

أرامكو السعودية
saudi aramco



Investment Opportunities in Drilling and Workover

where energy is opportunity™

Agenda

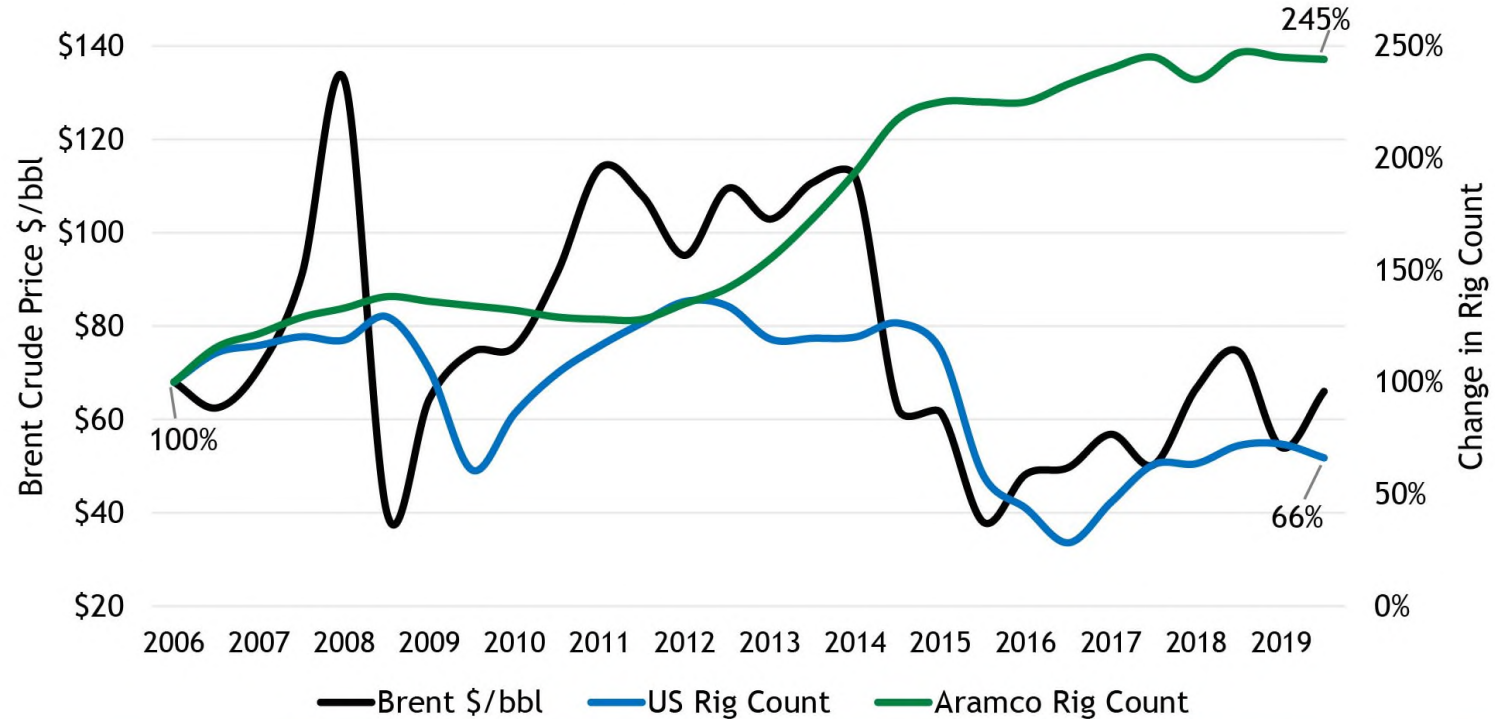
1. Business Stability
2. Evolving Operations
3. Investment Opportunities

Business Stability

1

Business Stability

- Robust and stable business environment in response to macroeconomic volatility



Evolving Operations

2

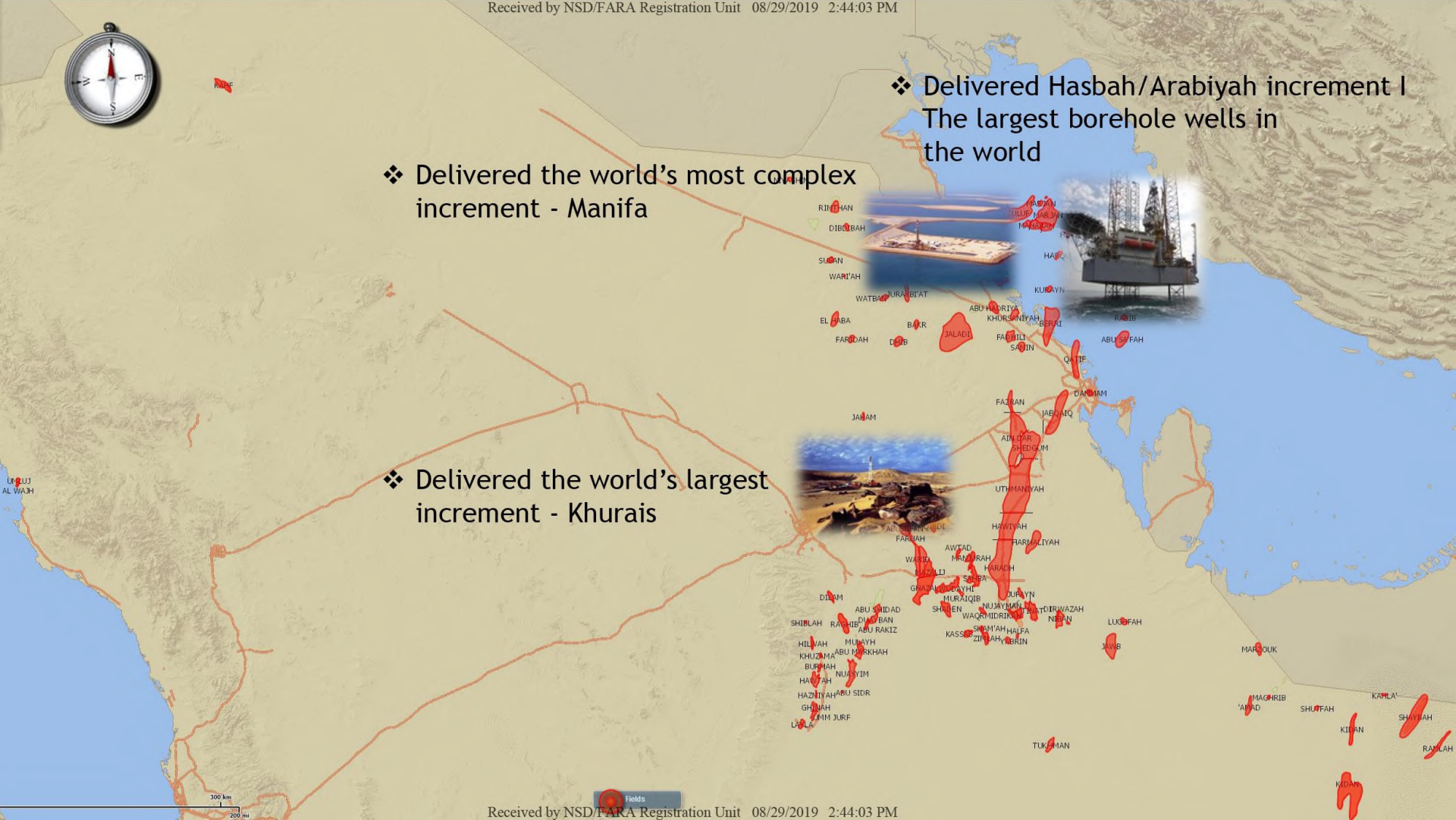


❖ Delivered Hasbah/Arabiyyah increment I
The largest borehole wells in the world

❖ Delivered the world's most complex increment - Manifa



❖ Delivered the world's largest increment - Khurais



Total Footage Drilled 2006-2019

Beijing

Washington
DC

Over 94,090,551 feet
29,611 KM

Evolving in Scale, Complexity, and Diversity

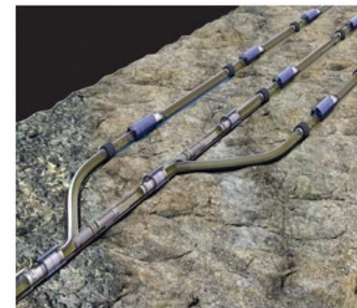
2007 Wells Delivery

- Primarily vertical oil wells
- Limited gas operations
- Conventional completions

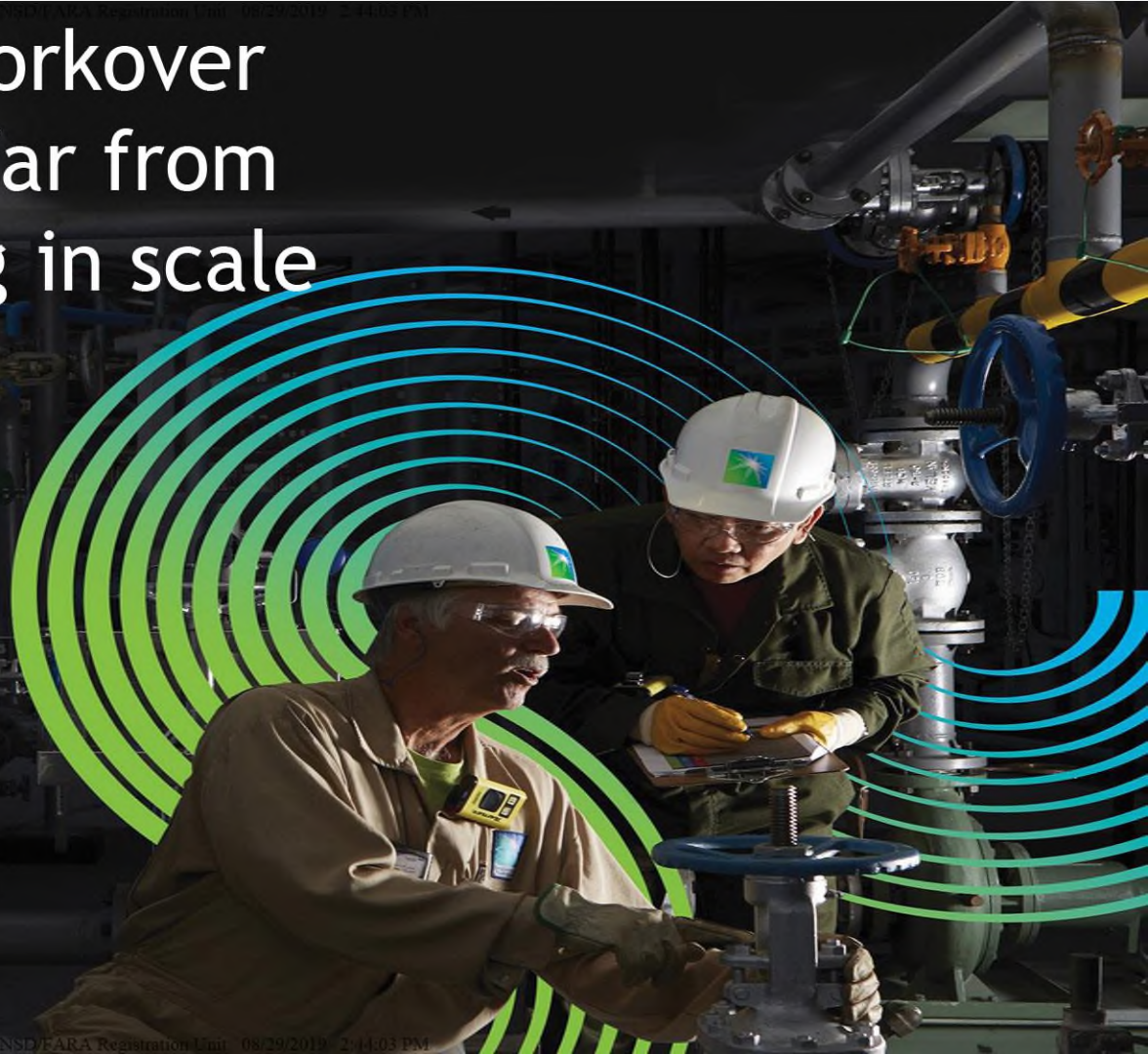


2017 Wells Delivery

- Extended reach and Multi-lateral wells
- Significant expansion in gas drilling operations
- Deep water exploration
- Advanced completions

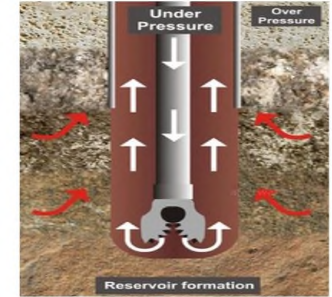
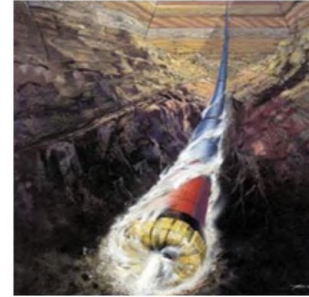


Our Drilling and Workover operations is still far from reaching its ceiling in scale and complexity



D&WO is expanding in many fronts

1. Expanding in unconventional resources.
2. Managed pressure and underbalance drilling.
3. HPHT wells (450 deg. F, 15k psi).
4. Coiled Tubing Drilling.
5. Casing Drilling.
6. Non-metallic tubing and accessories.

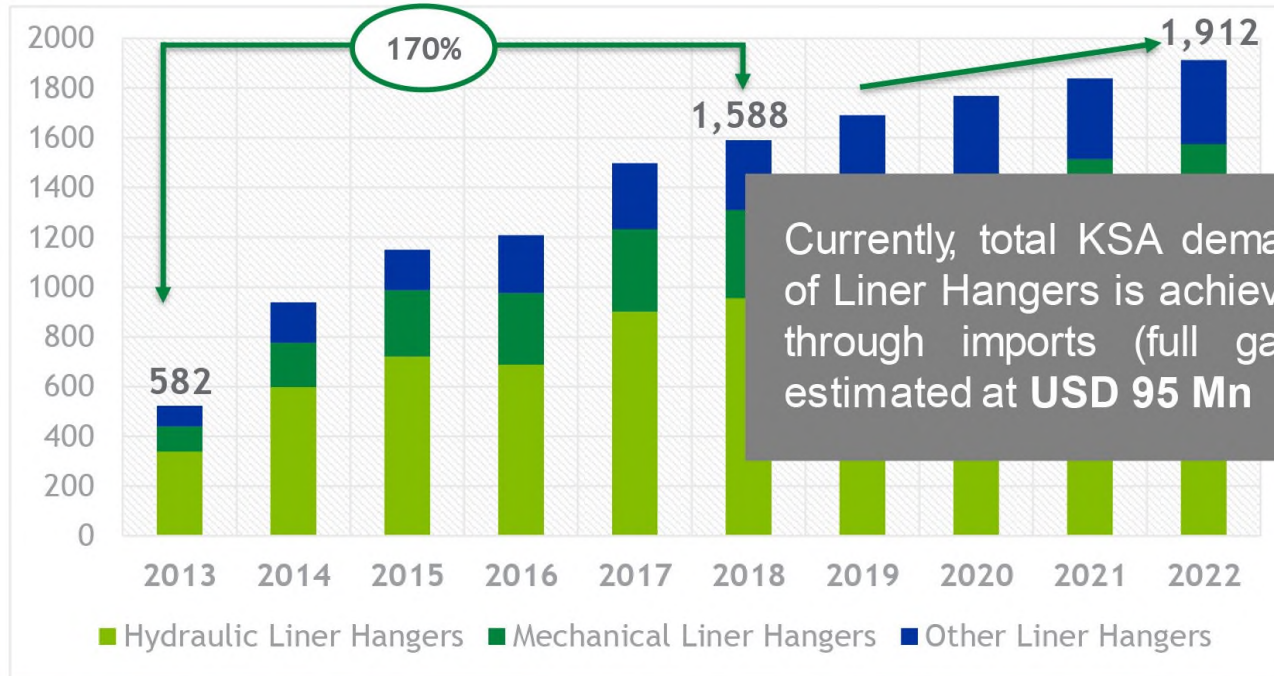


Investment Opportunities

3

Liner Hangers

KSA Liner Hangers market size evolution (Volume, Units)



Liner Hangers

Liner Hanger blocks and manufacturing



Liner Hanger blocks

1 Body/ Mandrel

2 Pack-off elements/
bushings

3 Components (Cone
slips, J-lug, etc.)

Manufacturing process

- Machined from one piece
- Threading (API)
- Heat treatment for H₂S exposure

- Synthesis
- Conversion
- Compounding

- Precision
- CNC machining

Drilling Fluids Business Volume

Average annual spend on drilling fluids products \$900 MM (direct purchase)

HPWBM Systems	Weighting Agents
Premium Lubricants	Salts
Non-Conventional LCM	Fluid Loss Control
SBM Systems	Thinners
WBM above 400°F	Emulsifiers
Borehole Stabilizers	Conventional LCM
Filter Cake Removal	Borehole Stabilizers

Explore More Opportunities

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▶ iktva

In Kingdom Total Value Add

Alignment with Vision 2030

- Strong, high-skilled Saudi workforce
- Bigger role for SMEs
- Robust manufacturing sector
- Business friendly environment
- Greater strategic trade relations



70% بحلول 2021

نسبة توطين السلع والخدمات
70 بالمائة بحلول عام 2021

Local Supply Chain Evolution

iktva

Traders

- Shipping & Customs Clearance
- Expediting
- Financial Risk Management

Service Suppliers

- Spare Parts Inventory
- Local Service Facility
- Pre-Sale & Warranty Support

Manufacturing & Engineering

- Design
- Fabrication
- Assembly
- Packaging
- Manufacturing





Strategic in Nature

70%

Double our
local content

30%

Increase in energy
sector exports

Thousands of
Jobs

Direct and in-direct
jobs for Saudi citizens



The In-Kingdom Total Value Add (iktva)

iktva is a program,
not a metric

iktva will work with
suppliers in a new
way for success

iktva is a Saudi
Aramco
Strategic
Imperative

Saudi Aramco vision is to enable a
globally competitive Saudi
Industrial Base

DEFINITION

The IKTVA program drives, measures and monitors the “added-value” brought to the Kingdom by a supplier.

a

Localized Goods and Services (\$)

b

Compensation Paid to Saudis (\$)

c

T&D of Saudis (\$)

d

Supplier Development Spend (\$)

r

Research & Development (\$)

X

Exports Revenue Factor

E

E = Saudi Aramco Revenue (\$)

$$\text{iktva} = \left(\frac{a+b+c+d+r}{E} \right) + X$$

Key Points - Simple & Transparent



UNIFORM
EVALUATION



SUPPLIER FOCUSED
Co-developed with
the suppliers



SIMPLE
Compared to other
international practices



3rd PARTY
ASSESSMENT
Offering transparency
& confidentiality

Driving iktva in Procurement

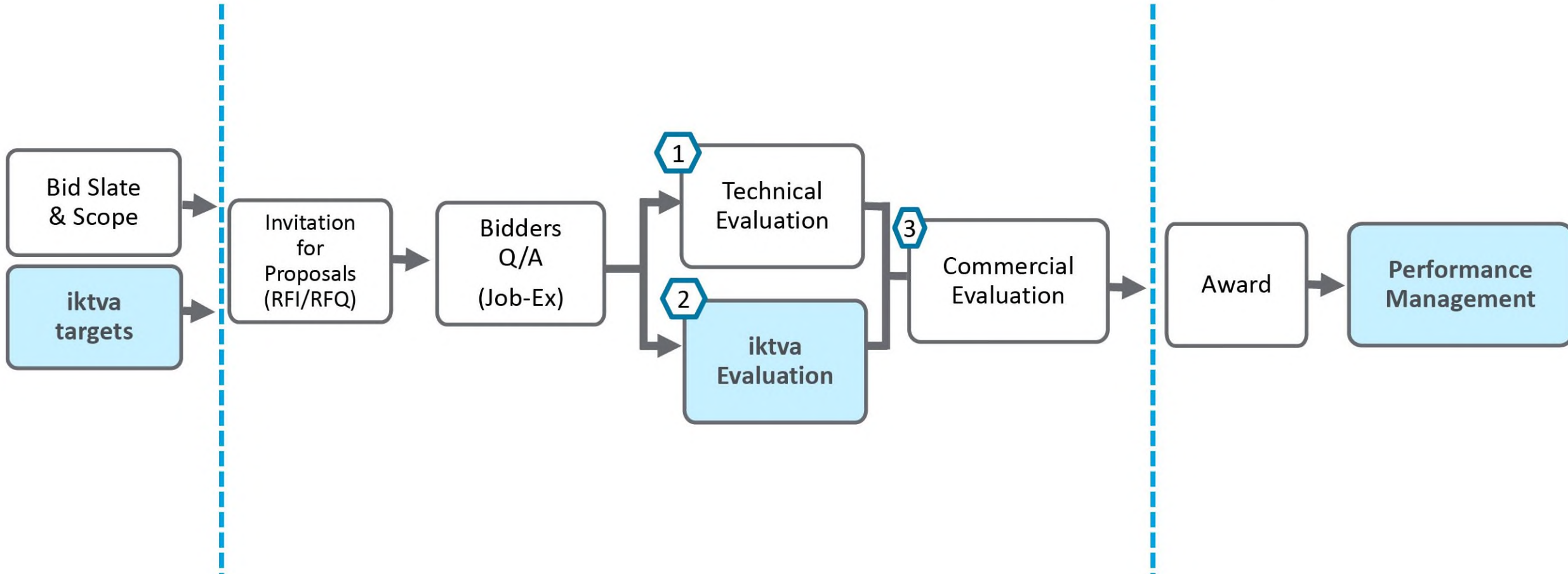


Driving iktva in Procurement

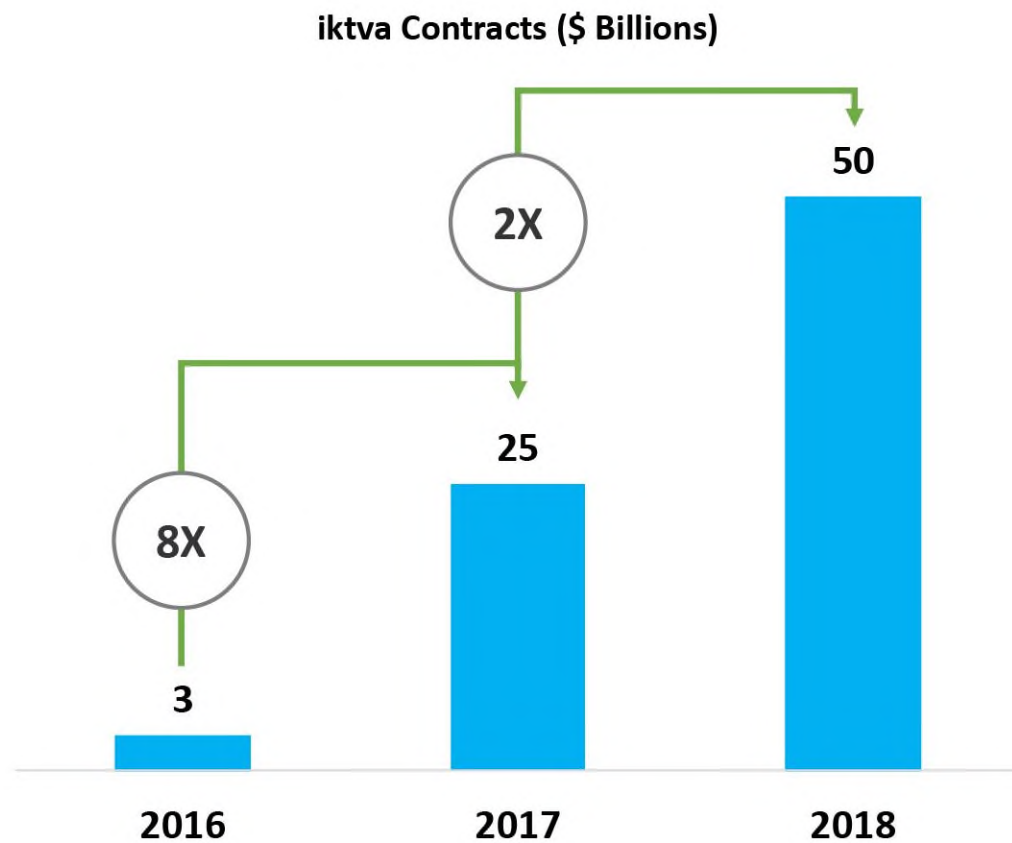
Pre-Bidding Phase

Bidding Phase

Post-Bidding Phase

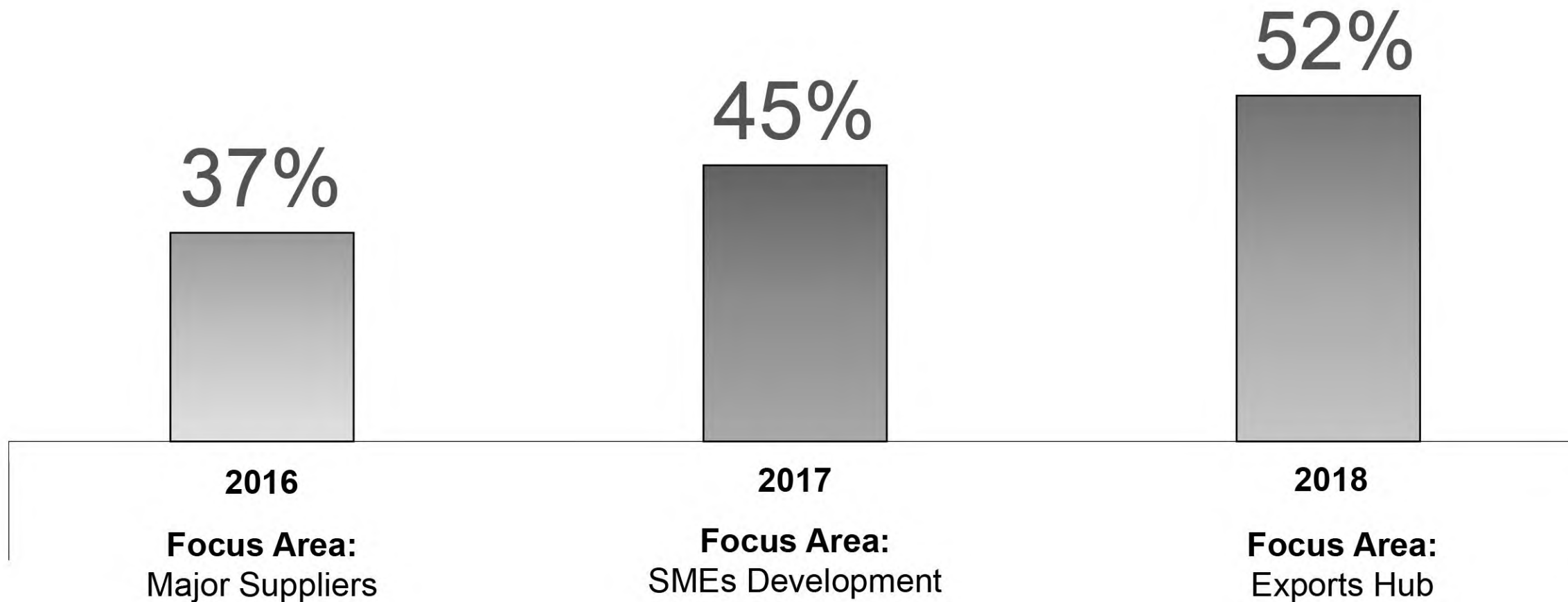


iktva in Contracts



More than 300 contracts with iktva requirement, equivalent to \$50 Billion

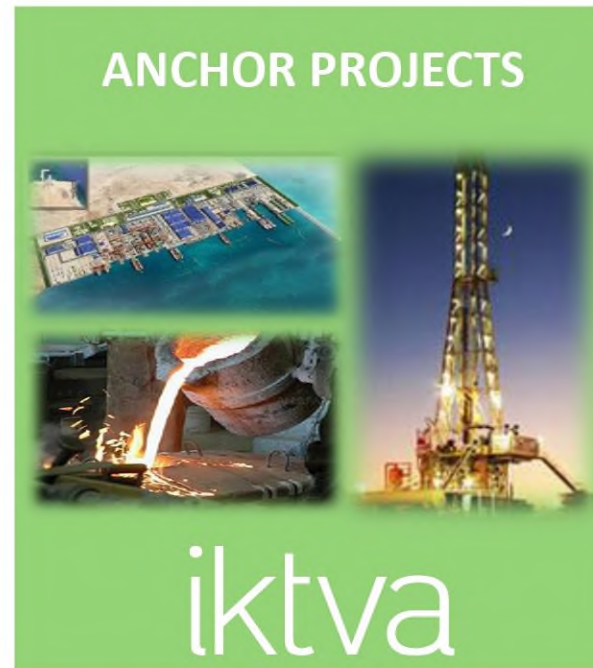
iktva Results



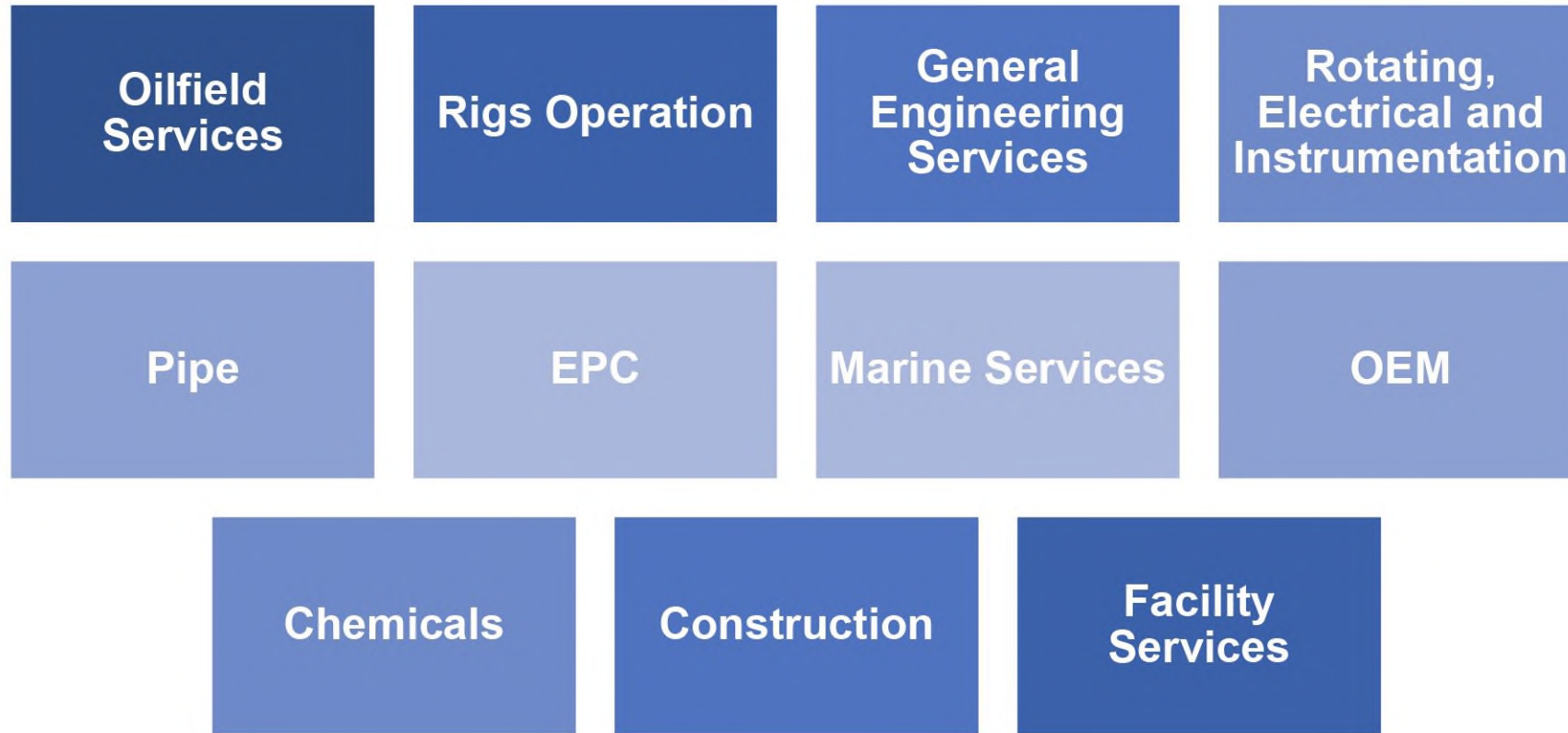
iktva Achievements

- **Doubled Goods and Services from local suppliers**
- **Increased spend on Saudi workforce by 60%**
- **Increased Training and Development of Saudi's by four times**
- **Reached \$1.4 Billion in Exports which represent 45% increase since 2015**
- **Increased number of prospective investments to more than 430 with an estimated capex of \$6.5 Billion**
- **Added 290 new local manufacturers in Saudi Aramco's supply chain**

iktva Execution Pillars



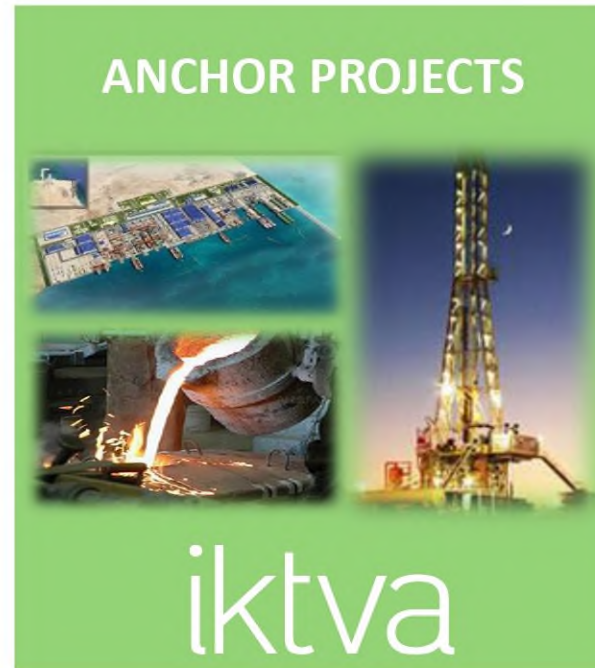
5-Year iktva Action Plans



iktva contribution
\$65 B

Direct Job Creation
24,000

iktva Execution Pillars



Anchor Projects

King Salman International Complex
for Maritime Industries and Services



King Salman Energy Park (SPARK)



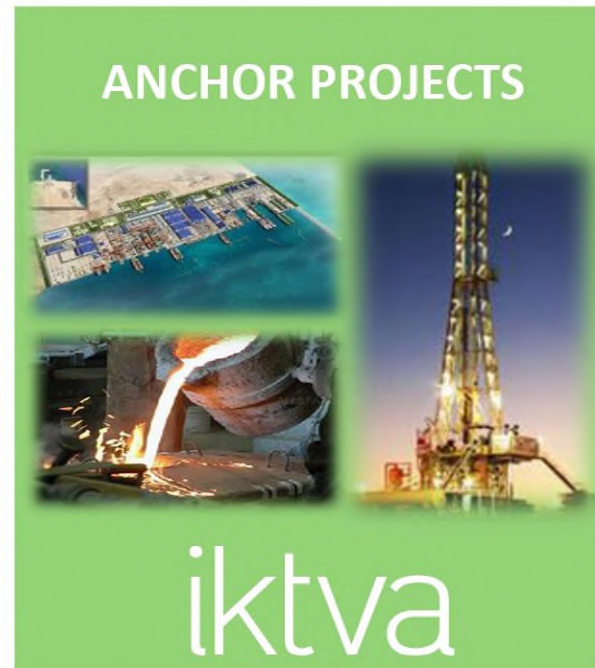
Casting & Forging



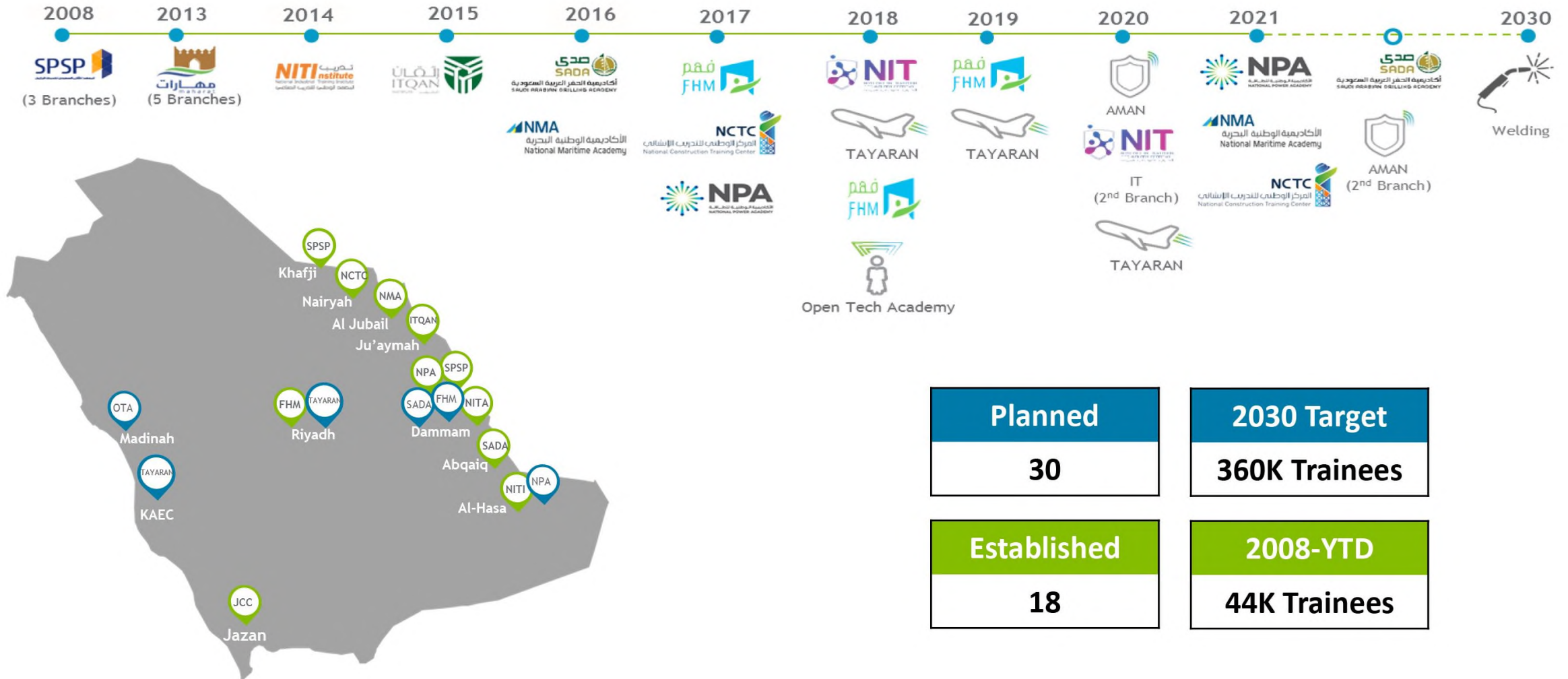
Land Rig Manufacturing



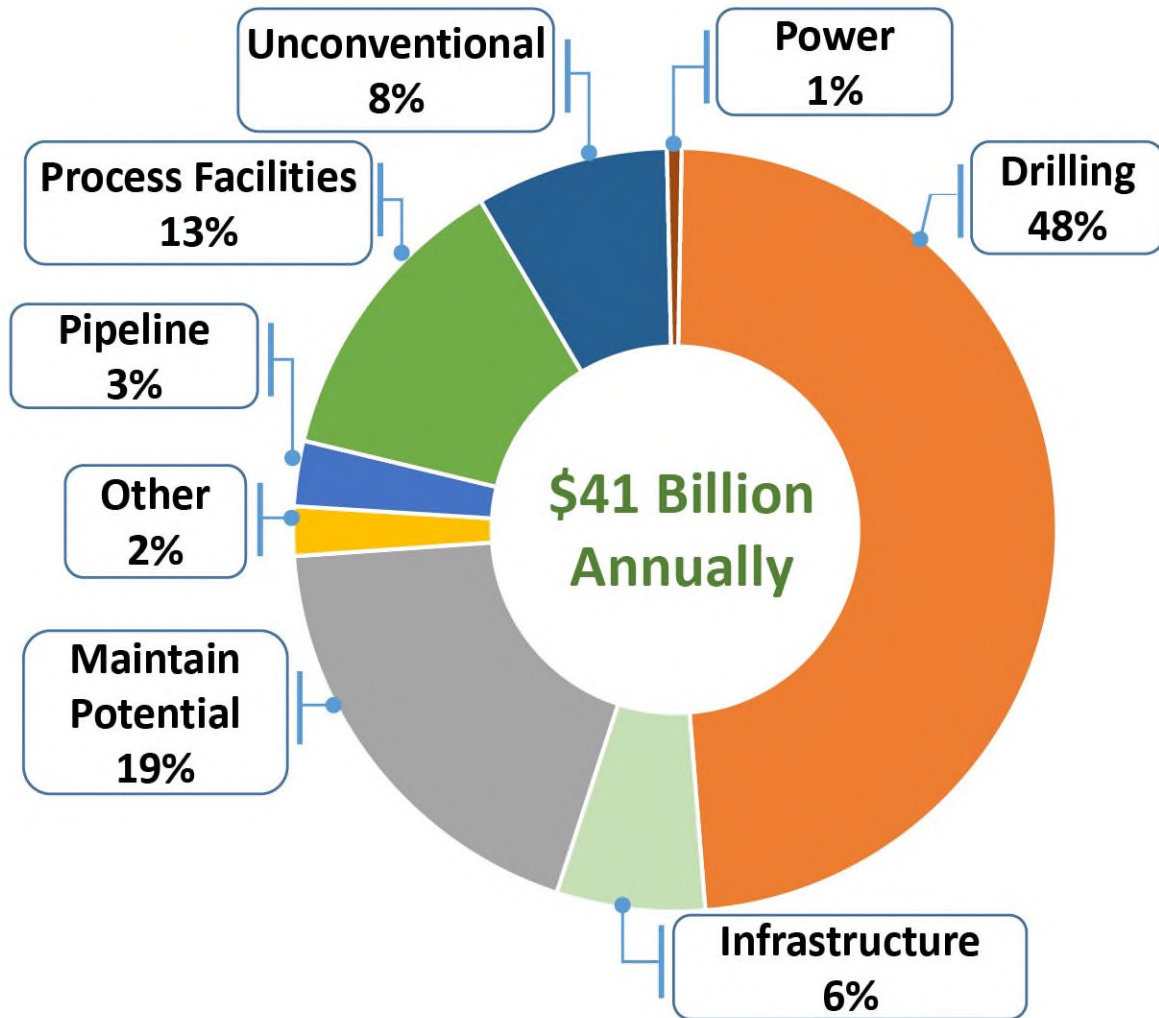
iktva Execution Pillars



Local Workforce Development



10 Year Capital Program - \$414 billion



Selected spend areas

Drilling & Well Services	\$134 Billion
Maintain Potential	\$78 Billion
Crude Oil to Chemicals	\$20 Billion
Pipeline Projects	\$7 Billion
Base Oil Plants	\$1.5 Billion

Over \$230 billion forecast on drilling operations

Materials



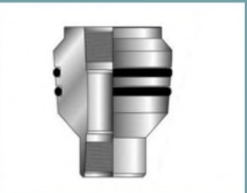
ICDS & ICD-Screens
1.44 Million



Trees
18,904 units



Casing heads
19,040 units



Hanger assemblies
39,600 units



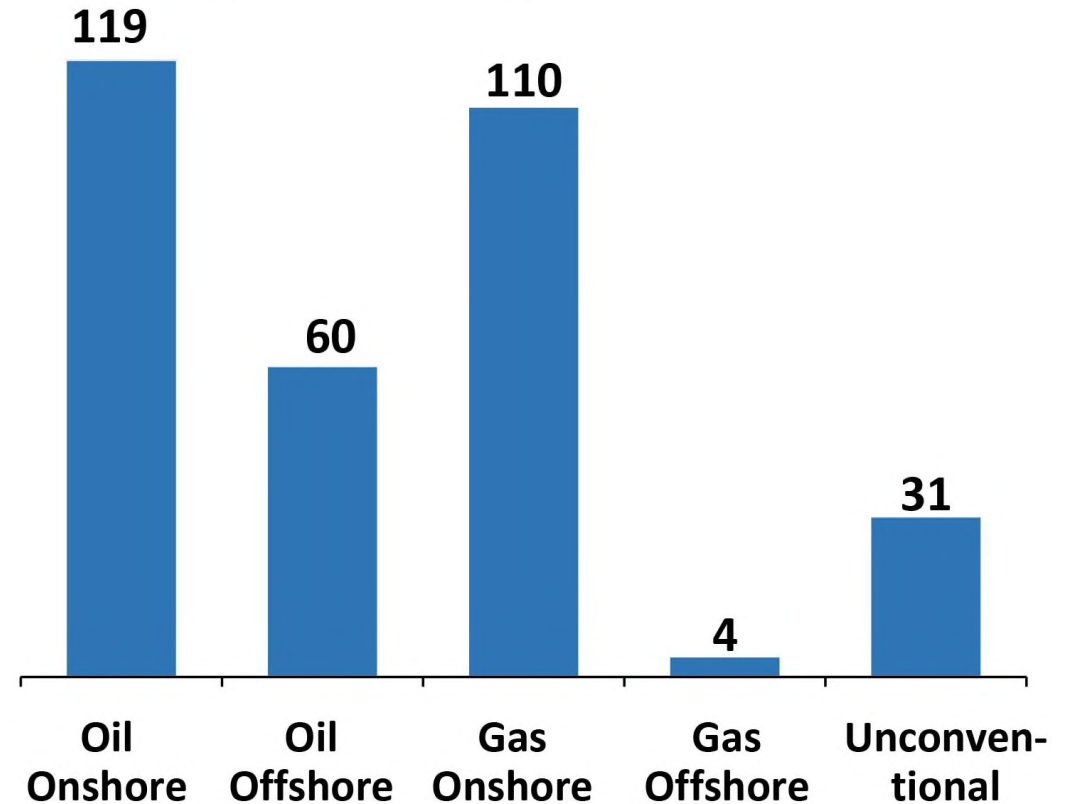
Packers
45 million units



Mud Products
763 million gallons

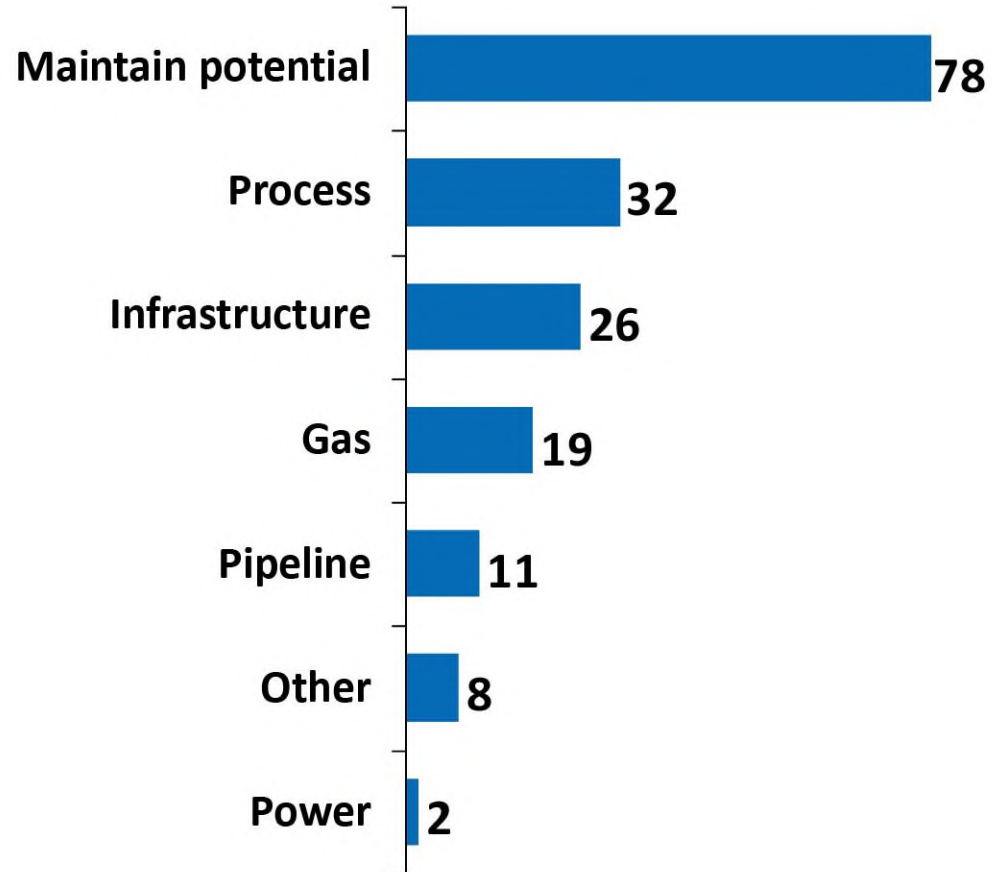
Services

Average annual rig count

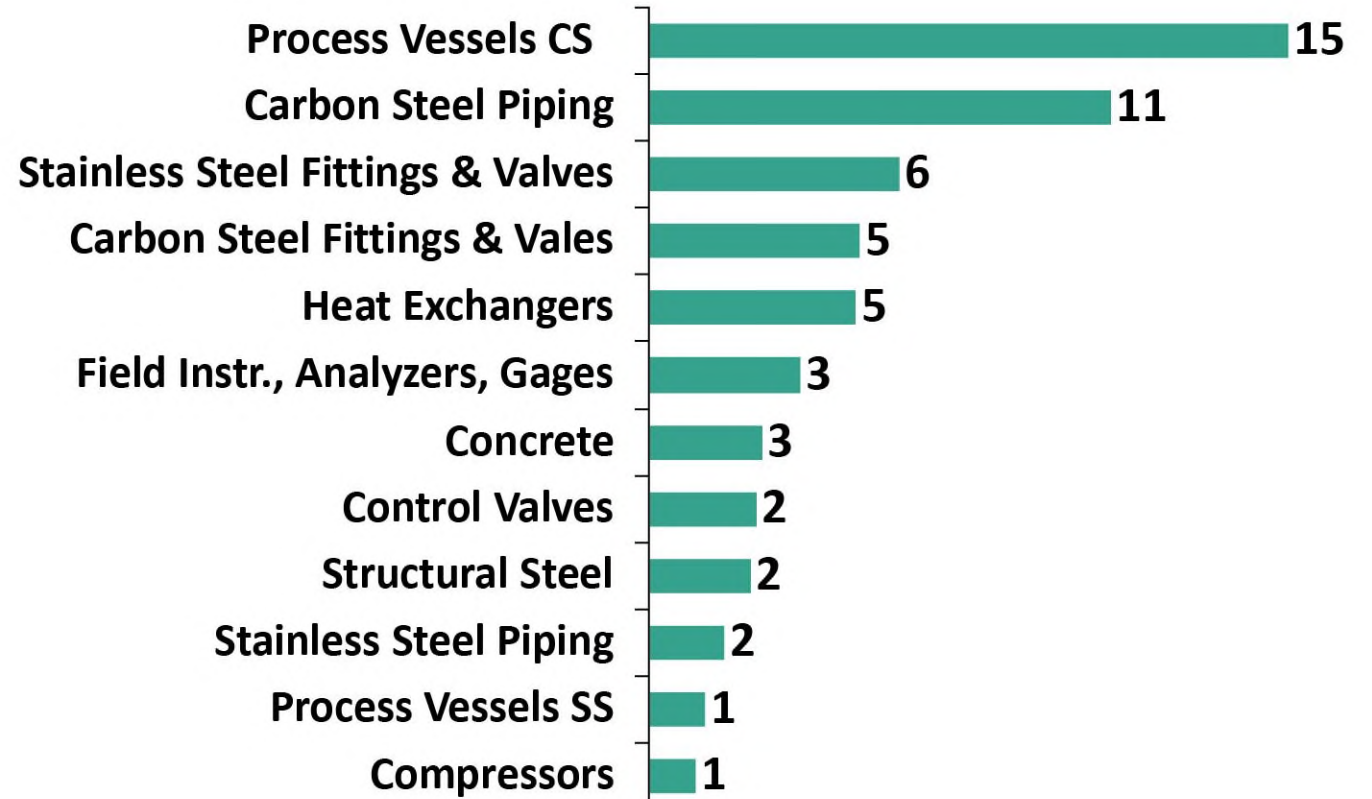


Over \$175 billion forecast on surface facilities

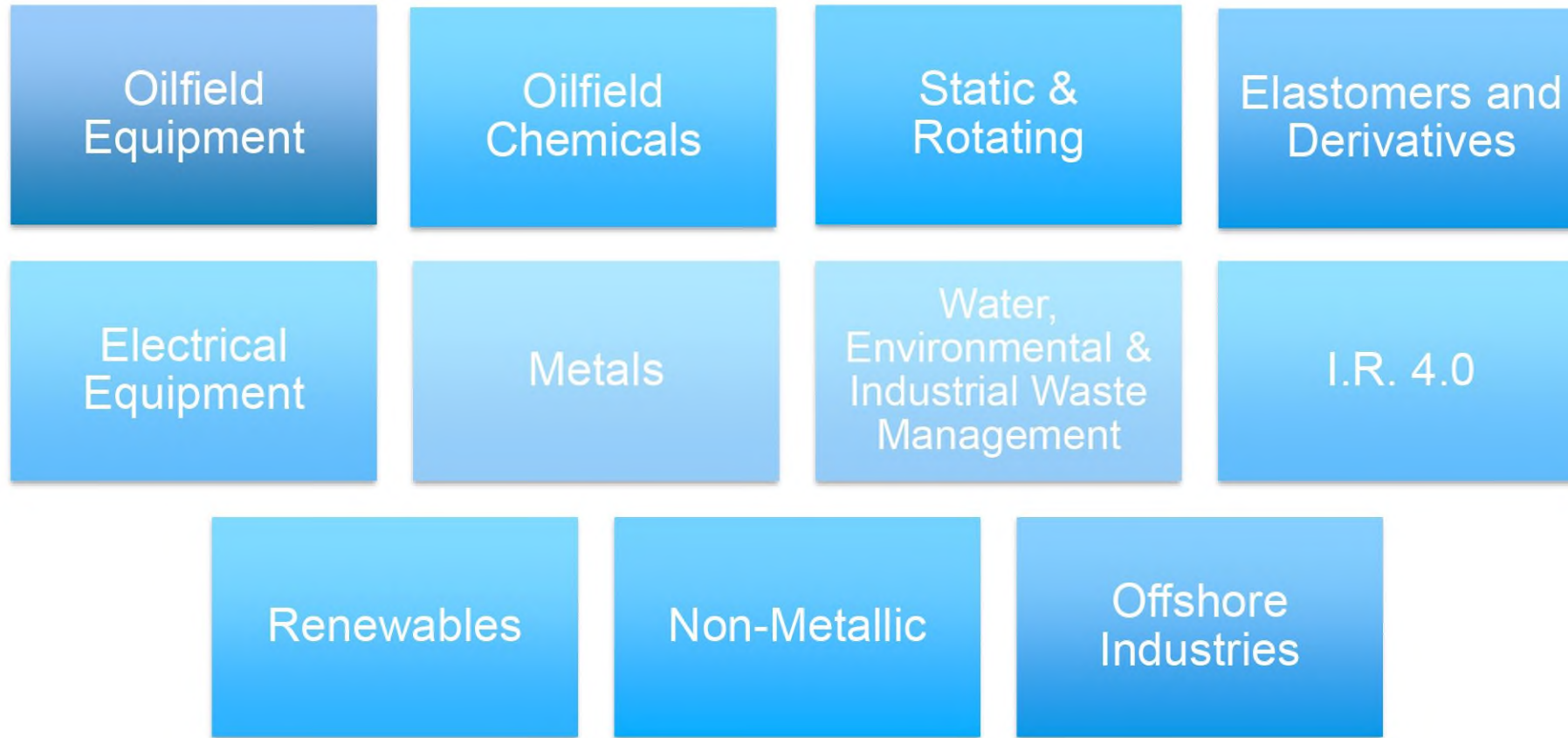
Programs (\$ billion)



Materials (\$ billion)



Opportunities for SMEs



**Current
annual
market
size gap
of \$16 B**

OILFIELD EQUIPMENT (TOTAL OPPORTUNITY 887 MM USD)

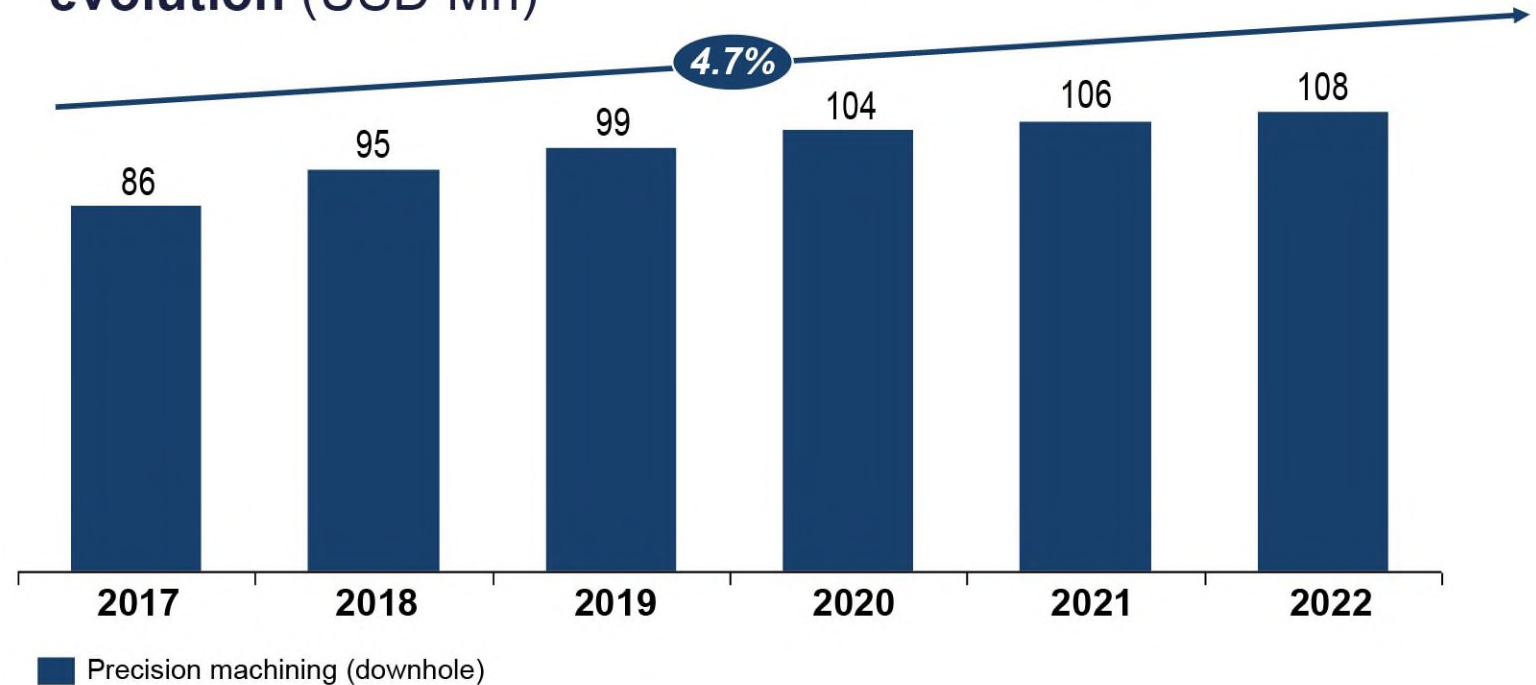
Precision Machining

Establish a state-of-the-art precision machining workshop for downhole equipment and tools to serve the KSA and GCC Oil and Gas industry.

The Business Case

1. Current KSA demand is estimated at USD 78 Mn /Annum
2. Forecasted ~4% annual growth in the regional precision machining market until 2022
3. Attractive cost base including low logistics, land, utilities, and labor costs

KSA downhole precision machining expected market size evolution (USD Mn)



Strong oil and gas production activity is expected to fuel the growth in precision machining demand

OILFIELD EQUIPMENT (TOTAL OPPORTUNITY 887 MM USD)

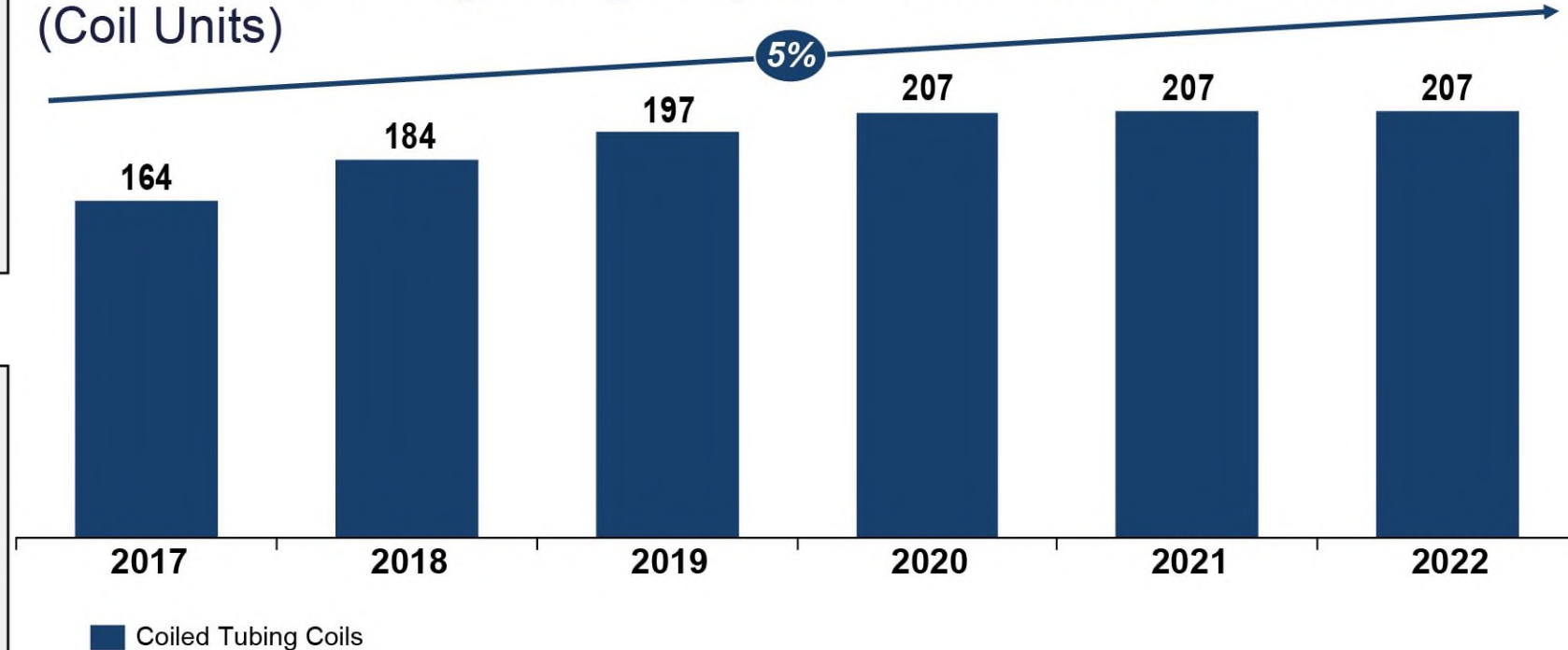
COILED TUBING

Establish a state-of-the-art manufacturing facility of Coiled Tubing strings to serve the KSA and GCC Oil and Gas industry

The Business Case

1. Current Coiled Tubing KSA demand is estimated at ~130 coils /annum
2. Forecasted ~5% annual growth in the regional Coiled Tubing market until 2022
3. Attractive cost base including low logistics, land, utilities, and labor costs

KSA Coiled Tubing strings expected market size evolution (Coil Units)



Strong outlook on KSA oil and gas production is expected to fuel the growth in Coiled Tubing strings

OILFIELD EQUIPMENT (TOTAL OPPORTUNITY 887 MM USD)

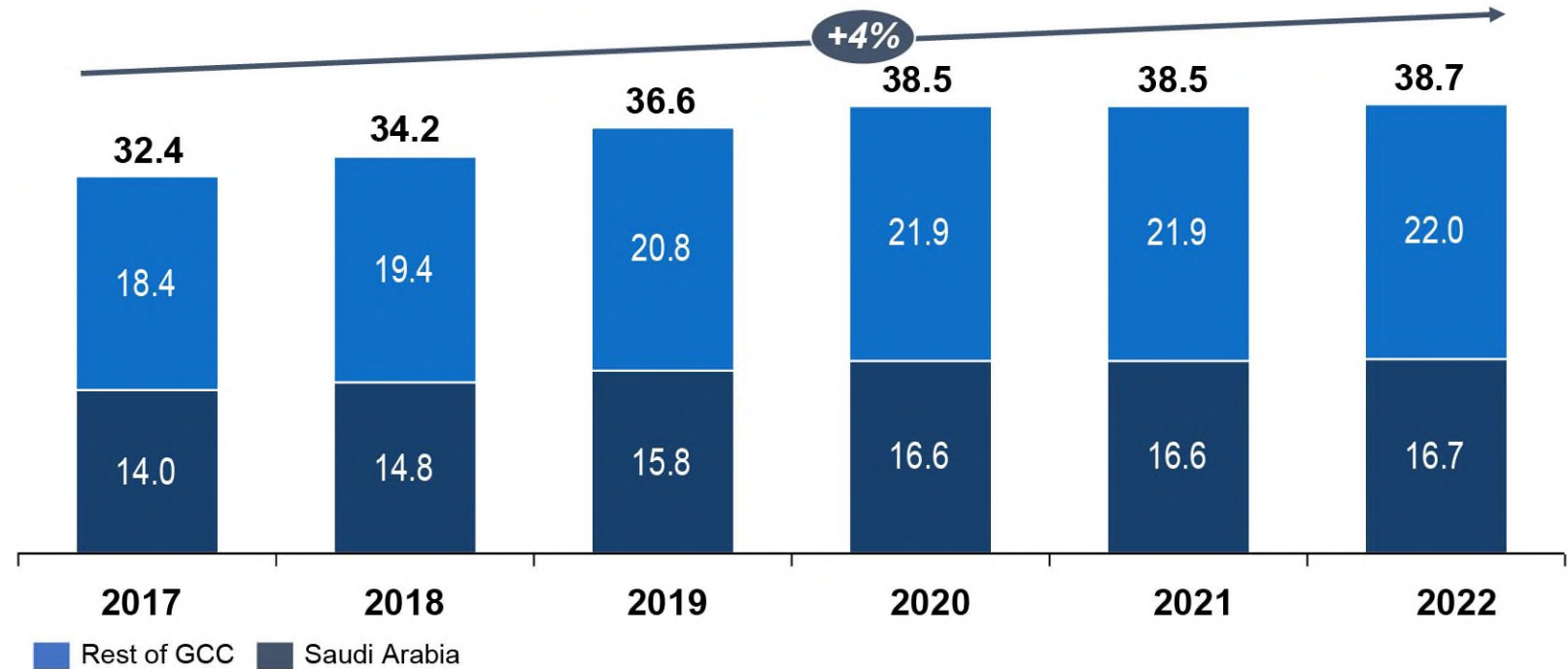
Drill Pipes

Potential to develop drill pipes production facilities & inspection services to serve the KSA and GCC Oil and Gas industry.

The Business Case

1. Current KSA demand is estimated at ~13.3 Ktpa¹
2. Forecasted ~4% annual growth in the regional drill pipes market until 2022
3. Attractive cost base including low logistics, land, utilities, and labor costs

GCC expected market size evolution (Ktpa)¹



KSA market demand is expected to be roughly 43% of the overall GCC demand for drill pipes

OILFIELD EQUIPMENT - MORE OPPORTUNITIES

**Perforating
Guns**

**Drill
Collars**

**Liner
Hangers**

Packers

DV Tools

**Whip
Stocks**

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OILFIELD CHEMICALS (TOTAL OPPORTUNITY 1.2 B USD)

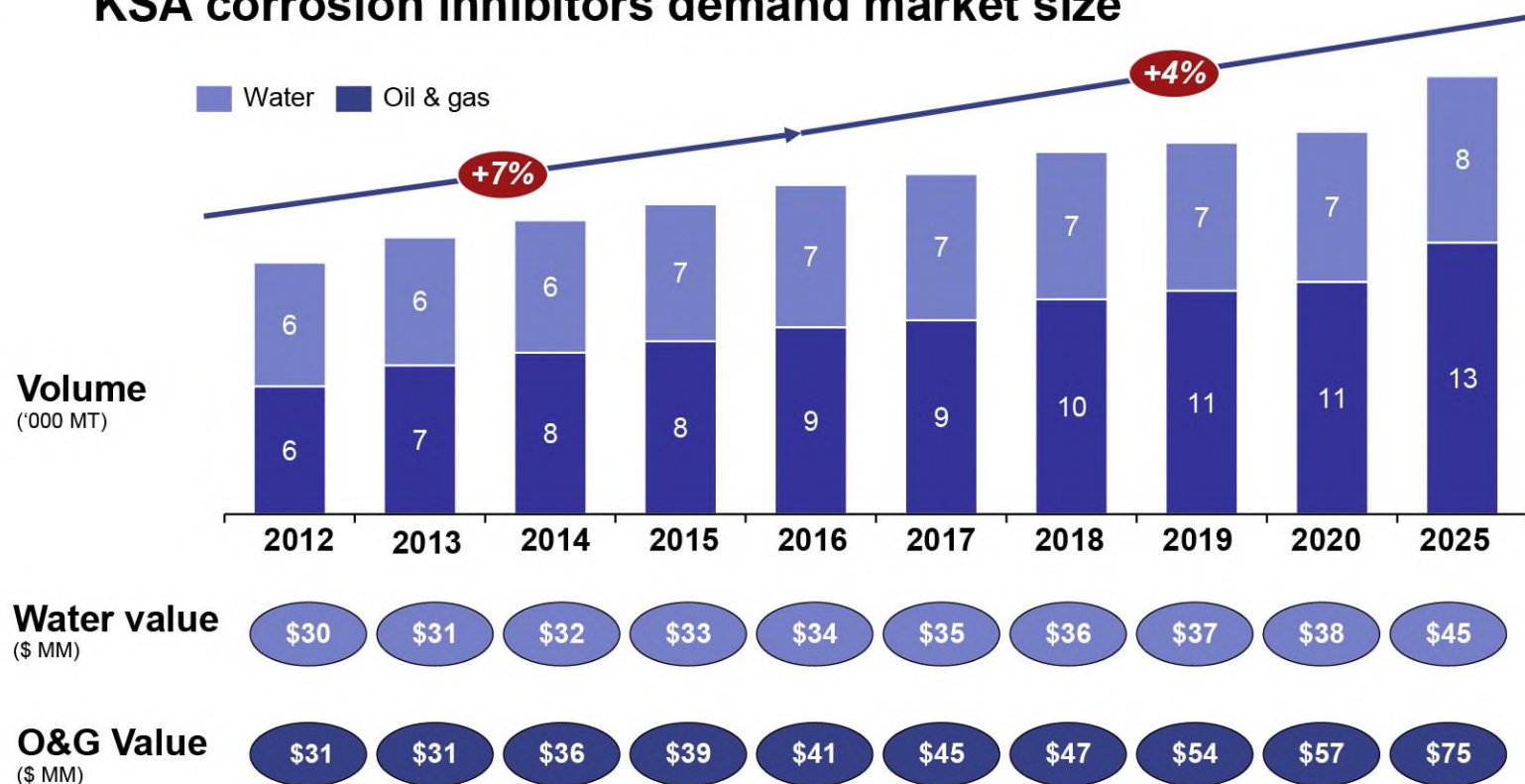
Corrosion Inhibitors

Potential for local facilities to produce key synthesis products such as ethoxylates, copolymers, phosphonates and amidoamines

The Business Case

1. Current KSA demand is estimated at ~\$90 MM
2. Forecasted ~4% annual growth until 2025
3. Attractive cost base including low logistics, land, utilities, and labor costs.

KSA corrosion inhibitors demand market size



Both the ME and KSA markets are expected to grow at roughly the same pace, with KSA commanding ~30% of the ME market

OILFIELD CHEMICALS - MORE OPPORTUNITIES

**Completion
Chemicals**

Drill Fluids

**Well
Stimulation
Fluids**

Demulsifiers

Proppants

Stabilizers

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STATIC & ROTATING (TOTAL OPPORTUNITY 1.4 B USD)

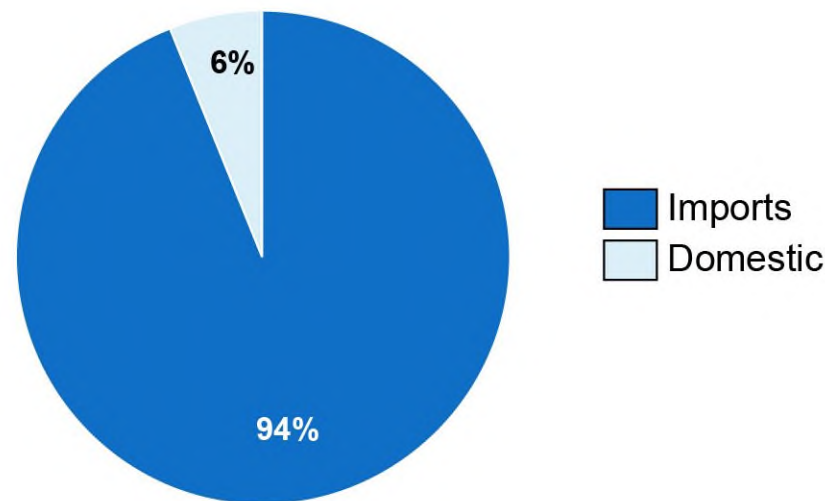
Pipe Fittings

Potential to establish multiple facilities to locally machine and manufacture pipe fittings

The Business Case

1. Current KSA demand is estimated at ~\$160 MM
2. Forecasted ~13% annual growth until 2022
3. Attractive cost base including low logistics, land, utilities, and labor costs.

Pipe fittings KSA imports (2016)



Market size ~US\$160 million or 860K Units, with 94% of the current demand met by imports into KSA

STATIC & ROTATING (TOTAL OPPORTUNITY 1.4 B USD)

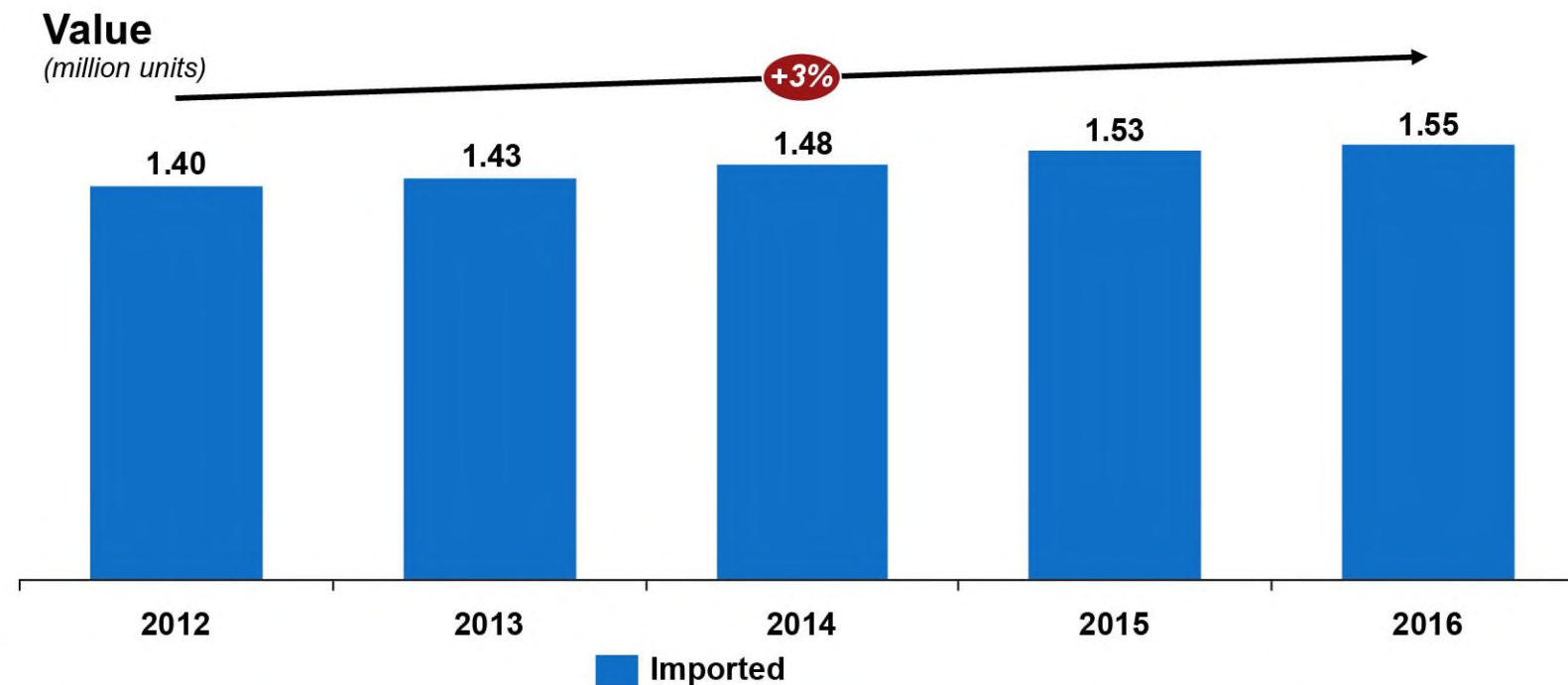
Bearings

Potential to establish multiple facilities to locally machine and manufacture bearings

The Business Case

1. Absence of domestic manufacturing presents a great opportunity to supply 1.55 Million units of KSA bearings demand
2. 100% of current market available for localization

Saudi Arabia bearings market size



No major international bearings suppliers are currently manufacturing in KSA

STATIC & ROTATING - MORE OPPORTUNITIES

Choke Valve

Butterfly Valve

Plug Valve

Tubes

Industrial,
Fans

Gears &
Mechanical
Seals

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ELECTRICAL (TOTAL OPPORTUNITY 2.8 B USD)

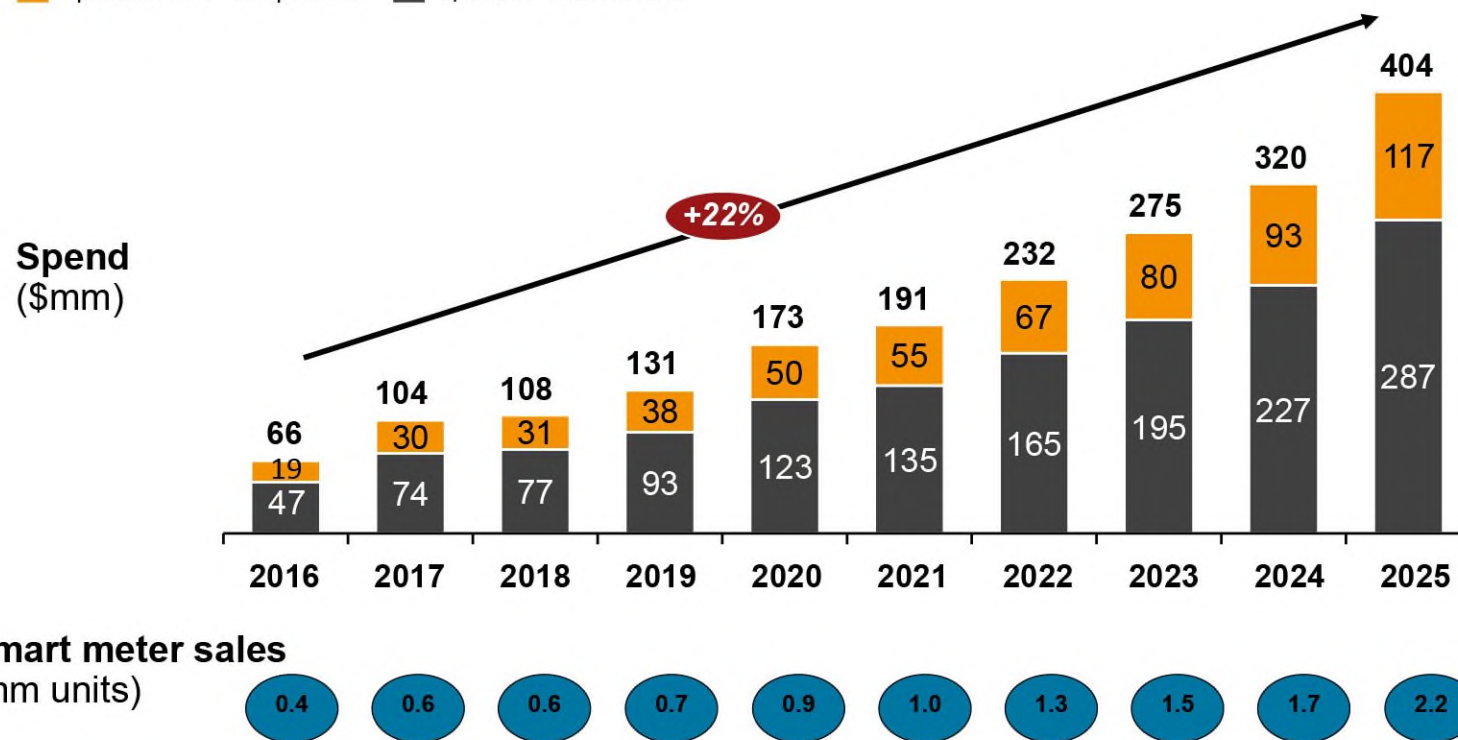
Smart Meters

Potential to manufacture smart meters as well as other components essential to smart grids such as line sensors, FACTS and current limiters.

The Business Case

1. The demand is \$77 MM in year 2018.
2. Expected annual growth of 22%
3. Limited local presence in hardware manufacturing and also in services providers

■ Spend on other components¹
■ Spend on smart meters



The market for smart meters and components is expected to grow at a rapid pace reaching \$400 mm in 2025

ELECTRICAL - MORE OPPORTUNITIES

Current &
Voltage
Transformers

Electrical
Fuses
Manufacturing

Circuit
Breakers
Manufacturing

Relays
Manufacturing

UPS
Manufacturing

Batteries
Manufacturing

Electrical
Inverters

Low Voltage
Motors

Conduit and
Fittings

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IR 4.0 (TOTAL OPPORTUNITY 1.5 B USD)

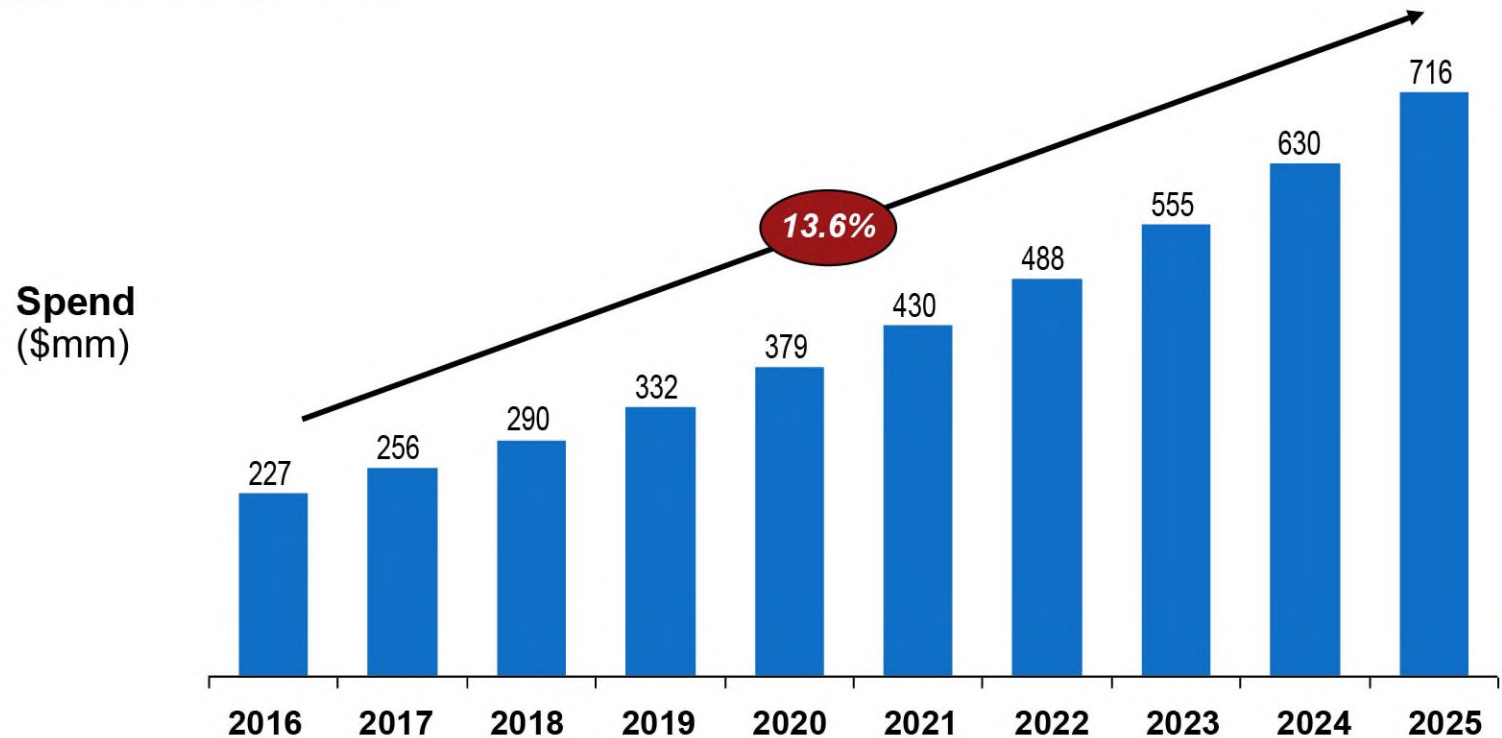
Advanced Analytics

Establish local manufacturing for Hardware and equipment used in advance analytics and local services providers for analytical services

The Business Case

1. Market value for data analytical services is \$227 in 2016 and expected to grow at 13.6% annually
2. Limited local presence in hardware manufacturing and also in services providers

■ KSA Spend on big data analytics



Market for Advanced Analytics in KSA is expected to grow at ~14% CAGR to reach a value of \$716MM by 2025

IR 4.0 - MORE OPPORTUNITIES

Cyber Security

Cloud Computing

High Performance Computing

Additive Manufacturing,

Robotics and UAVs

Smart Wells

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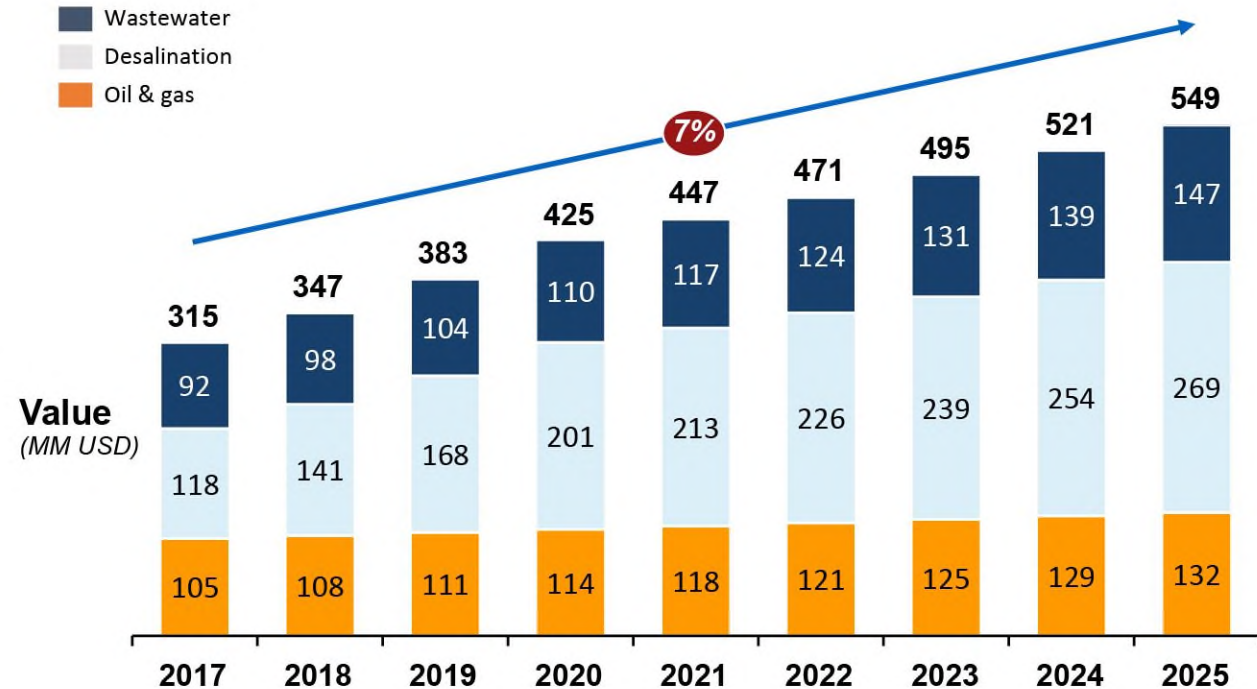
WATER & WASTEWATER (TOTAL OPPORTUNITY 1.2 B USD)

RO Membrane

Establish local manufacturing plants of RO membranes through partnerships with international players.

The Business Case

1. Additional demand of ~\$550 MM in KSA and ~\$914 MM in GCC by 2025
2. Limited local production of RO membranes to service KSA and GCC demand



Demand for RO membranes is expected to grow to by a CAGR of 7% to reach ~\$550 MM by 2025

WATER & WASTE WATER - MORE OPPORTUNITIES

Sludge
Thickeners

Filters

PAM

Coagulants

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ENABLING EQUIPMENT (TOTAL OPPORTUNITY 1.8 B USD)

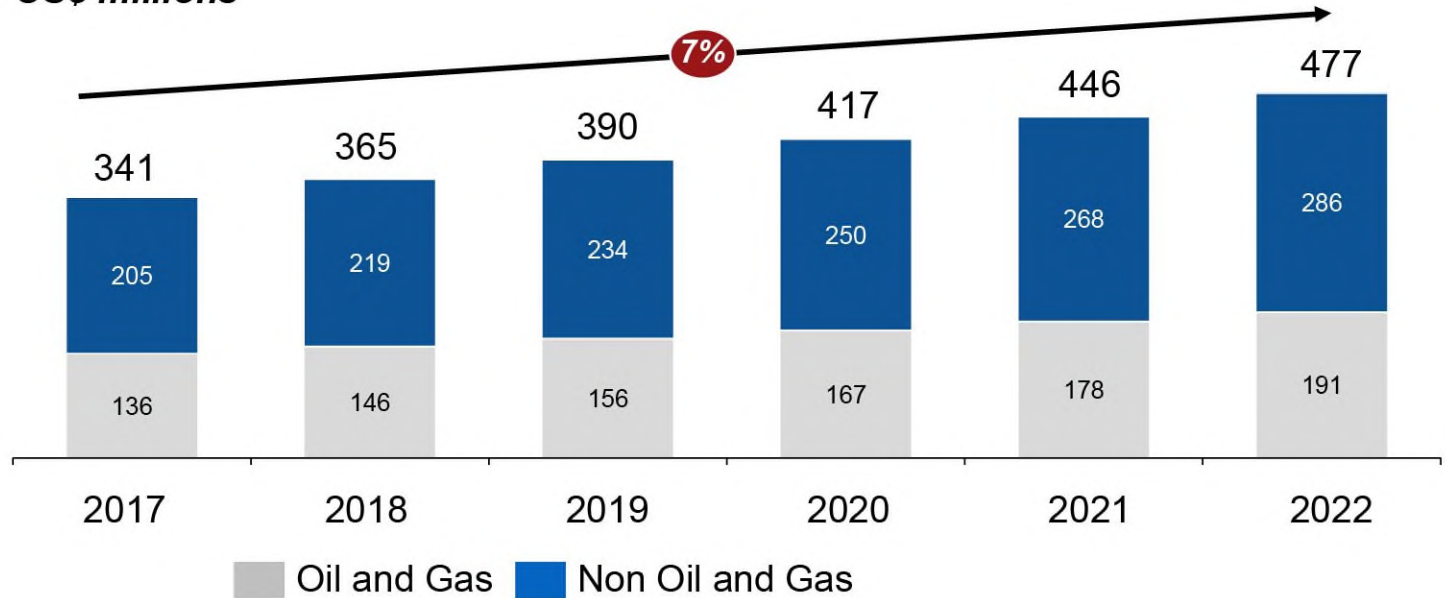
PPE

Hard hat, Face and eye protection, Fall protection systems, Protective clothing materials and fire resistant clothing.

The Business Case

1. KSA demand was \$ 341 USD with projected growth of 7% annually until 2022
2. Limited local production capacity. Potential exist for high quality products localization

US\$ millions



The demand for PPE equipment in KSA is expected to grow at 7% annually to reach ~US\$ 480 million by 2022

ENABLING EQUIPMENT - MORE OPPORTUNITIES

Welding and
consumables

Diesel
Generators

<https://www.iktva.sa/opportunities-2/>

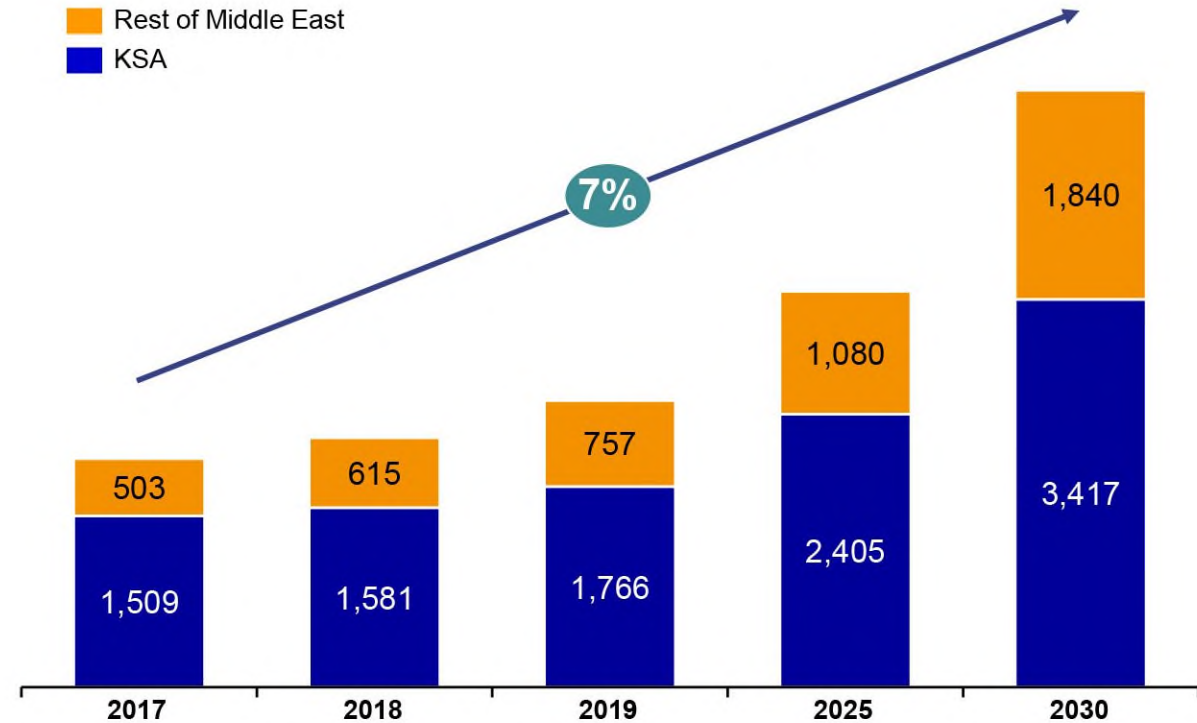
NON-METALLIC - RTP

The Opportunity

Potential to establish multiple facilities to locally manufacture RTP pipes

The Business Case

1. Planned pipes manufacturing expected to be insufficient post 2020, as market is expected to grow at >7% CAGR
2. Key building blocks for production of reinforced plastics are available in abundance



Increased use of RTP piping for new wells constructed in KSA will be to driving growth in this segment

NON-METALLIC - GFRP REBAR

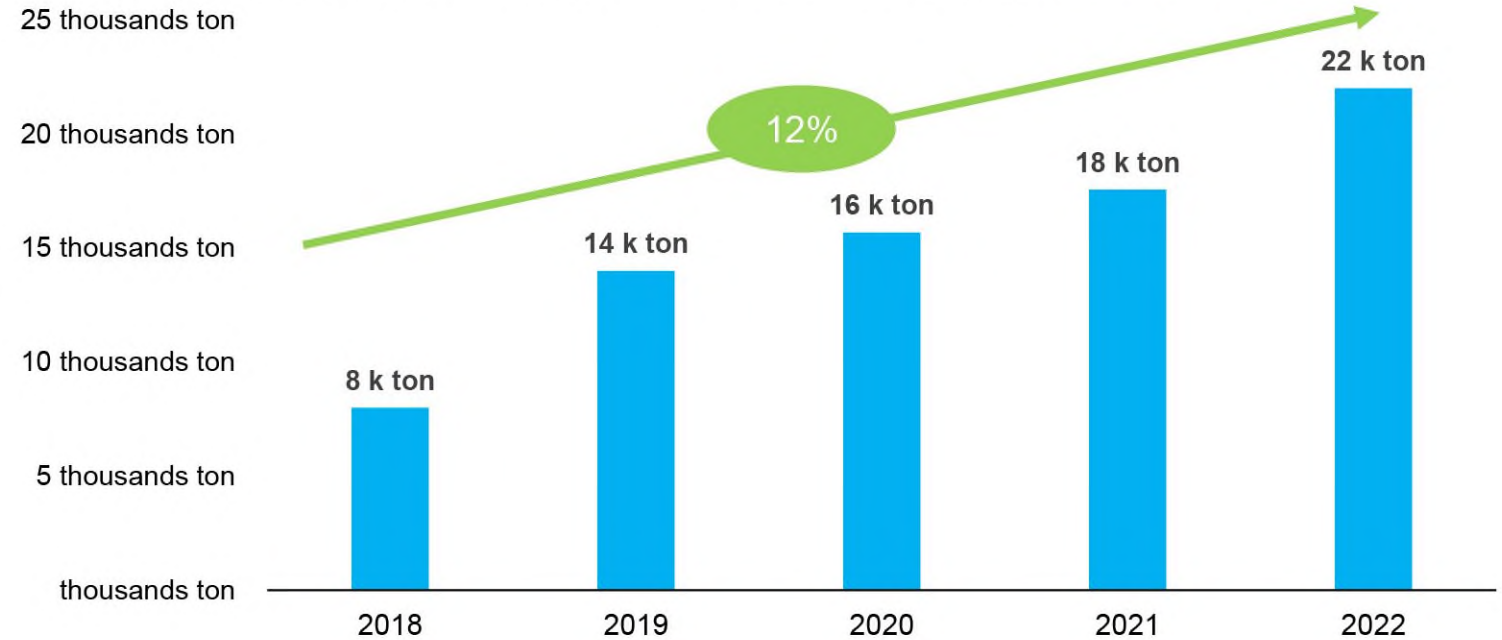
The Opportunity

Potential to establish multiple manufacturing facilities for GFRP rebar

The Business Case

1. Limited local production capacity is available.
2. Key building blocks for production of GFRP rebar are available locally and regionally.
3. Saudi Aramco is mandating the use of GFRP rebar in some applications

Forecasted Saudi Aramco Demand for GFRP Rebar in Metrec Ton



Expected growth rate 12% annually in GFRP rebar usage

▶ Thank You



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