



# LOCAL MACHINE BUILDING SECTOR ANALYSIS

2022 SUMMARY

## MAJOR OPERATORS

Consolidation of efforts  
Provision of quantitative and technical data  
Implementation of projects



## GOVERNMENT

Preferences and subsidies  
Facilitation and stimulation



## MACHINE BUILDING INDUSTRY

Capacity development  
as per international standards  
Technology transfer



IMBC activities in 2022 were focused on capacity development activities with local manufacturers of the goods of three commodity group, namely Valves, Instrumentation, Electrical (Commodity Group A), and as per Operators' recommendation, on studying the potential for localization of four commodity groups, namely Linepipes, Pumps and Seals, HVAC and Process Filters (Commodity Group B) and recommending specific goods with proposals for their localization, primarily through:

- Analyzing the potential demands of three major Operators (TCO, KPO, NCOC) and identifying types of goods with relatively high demands, collecting technical specifications, reaching out to the local market, conducting site visits and identifying manufacturers with the best fit to localize the manufacturing of goods.
- Conducting market studies and engagement of the international manufacturers and OEMs as potential investors in the localization of their manufacturing in the RoK.
- Creating a list of advocacy issues that may be hindering the development of the local oil & gas machine building sector as per international standards.

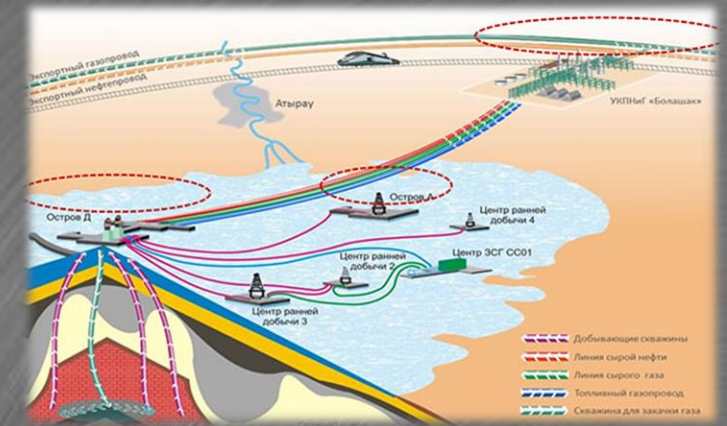
## Technological challenges in the development of Kashagan, Karachaganak and Tengiz projects:

- High abnormal reservoir pressure: up to 600 bar;
- Deep oil and gas reservoirs: ~ 5,000 m;
- High H<sub>2</sub>S (20%) and other toxic and highly corrosive chemical compounds;
- Highly flammable and explosive environment;
- Critical environmental risks, especially in maritime conditions;
- Extreme operating conditions: - 50 to + 50°C.



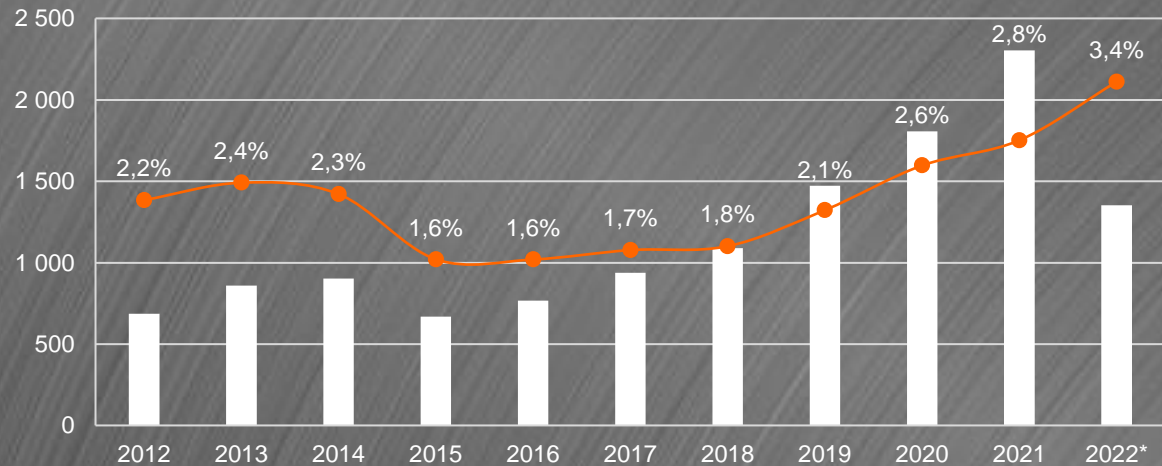
## Requirements to equipment:

- Use of a wide range of various types of alloys and corrosion-resistant metals;
- Explosion protection and fire safety;
- Proven failure safety.

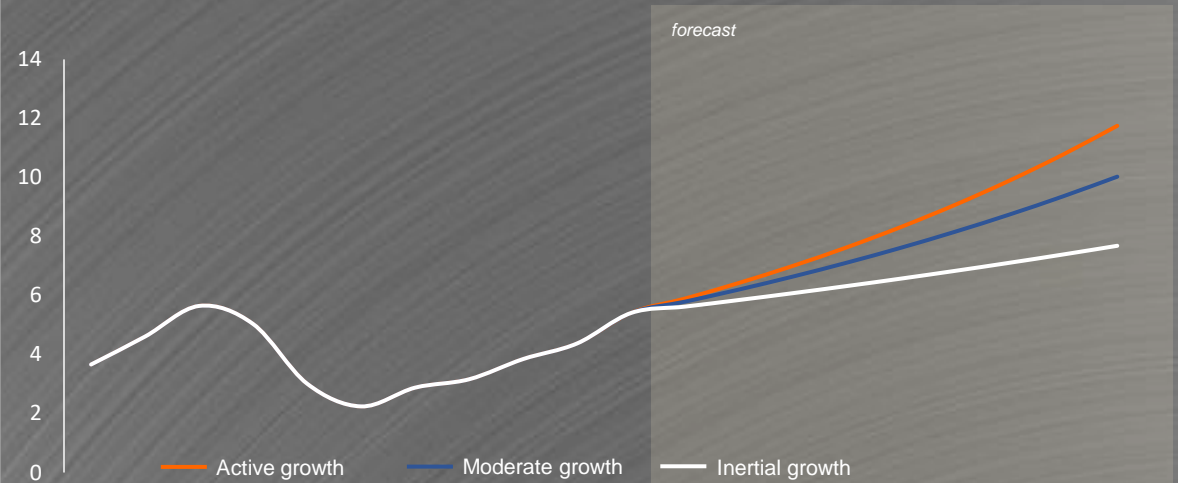


# ROK MACHINE BUILDING INDUSTRY ANALYSIS

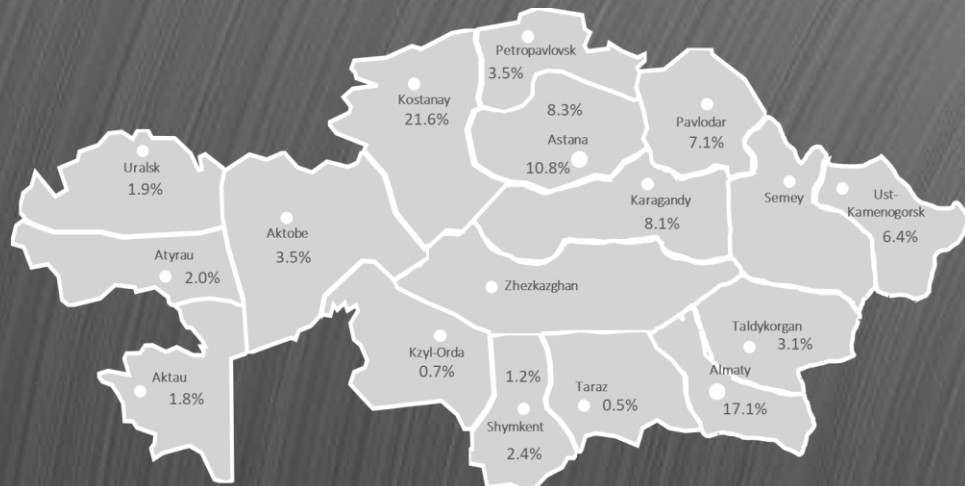
Industry GVA / GDP, bln KZT



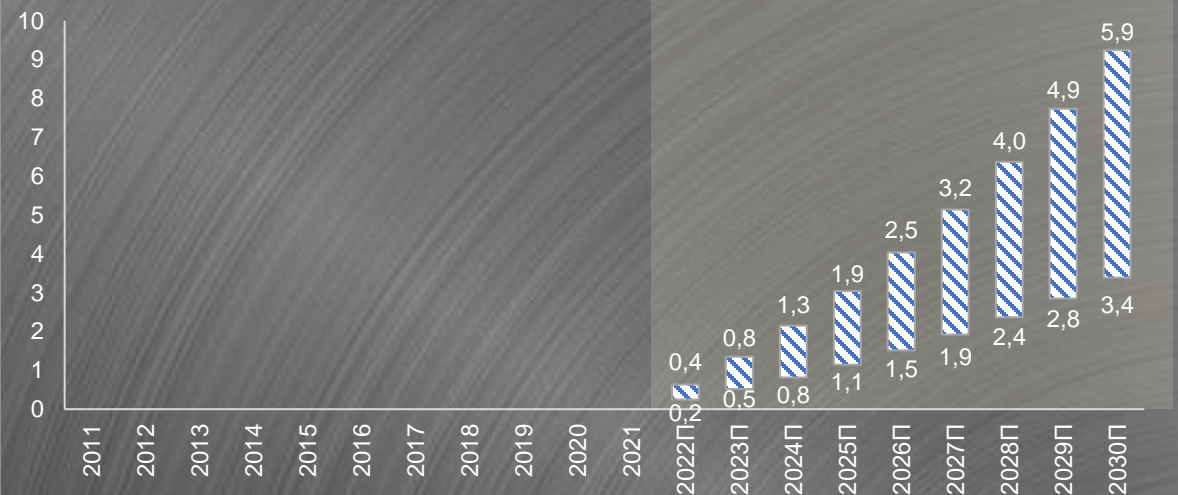
Industry scenario-based output forecast, bln USD



Industry Output in 2022 (1.4 tln KZT) by region, %

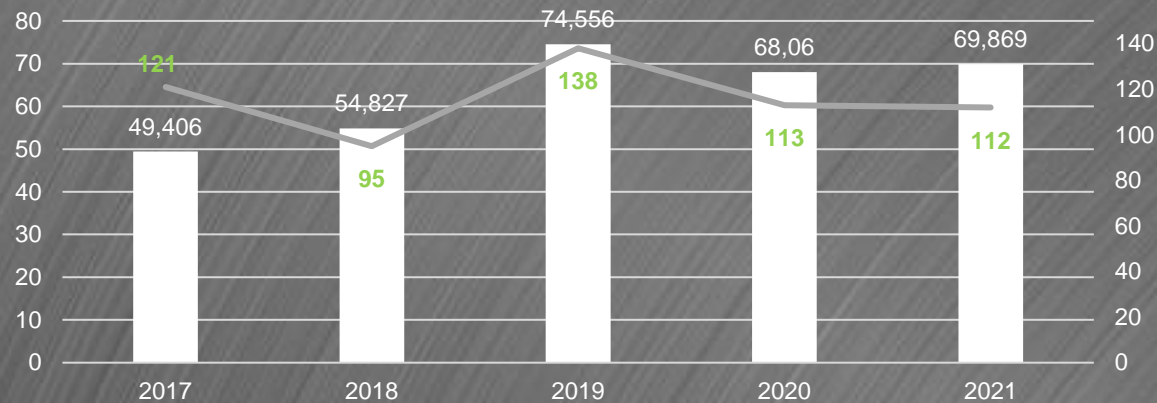


Effect to GDP\*, bln USD



Source: RoK BNS ASPIR, IMBC, IMF, The Business Research Company  
 Note: \*difference between chosen scenario GDP and inertial scenario GDP

## Volume of production of oil and gas machine building goods, bln KZT



The favorable forecast for oil & gas production in Kazakhstan for the long-term correlates with global trends. According to the forecasts, until 2025, oil consumption as the main energy resource in the transport sector will not fall below 90% of the total share of consumption.

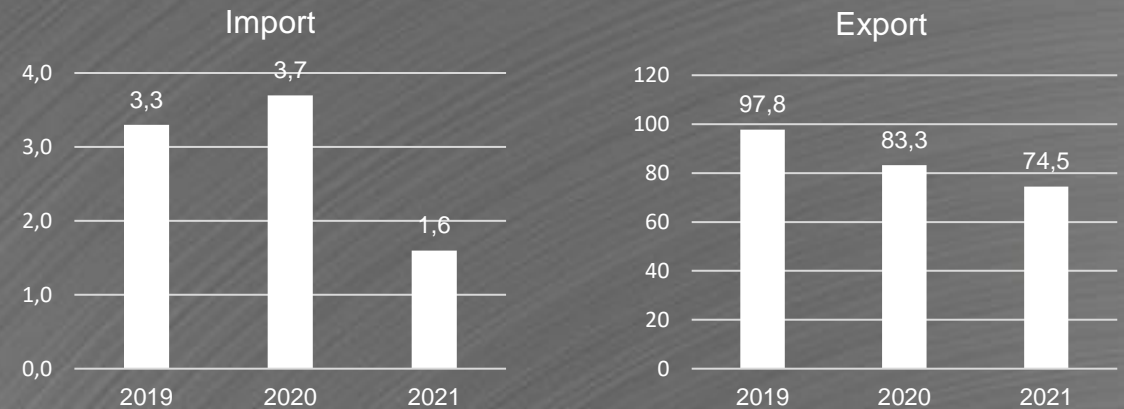
## RoK export / import ratio

	2016	2017	2018	2019	2020	2021
Export	1	1	1	1	1	1
Import	15	17	21	34	44	21

The country's oil and gas industry create a significant potential for the growth of oil & gas machine building due to the satisfaction of domestic enterprises of the existing demand for a wide range of imported products.

Currently, there is a negative trade balance in oil & gas equipment. Every 1 USD of oil and gas equipment exports accounts for 21 USD of imports.

## Import & Export of oil and gas machine building goods

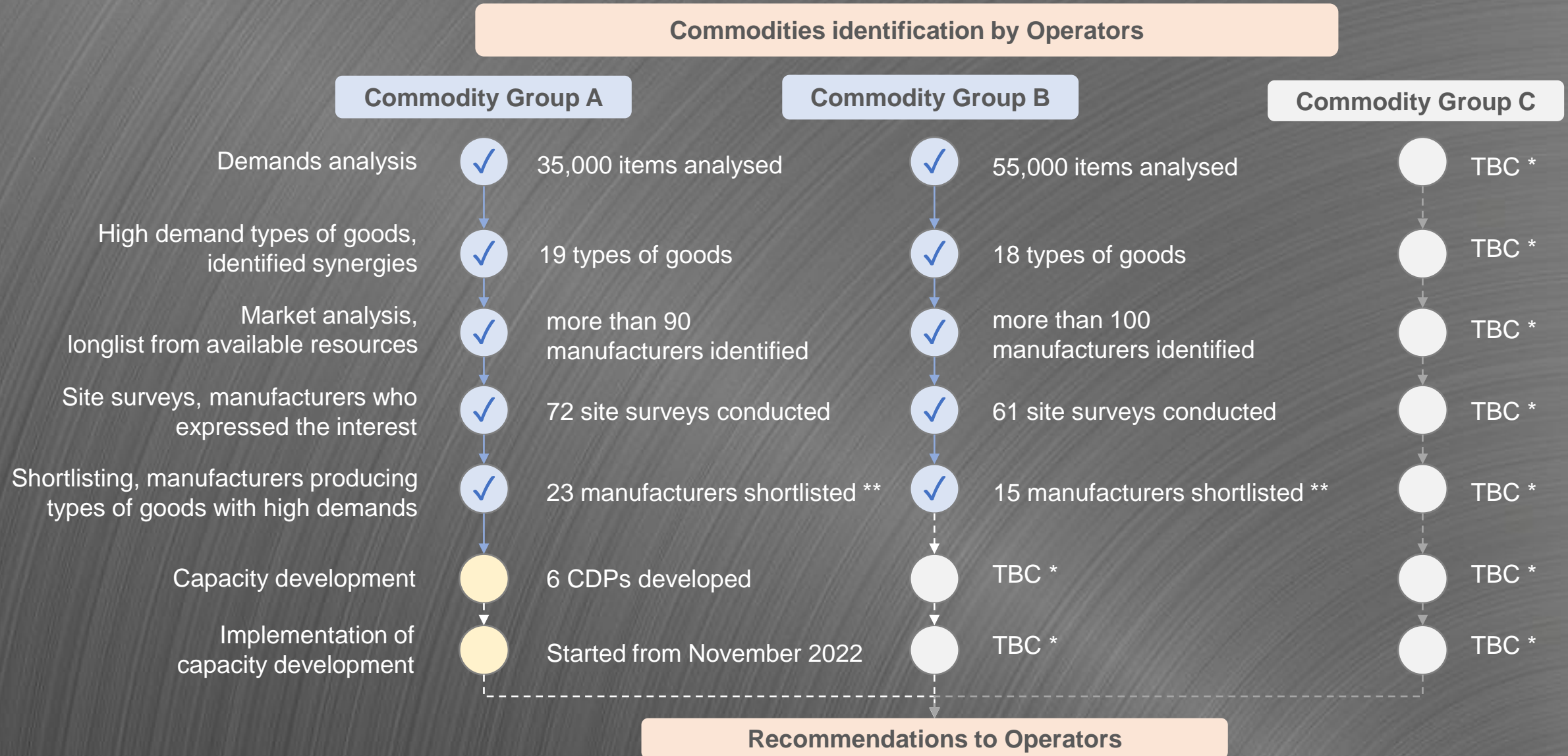


At the end of 2021, the oil & gas machine building market made purchases of goods for 1.2 BUSD, which is 37% lower than in 2020 (1.9 BUSD).

The share of oil & gas machine building in the total volume of the machine-building industry of RoK equals 3% (68.5 bln KZT), local manufacturing covers only 9.4% of the local market demand.

## Actual number of workers in manufacturing industry by occupation, thousand people

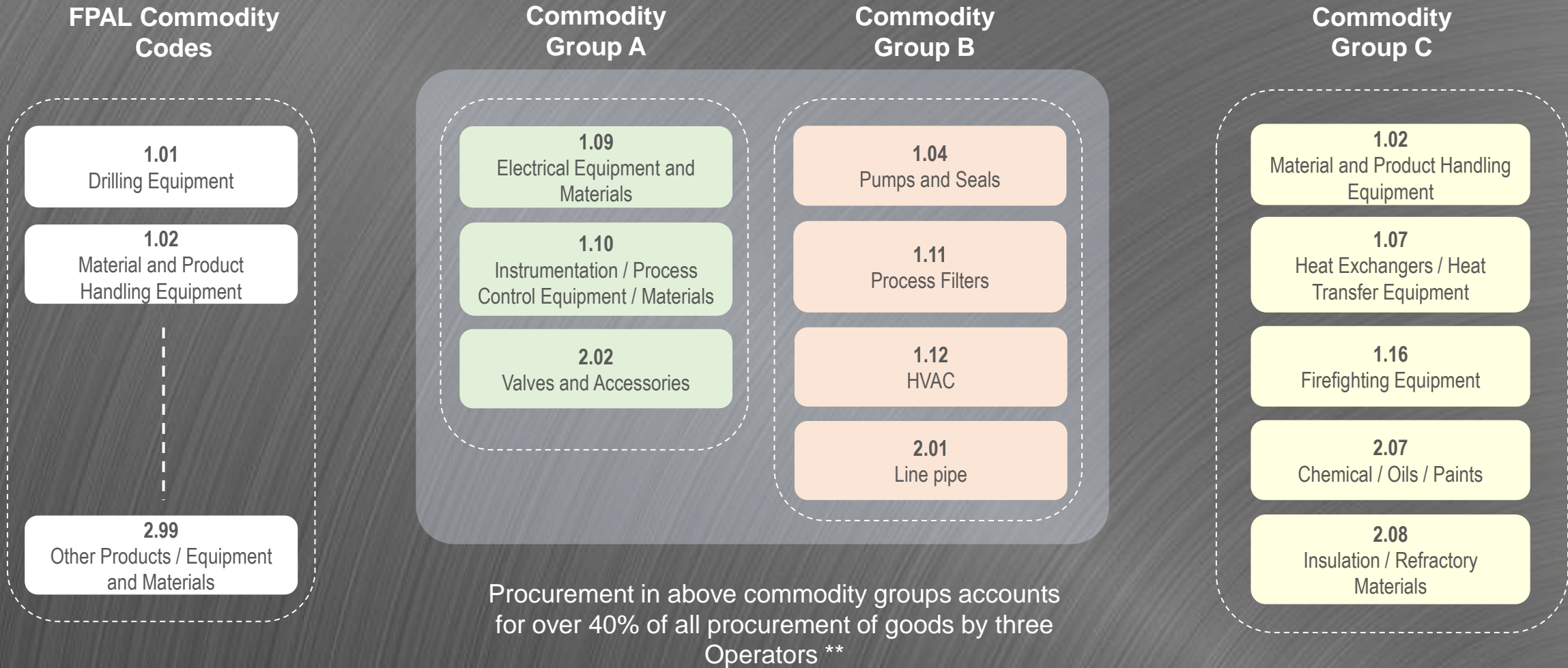
Sector	2Q 2018	2Q 2019	2Q 2020	2Q 2021	2Q 2022
Industry	622,7	625,9	604,8	606,7	610,8
Manufacturing industry	284,6	291,1	278,7	282,3	286,2
Oil & Gas machine building	13,4	14,2	14,3	14,2	15,3



\* To be conducted after completion of previous stages

\*\* Subject to change as additional manufacturers are identified, engaged and capacity development work progresses

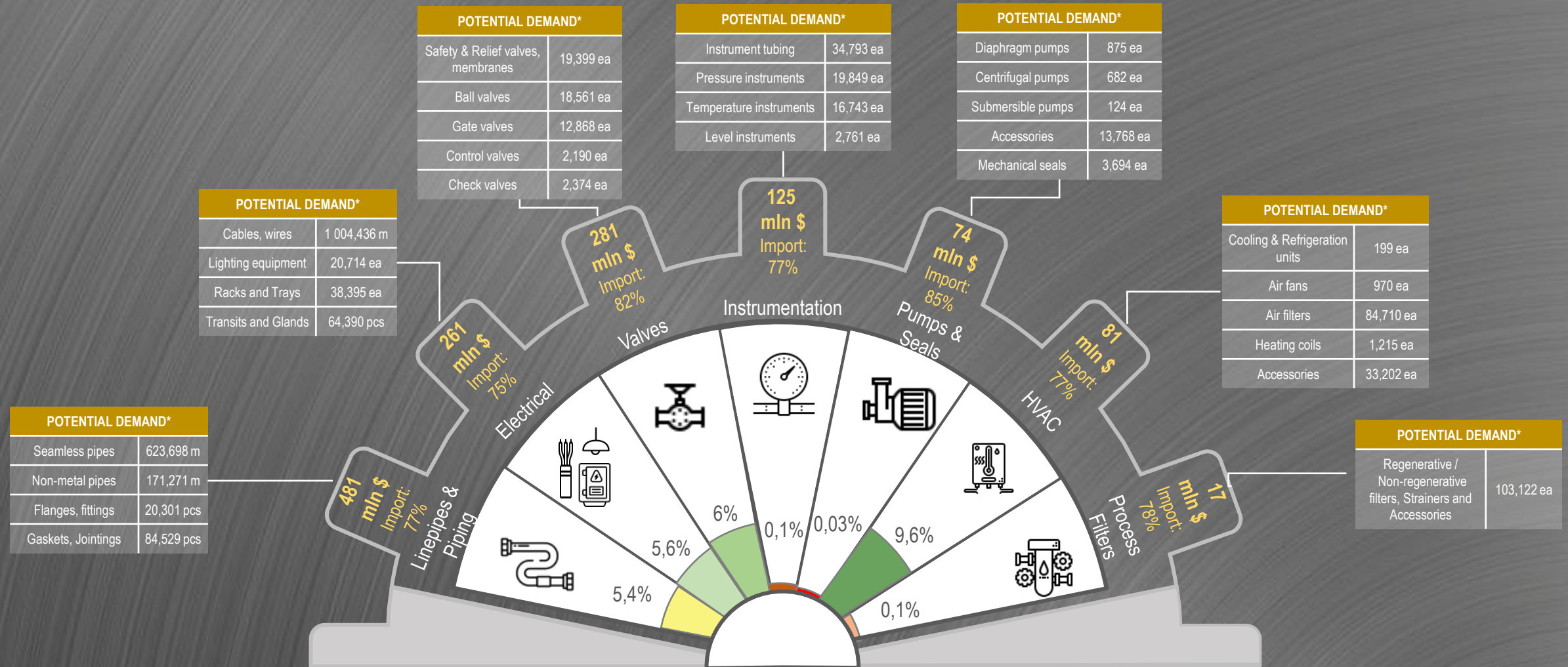
In our analyses of demands and identifying localization priorities, we utilize the FPAL coding system \*



\* Information on FPAL can be found via: <https://www.achilles.com/app/uploads/2018/12/Achilles-JQS-Code-Guide-V2.pdf>

\*\* According to the statistical data of IACNG MoE RoK, 2021

# PROCUREMENT AND DEMANDS UNDER COMMODITIES IN GROUP A & B (2020-2022)



\* The list is non-exhaustive. The demands represent the forecasted consumption by 3 Operators for the next 10 years and do not necessarily include demands under expansion projects and EPC/pC scopes. The tables include a snapshot of the types of goods within corresponding categories with the relatively higher quantitative demands.

\*\* Contract data is based on IACNG reports for 2020 - 2022 y. for procurement of goods by 3 Major Operators and does not include goods procured by EPC/pC.



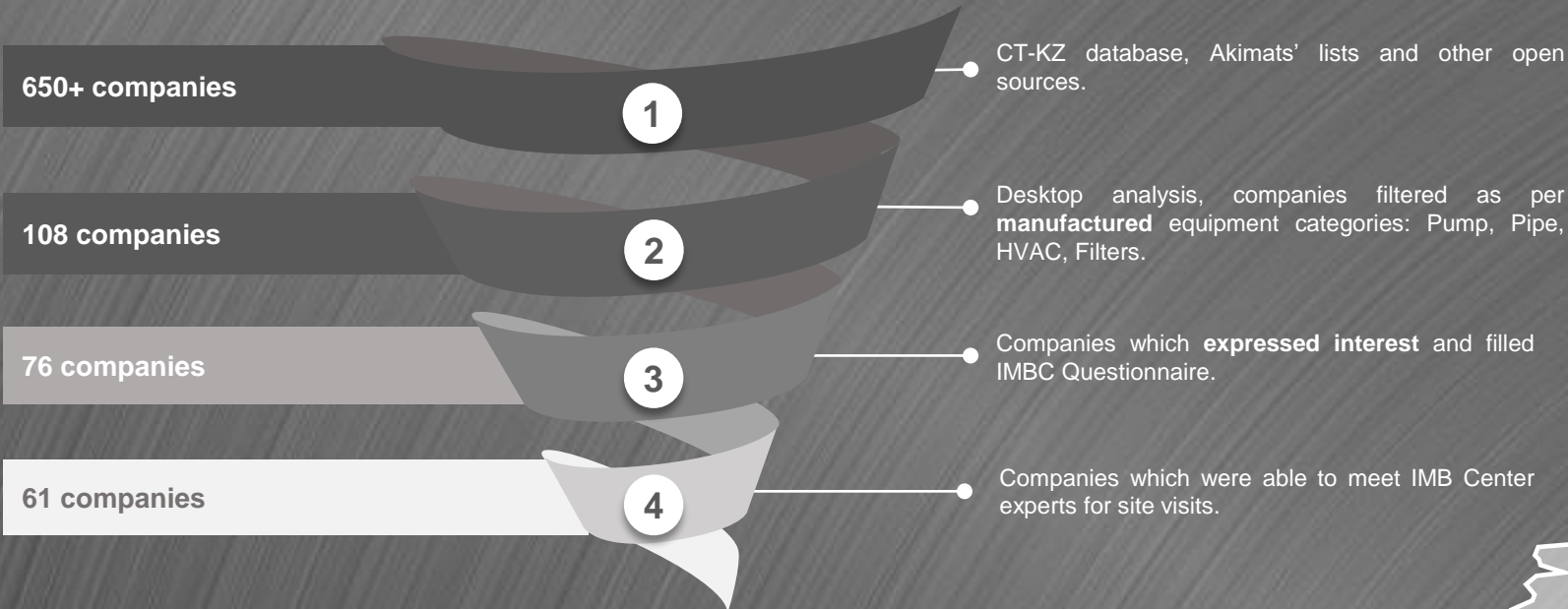
# RESULTS OF THE DEMANDS ANALYSIS UNDER COMMODITY GROUP B

- In 2022, Operators recommended the following 4 commodities on which they provided the demand data: Linepipes & piping, Pumps & Seals, HVAC, Process Filters.
- IMB Center consolidated and processed more than 55,000 line-items on these commodities to identify synergies and high potential for localisation.
- The analysis identified 18 types of goods that are forecasted to be in relatively high demand by the Major Operators within the next 10 years.

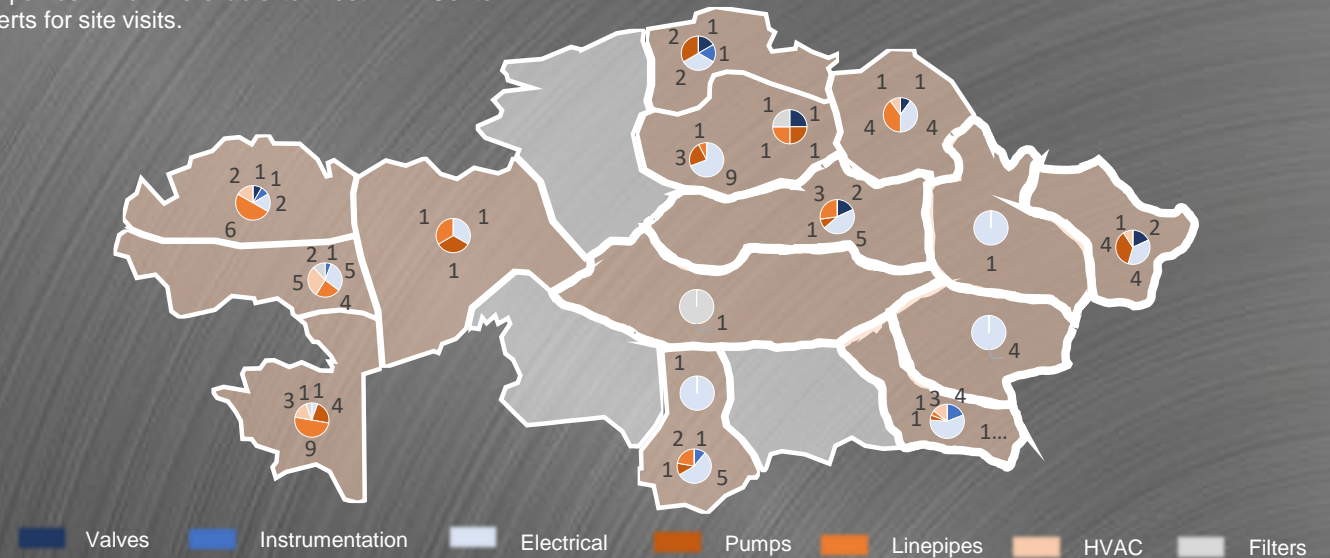
#	Description	FPAL*
1	Seamless pipe material grade API 5L	2.01.01
2	Seamless pipe Carbon Steel ASTM A333, pipe steel GOST 8732-78	2.01.01
3	Seamless pipe Stainless Steel ASTM A312	2.01.01
4	Metal fittings (including flanges, blinds, spacers, elbow, nozzle, collar, tee, reducer, sockolet, weldolet, bar)	2.04.05
5	Polyethylene pipes	2.01.03
6	Gaskets (spiral wound, compressor/pump gaskets, PTFE, OEM, O-rings)	2.01.06
7	Fastening (studbolts, hexagonal, cap, screw, nut, washer etc.)	2.04.07
8	Diaphragm pumps	1.04.03
9	Pumps spares & consumables (shims, pins, rings, bearings, belts)	1.04.99
10	Centrifugal	1.04.01
11	Submersible	1.04.05
12	Mechanical seals (dry and wet gas)	2.03.08
13	Air conditioner, Refrigerating unit	1.12.02
14	Heaters	1.12.08
15	Air filter (kit, element, bag, cartridge, OEM)	1.12.05
16	Ducting galvanized & PVC	1.12.07
17	Air fans	1.12.04
18	Filter Consumables – Bags, Cartridges	1.11.02

\* FPAL – International categorization system of oil & gas goods procured by industry

## Databases of manufacturers (RoK MIID, Akimats, Qazindustry, AKMI, IMB Center website form)



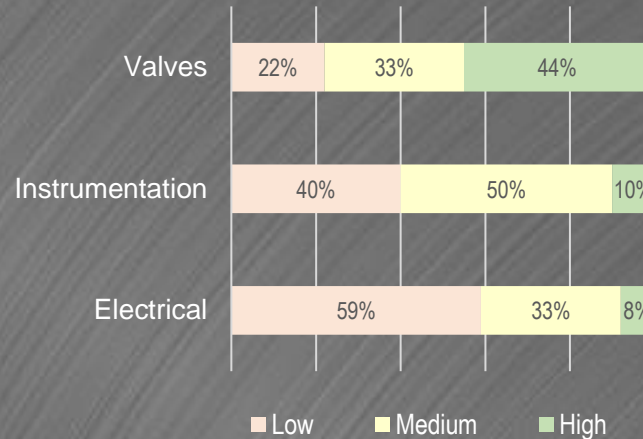
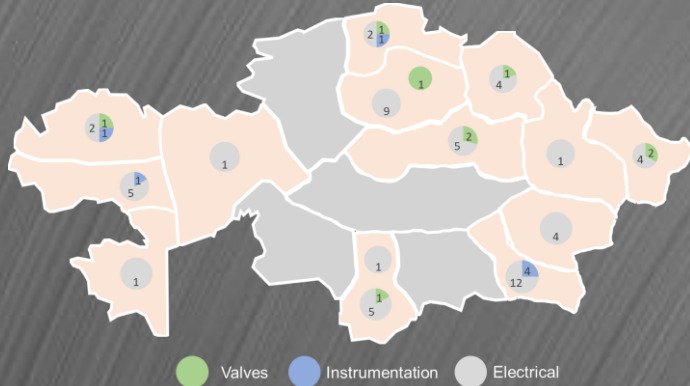
Center has surveyed the manufacturing facilities of  
**61 local manufacturers in 3 cities of Republican significance and 11 regions of country.**



# RESULTS OF MARKET ANALYSIS: COMMODITY GROUPS A & B

As of today, Center visited **123 local manufacturers** potentially producing the commodities of interest

## Commodity group A (72 manufacturers)



9

According to the conducted analyses based on site-visits, Center classified manufactures by their readiness level:

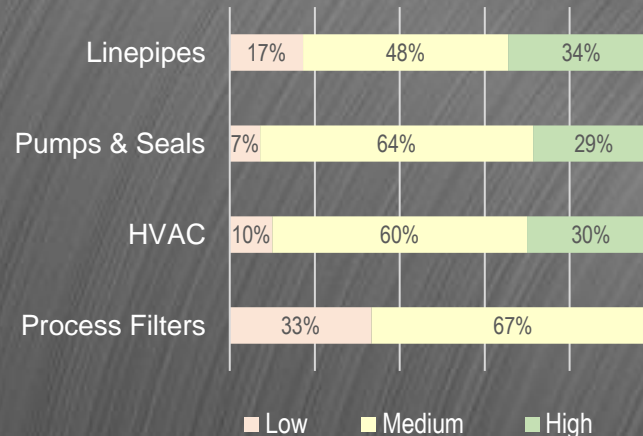
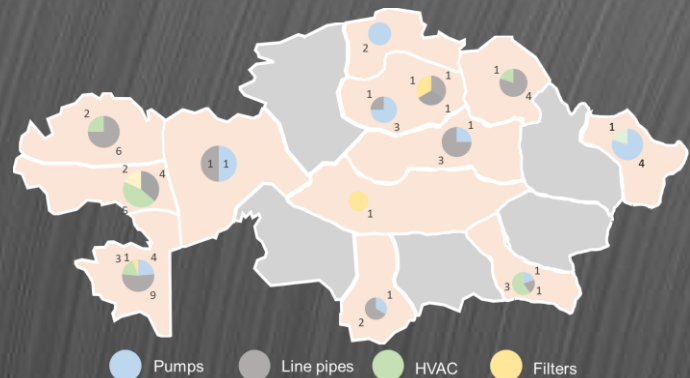
- 35% - low readiness level;
- 44% - medium readiness level;
- 21% - high readiness level.

7

56

Readiness level was assessed in terms of QMS, HSE, EDD, financial stability, industrialization, engineering, production personnel, manufacturing experience and availability of mandatory certifications.

## Commodity group B (61 manufacturers\*)



29

14

10

3

- Most of the manufacturers classified with low readiness level have issues related to availability of required certifications, financial stability, limited manufacturing experience, etc.
- By matching the identified top-priority goods and evaluated readiness levels, manufacturers will be shortlisted and progressed to the next stage that is Capacity Development.

\* 5 companies were not manufacturers of relevant goods under subject Commodity Group

	Pre-Desktop	Data analysis	Market study	TS Analysis	Site Surveys	Gap analysis	CDP
Deliverables	Recommended commodities list	Top-priority goods list goods with relatively high demands	Completed longlist	Summarised technical requirements (STRs)	Preliminary shortlist of potential manufacturers	Gap analysis results manufacturers shared with checklists (STR, QMS, HSE)	Selected manufacturers
Commodity Group A:	3 commodities recommended by Operators	19	> 90 manufacturers identified	12 STRs for 12 type of goods	72 site surveys conducted	21 manufacturers shared with checklists (STR, QMS, HSE)	7 manufacturers completed gap analysis checklists
Electrical		7	64	6 STRs for 6 type of goods	56 site surveys conducted	12	4 CDPs prepared
Instrumentation		4	25	2 STRs for 2 type of goods	7 site surveys conducted	2	-
Valves		8	11	4 STRs for 4 type of goods	9 site surveys conducted	7	2 CDPs prepared

Based on technical assessment, IMBC proposed the following recommendations to one manufacturer for 4 types of equipment:



## Health Safety Environment

- Implement accident record log;
- Implement logs on trainings (safety, fire & electrical safety, industrial safety);
- Implement an examination system for HSE;
- Set up HSE signs (evacuation plan, fire exit, muster point, etc.);
- Certification of workplaces for working conditions every 5 years;
- Plan for the elimination of possible accidents (agreements with state institutions);
- Test fire escapes & fire protecting equipment by licensed industrial safety firms.

## Quality Management Systems

- Develop training plan & if applicable assess trainings' effectiveness;
- Develop production plan;
- Implement & maintain Management of change process;
- Filling out a supplier card for all the suppliers;
- Initial supplier evaluation for critical and non-critical purchases;
- Implementation of customer satisfaction analysis.

## Manufacturing (engineering, industrialization, certification)

- Develop detailed datasheets both for Enclosures and Lighting Fixtures in accordance with Operators' summarized technical requirements;
- Pressure, vibration and electrical testing set up for Lighting Fixtures;
- Certification process as per IECEx standard, including all required steps:
  - First article production;
  - Submission of application to IECEx conformity assessment certification body (ExCB);
  - Shipment of first articles (equipment) to designated test lab & obtain ExTR;
  - Obtaining Quality assessment report (QAR) from IECEx qualified auditor;
  - Obtaining IECEx certificate from ExCB.

**Implementation process of above-mentioned recommendations might take 12 – 16 months and fully depends on the manufacturer's willingness and available resources both human and financial**

## Ministry of Finance, State Revenue Committee

Sales of goods at zero VAT rate



Before	Now
No practice of applying provisions and difficulties in their application at the regional level due to various interpretations and understanding	Official confirmation received on the applicability of the tax code provisions regarding the possibility of contracting of local manufacturers with zero VAT rates under TCO, NCOC and Dunga projects.

Reimbursement of expenses for international certificates



## Ministry of Industry & Infrastructure Development, Qazindustry

Before	Now
<ul style="list-style-type: none"> <li>0.11 bln KZT average annually in 2014 - 2021</li> <li>up to 50% or up to 3,000 MCI per certification (20k USD)</li> </ul>	<ul style="list-style-type: none"> <li>1.8 bln KZT available in 2023 onwards</li> <li>up to 70% or up to 30,000 MCI per certification (200k USD)</li> </ul>

Atyrau SEZ inclusion of machine building industry



## Atyrau Akimat, MI&ID, Atyrau SEZ

Before	Now
Machine building sector is not included in the SEZ's scope	No decision is made yet despite the common understanding of the issue

## LOCALIZED PROJECTS

### Honeywell

- Gas detectors
- Temperature transmitters
- Intrinsically safe control cabinets



### PETROLVALVES

- Range of valves
- Skid equipment

### SIGMA SOLUTIONS

WE BRING THE POWER

- Ex-proof distribution boards
- Junction boxes

## INITIATIVES IN 2022

### schneider

DBB,  
needle valves

### Schlumberger

Valves, pumps

### LESER

The-Safety-Valve.com

Safety, pressure  
relief valves

### NETZSCH

Pumps

### PFF

Flanges

### BBMPANO

Distribution  
boards

### SEVERN

Valves

### EO.kz

EDIL - ORAL.KZ

Valves, pumps,  
heat exchangers,  
electric motors

### HI AIR KOREA

HVAC

### Baker Hughes

Flexible pipes

### john crane

Mechanical  
seals

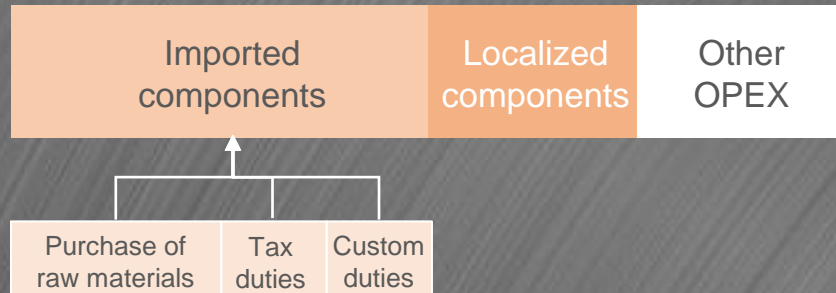
### Swagelok

Grab sampling  
systems, diaboxes

### BREDA

Valves

## COST OF LOCALIZATION



### Main localization and local sourcing barriers

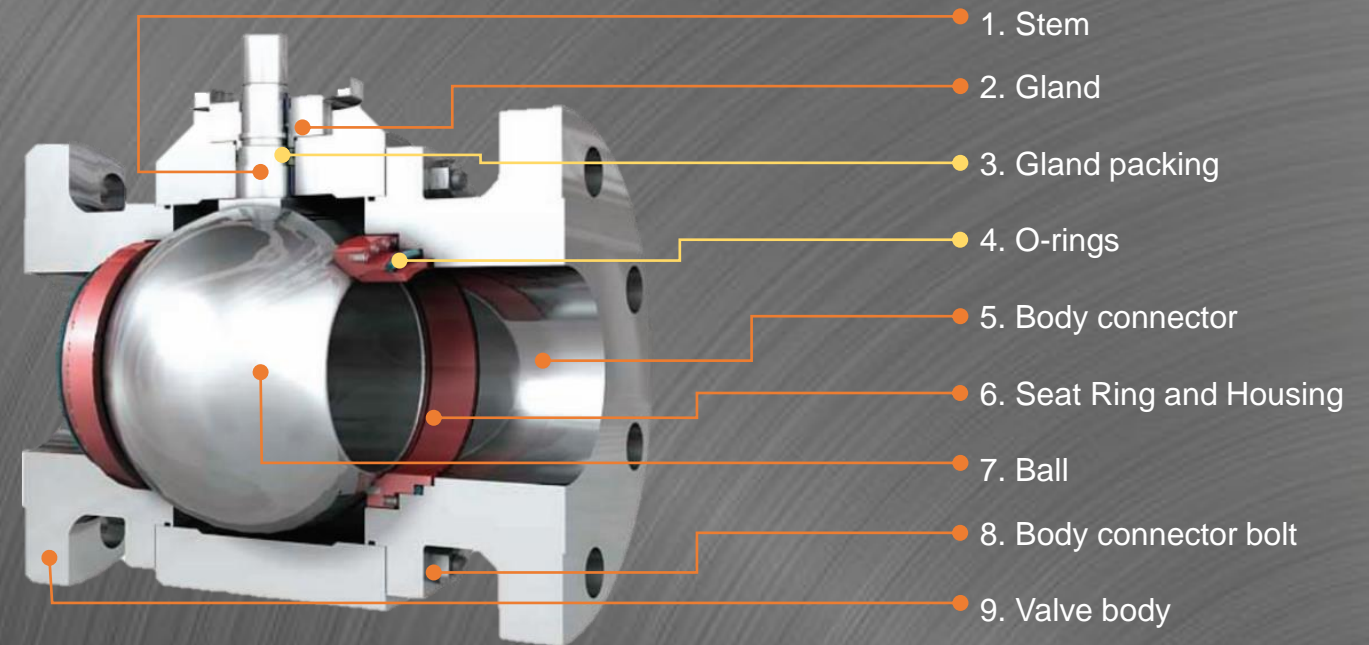
- Currently main localization barrier in RoK is the inability of sourcing all required components internally, i.e., within the country.
- Thus, there raises a need to import such components from abroad, which will be complemented with corresponding tax and custom duties.
- This fact significantly pushes the product's final price up and put such products in less competitive position during the participation in the procurement process.
- Major imported components or raw materials in manufacturing of machine building good are metallic and non-metallic components.
- Even though, there are certain availability in local market, there are no any available components as per Operators' required standards and certifications.

## EXAMPLE OF BALL VALVES

Every single component of ball valve manufactured as per Operators and OEMs standards can be manufactured in RoK, however there is a significant barrier in terms of lack of raw materials:

- For all metallic components there is a requirement for ASTM certified metal – **40% of total manufacturing cost**;
- For all non-metallic components there is a requirement for ASTM certified engineering rubber and plastics.

Importing those raw materials with corresponding tax and custom duties, significantly pushes up the good's unit price and makes the product of local manufacturers or localized OEM's production less price competitive compared to imported goods.



— Metallic components

— Non-metallic components



## Capacity Development: Commodity Group A

In 2022 IMB Center has focused its activities on capacity development of those local manufacturers that have been identified within the 2021:

- ✓ Summarized Technical Requirements (STR) checklists based on Operators' technical specifications for required **12** types of goods had been prepared and shared with 23 local manufacturers of Commodity Group A goods.
- ✓ **8** technical assessment visits to identify the gaps and potential development areas for local manufacturers against applicable STRs have been conducted.
- ✓ **6** Capacity Development Plans (CDP) and recommendations for local manufactures have been prepared and agreed with them for further implementation.

## Demand Analysis and Market study: Commodity Group B

The results of the analysis of the potential of local manufacturing of Commodity Group B goods, following the analysis of the demands as provided by the Operators have revealed the following:

- There is a lack of synergies due to the fact that a big portion of all consolidated demands are attributed to one Operator and causes a disproportionate distribution of demands.
- Identified **18** types of goods that have been forecasted to be in relatively high demand and the relevant Technical Specifications have been requested respectively.
- The production facilities of the 61 longlisted manufacturers of Commodity Group B goods have been visited.

## Localization activities

As part of investment facilitation and localization, Center has continued the engagements with international manufacturers and industry associations:

- ✓ As of year-end 2022, **13** additional MoUs with potential investors and OEMs were signed, including global corporations such as Schlumberger, John Crane, Baker Hughes.
- ✓ **5** Localization Cases have been obtained from the potential investors and OEMs and have been shared with Operators for feedback.
- ✓ As part of an MoE RoK initiative, joint exercise with Operators conducted to facilitate the localization of top OEMs.

## Advocacy

3 key advocacy issues identified by IMB Center in 2021 have been focused on within 2022. Center has developed engagement plans to address those issues and implemented them throughout the year. These issues include reimbursement of international certifications expenses, inequality in VAT preferences of locally manufactured goods vs. imported ones, revision of the limitations of the Atyrau SEZ to allow the allocation of machine building enterprises.

