

Criticality is determined expertly with a scoring system for each parameter of the category and by comparing total estimates measured for all categories.

2. Chance to gain additional value through an efficient C&M/services procurement. Let's consider the degree of oil and gas C&M impact (Table 1).

List 1 contains C&M and services which bear the greatest risks for the enterprise at the stages of manufacture and procurement. This category has also the greatest value potential that an effective procurement process can bring. It is the most critical category with the largest number of check-outs.

List 2 contains basically the affordable (but still costly) C&M and services, corresponding level of risks and other factors.

List 3 contains less costly C&M and services that do not have a critical impact on production

Prioritized categories of purchased C&M and services are determined based on two parameters: expected amount of money spend for each category and criticality of each category. Priority waves are identified by comparing all categories of C&M and services with each other. Thus, first wave categories (pipes, CMD&A, drilling equipment, specially made equipment, reagents) require enterprise's closer attention in terms of procurement management. Besides, there should be procurement strategies designed for these categories (Figure 1).

Table 1: C&M categories affecting the enterprise activity

C&M category	Effect on reliability. Production continuity (0-10 points)	Effect on production costs (0-10 points)	Effect on quality (0-10 points)	Effect on OHS and security (0-10 points)	Effect on the Environment (0-10 points)	Effect on enterprise's image (0-10 points)	Total
1 Pipes	10	7	8	8	5	7	45
2 Reagents	4	4	5	6	4	3	36
3 Auxiliary materials	2	3	2	3	2	3	15
4 Metal and section isolation valves	5	3	4	2	2	2	18
5 Drilling equipment	7	6	5	4	3	4	29
6 Electrical equipment							23
7 Auxiliary equipment							15
8 Specially made equipment	6	5	6	5	4	6	32
9 Spare parts	4	3	3	3	3	3	19
10 CMD&A	6	3	6	4	3	6	28
11 Chemistry	5	4	3	2	2	2	19
12 Service utility materials	2	1	2	2	2	1	10

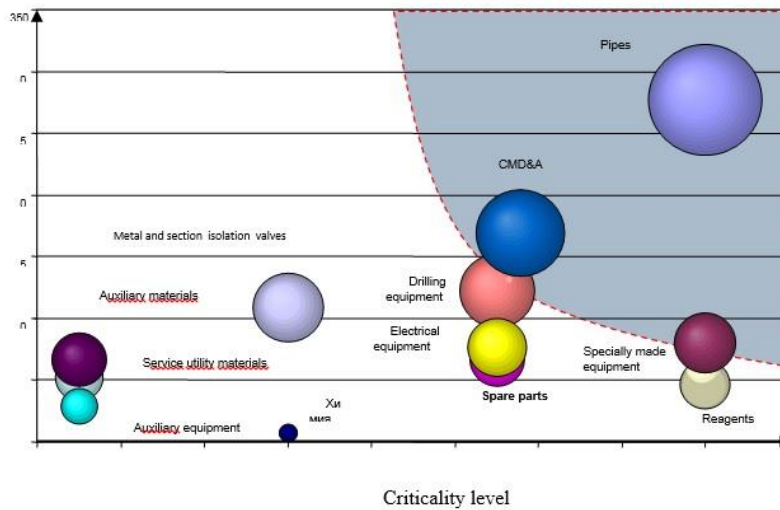


Figure 1: Prioritized categories of purchased C&M and services

Purchased C&M/services category effective management allows achieving sustainable cost savings in the amount of 5-40% for a particular category.

can lead to serious financial consequences and cause a supply failure, conflicts, deprive the opportunity to improve the quality of a product or a service.

Declared material and technical resources are been proposed to be standardized in order to rationalize the purchased C&M. In the best case, unclear product description can lead to a loss of time; in the worst case, it

Table 2 shows that the intersection of a declared material and technical resources nomenclature is not the same for all shops (94% of it is unique).

Table 2: Nomenclature intersection for PTR specified in List 1 and used in different shops of the oil and gas enterprise

Number of shops that have declared PTR	Number of stock items,		Amount of money, thousand RUB	% of total sum	Comments
	pcs.	%			
1	2	3	4	5	6
Procurement Plan for 2016					
1	887	94	7003.27	79.43	
2	54	5.73	1422.58	19.52	Pipes, transformers
3	1	0.135	3.93	0.04	Pumps 1ESPDP5-25-1750
4	1	0.135	89.62	1.01	Methanol
Procurement Plan for 1Q 2016					
1	1276	93.48	4823.36	94.85	
2	80	5.86	251.65	4.95	Sucker rod pump. SRP-19-8000 (RUB 31 MIO) Submersible Motor Cable CPPAF-120 3*16 (RUB 63 MIO) Weldless hot-worked Pipe-8732 325*809G2S (RUB 42 MIO)
3	9	0.66	10.04	0.2	Weldless hot-worked pipe-8732 114*10 20 (RUB 9 MIO) Weldless hot-worked pipe-8732 159*820 (RUB 0.5 MIO)
Purchases made in 1-3Q 2015					
1	3096	92.36	11926.25	78	
2	188	5,6	2671,3	17	Tubing joints and casing pipes (RUB 2178.34 MIO) Methanol and other reagents (RUB 164.58 MIO)
3	55	1.64	704.28	4.6	Submersible Motor Cable CPPAF-120 3*16 (RUB 212 MIO), SRP (RUB 87 MIO), casing pipes (82 million rubles)
4	13	0.4	38.15	0.25	Pumps 1ESPDP5-25-1750 (RUB 14 MIO), transformer TMPN-100-3/1 25 (RUB 10 MIO)

Technical review of the problem can reduce the nomenclatural diversity between the shops of the enterprise. This will allow increasing the number of negotiable subjects and reducing the resources purchase price.

List 1 contains material and technical resources declared simultaneously by four shops in 1-4Q 2015 (Table 3).

Table 3: Nomenclature declared simultaneously by four shops

Resource name		Number of purchased resources	Total value. RUB thousand
1	2	3	4
18013219	Pumps 1ESPDP5-25-1750	73 pcs	14 772.17
18005187	Transformer TMPN-100-/1.25	129 pcs	10 723.83
14032390	Weldless hot-worked pipe-8732 159x820	92 tons	3 300.58
14032449	Weldless hot-worked pipe-8732 89x10 20	81 tons	2 285 .74
14032381	Weldless hot-worked pipe-8732 114x6 20	35 tons	1 211 .87
14032452	Weldless hot-worked pipe-8732 89x6 20	19 tons	805 .17
14032385	Weldless hot-worked pipe-8732 159x6 20	15 tons	543 .57
14007487	Class A Cement	624 tons	1 761 .55
14018617	Sucker rod pump. SRP-22-1500	1795 pcs	1 689.10
14004633	Branch-17375 90gram 114x10 20	1175 pcs	511 .93
14021544	Branch-17375 90gram 114x8 20	831 pcs	291 .75
14004645	Branch-17375 90gram 114x6 20	356 pcs	94 .97
14101239	Salt pellets	7900 kg	158 .81

The largest value share of items with demand (81%) is attributed to 5 categories of material and technical resources, 4 of which are characterized by significant purchase regularity (Table 4).

Table 4: Categories of material and technical resources attributed with the largest cost share of annual demand (81%)

Category name	Total value. RUB thousand	Value share	Value group	CV	Group by purchase regularity
1	2	3	4	5	6
Casing pipes	4 261 .73	48.31%	A	0.21	X
Tubing joints	1 130 .70	12.81%	A	0.17	X
Oil and gas production chemicals	709 .23	8.04%	A	0.72	Z
Drilling chemicals	589 .43	6.68%	A	0.21	X
Other mortars, dry mix	488 .52	5.53%	A	0.12	X

The largest value share of items with demand (80.5%) is attributed to 22 (out of 650) categories of material and technical resources. Only 4 of them

are characterized by significant purchase regularity within the quarter (Table 5).

Table 5: Categories of material and technical resources (22) attributed with the largest cost share of quarter demand (80.5%)

List No.	Category name	Total value. RUB thousand	Value share	Value group	CV	Group purchase regularity
1	2	3	4	5	6	7
1	Casing pipes	934.31	15.56	A	0.38	Y
1	Steel pipes	786.56	13.1	A	1.02	Z
1	Tubing joints	719.40	11.98	A	0.12	X
1	Oil and gas production chemicals	491.61	8.18	A	0.79	Z
1	Insulated pipes	267.21	4.45	A	1.38	Z
1	Other mortars, dry mix	179.48	2.98	A	0.61	Z
1	Oil field and standard cables	167.50	2.78	A	0.32	Y
1	Drilling chemicals	145.01	2.43	A	0.12	X
1	Group metering units	138.34	2.3	A	1.36	Z
1	ESP pumps	123.66	2.05	A	0.26	Y
1	Modular group and modular cluster pumping stations	115.00	1.91	A	1.41	Z
2	Steel valves	104.47	1.75	A	0.74	Z
1	Compressor equipment	99.28	1.65	A	0.94	Z
1	Spare parts for gas turbine power plants	90.87	1.5	A	1.41	Z
1	Packaged transformer substations	82.01	1.37	A	1.3	Z
1	ESP motors	72.84	1.21	A	0.15	X
1	ESP motor control stations	71.19	1.19	A	0.08	X
1	Oil type power transformers	55.90	0.93	A	1.39	Z
2	Mechanical cleaning filters	54.93	0.91	A	1.34	Z
1	Pump rods without centralizers	51.91	0.86	A	0.34	Y
1	Central pump stations	44.06	0.74	A	0.36	Y
1	Other oilfield equipment	37.38	0.62	A	1.23	Z

Significant level of procurement efficiency can be maintained by monitoring and controlling the process of purchasing a small number of nomenclature material and technical resources.

Storage expenses can be reduced at the stage of regular delivery scheduling.

Table 6 presents data on annual demand for material and technical resources in 2016. Based on them, there was prepared a report presenting the summarized information about the planned purchases provided by all shops.

Table 6: Annual demand for material and technical resources in 2016, RUB thousand

Inventory item	1Q	2Q	3Q	4Q	Total
Magnetic drum	176.47	205.78	477.49	673.88	1 533.62
Mobile compressor station	935.89	966.67	951.89	903.33	3 757.78
Mobile-crown high masts	641.06	294.06	294.10	230.57	1 459.80
Stationary-crown high masts	133.32	280.42	211.01	63.91	841.71
Equipment not included in the construction estimate	939.57	580.65	485.41	423.86	2 429.49
Total	2 826.31	2 327.58	2 419.9	2 295.55	9 869.34

Table 7 presents the annual delivery planning results for 2016 based on the reduced nomenclatural diversity of material and technical resources

between the shops of the enterprise, and increased number of negotiable subjects.

Table 7: Material and technical resources declared in 2016

Inventory item	List 1		List 2		List 3		Total value	Total items
	Value (RUB MIO)	Number of querying items	Value (RUB MIO)	Number of querying items	Value (RUB MIO)	Number of querying items		
Magnetic drum	1 167.63	184	70.71	32	17.05	40	1255.39	256
Mobile compressor station	1 190.58	215	107.03	312	23.86	73	1321.47	600
Mobile-crown high masts	764.24	1 924.00	399.36	16694.00	113.19	12745.00	1 276.79	31 363
Stationary-crown high masts	649.58	252	71.71	219	0.2	10	721.48	481
Equipment not included in the construction estimate	1 313.04	1 100.00	108.84	365	8.95	29	1 430.83	1 494
Grand total	5 085.06	3 675.00	757.64	17622.00	163.25	12897.0	6005.95	34 194
Share in total value/items (%)	84.67	10.75	12.61	51.54	2.72	37.72	100	100
Number of resources (pcs)	1 365		6 063		3 979		11 407	
Share in total resources volume (%)	11.97		53.15		34.88		100	

Table 8: Economic benefit derived from rationalized nomenclature of C&M

Inventory item	Procurement costs before standardization	Procurement costs after standardization	Economic benefit
Magnetic drum	1 533.62	1 255.39	278.23
Mobile compressor station	3 757.78	1 321.47	2436.31
Mobile-crown high masts	1 459.80	1 276.79	183.01
Stationary-crown high masts	841.71	721.48	120.23
Equipment not included in the construction estimate	2 429.49	1 430.83	998.66
Total	10022.4	6 005.95	4016.45

Thus, economic benefit will amount to RUB 4.016.45 million after optimizing material supply.

4. DISCUSSION

We have analyzed the supplies, commodity stock, long-stocked resources of the oil and gas enterprise with no demand and found out that procurement activity require closer attention in order to optimize the material supply. There was a need in diagnosing procurement activity in order to compare it with the existing procurement process

In this case, one has to fill out a feedback form that contains 225 questions grouped by enterprise directions and questionnaires specially designed for:

- management team;
- purchasing Specialists;
- responsible customers;
- human Resources Specialists
- IT technicians.

Comparative analysis allowed us to identify the following positive aspects:

1. There is a package of initiatives focused on improving procurement activity [7];
2. There is a vision, objectives and a procurement strategy coordinated with the general strategy of the enterprise [2, 15].

We have allocated areas that require attention:

1. organization's goal is defined, but formally is not repeated into the procurement sphere. Hence, procurement goals and objectives are not agreed among the senior managers;
2. current system of key performance indicators is under development. High-level procurement KPI are not detailed, not tied to the processes or the motivation system;
3. approach to company's purchasing management has not been compared with those existing in other companies (best practice) until now. This situation does not allow determining whether the existing initiatives are appropriate or not.

5. CONCLUSION

Thus, physical resources prioritization can significantly save financial resources without without compromising the product quality. The proposed method also allows using an alternative way of maintaining accounting and reporting documentation, drafted in order of priority. This method can be used both at large and small enterprises, including oil and gas ones.

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