industrial Development Fund
Source: Aramco; Data Bridge; Press releases; Team analysis

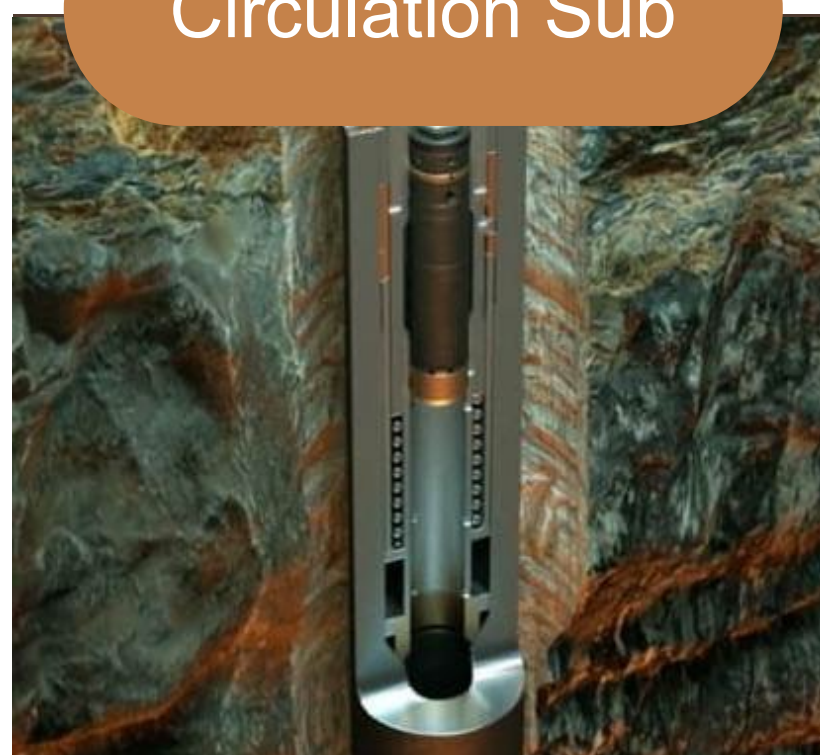
Wellbore Cleanout technical overview

Negative Test Packer



- Isolate sections of wellbore to perform negative pressure tests

Circulation Sub



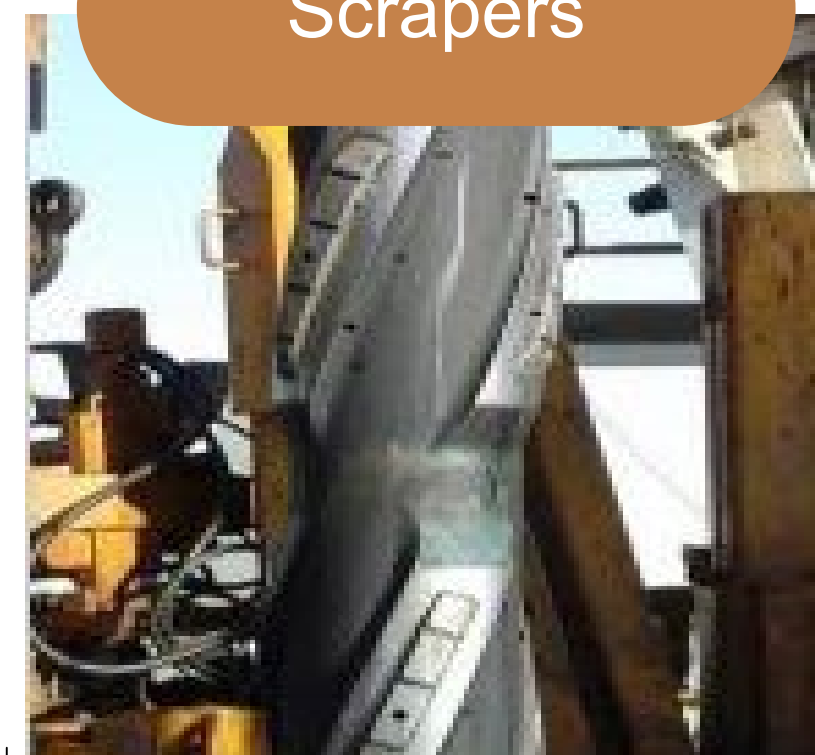
- Facilitate fluid circulation during wellbore cleanout

BOP Jetting Tools



- Clean the blowout preventer stack (especially after extended drilling operations)

Scrapers



- Mechanically remove debris, scale, rust, or residual from casing or tubing

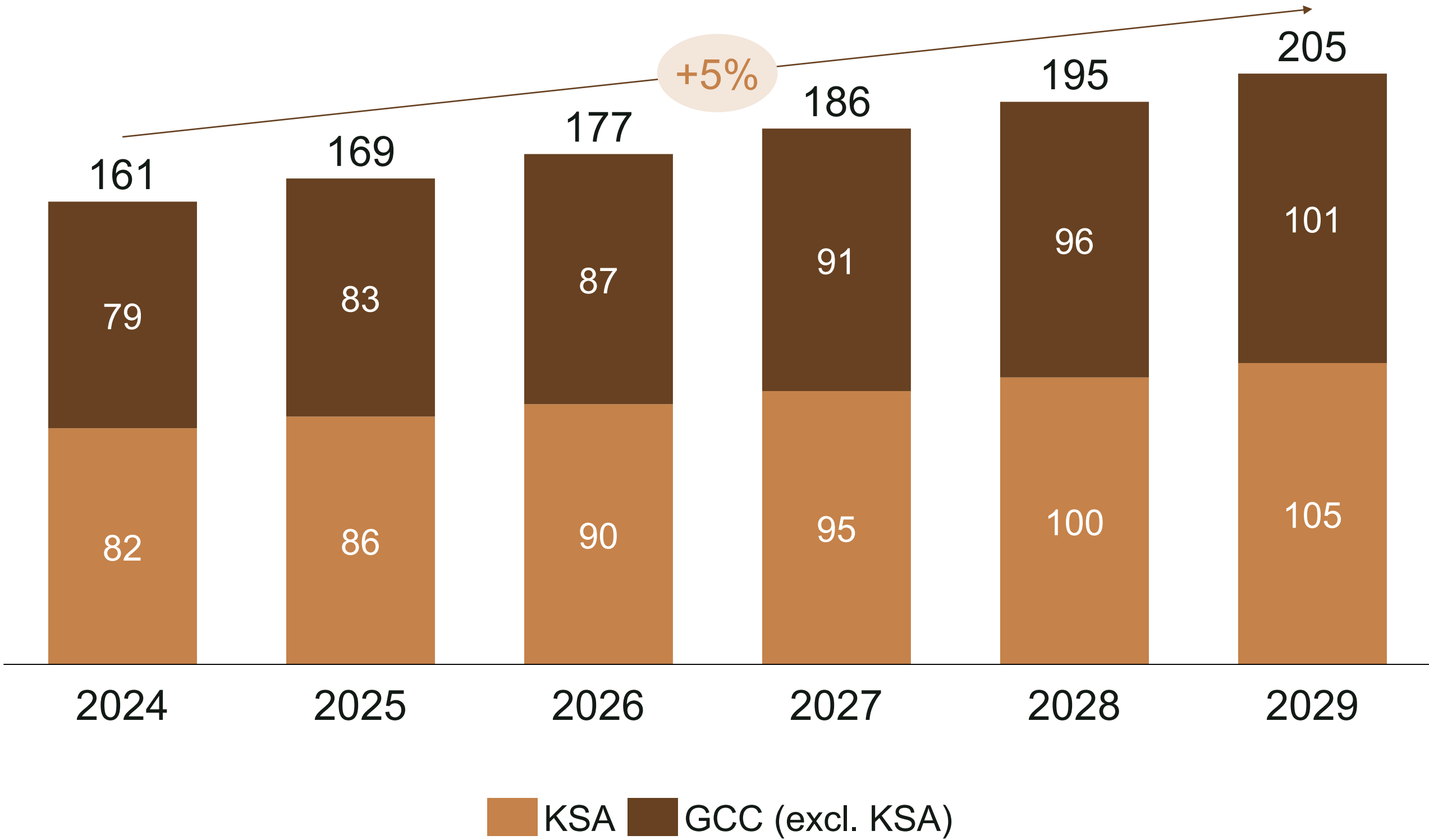
Additional supporting component examples

- 1 String magnet
- 2 Brushes
- 3 Junk basket
- 4 Flat bottom magnet

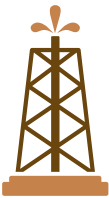


Wellbore Cleanout demand, customers, and drivers

Forecasted KSA and rest of GCC Wellbore Cleanout market 2024-2029 (\$MM)



Wellbore Cleanout customers in KSA



Oil producers



Gas producers

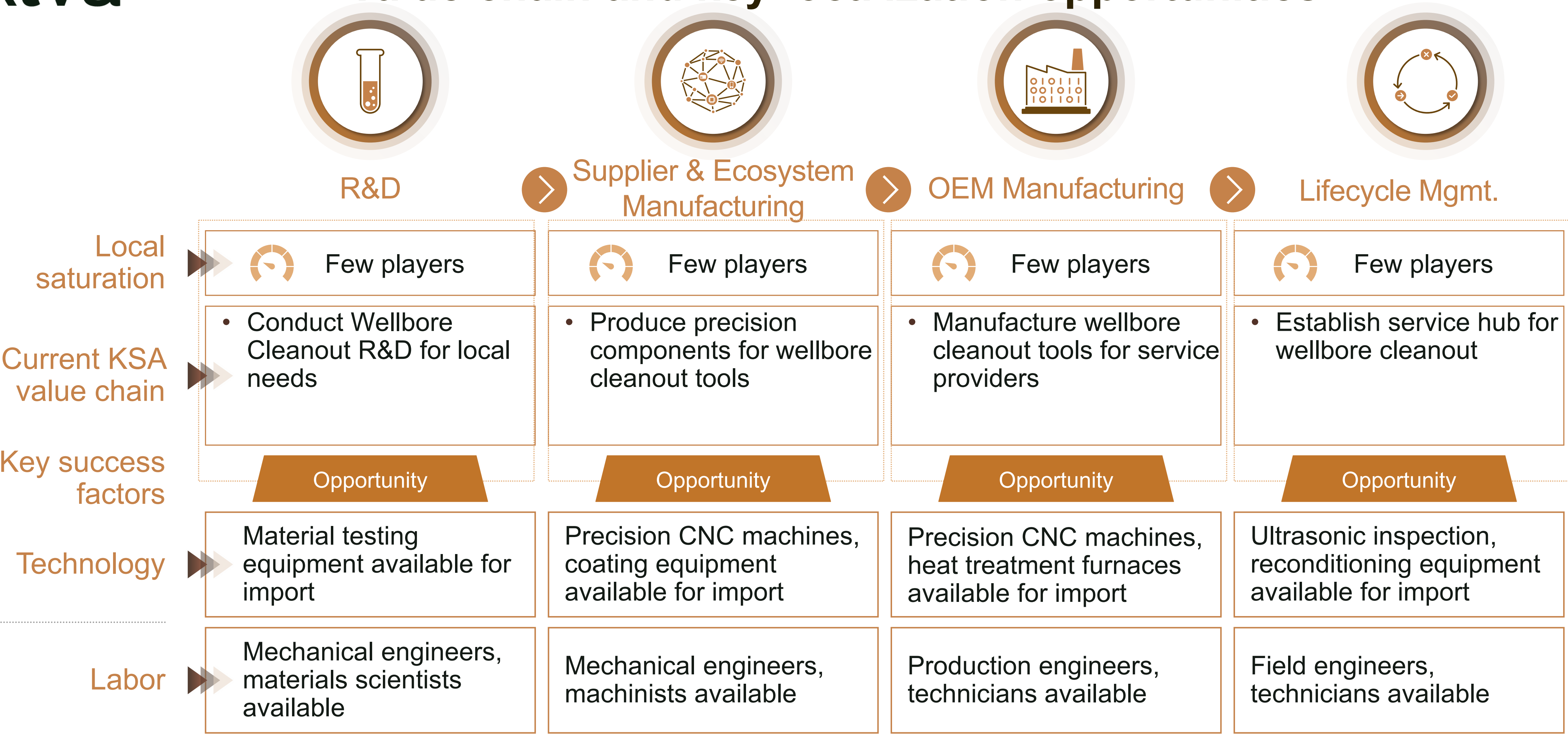
Key KSA demand drivers

- Enhancing Production Efficiency: Clean wellbore allows for smoother flow of oil and gas, which can significantly improve production rates - removing debris and other impediments ensures that the well operates at its optimal capacity
- Preventing Equipment Damage: Debris and scale can cause wear and tear on downhole equipment, leading to costly repairs and downtime - regular cleanouts protect these tools and extend lifespan

Catalyzing Supply Chains

Note: \$MM = USD Millions
Source: Aramco; Data Bridge; Press releases; Team analysis

Value chain and key localization opportunities



Catalyzing Supply Chains

Note: CNC = Computer Numerical Control
Source: Aramco; Data Bridge; Press releases; Team analysis

Mud Engineering Services

Tulio Olivares Antunez

Opportunity profile – Mud Engineering Services

1

KSA in high need of Mud Eng. Services to realize ongoing O&G expansion

Key supporting elements



Mud Engineers



Field supervisors



Testing Equipment

2

Mud Eng. Services is a growing market, KSA has leading regional share

46

Estimated 2024 KSA market size (\$MM)

4%

Forecasted 5-year CAGR

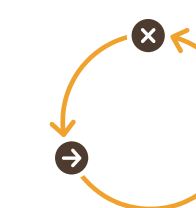
3

Attractive investment opportunities for the Mud Eng. Services value chain

KSA value chain opportunities



R&D



Lifecycle Mgmt.

KSA enablers

- Financing available (SIDF)
- Competitive taxes
- Benefits in industrial parks with OSS services acces
- Skilled labor from SADA

Catalyzing Supply Chains

Mud Engineering Services technical overview

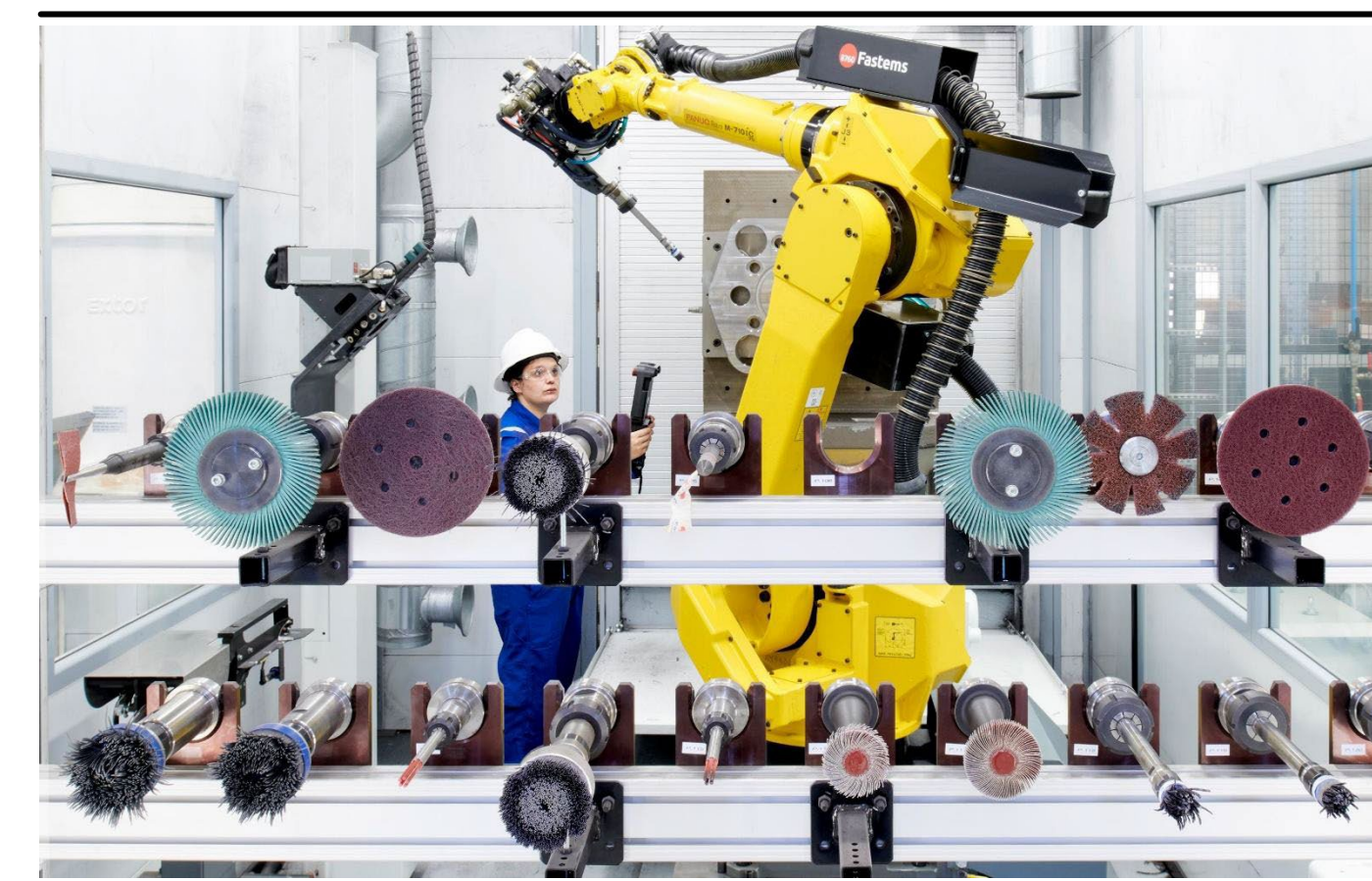
Mud engineers



Field supervisors



Testing equipment



- Support services in critical and non-critical wells – e.g., HPHT deep water services, underbalanced drilling, workovers

- Local laboratory services support in troubleshooting field concerns, testing water base mud, oil base mud, and brines

- Aid field mud engineers in organization and problem solving

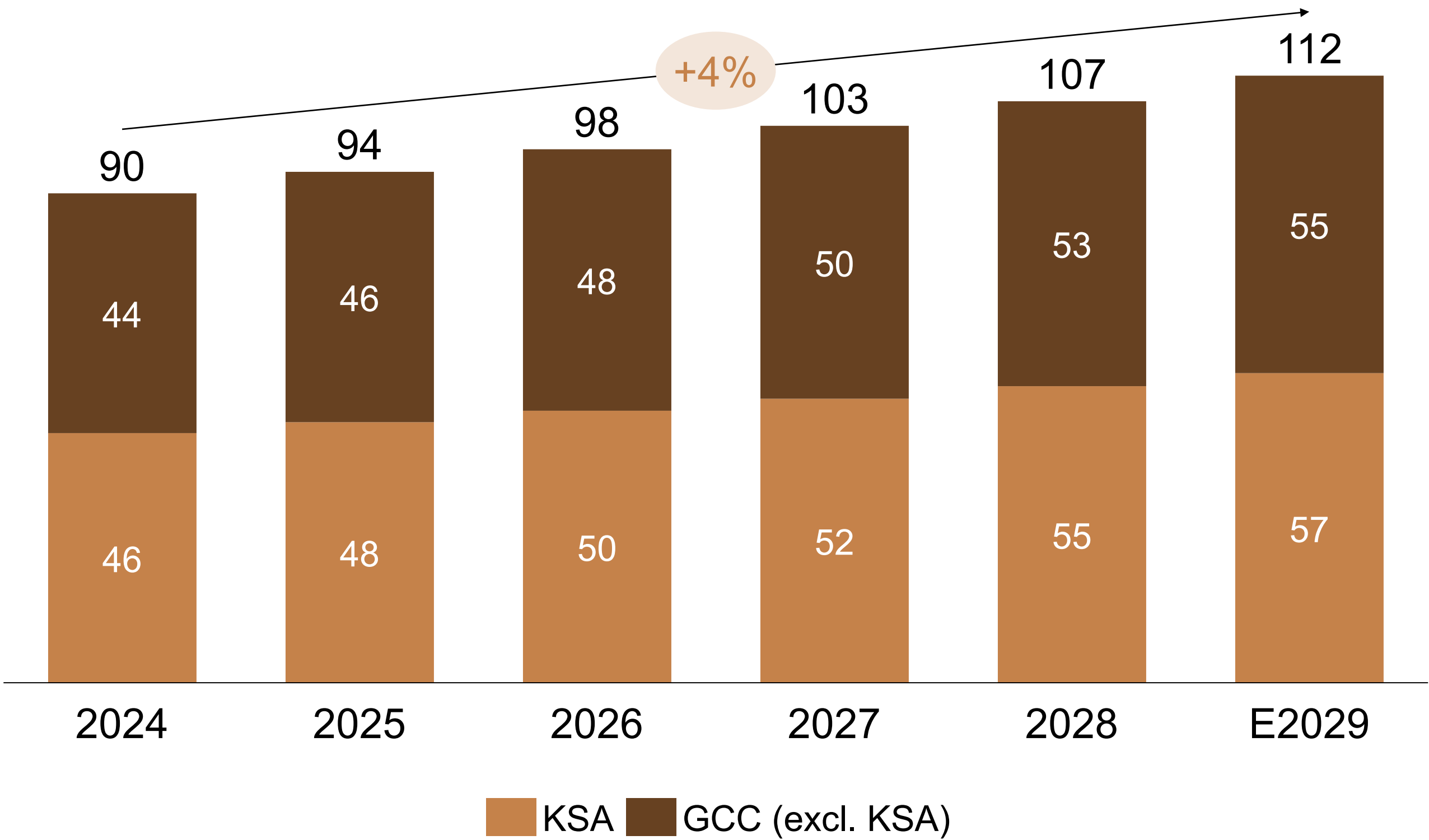
Catalyzing Supply Chains

Note: HPHT = High pressure, high temperature
Source: Aramco; Grandview; Press releases; Team analysis

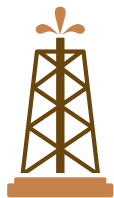


Mud Engineering Services demand, customers, and drivers

Forecasted KSA and rest of GCC Mud Engineering Services market 2024-2029 (\$MM)



Mud Engineering Services customers in KSA



Oil producers



Gas producers

Key KSA demand drivers

- **Rise in gas & upstream activities:** Further demand for mud engineering services due to rise in gas & upstream activities
- **Increase in well complexity:** Additional use of mud engineering services needed due to rise in complexity for drilled wells

Catalyzing Supply Chains

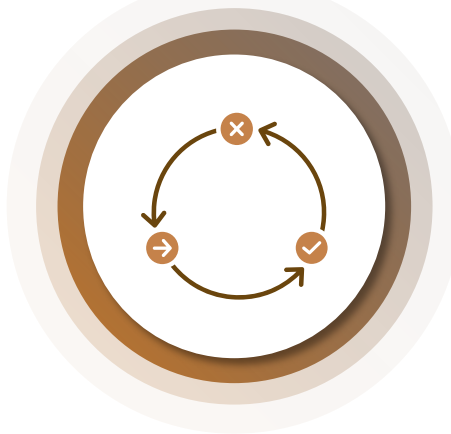
\$MM = USD Millions
Source: Aramco; Grandview; Press releases; Team analysis



Value chain and key localization opportunities



R&D



Lifecycle Mgmt.



Local saturation



Few players

Current KSA value chain



- Conduct mud engineering services R&D for local needs

Key success factors

Opportunity

Technology



Prototyping, testing equipment available

Labor



Chemical & Mechanical engineers, materials scientists available



Few players

- Deploy and deliver mud engineering services solutions and provide maintenance for existing installations

Opportunity

Field equipment available

Field engineers, technicians available

Catalyzing Supply Chains

Investment opportunity and enablers

Key enablers in KSA to drive success



Favorable utilities and labor pricing:
Favorable utilities and labor cost relative to major global manufacturing hubs



Special economic zone benefits:
Saudization, tax, and administrative benefits from producing goods in special economic zones (e.g., Ras al Khair)

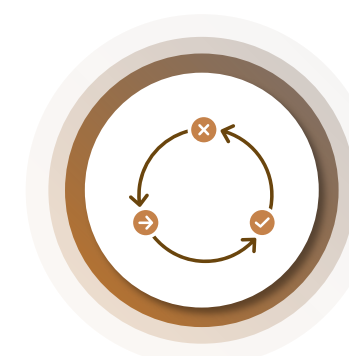


Tax exemptions on exports: Earnings tax exemptions on machined products manufactured in the KSA exported abroad

Where is the opportunity



R&D
Conduct mud engineering services R&D for local needs



Lifecycle Management
Deploy and deliver mud engineering services solutions and provide maintenance for existing installations

Artificial Lift Systems

Jawad Al Zayer

Opportunity profile – Artificial Lift Systems (AL Systems)

1

KSA in high need of AL Systems to realize ongoing O&G expansion

Key equipment category



Electric Submersible Pumps (ESP)

2

AL Systems are a growing market, KSA has the largest regional share

150

Estimated 2024 KSA market size (\$MM)

4%

Forecasted 5-year CAGR

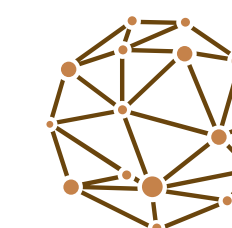
3

Attractive investment opportunities for the AL Systems value chain

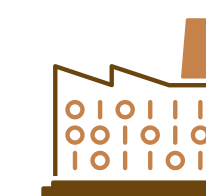
KSA value chain opportunities



R&D



Ecosystem
Mfg.



OEM
Mfg.

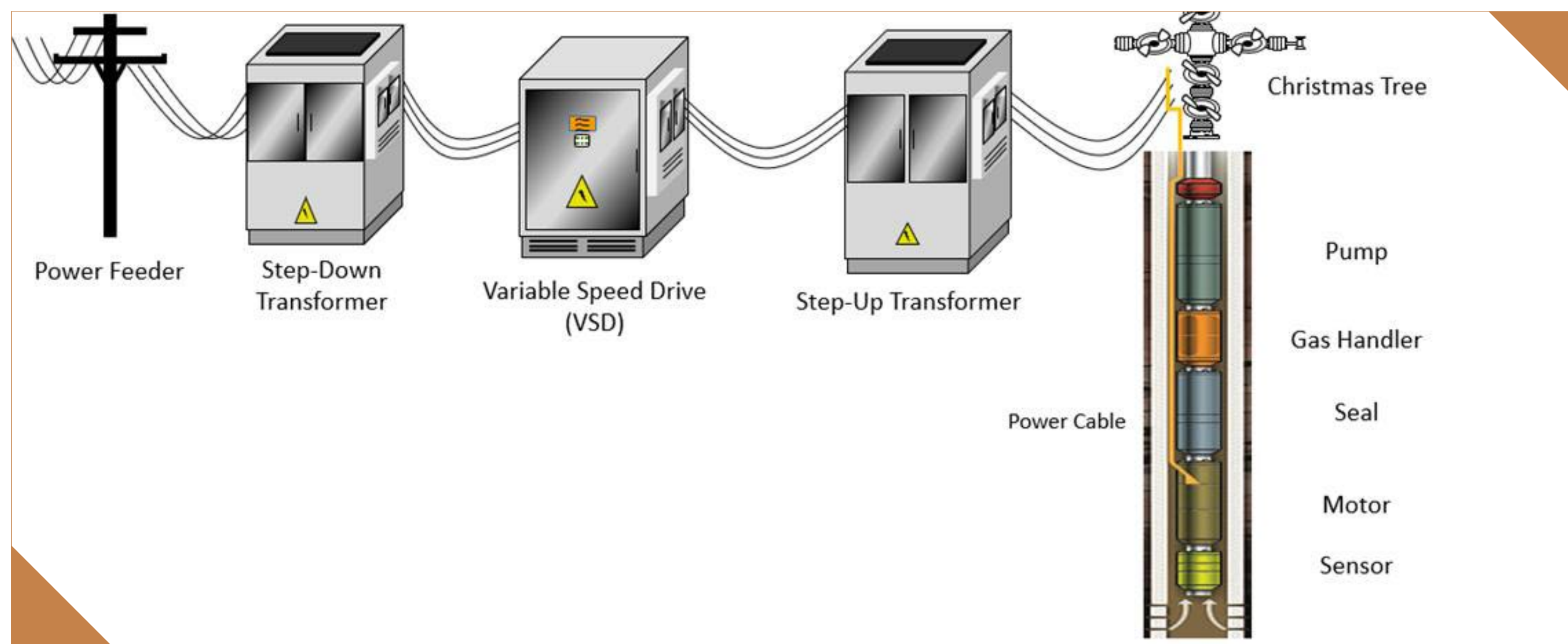
KSA enablers

- Financing available (SIDF)
- Competitive taxes
- Benefits in industrial parks with OSS services access, Saudization waivers
- Skilled labor for component manufacturing from SADA

Catalyzing Supply Chains

Artificial Lift Systems Technical Overview

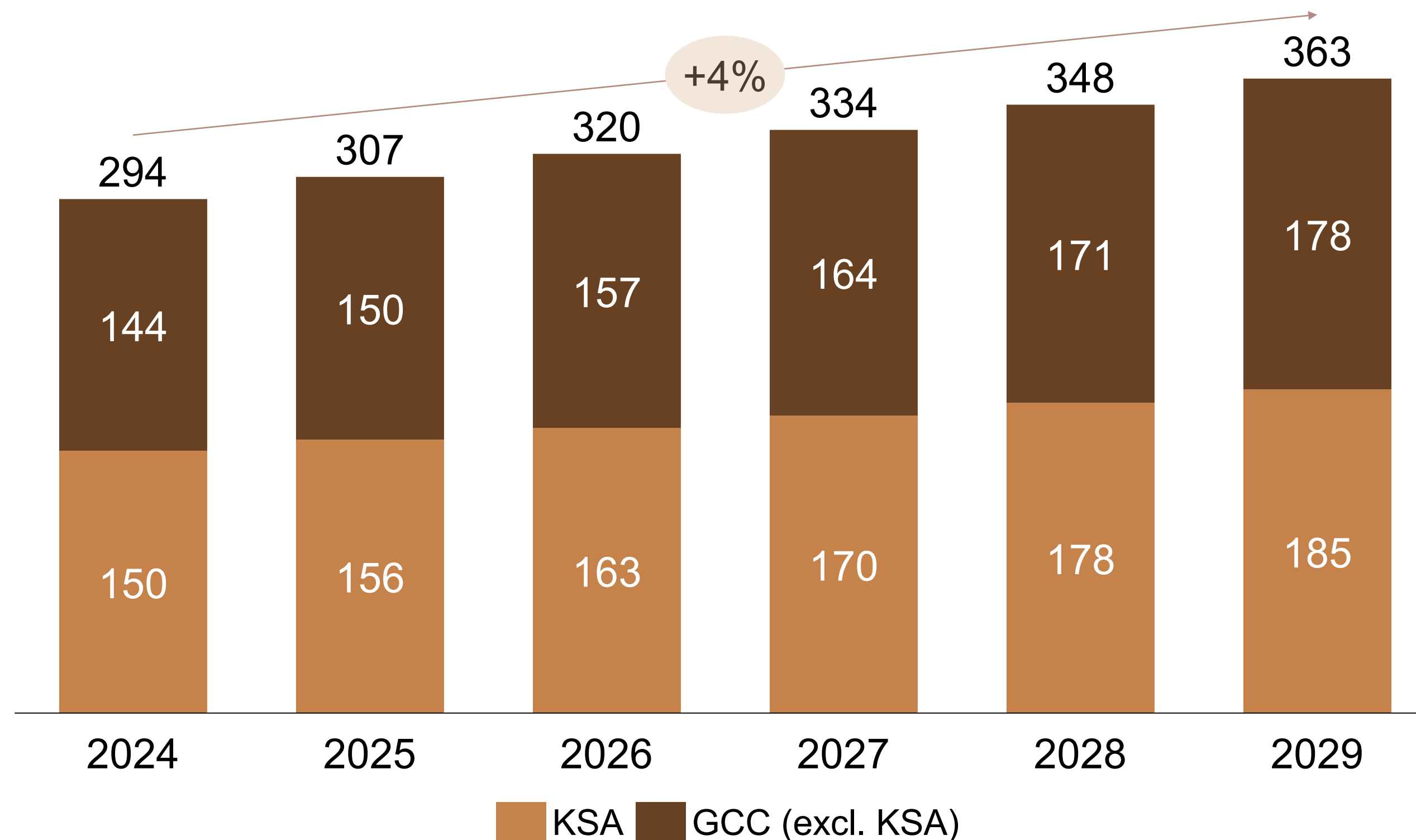
Electric Submersible Pumps



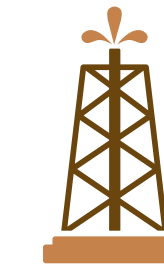
- AL systems supplement reservoir natural drive
- ESP systems are most commonly used AL systems

Artificial Lift Systems demand, customers, and drivers

Forecasted KSA and rest of GCC AL Systems market 2024-2029 (\$MM)



Typical AL Systems customers in KSA



Oil producers

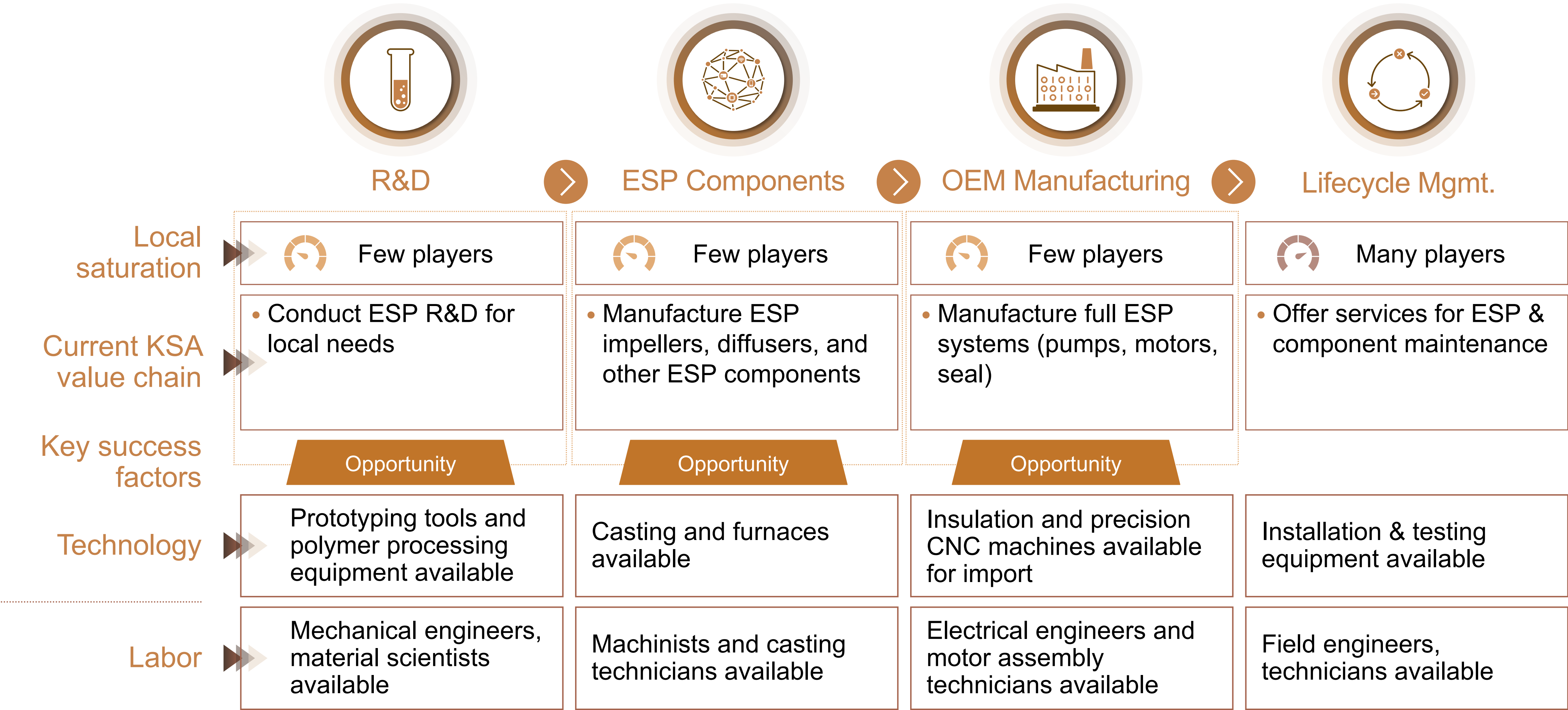
Key KSA demand drivers

- **Rise in gas & upstream activities:** Rise in upstream activities require further use of AL systems
- **Increasing O&G recovery efforts from mature fields:** mature fields requires AL systems to improve production

Catalyzing Supply Chains

Note: \$MM = USD Millions
Source: Aramco; TechSci Research; Press releases; Team analysis

Value chain and key localization opportunities



Catalyzing Supply Chains

Note: ESP = Electric submersible pumps; CNC = Computer Numerical Control
Source: Aramco; TechSci Research; Press releases; Team analysis

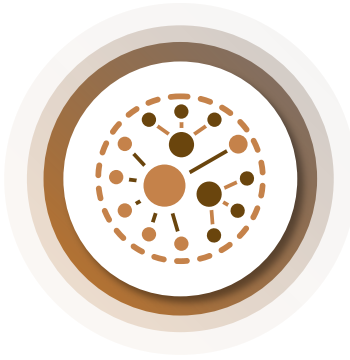


Investment opportunity and enablers

Key enablers in KSA to drive success



Accelerated approvals and licensing: MISA fast-track for licensing and permits streamlines procedural processes (incl. full capital repatriation)



Ecosystem enablement in SPARK: Access to wide ecosystem of energy players incl. integrated “one-stop shop” service platform



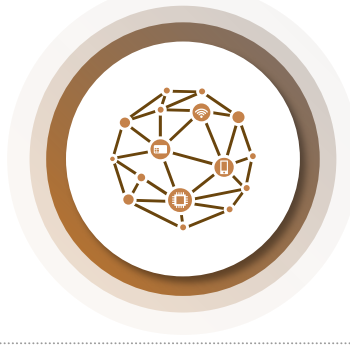
Tax exemptions on exports: Earnings tax exemptions on AL systems manufactured in the KSA exported abroad



Where is the opportunity



R&D
Conduct ESP R&D for local needs



Supplier & Ecosystem Manufacturing
Manufacture ESP impellers, diffusers, and other ESP components



OEM Manufacturing
Manufacture ESP systems

Catalyzing Supply Chains

Note: MISA = Ministry of Investment Saudi Arabia; SPARK = King Salman Energy Park; ESP = Electronic Submersible Pumps
Source: Aramco; TechSci Research; Press releases; Team analysis

Opportunity profile – Artificial Lift Systems (AL Cable)

1

KSA in high need of AL Cable to realize ongoing O&G expansion

Key categories



Motor
Winding



Downhole
Power Cable

2

AL Cable is a growing material subset of overall AL Systems market

6

Estimated 2024 KSA market size (\$MM)

4%

Forecasted 5-year CAGR

3

Clear enablers to support AL cable manufacturing

KSA enablers

- Financing available (SIDF)
- Competitive taxes
- Benefits in industrial parks with OSS services access, Saudization waivers
- Skilled labor for component manufacturing from SADA

Catalyzing Supply Chains

Note: \$MM = USD Millions; SIDF = Saudi Industrial Development Fund
Source: Aramco; Industry data; Press releases; Team analysis

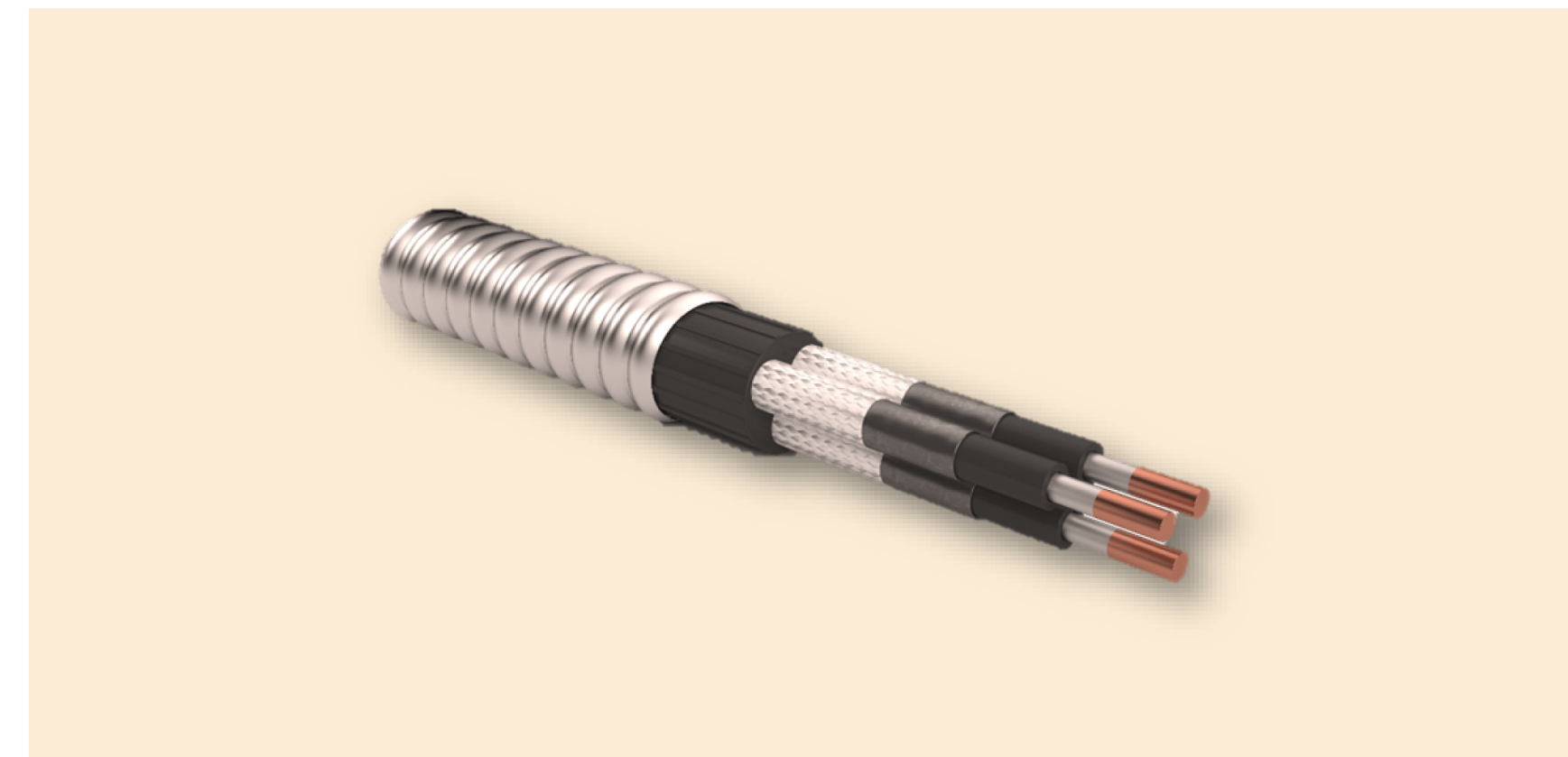
Potential AL Cable Localized Categories

Motor Winding



- Standard Motors
- PMM
- Slim ESPs

Downhole Power Cable

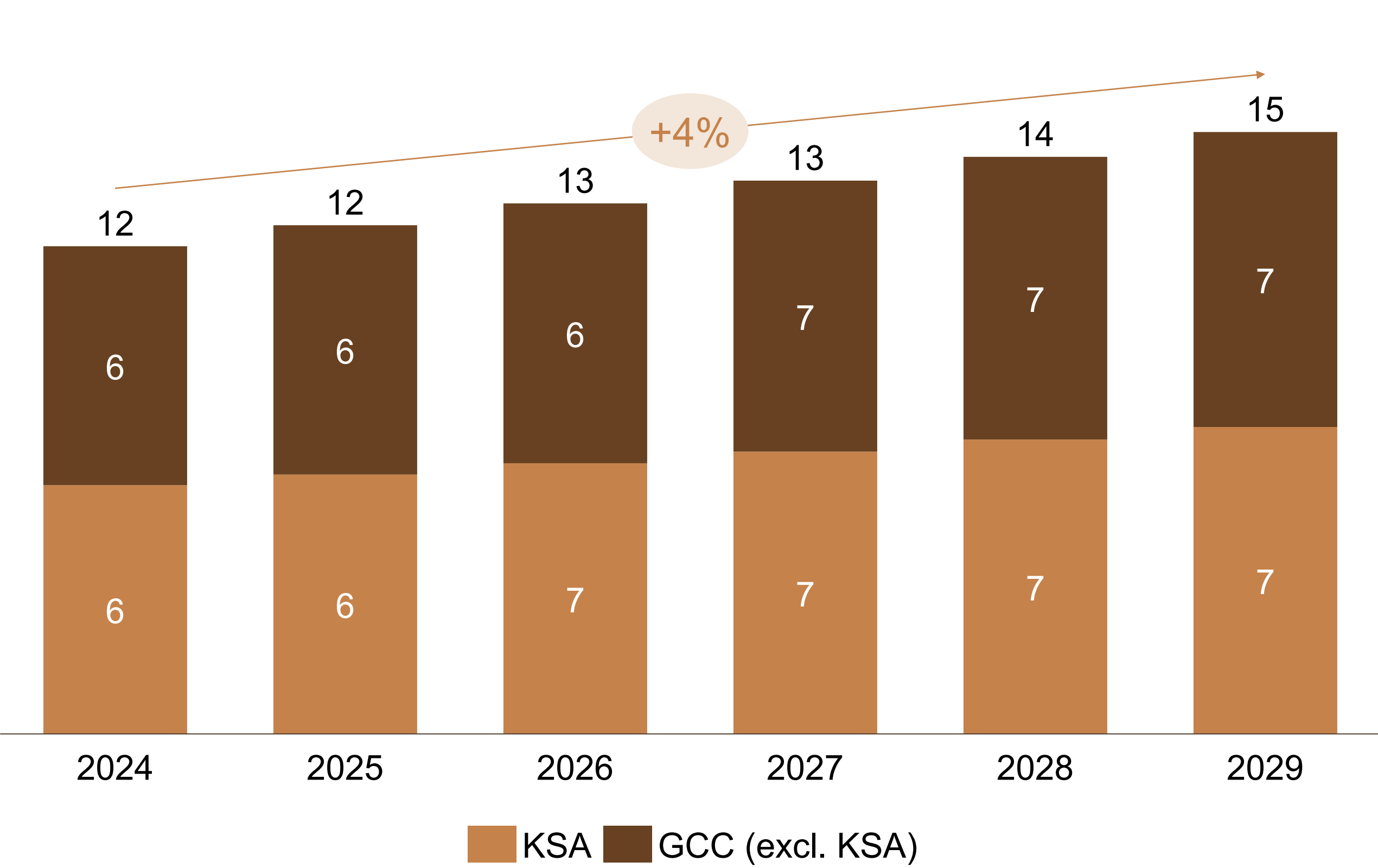


- Standard Cable
- Round Cable
- Flat Cable
- Monel Armor



AL Cable demand, customers, and drivers

Forecasted KSA and rest of GCC AL Cable market 2024-2029 (\$MM)



AL Cable customers in KSA

- Oil producers
- Gas producers
- ESP providers

Key KSA demand drivers

- Rise in upstream activity and growth in gas production:** Bolstered upstream and gas production activities require additional AL Cable implementations
- Completions complexity increase:** Boost in complex well completions increases need for AL Cable to preserve formations and maximize productivity

Catalyzing Supply Chains

Note: \$MM = USD Millions
Source: Aramco; Industry data; Press releases; Team analysis

Please direct Business Opportunities inquiries below:



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Email: local-content@Aramco.com