

Drilling

*Downhole Completions & Supply Chain
Ecosystem 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.

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.

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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
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Business Opportunities

12 Sectors	210 Business Opportunities	\$28 bn Annual Market Size
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Anchor Projects

 IMI	 SPARK	 Tuwaiq
6 Anchor projects		

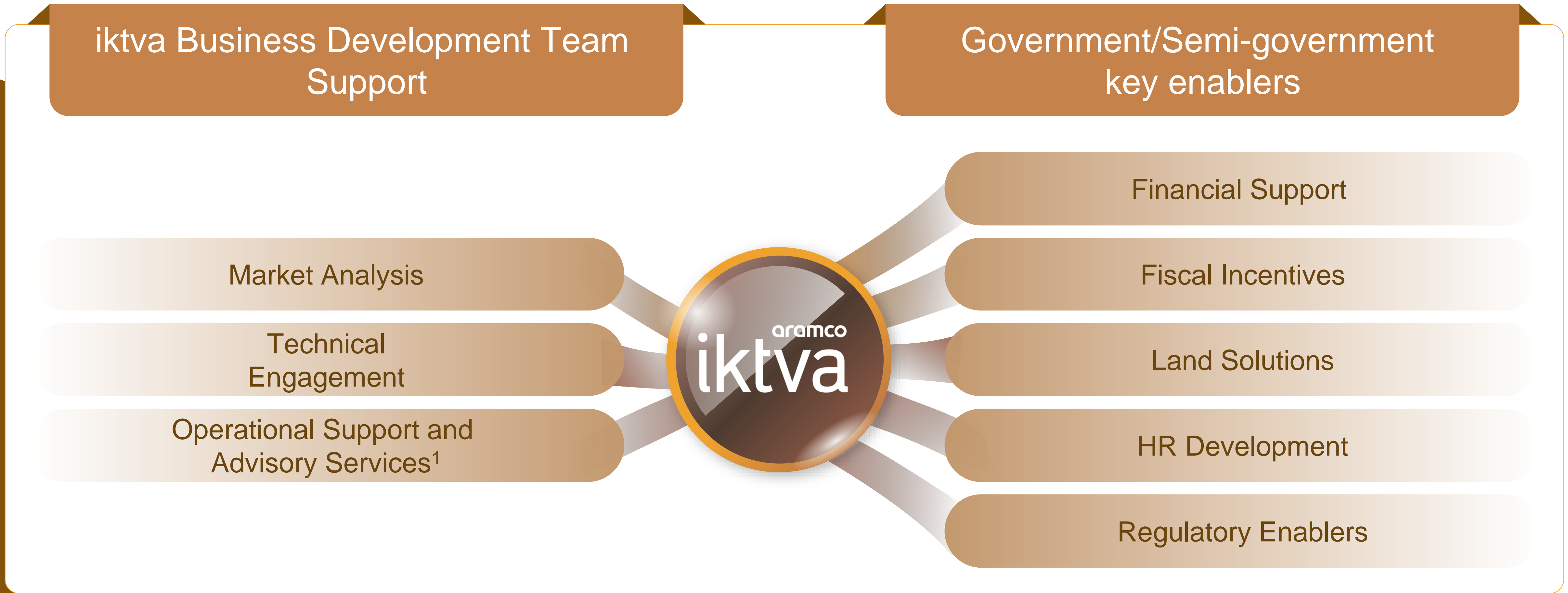


Local Workforce Development

16 National Training Centers	90+ Programs
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Catalyzing Supply Chains

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



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.

Downhole Market Overview

KSA downhole market snapshot



2024 KSA market size for opportunities
in today's workshop

Six opportunities to be discussed today

- 1 Intelligent Well Completions (IWCs)
- 2 Multilateral Completions
- 3 Subsurface Safety Valves (SSSVs)
- 4 Packers
- 5 Liner Hangers
- 6 PDC Cutters

Intelligent Well Completions (IWCs)

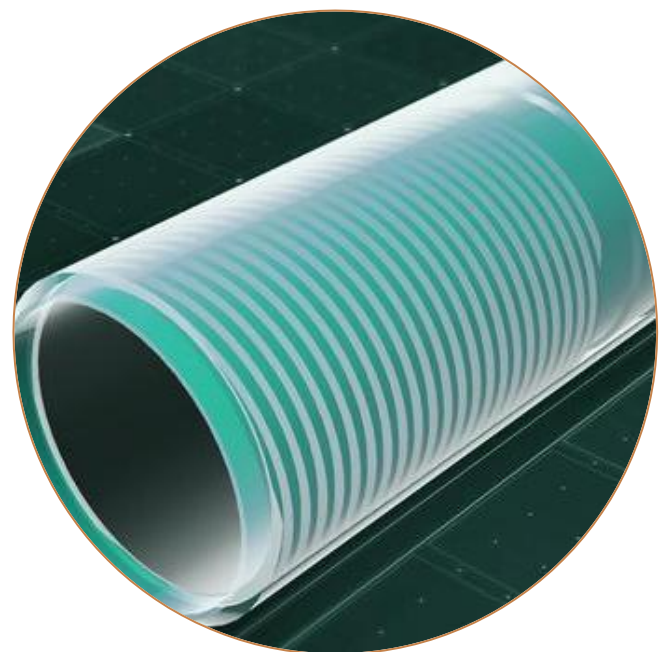
Saud Shaheen

Opportunity profile – Intelligent Well Completions (IWCs)

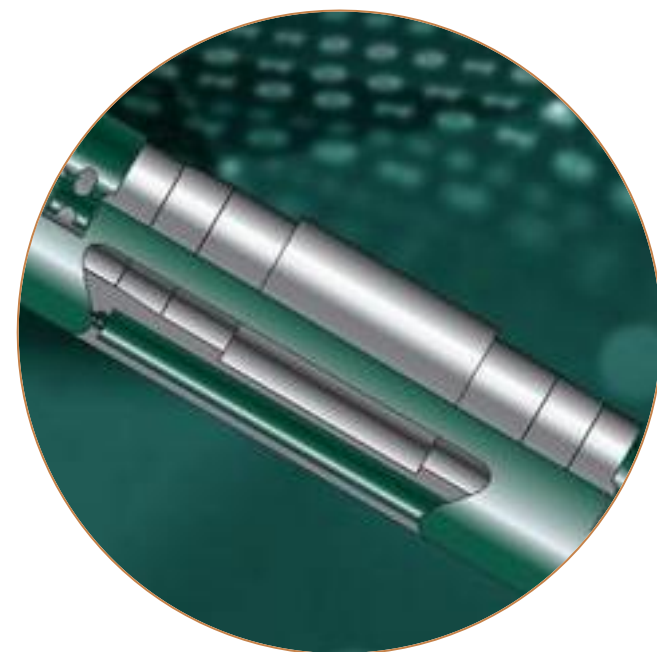
1

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

Key components¹



Inflow Control Valve (ICV)



Permanent Downhole Monitoring System (PDHMS)

2

IWC is a growing market and KSA has the largest regional share

217

Estimated 2024 KSA market size (\$MM)

6%

Forecasted 5-year CAGR

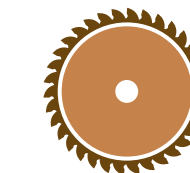
3

Attractive investment opportunities for the IWC value chain

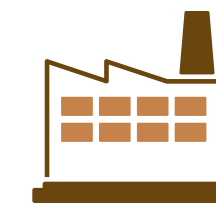
KSA value chain opportunities



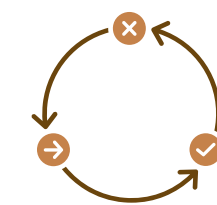
R&D



Precision Machining



OEM Mfg.



Lifecycle Mgmt.

KSA enablers

- Preference for local manufacturing aligned with local content goals
- Available financing (SIDF)
- Established industrial parks with access to labor & utilities
- Competitive taxes

Catalyzing Supply Chains

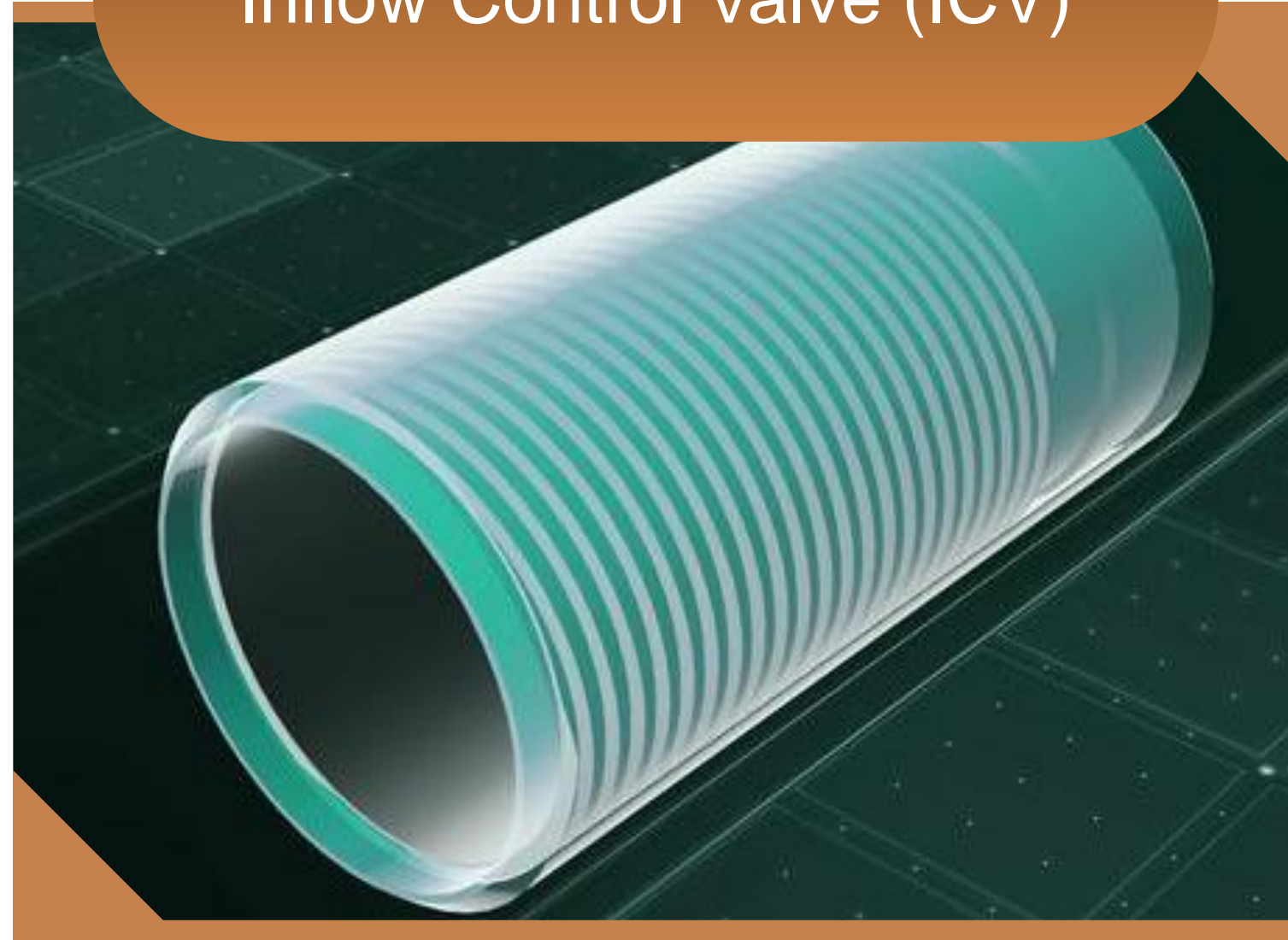
1. Other complementary components covered under potential localized components on next slide

Note: \$MM = USD Millions; SIDF = Saudi Industrial Development Fund

Source: Aramco; TechNavio; Team analysis

Intelligent Well Completions technical overview

Inflow Control Valve (ICV)



- Remotely operated downhole valves
- Used to control flow into or out of an isolated reservoir

Permanent Downhole Monitoring System (PDHMS)



- Downhole sensor to measure downhole temperature and pressure

Additional supporting components

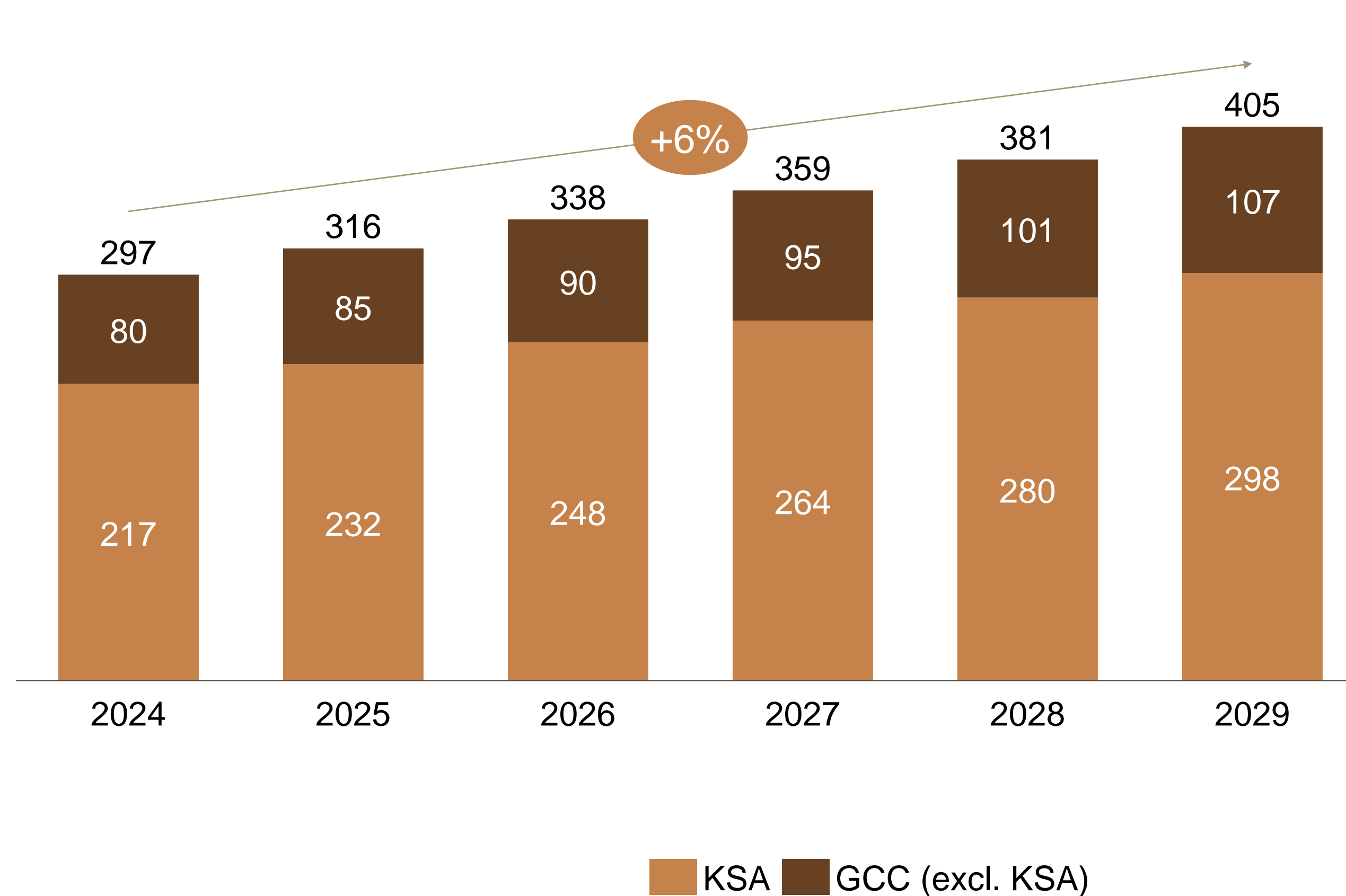
- 1 Feed-through packers
- 2 Hydraulic control unit
- 3 Control lines
- 4 Surface acquisition unit

Catalyzing Supply Chains

Aramco material number: 1. 6000010708, 2. 6000013641, 3. 6000010702, 4. 6000010703, 5. 6000010704, 6. 6000010706, 7. 6000010707, 8. 6000010710, 9. 6000015596, 10. 6000010705, 11. 6000010709, 12. 6000010700, 13. 6000015787, 14. 6000010701
Source: Aramco; TechNavio; Team analysis

IWC demand, customers, and drivers

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



Typical IWC customers in KSA



Oil producers



Gas producers

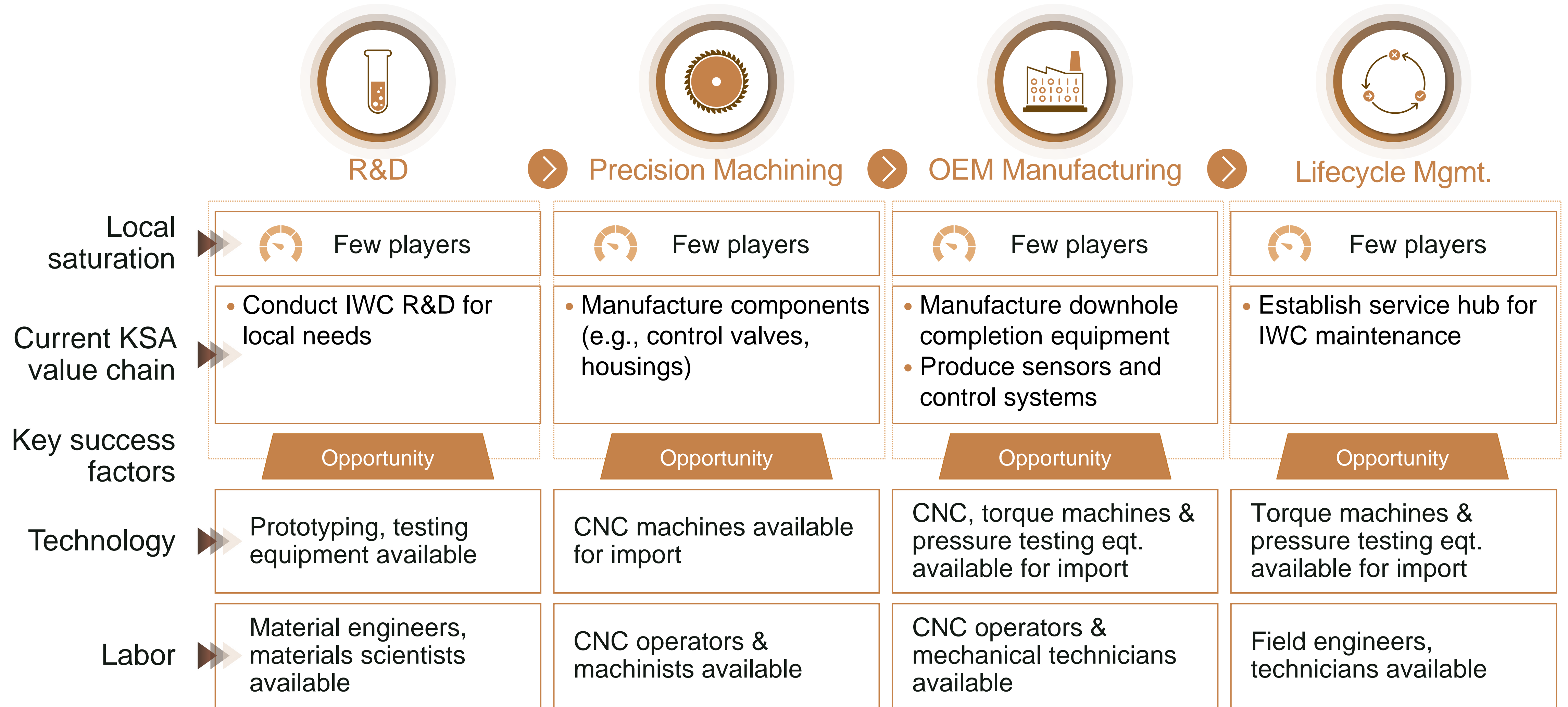
Key KSA demand drivers

- **Rise in upstream activity and growth in gas production:** Bolstered upstream and gas production activities require additional IWC components
- **Completions complexity increase:** Boost in complex well completions increases need for IWCs (specifically ICVs) for zonal isolation and selective production control

Catalyzing Supply Chains

Note: IWC = Intelligent Well Completion; Inflow Control Valve
Source: Aramco; TechNavio; Team analysis

Value chain and key localization opportunities



Catalyzing Supply Chains

Note: HPHT = High Pressure High Temperature; CNC = Computer Numerical Control
Source: Aramco; Mordor Intelligence; Expert inputs; Team analysis

Multilateral Completions

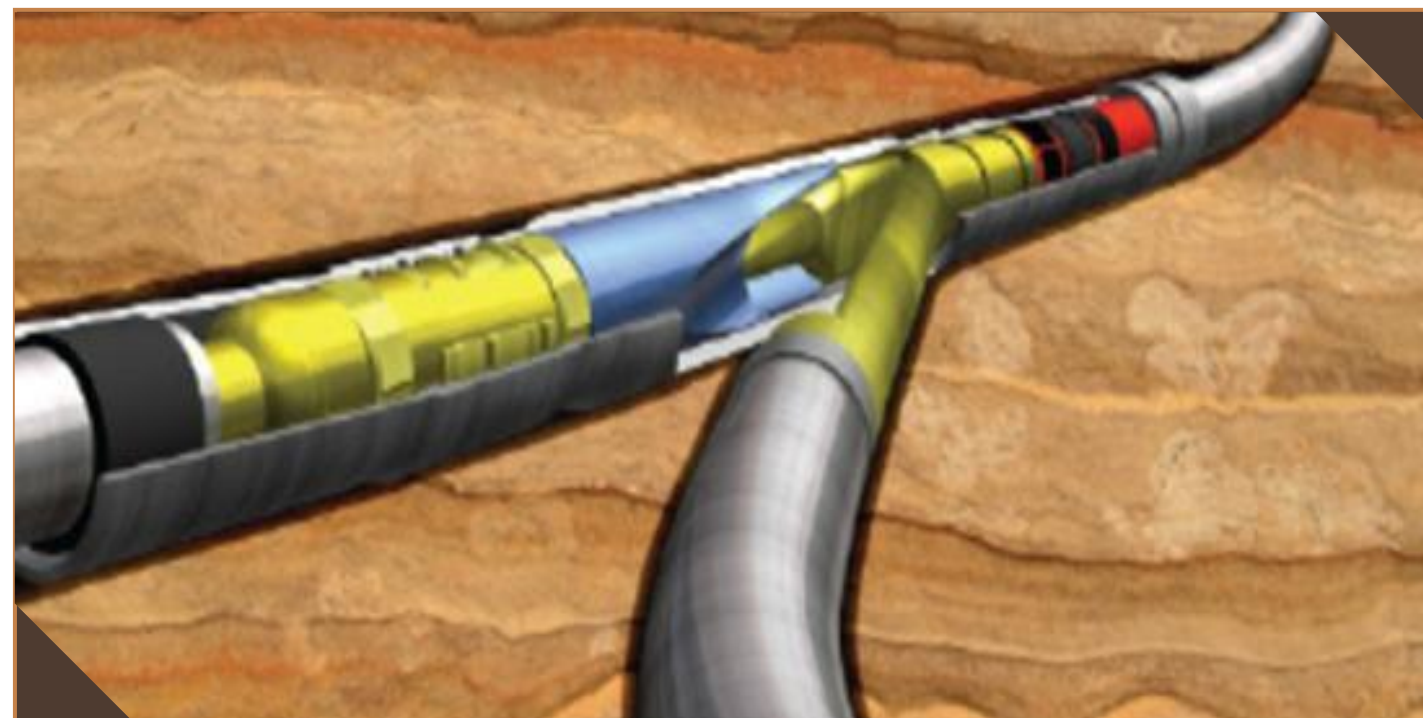
Saud Shaheen

Opportunity profile – Multilateral Completions (MLT)

1

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

Key categories



- Whipstock & Mill
- Selective Diverter
- ML Packer

2

MLTs are a growing market, KSA has the largest regional share

15

Estimated 2024 KSA market size (\$MM)

5%

Forecasted 5-year CAGR

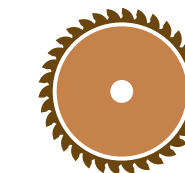
3

Attractive investment opportunities for the MLT value chain

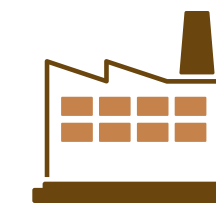
KSA value chain opportunities



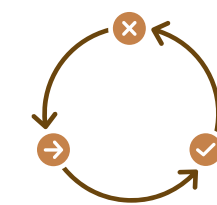
R&D



Precision
Machining



OEM
Mfg.



Lifecycle
Mgmt.

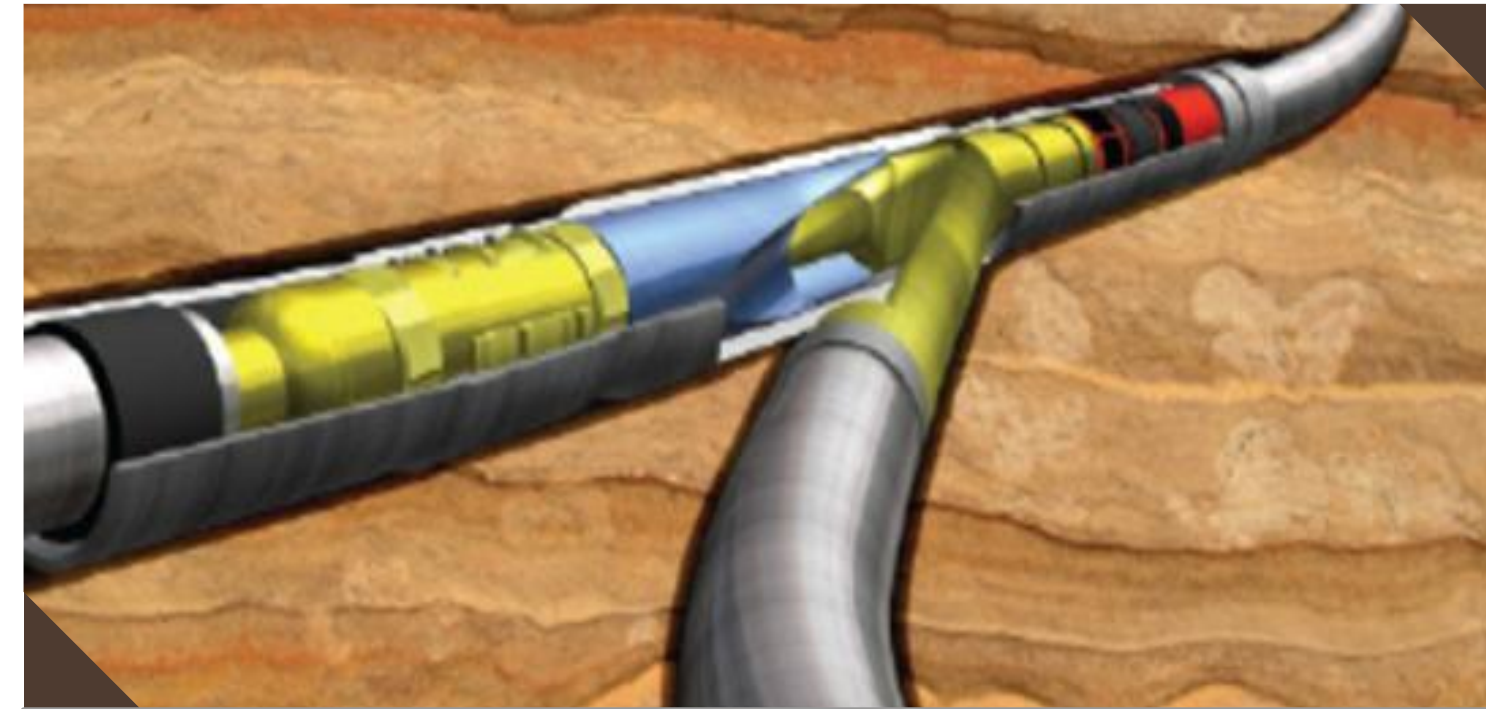
KSA enablers

- Preference for local manufacturing aligned with local content goals
- Available financing (SIDF)
- Established industrial parks with access to labor & utilities
- Competitive taxes

Catalyzing Supply Chains

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

Multilateral Completions technical overview



Whipstocks & Mills

- Sidetracking tool used to deviate drill bit from vertical orientation inside the wellbore

Selective Diverter

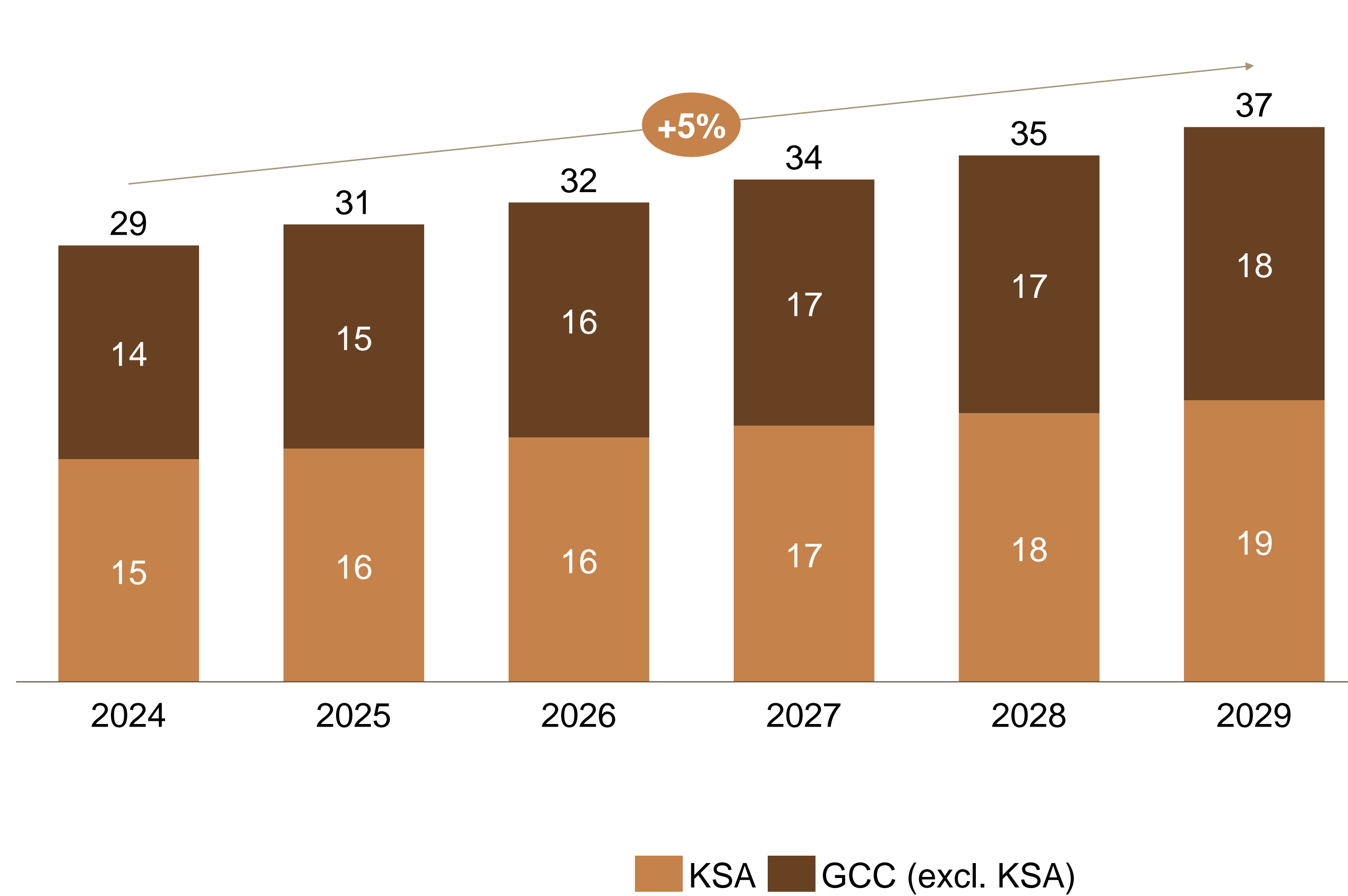
- Machined tools to allow access to lateral or motherbore based on ODs

ML Packers

- Special packers to allow separate flow and isolate junction

Multilateral Completions demand, customers, and drivers

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



Typical MLT customers in KSA



Oil producers

Key KSA demand drivers

- **Rise in upstream activity and growth in gas production:** Bolstered upstream and gas production activities require additional MLT systems
- **Increasing O&G recovery efforts from mature fields:** Creation of additional channels for mature fields requires use of MLT systems

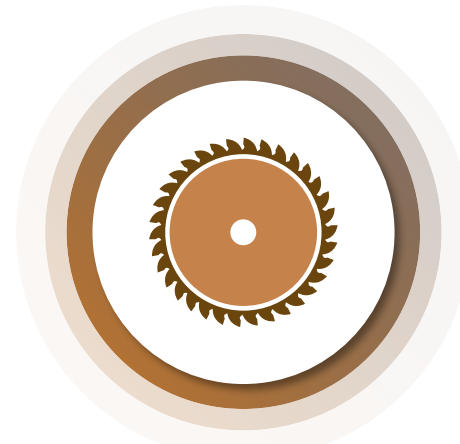
Catalyzing Supply Chains

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

Value chain and key localization opportunities



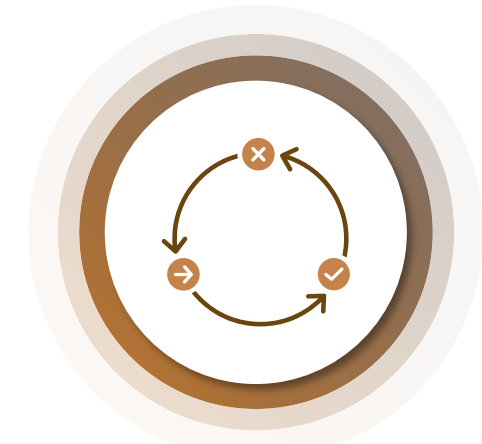
R&D



Precision Machining



OEM Manufacturing



Lifecycle Mgmt.

Local saturation	Few players	Few players	Few players	Few players
Current KSA value chain	<ul style="list-style-type: none"> Conduct MLT R&D for local needs 	<ul style="list-style-type: none"> Produce MLT components 	<ul style="list-style-type: none"> Manufacture MLT completion systems 	<ul style="list-style-type: none"> Establish service hub for MLT maintenance
Key success factors	Opportunity	Opportunity	Opportunity	Opportunity
Technology	Prototyping tools, testing equipment available	CNC machines available for import	5-axis CNC devices, EDM equipment available for import	Installation, surface data acquisition, and testing systems available
Labor	Mechanical engineers, material scientists available	CNC operators & machinists available	Machinists & hydraulic technicians available	Field service engineers, technicians available

Catalyzing Supply Chains

Note: VIM = Vacuum induction melting furnace; MLT = Multilateral Completion; CNC = Computer numerical control
Source: Aramco; Press releases; Mordor Intelligence; Team analysis

Subsurface Safety Valves (SSSVs)

Hani Al Yahya

Opportunity profile – Subsurface Safety Valves (SSSV)

1

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

2

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

3

Attractive investment opportunities for the SSSV value chain

Key categories



Tubing Retrieval SSSV



Wireline Retrieval SSSV

25

Estimated 2024 KSA market size (\$MM)

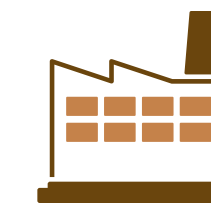
5%

Forecasted 5-year CAGR

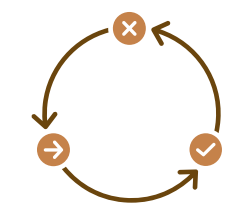
KSA value chain opportunities



R&D



OEM Mfg.



Lifecycle Mgmt.

KSA enablers

- Preference for local manufacturing aligned with local content goals
- Available financing (SIDF)
- Established industrial parks with access to labor & utilities
- Competitive taxes

Catalyzing Supply Chains

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

SSSV technical overview

Tubing Retrieval SSSV (TR-SSSV)



Wireline Retrieval SSSV (WR-SSSV)

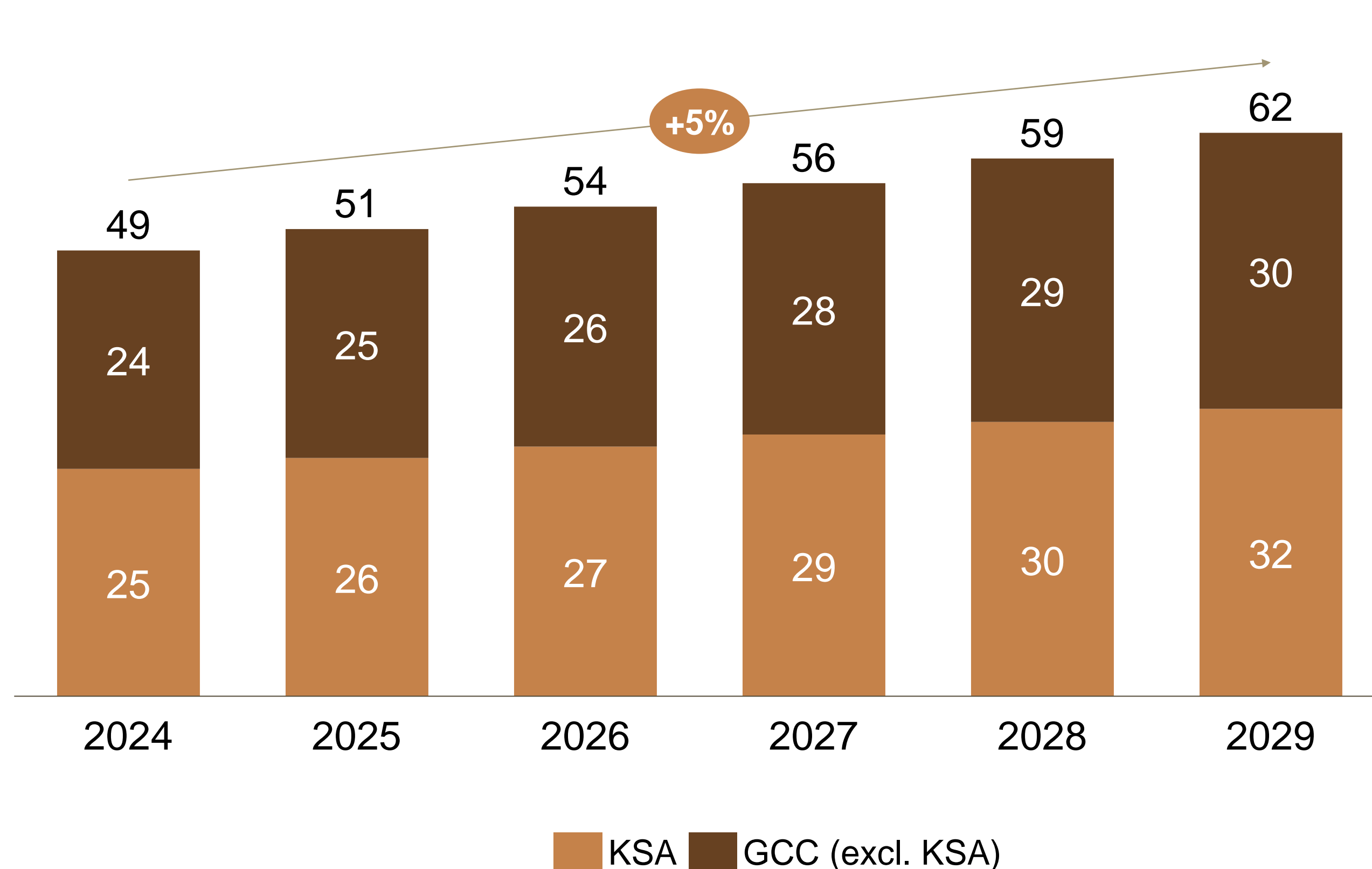


- Safety device installed in the upper wellbore to provide emergency production closure
- Designed to be failsafe such that wellbore is isolated in the event of any system failure or damage to surface production control facilities

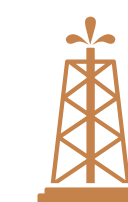
Catalyzing Supply Chains

SSSV demand, customers, and drivers

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



Typical SSSV customers in KSA



Oil producers



Gas producers

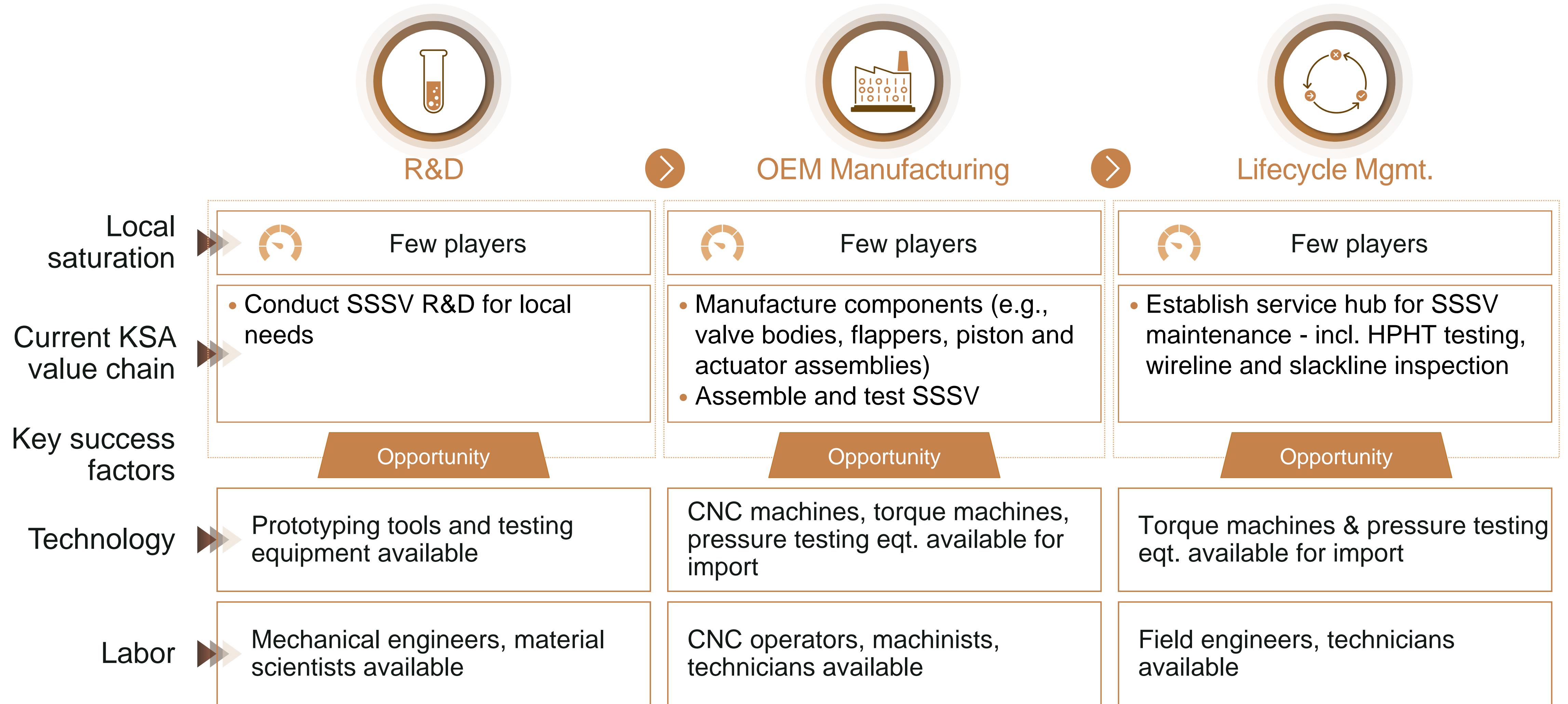
Key KSA demand drivers

- **Rise in upstream activity and growth in gas production:** Bolstered upstream and gas production activities require additional SSSV
- **Increase in critical areas drilling:** Rise in required SSSV installations due to increase in offshore and near populated area well drilling to reduce the safety and environmental impact of any potential incidents

Catalyzing Supply Chains

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

Value chain and key localization opportunities



Catalyzing Supply Chains

Note: CNC = Computer numerical control; SSSV = Subsurface Safety Valve; HPHT = High pressure high temperature; NDT = Non-Destructive Testing
Source: Aramco; Mordor Intelligence; Team analysis

Packers

Deema Alghuwainim

Opportunity profile – Packers

1

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

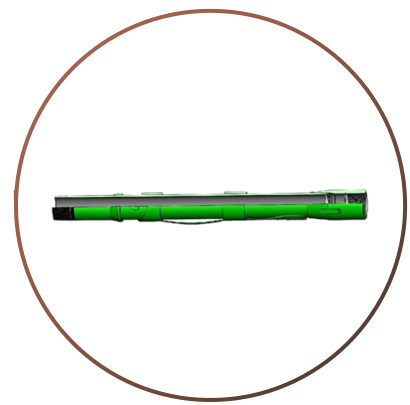
2

Packer market is growing, with KSA holding the largest regional share

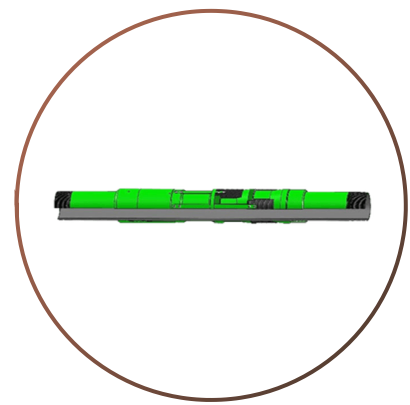
3

Attractive investment opportunities for the Packers value chain

Types



Mechanical set



Hydraulic set



Inflatable



Swellable

230

Estimated 2024 KSA market size (\$MM)

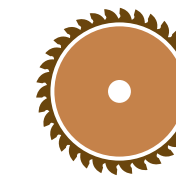
5%

Forecasted 5-year CAGR

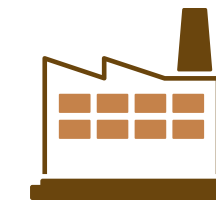
KSA value chain opportunities



R&D



Precision Machining



OEM Mfg.

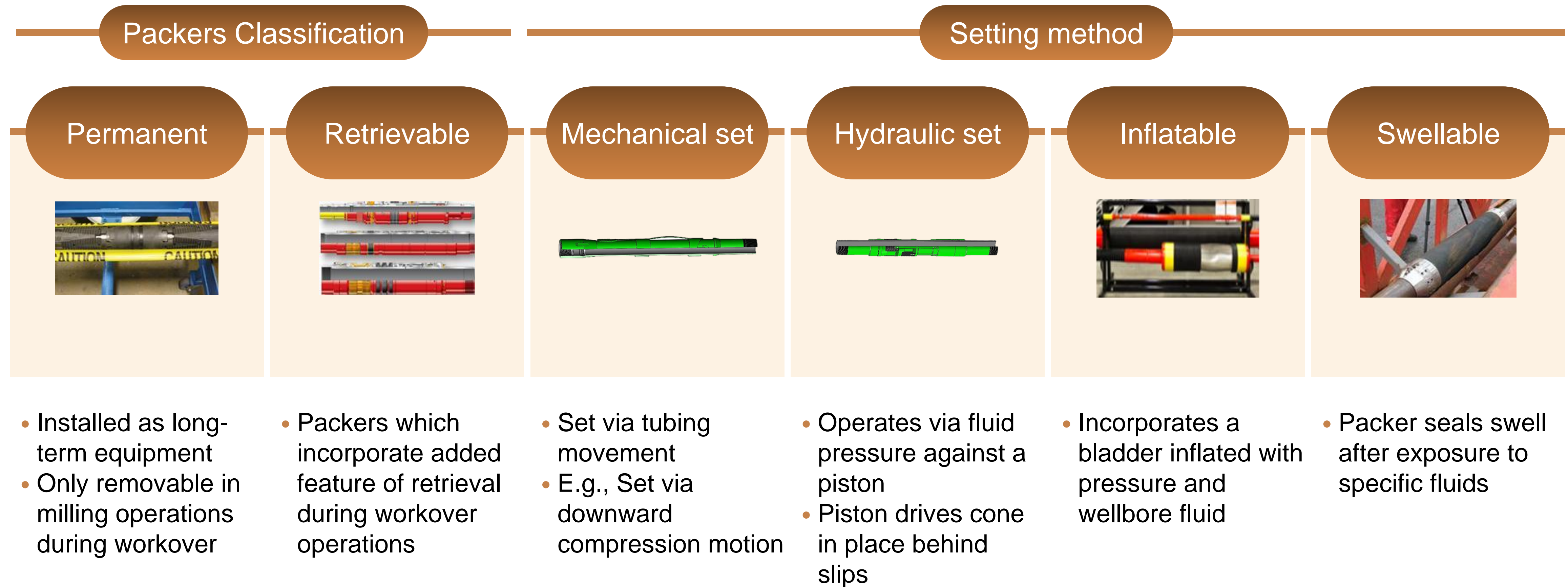
KSA enablers

- Preference for local manufacturing aligned with local content goals
- Available financing (SIDF)
- Established industrial parks with access to labor & utilities
- Competitive taxes

Catalyzing Supply Chains

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

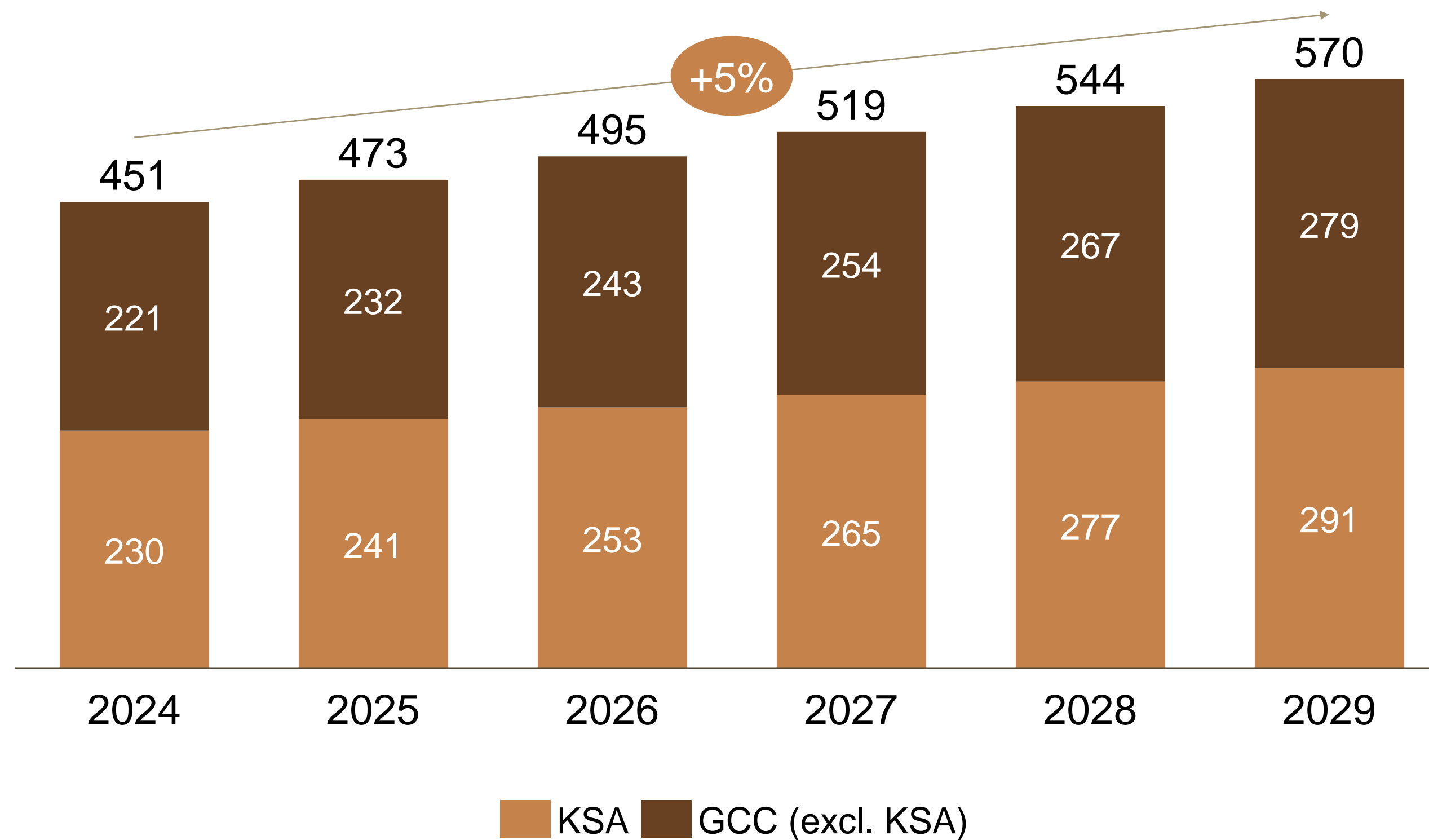
Packers technical overview



Catalyzing Supply Chains

Packers demand, customers, and drivers

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



Typical Packers customers in KSA



Oil producers



Gas producers

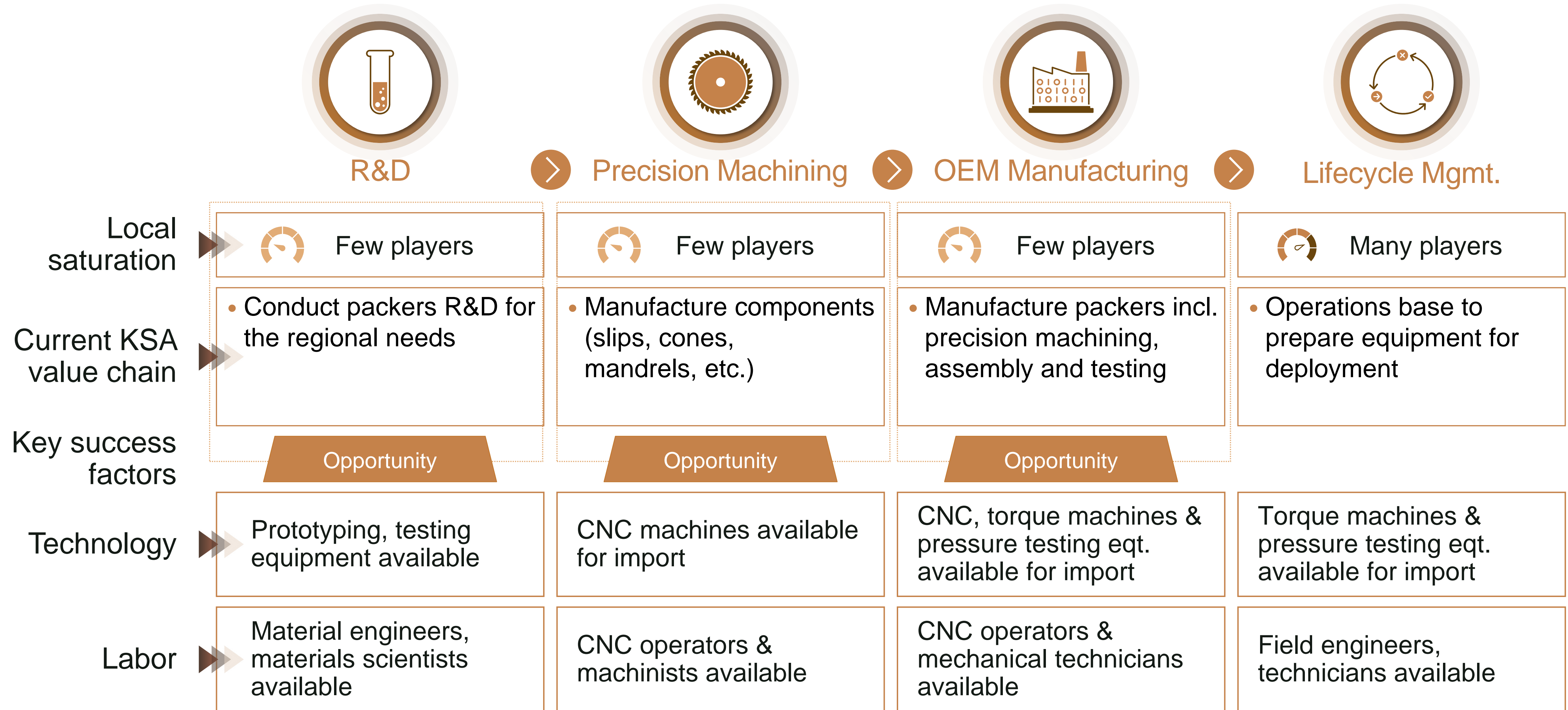
Key KSA demand drivers

- **Rise in upstream activity and growth in gas production:** Bolstered upstream and gas production activities require additional packers
- **Completions complexity increase:** Boost in complex well completions increases need for packers for zonal isolation and selective production control

Catalyzing Supply Chains

Note: \$MM = USD Millions
Source: Aramco; Mordor Intelligence; Expert inputs; Team analysis

Value chain and key localization opportunities



Catalyzing Supply Chains

Note: HPHT = High Pressure High Temperature; CNC = Computer Numerical Control
Source: Aramco; Mordor Intelligence; Expert inputs; Team analysis

Liner Hangers

Rayan Al Saber

Opportunity profile – Liner Hangers

1

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

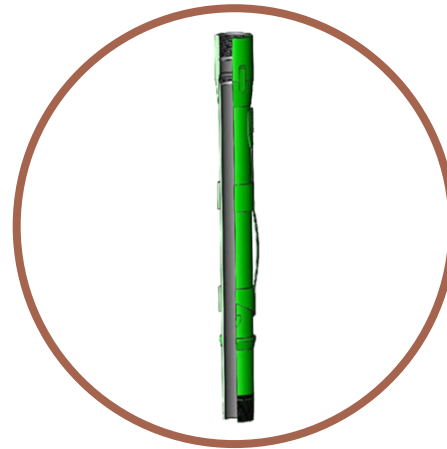
2

Liner hangers are a growing market, KSA has the largest regional share

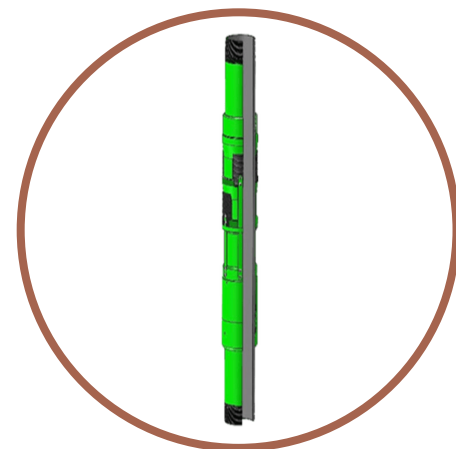
3

Attractive investment opportunities for the Liner Hanger value chain

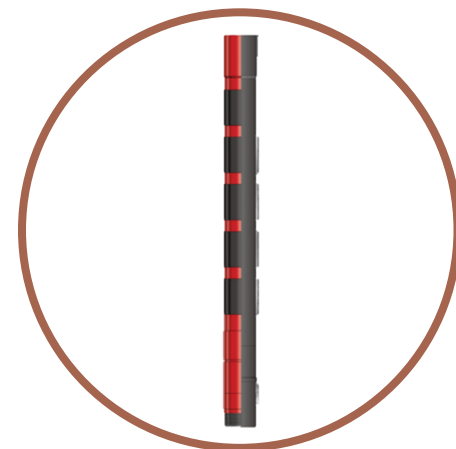
Types



Mechanical



Hydraulic



Expandable

192

Estimated 2024 KSA market size (\$MM)

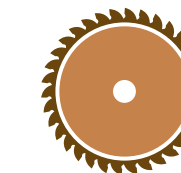
6%

Forecasted 5-year CAGR

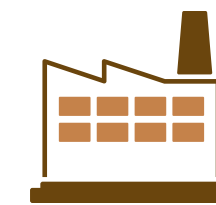
KSA value chain opportunities



R&D



Precision
Machining



OEM
Mfg.

KSA enablers

- Preference for local manufacturing aligned with local content goals
- Available financing (SIDF)
- Established industrial parks with access to labor & utilities
- Competitive taxes

Catalyzing Supply Chains

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

Liner Hanger technical overview

Mechanical



Hydraulic



Expandable



- Attaches to walls of the casing through mechanical mechanism
- Designed for use on vertical and low deviation wells

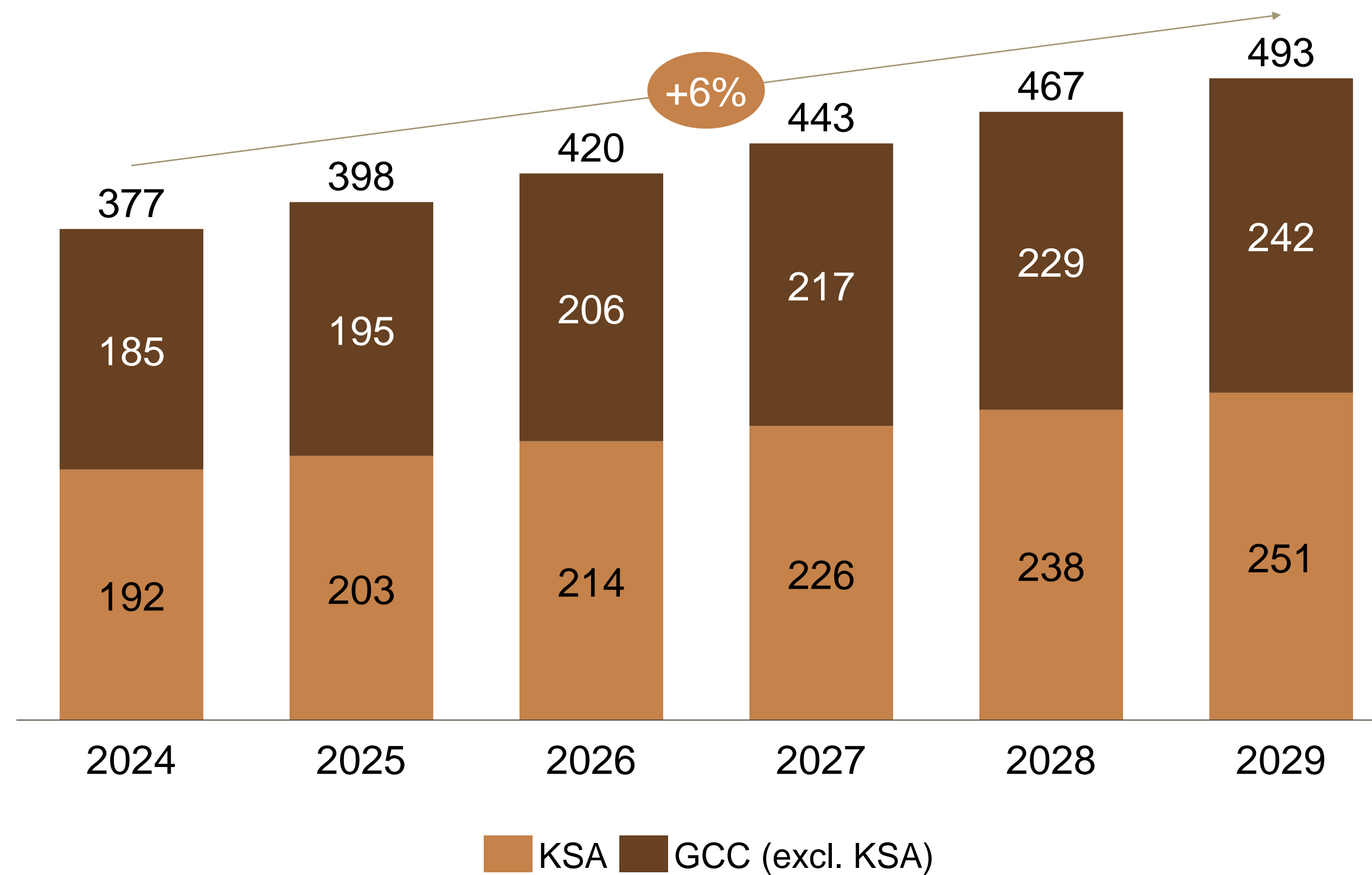
- Attaches to walls of casing through hydraulic pressure mechanism
- Used in offshore, deep onshore, and HPHT wells

- Attaches with bi-directional anchoring capabilities and bi-directional annular seal
- Offers higher tensile and compressive load capabilities for oil & gas wells
- Increased bypass area due to enlarged ID

Catalyzing Supply Chains

Liner Hanger demand, customers, and drivers

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



Typical Packers customers in KSA



Oil producers



Gas producers

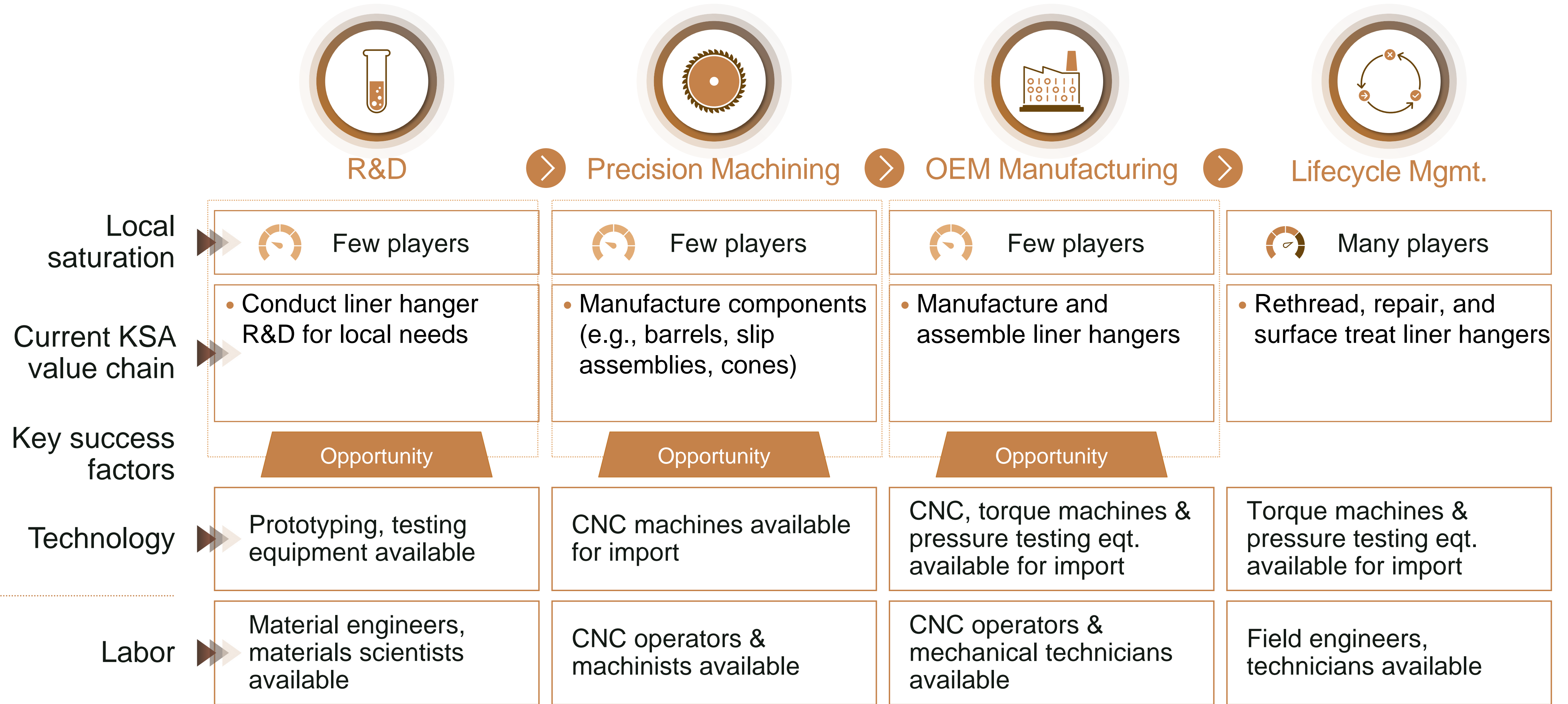
Key KSA demand drivers

- Rise in upstream activity and growth in gas production: Bolstered upstream and gas production activities require additional liner hangers
- Increased gas production for domestic consumption: Sour gas field developments require durable completions

Catalyzing Supply Chains

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

Value chain and key localization opportunities



Catalyzing Supply Chains

Note: HPHT = High Pressure High Temperature; CNC = Computer Numerical Control
Source: Aramco; Mordor Intelligence; Expert inputs; Team analysis

PDC Cutters

Mohammed Al Othman

Opportunity profile – PDC Cutters

1

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

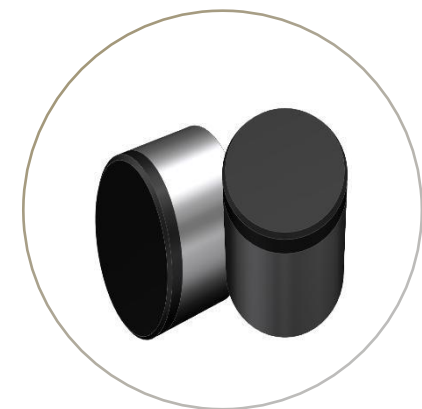
2

PDC Cutter is a growing market, KSA has the largest regional share

3

Attractive investment opportunities for the PDC Cutter value chain

Key types



Standard



Premium



Super Premium

45

Estimated 2024 KSA market size (\$MM)

4%

Forecasted 5-year CAGR

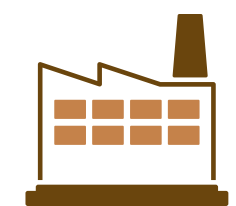
KSA value chain opportunities



R&D



Ecosystem Mfg.



OEM Mfg.

KSA enablers

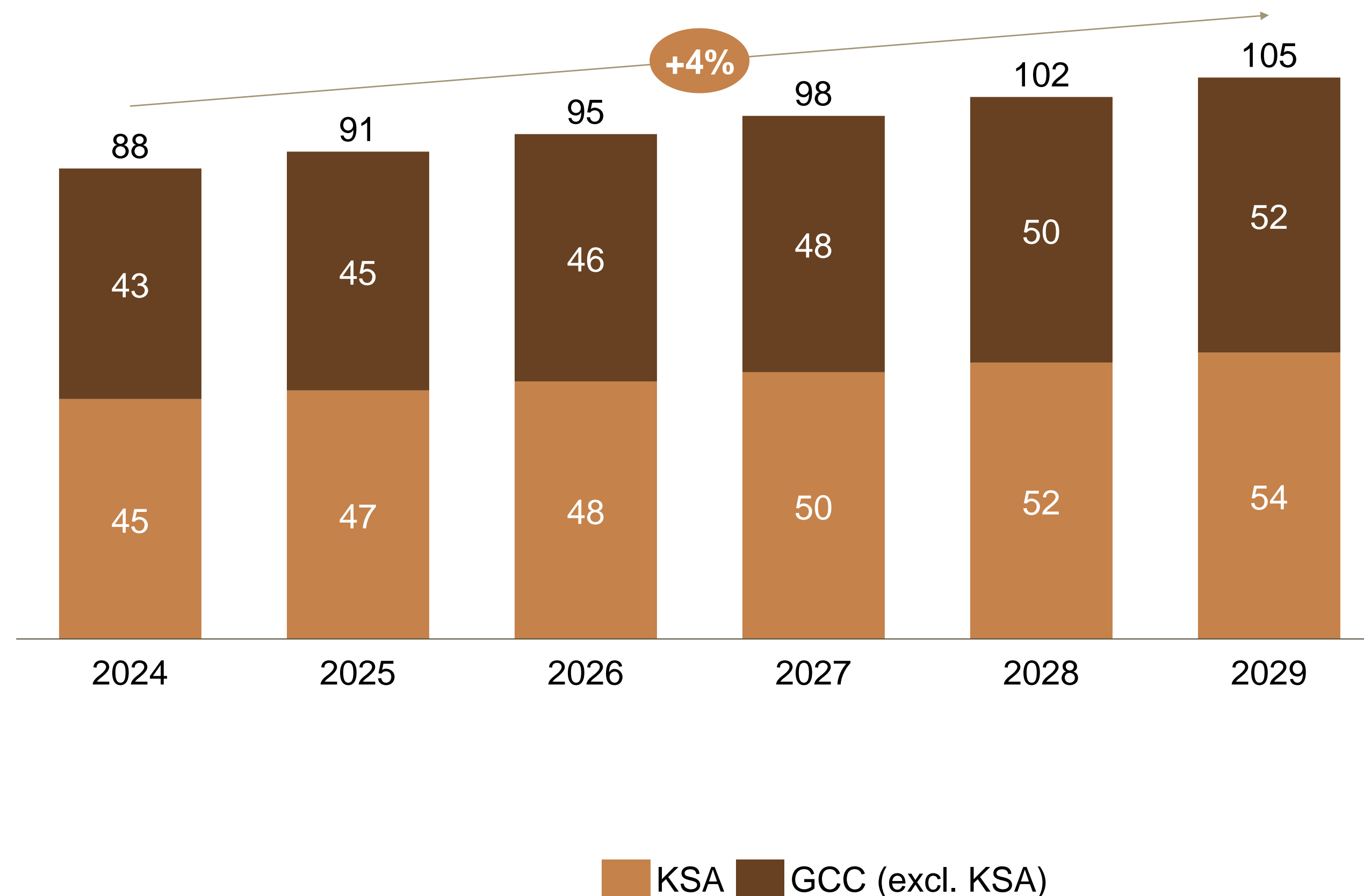
- Preference for local manufacturing supporting local content goals
- Available financing (SIDF)
- Benefits in industrial parks
- Competitive taxes

Catalyzing Supply Chains

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

PDC Cutters demand, customers, and drivers

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



Typical PDC Cutter customers



Drill Bit Manufacturers

Key KSA demand drivers

- Rise in oil, gas & upstream activities: Increase drilling and workover activities requires further use of drilling bits and downhole tools.

Catalyzing Supply Chains

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

Value chain and key localization opportunities



Catalyzing Supply Chains

Note: HFI = High-frequency induction; NDT = Non-Destructive Testing
Source: Aramco; Grandview; Press releases; Team analysis

Workshop Agenda

No.	Title of the Investment Opportunity	Presenter
-	Introduction	Brian Stolz
1	Intelligent Well Completions (IWCs)	Saud Shaheen
2	Multilateral Completions	Saud Shaheen
3	Subsurface Safety Valves (SSSVs)	Hani Al Yahya
4	Packers	Deema Al Ghuwainim
5	Liner Hangers	Rayan Al Saber
6	PDC Cutters	Mohammed Al Othman
7	Closing remarks	Brian Stolz