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Kazakhstan: Public Procurement Reporting Module for the National eProcurement System

The methodology for calculating key performance indicators used in the public procurement reporting module

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1 Document objectives

This document has been prepared under contract number № C38739/1189/46558, dated 24 April 2018 between the European Bank for Reconstruction and Development and the consultant - «RBC IT International Group» LLC («RBC»).

This paper aims to present key performance indicators which evaluate public procurement processes in the Republic of Kazakhstan and to introduce the methodology for calculating these indicators based on the OCDS.

The provided information for each indicator is as follows:

1. Name;
2. Short description;
3. Calculating formula based on OCDS data.

All indicators presented in this document are divided into the following categories:

1. Quantitative indicators;
2. Cost indicators;
3. Time duration indicators.
4. Indicators for EEC forms.

2 Data sources used for calculating the KPIs

The following open procurement data sources are necessary to calculate KPIs:

1. Tendering data API https://ows.goszakup.gov.kz/ocds
2. Contracting data API https://ows.goszakup.gov.kz/ocds-contract
3. Planning data API https://ows.goszakup.gov.kz/ocds-plan

To calculate indicators, it is necessary to download all documents which describe public procurement processes using access points to all APIs listed above. The list of documents is contained in the releases [] array of the HTTP response body. To gain access to data you have to request an access token from the public procurement web-portal administrator.

3 Mathematical conventions used in formulas

A combination of JSONPath and SQL syntax has been used to introduce formulas. A list of this syntax is presented below:

- **count** — analogue **count** in SQL

- **count_unique** — analogue **count distinct** in SQL
- **sum** — analogue **sum** in SQL
- **avg** — analogue **avg** in SQL
- **where** — analogue **where** in SQL
- **group by** — analogue **group by** in SQL
- **exists** — operation indicates that any data item is present.
- <> — operator “not equal.”
- **and**, **or** — logical conjunction and disjunction;
- **not** — logical negation
- **in** — analogue **in** SQL
- **+**, **-**, **=** — addition, subtraction, and equality operators
- **concat** — string concatenation
- **Len(array)** — length of JSON-array
- **{name KPI}** — indicator value (applicable when one indicator is used to calculate another indicator as a variable).

4 Indicators

4.1 QUANTITATIVE INDICATORS

4.1.1 Number of procedures

- Name: Number of procedures;
- Short description: the total number of procedures which have been placed on the electronic public procurement system.
- Formula:

```
count($.tender.lots[].id)
```

4.1.2 Number of lots

- Name: Number of lots;
- Short description: the total number of lots which have been placed on the electronic public procurement system;
- Formula:

```
count($.tender.lots[].id) where $.tender.subStatus in(210, 220)
```

4.1.3 Number of contracting authorities

- Name: Number of contracting authorities;

- Short description: this indicator presents the number of organizations which have placed a procedure on the eProcurement system at least once.
- Formula:

```
count_unique($.parties[].id) where 'buyer' in $.parties[].roles[]
```

4.1.4 Number of bidders

- Name: Number of bidders;
- Short description: this indicator presents the number of organizations which have participated in public procurement tenders.
- Formula:

```
count_unique($.parties[].id) where 'tenderer' in $.parties[].roles[]
```

4.1.5 Number of bids

- Name: Number of bids;
- Short description: this indicator presents the number of bids which have been placed in the eProcurement system.
- Formula:

```
count(concat($.data.bids.details[].id,$.data.bids[].details.relatedLot.id))
```

4.1.6 Average number of bids in a lot

- Name: Average number of bids in a lot;
- Short description: this indicator presents the number of the average number of bids, submitted by bidders for one lot (It is only calculated for completed lots in competitive procedures)
- Formula:

```
{Number of bids} / {Number of lots}
where $.tender.procurementMethodDetails
                not in('singleSourceUnsuccessful', 'singleSourcePlan')
and $.tender.lots[].status = 'complete'
```

4.1.7 Number of lots in non-competitive procedures

- Name: Number of lots in non-competitive procedures;
- Short description: this indicator presents the number of lots in non-competitive procedures (Single source procurement);
- Formula:

```
{Number of lots} where $.tender.procurementMethodDetails
                in('singleSourceUnsuccessful', 'singleSourcePlan')
```

4.1.8 Share of non-competitive procedures by number of lots

- Short description: this indicator refers to the ratio of the number of lots of non-competitive procedures to the total number of lots;
- Formula:

```
{Number of lots in non-competitive procedures} / {Number of lots}
```

4.1.9 Number of enquires

- Name: Number of enquires;
- Short description: this indicator presents the number of enquires about procedures placed on the eProcurement system.
- Formula:

```
count($.tender.enquiries[].id)
```

4.1.10 Number of complaints

- Name: Number of complaints;
- Short description: this indicator presents the number of complaints placed on the eProcurement system.
- Formula:

```
count($.complaints[].id)
```

4.1.11 Number of awards

- Name: Number of awards;
- Short description: this indicator presents the number of bid awards granted by contracting authority or organizer;
- Formula:

```
count($.awards[].id)
where $.tender.procurementMethodDetails
                not in('singleSourceUnsuccessful', 'singleSourcePlan')
```

4.1.12 Number of awarded lots

- Name: Number of awarded lots;
- Short description: this indicator presents the number of lots in which a bid award has been granted by the contracting authority or organizer;
- Formula:

```
{Number of lots} where exists ($.awards[])
and $.tender.procurementMethodDetails
                not in('singleSourceUnsuccessful', 'singleSourcePlan')
```

- *Tip: $.awards[] are joined with corresponding bids using the $.awards[].relatedBid field*

- *Tip: $.bids.details[] are joined with corresponding lots using the $.bids.details[].relatedLot field*

4.1.13 Number of plan items

- Name: Number of plan items;
- Short description: this indicator presents the number of plan items placed on the eProcurement system;
- Formula:

```
count($.plans[].items[].id)
where $.plans[].items[].status not in('changed', 'delegated')
```

4.1.14 Number of contracts

- Name: Number of contracts;
- Short description: этот показатель обозначает количество договоров о государственных закупках, которые не находятся на стадии черновика;
- Formula:

```
count_unique($.contracts[].rootId)
where $.contracts[].status in
('pending', 'active', 'complete', 'terminated', 'partiallyComplete', 'cancelled')
```

4.1.15 Number of payments

- Name: Number of payments;
- Short description: this indicator presents the total number of payments made during contracts execution;
- Formula:

```
count_unique($.contracts[].implementation.transactions[].id)
where $.contracts[].status in
('pending', 'active', 'complete', 'terminated', 'partiallyComplete', 'cancelled')
```

4.1.16 Average number of payments per contract

- Name: Average number of payments per contract;
- Short description: this indicator presents the average number of payments per contract made during contracts execution;
- Formula:

```
avg(count_unique($.contracts[].implementation.transactions[].id)
where $.contracts[].status in
('pending', 'active', 'complete', 'terminated', 'partiallyComplete', 'cancelled'))
group by $.contracts[].rootId
```

4.1.17 Number of additional agreements

- Name: Number of additional agreements;

- Short description: this indicator presents the total number of additional agreements concluded during contracts execution;
- Formula:

```
count_unique($.contracts[].id)
where $.contracts[].id <> $.contracts[].rootId
```

4.1.18 Average number of additional agreements per contract

- Name: Average number of additional agreements per contract;
- Short description: this indicator presents the average number of additional agreements per contract made during contracts execution;
- Formula:

```
{Number of additional agreements} / {Number of contracts}
```

4.2 COST INDICATORS

4.2.1 Lots' value

- Name: Lots' value;
- Short description: this indicator presents the total value of lots placed in the eProcurement system;
- Formula:

```
sum($.tender.lots[].value.amount)
```

4.2.2 Savings

- Name: Savings;
- Short description: this indicator presents the difference between the initial cost of lots and the cost of this lots in the awarded procedures;
- Formula:

```
{Lots value} - sum($.bids.details[].value.amount
                   where exists ($.awards[].id
                   where $.awards.status = 'active'
                   and $.awards[].place = 1))
and $.tender.procurementMethodDetails
                   not in('singleSourceUnsuccessful', 'singleSourcePlan')
```

4.2.3 Savings percentage

- Name: Savings percentage;
- Short description: this indicator refers to the ratio of savings and lots of value;
- Formula:

```
{Savings} / {Lots vlaue} * 100%
                   where exists ($.awards[].id
                   where $.awards.status = 'active'
```

```
                    and $.awards[].place = 1))
and $.tender.procurementMethodDetails
                    not in('singleSourceUnsuccessful', 'singleSourcePlan')
```

4.2.4 Announced lots' value

- Name: Announced lots' value;
- Short description: this indicator presents the total value of lots placed in the eProcurement system in which bids are accepted or will be accepted in future;
- Formula:

```
sum($.tender.lots[].value.amount) where $.tender.subStatus in(210, 220)
```

4.2.5 Lots' value from noncompetitive procedures

- Name: Lots' value from noncompetitive procedures;
- Short description: this indicator presents the total value of lots placed in the eProcurement system;
- Formula:

```
{Lots value} where $.tender.procurementMethodDetails
                    in('singleSourceUnsuccessful', 'singleSourcePlan')
```

4.2.6 Share of lots' value from non-competitive procedures

- Name: Share of lots' value resulted from non-competitive procedures;
- Short description: this indicator refers to the ratio of lots' value from non-competitive procedures to the total lots' value;
- Formula:

```
{Lots value from noncompetitive procedures} / {Lots value}
```

4.2.7 Awarded lots' value

- Name: Awarded lots' value;
- Short description: this indicator presents the number of lots in which an award decision has been made;
- Formula:

```
{Lots value} where exists ($.awards[])
and $.tender.procurementMethodDetails
                    not in('singleSourceUnsuccessful', 'singleSourcePlan')
```

- *Tip: $.awards[] are joined with bids using the $.awards[].relatedBid field*
- *Tip: $.bids.details[] are joined with lots using the $.bids.details[].relatedLot field*

4.2.8 Margin of dumping

- Name: Margin of dumping;
- Short description: this indicator presents the difference between bid value and the dumping value threshold;

- Formula:

```
sum($.tender.lots[].minValue.amount - sum($.bids.details[].value.amount
                    where exists ($.awards[].id
                    where $.awards.status = 'active'
                    and $.awards[].place = 1))
and $.tender.procurementMethodDetails
                    not in('singleSourceUnsuccessful', 'singleSourcePlan')
```

4.2.9 Normal price reduction

- Name: Normal price reduction;
- Short description: this indicator presents the difference between bid value and lot value for bids which have higher value than the dumping threshold or the difference between dumping threshold and lot value for bids which have lower value than the dumping threshold;
- Formula:

```
sum($.tender.lots[].value.amount - sum($.bids.details[].value.amount
                    where exists ($.awards[].id
                    where $.awards.status = 'active'
                    and $.awards[].place = 1))
and $.tender.procurementMethodDetails
                    not in('singleSourceUnsuccessful', 'singleSourcePlan')
and $.bids.details[].value.amount > $.tender.lots[].minValue.amount
```

4.2.10 Margin of dumping percentage

- Name: Margin of dumping percentage;
- Short description: this indicator shows the ratio of the margin of dumping to the total savings;
- Formula:

```
{Margin of dumping} / {Savings} * 100%
 where exists ($.awards[].id
                    where $.awards.status = 'active'
                    and $.awards[].place = 1))
and $.tender.procurementMethodDetails
                    not in('singleSourceUnsuccessful', 'singleSourcePlan')
and $.bids.details[].value.amount < $.tender.lots[].minValue.amount
```

4.2.11 Total adjustment value

- Name: Total adjustment value;
- Short description: this indicator presents the total value adjustment according to nonprice criteria stated in the procurement procedure;
- Formula:

```
sum($.bids.details[].value.amount * $.nonPriceEvaluation[].totalScore)
```

- *Tip: $.bids.details[] are joined with nonprice criteria using the $.nonPriceEvaluation[].relatedBid field*

4.2.12 Average adjustment value

- Name: Average adjustment value;
- Short description: this indicator presents the average value adjustment according to nonprice criteria stated in the procurement procedure;
- Formula:

```
avg($.bids.details[].value.amount * $.nonPriceEvaluation[].totalScore)
```

- *Tip: $.bids.details[] are joined with nonprice criteria using the $.nonPriceEvaluation[].relatedBid field*

4.2.13 Average adjustment percentage

- Name: Average adjustment percentage;
- Short description: this indicator presents the average percentage of the value adjustment (the ratio of adjustment value to bid value);
- Formula:

```
avg($.nonPriceEvaluation[].totalScore)
```

4.2.14 Planned estimated value

- Name: Planned estimated value;
- Short description: this indicator presents the total value of all published plan items;
- Formula:

```
sum($.plans[].items[].quantity * $.plans[].items[].unitPrice)
where $.plans[].items[].status not in(‘changed’, ‘delegated’)
```

4.2.15 Contracts value

- Name: Contracts value;
- Short description: the total value of all non-draft contracts;
- Formula:

```
sum($.contracts[].value.amount)
where $.contracts[].status in
('pending', 'active', 'complete', 'terminated', 'partiallyComplete', 'cancelled')
```

4.2.16 Payments value

- Name: Payments value;
- Short description: this indicator presents the total value of payments made during contract execution;
- Formula:

sum($.contracts[].implementation.transactions[].value.amount)
where $.contracts[].status **in**
('pending', 'active', 'complete', 'terminated', 'partiallyComplete', 'cancelled')

4.2.17 Average payment value

- Name: Average payment value;
- Short description: this indicator presents the average value of payments made during contract execution;
- Formula:

avg($.contracts[].implementation.transactions[].value.amount)
where $.contracts[].status **in**
('pending', 'active', 'complete', 'terminated', 'partiallyComplete', 'cancelled')

4.2.18 Contract execution percentage

- Name: Contract execution percentage;
- Short description: this indicator presents the contract execution percentage in terms of payments (the ratio of payments value to contract value);
- Formula:

{Payments value} / {Contracts value} * 100%

4.2.19 Execution percentage (lots)

- Name: Execution percentage (lots)
- Short description: this indicator presents the ratio of lots value to planned estimated value;
- Formula:

{Lots value} / {Planned estimated value} * 100%

4.2.20 Execution percentage (contracts)

- Name: Execution percentage (contracts)
- Short description: this indicator presents the ratio of contracts value to planned estimated value;
- Formula:

{Contracts value} / {Planned estimated value} * 100%

4.2.21 Execution percentage (payments)

- Name: Execution percentage (payments)
- Short description: this indicator presents the ratio of payments value to planned estimated value;
- Formula:

{Payments value} / {Planned estimated value} * 100%

4.3 TIME DURATION INDICATORS

4.3.1 Average bidding period duration

- Name: Average bidding period duration;
- Short description: this indicator presents the average time length in days for bidding period;
- Formula:

avg($.tender.tenderPeriod.durationInDays)

4.3.2 Average time to answer enquiry

- Name: Average time to answer enquiry;
- Short description: this indicator presents the average time length in days it takes contracting authorities or organizers to answer enquiries from potential suppliers;
- Formula:

avg($.tender.enquiries[].dateAnswered - $.tender.enquiries[].date)

4.3.3 Average time length to start the complaint review

- Name: Average time length to start the complaint review;
- Short description: this indicator presents the average time length in days it takes the review body to start a complaint review since its publication in the eProcurement system;
- Formula:

avg($.complaints[].dateReview - $.complaints[].dateRceived)

4.3.4 Average time length to process a complaint

- Name: Среднее время обработки жалобы;
- Short description: this indicator presents the average time length in days it takes the review body to process a complaint and publish the complaint decision;
- Formula:

avg($.complaints[].dateResolved - $.complaints[].dateReview)

4.3.5 Average time length to review a complaint

- Name: Average time length to review a complaint;
- Short description: this indicator presents the average time length in days it takes the review body to review a complaint from start to finish;
- Formula:

avg($.complaints[].dateResolved - $.complaints[].dateReceived)

4.4 INDICATORS FOR ECC FORM

4.4.1 Number of conducted public procurement procedures

- Formula:

count($.tender.lots[].id) **where** $.tender.lots[].status = 'complete'

4.4.2 Number of procedures which did not lead to the conclusion of the contract

- Formula:

count($.tender.lots[].id)
where $.tender.lots[].status **in**('unsuccessful', 'cancelled')

4.4.3 Number of bids submitted by potential suppliers

- Formula:

count($.bids.details[].id)

4.4.4 Number of rejected bids which did not participate in the awarding process

- Formula:

count($.bids.details[].id)
where $.bids.details.status = 'disqualified'

4.4.5 Number of awarded bids

- Formula:

count($.bids.details[].id)
where exists($.awards[].id **where** $.awards.place = 1)

- *Tip: $.awards[] are joined with bids using the $.awards[].relatedBid field*

4.4.6 Procurement methods table

Indicators for EEC form are grouped by procurement method. `$.tender.procurementMethodDetails` field is used to determine the procurement method of a particular procedure. The correspondence between the `$.tender.procurementMethodDetails` field and procurement methods from the EEC form is presented in the table below:

EEC form	$.tender.procurementMethodDetails
Open Tender	'openTender'
Electronic Auction	'auction'
Request for Quotations	'requestForQuotations'
Single Source Procurement	'singleSourceUnsuccessful' 'singleSourcePlan'

Other	'dwellingProcurement' 'stateSocialProcurement'

4.4.7 Bidder country

Indicators for the EEC form are also grouped by bidder country. Bidder country can be obtained using the following formula:

```
$.parties[].address.countryName where 'tenderer' in $.parties.roles[]
```