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BUDAPEST

Data publication practices of public procurement authorities around the world – 2018

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The data publication practices of public procurement authorities around the world – 2018

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Abstract

This report deals with the results of 2018 CRCB's survey which focused on the data publication practices of 118 public procurement authorities around the world based on an empirical analysis of their websites. We analyse two main questions: (i) how easily accessible the data of public tenders at contract level are in the analysed websites; (ii) which pieces of information in contract level are accessible in structured and downloaded format. The report describes and evaluates the data publication practices of public procurement authorities based on different indicators of the ease of access to and extensiveness of the published contract-level data. It gives a brief assessment of the availability of English language websites and an overview of the OCDS protocol, the coded contents of PPA websites. The results show that in the 112 countries and 6 regions included in this report there were 92 cases where the website of public procurement authority existed. Only 67 countries or regions (56%) publish structured data tables of awarded procurement contracts. The data tables are accessible in an online structured format in 64 countries and regions (54%), while only 28 (24%) make it possible to download the data. This also means that in 46% of the cases, citizens cannot have any precise knowledge on how their states spend the taxpayers' money: when the public contract was concluded, how many public procurements were managed by the public institutions case by case and how much the value of each one was; who were the winners, and how much value was won by each winner, etc. The composite indicators used in the analysis which reflect the on-line data publication quality and the data availability show that both developed and developing countries, and countries with high and with low TI CPI scores have average or poor scores. These results point out that not only in developing and emerging countries there is still a to-do list to be accomplished concerning the improvement of quality of public procurement data publication but in the developed countries as well.

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Introduction

In this report we deal with the first results of the CRCB's survey, which focused on the data publication practices of 118 public procurement authorities around the world[1]. The survey took place between January 16 and March 26 2018, and comprised of coding the contents of the website of the public procurement authority of each country based on a questionnaire[2].

We focused on two questions: (i) how easily data on public tenders at contract level is accessible on the analysed websites; (ii) which pieces of information in contract level are accessible in structured and downloaded format[3]. That is, we were not interested in descriptors of aggregated data publication (e.g. how many public tenders were managed annually in the given country, or how much public money was dispensed by year and by country via public procurement, etc.). Rather, we wanted to know whether contract-level data of public tenders was available and, if so, in what format: (1) unstructured format (text); (2) structured but directly non-downloadable format (html, etc.); (3) structured and directly downloadable format (i.e. csv, xlsx, json, etc.). We are convinced that the last form (3) best serves the purpose of analysis of public procurement. That is, we believe that amongst the protocols providing contract level data the protocol prescribing the disclosure of as much contractual data as possible in structured and directly downloadable format is the best for analysing corruption and collusion, and for the fight against these undesirable phenomena. One such protocol is the Open Contracting Data Standard (OCDS), a framework which largely promotes the fight against corruption and collusion. Analysis of the data publication practices of countries using OCDS is also included in the report.

In this report, following a brief assessment of the availability of English language websites and an overview of the OCDS protocol, the coded contents of PPA websites are systematically analysed. We begin by reporting which countries in our sample make contract-level procurement data in either online ordered html or downloadable formats publicly available. After narrowing down the analysed

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[1] On February 2018, we published a preliminary study comparing the data disclosure politics of the procurement authorities of Bangladesh, Hungary and Zambia according to some aspects. See http://www.crcb.eu/?p=1322.

[2] The questionnaire see Annex 1; the list of countries and websites see Annex 2.; the methodology of data collection see Annex 4; and the definition of terms used in the analysis see Annex 5.

[3] Two factors that limit our analysis are important to consider. First, in this report we analysed only the websites of public procurement authorities or other sites managed by state institutions which deal with public procurement data of the given county. So, we do not deal with sites managed by international organizations, European Union, NGOs, or ad-hoc research projects. Second, we could analyse only the availability of public procurement data and the quality of data publication. We could not deal with the analysis of the data itself that is we have not examined *the validity* or *accuracy* of the published data.

sample to these cases, their data publication is assessed and ranked based on constructed indicators of searchability, time period of data availability, and extensiveness of the published contract-level data. This is followed by a more detailed analysis of available downloadable data along similar parameters. We briefly re-evaluate the countries' performance in publishing data in accordance with the OCDS, and then we identify further areas where progress would make the published procurement data even more suitable for statistical analysis aimed at identifying corruption and collusion. Finally, we summarize our results by analysing the data disclosure protocol of public procurement authorities with two composite indicators which reflect the aspect of data publication quality and data availability.

Main conclusions

1. This report deals with the first results of the CRCB's survey, which focused on the data publication practices of 118 public procurement authorities around the world. The survey took place between January 16 and March 26 2018, and comprised of coding the contents of the website of the public procurement authority of each country based on a questionnaire.

2. The analysis focused on two questions: (i) how easy data of public tenders at contract level are accessible in the analysed websites; (ii) which pieces of information in contract level are accessible in structured and downloaded format.

3. Of the 112 countries and 6 regions included in this report in 92 cases the website of public procurement authority had existed. In the sample of 92 websites, 39 are available in a language other than the country's official one.

4. Only 67 countries or regions (57%) publish structured data tables of awarded procurement contracts. The tables are accessible in an online ordered html format in 64 countries and regions (54%). This also means that in 46% of the cases, citizens cannot have any precise knowledge of how their states spend the taxpayers' money: when was the public contract concluded, how many public procurements have been managed by the public institutions case by case and how much was the value of each one; who were the winners, and how much value was won by each winner, etc.

The availability of downloadable data on individual awarded procurement contracts is a crucial indicator of the quality of procurement data publication, as the option to download the data tables significantly increases transparency in procurement. This is due to the fact that it is downloadable data that makes empirical analysis of procurement data the easiest and most effective.

Of the 92 procurement authorities studied in this report only 29, so 32%, make the download of structured individual contract-level data tables possible (the list of these countries see in table 9). This is a very low percentage: a mere 26% of all 118 countries and regions included in the sample of this report.

5. The percentage of countries publishing structured tables on awarded contracts diverges significantly between continents. These ratios were calculated by dividing the number of countries with awarded contract tables by the number of examined countries in each continent. While in Australia and North America all examined countries publish structured awerded tender data. In Europe this ratio is 83%, while in Africa it is a mere 59%.

6. Of the 64 online data tables 56 (88%) have search engines with the option of applying search filters, which enable a more advanced search than simply searching for keywords. Colombia and Portugal enable the highest number of search filters, followed by Denmark, Latvia, Paraguay, South Korea, and Romania. At the other end of the list, Kenya, Mauritius and Mozambique only

provide one filtering option, making their service considerably less user-friendly. Congo fares worst, where not one single search filter is available out of the 11 most important ones we identified.

7. Of the 67 countries where awarded contract data were available, information on the publication or signing date of the first contact could be gleaned during data collection in the case of 59. For these 59 countries where we identified the start date of data availability, the average length of the time period was 7 years, while the median was 6. The time period of data availability was the longest, 26 years, in the case of the state of California in the US. California was followed by Bangladesh and Uruguay with 21 years, and Latvia with 18. At the bottom of the ranking we find Iceland, Nepal, Pakistan, and Senegal, for which procurement data is available only from 2017.

8. Certain data on the awarded contracts are vital for analyses aimed at analysing corruption risks and identifying the possible cartells. Of the pieces of contract-level data table we identified 20 fields (characteristics), which we consider indispensable for the contract data analysis to yield meaningful results. On average 9 fields were available out of the 20 in the online or downloadable tables, while the median across the 66 websites was 9 fields. At the top of the ranking we find Moldova and Ukraine with all 20 fields were present in the tables. These two countries are followed by Columbia, Hungary and Russia with 17 fields, then Belarus, Czechia, and Uganda, where 16 of the vital fields were found. The lowest ranked countries interestingly contain two European ones – Denmark and Luxembourg – with 3, and Japan with 2 fields, while the ranks are closed by Congo, where only one single field was found.

9. While the availability of downloadable data is in itself a commendable effort to transparency, whether it is fit for empirical study depends on a number of further criteria, one of which is the ease of locating and accessing downloadable data. The number of clicks required to reach the download page of awarded contracts data from the procurement authority's opening page reflects the time and effort needed to even acquire the data for later statistical analysis. The clicks needed to reach the download link from the opening page of the PPA website ranged from 1 to 7 in our sample of 28 countries, with a mean of 2.9 and median of 3. The lowest, 1 click, was registered for Latvia, where the download page was directly available from the opening page. The highest number of clicks is required on the Russian procurement authority's website, where only after 7 different pages can the user finally locate the download link.

10. Two crucial determinants of the usefulness of downloaded data is the length of the time period of data availability, and the number of awarded contract records in the data tables. The ranking shows that the downloadable data tables contain contracts published in the longest time period in California (26), Uruguay (21), Malta (19), and Latvia (18), while the shortest time period can be observed in Liberia and Nepal (1 year for both). The average time period length is 8.8 years. The lowest number of contracts are available for Liberia (55), while countries where the number exceeds 1 million are the US (20 million), Russia

(17 million), Colombia (6 million), and Ukraine (above 1 million).

11. We identified 20 fields (characteristics) that are especially important for identifying corruption risk and other anomalies. These pieces of data on awarded contracts without which meaningful statistical analysis of the contract-level data cannot be performed. We rank the procurement authorities which publish downloadable structured data according to the number of selected fields available for each individual contract. The ranking shows that Ukraine and Moldova publish the maximum, 20 fields, while Columbia (17), Russia (17), the Czech Republic (16) and Uganda (16) also publish close to all of the important fields. At the lower end of the table we find Ireland (5), Liberia (5), Kenya (4) and Cape Verde (4), where the lack of appropriate contract-level data is a serious impediment to empirical analysis. The US and Canada, countries with traditionally high quality data publication, perform relatively well too, with 13 and 11 fields available. The mean number of selected fields available is 11.3, while the median is 11.

12. In our opinion the Open Contracting Data Standard (OCDS) is an innovative public procurement data publication scheme, which we deem especially desirable as a data publication strategy since it enables the highest levels of transparency and data usability.

The OCDS framework incorporates stringent and well-outlined regulations on what contract-level information should be published for each record. And indeed for OCDS user countries, this results in achieving very high rankings on our indicator of the number of selected fields in the awarded contract tables. The mean number of fields in awarded contract datatables is 13.1 for OCDS user countries, substantially higher than the mean of 9.4 in the whole sample. Of the 11 PPA websites employing OCDS, Ukraine's and Moldova's publish all 20 fields we identified as crucial. These countries are followed by Colombia (17), Uganda (16), Zambia (15) and Chile (11). The fewest fields are published by Uruguay, where only 8 out of the 20 are available. This indicates that while the information is still useful and enables statistical analysis, but compliance with the more advanced data publication and prescriptions of OCDS would further enhance data usability.

In sum, while there is certainly scope for further improvement as outlined above, it is evident from the results of this report that OCDS-using PPA websites' data publication is of very high quality, further reaffirming our belief that OCDS is a highly efficient and desirable data publication scheme.

13. We have constructed two composite indicators: the first reflects the on-line data publication quality of national authorities of public procurement (Index of Data Publication Quality, IDPQ), and the second indicator concerns the data availability (Index of Data Availability, IDA).

The IDPQ arranges the countries into three groups. The results show that all three groups are extremely heterogeneous: both developed and developing countries, and countries with high and with low TI CPI scores. In the best

performing group (where the value of IDPQ is one) there are Australia, Canada, USA and also Colombia, Kenya or Zambia. And the group with the worst score (where the value of IDPQ is zero) is also very mixed: besides Afghanistan, Albania, Niger or Chad, Belgium, Iceland or Sweden are also included in this group.

14. We calculated IDA only in the cases where there are any structured non-downloadable data of contract award notices on the PPA website. So, the IDA has value only in case of 66 countries or regions where awarded contract data were available. The best scores there were achieved by the Latvia, Portugal, Ukraine and Columbia. The Czech Republic, USA, Paraguay, Uganda, Nepal and Serbia are slightly behind them. A lot of developed countries with low level of corruption and with high degree of rule of law have very good IDA's scores, e.g. the USA, Australia, Canada or Switzerland. There are some emerging countries where the availability of public procurement data is quite good, for example, in Ukraine, Colombia, Turkey, Russia or Chile. And some new EU member states also have quite a high performance from that point of view: Latvia, the Czech Republic and Romania. A very interesting result is that in the old EU member countries (except for Portugal) the data quality and availability of public procurement data are rather poor or average when we look at their IDPQ and IDA scores. These results draw attention to the fact that in the old EU member states (except for Portugal) the data quality and availability of public procurement data are rather poor or average.

At European level this situation is fundamentally improved by some EU financed excellent research projects that seek to publish data instead of the public procurement authorities or other state institiuions of the member state, but even so this might not be the right solution. We are convinced that the EU member states, state institutions and within them the public procurement authorities should improve their own data publication protocol and disclose contract award notice data at contract level in structured and downloadable format. The fundamental problems of public procurement data publication for each country should be resolved by the public procurement authorities or other state institutions itself.

1. How many websites are available in English?

When the website of a public procurement authority is available in a language other than the country's official language, its accessability substantially increases. Of the 112 countries and 6 regions included in this report in 92 cases the website of public procurement authority had existed. In the sample of 92 websites, 39 are available in a language other than the country's official one.

When a website's contents can be read in English, it signals that its operators do not presuppose that the reader (businesses, analysts, journalists, etc.) understands a different, less widely spoken and more region-specific language. This makes the website significantly more accessible, enabling those interested, i.e. possible bidder companies, public procurement analyists – who can be from anywhere in the world – to easily navigate the contents of the webpage, access and understand the data, and garner information on the public procurement system of the country. Out of the 92 countries and regions which operate public procurement authority websites out of our sample, 61 (66%) operate an English-language version of the website. In the case of 37 out of the 61 the official language of the country is not English, which is a strong indication of the public procurement authority taking conscious steps to distribute information on awarded contracts and calls for tender to a wider audience.

Yet, while these efforts are commandable, it is crucial to note that the English-language versions of the websites are in many cases not fully translated. Only for 28 of the 61 countries and regions were all contents of the websites available in English, meaning that 33 of them were only partially translated. A proportion of these were in a "mixed language" – partially in English, partially in the official language of the country. A good example of this is Hungary's public procurement authority website, where only a brief greeting on the opening page is available in English and a few headers, while all other information can only be viewed in Hungarian (see Image 1).

Image 1: Hungary as an example of a partially translated English language procurement authority website

See: http://www.kozbeszerzes.hu/english/
Source: CRCB

Still, Iceland's case is even less desirable: here, only a simple opening page with most in-text links leading to other Icelandic-language pages constitutes the English version of the website, with no indication that more information can be accessed on the Icelandic version (see Image 2). The Icelandic-langauge website on the other hand boasts ample information, numerous headers and subpages, and looks altogether significantly different, potentially leading to confusion in the reader.

The CRCB is of the opinion that it would be adviseable for more countries to make information on their public procurement systems and procurement data available in English as well. This would not only markedly increase the number of webpage visits but could also contribute to strengthening competition on the country's procurement market.

Image 2: Iceland as an example of an incomplete English language procurement authority website
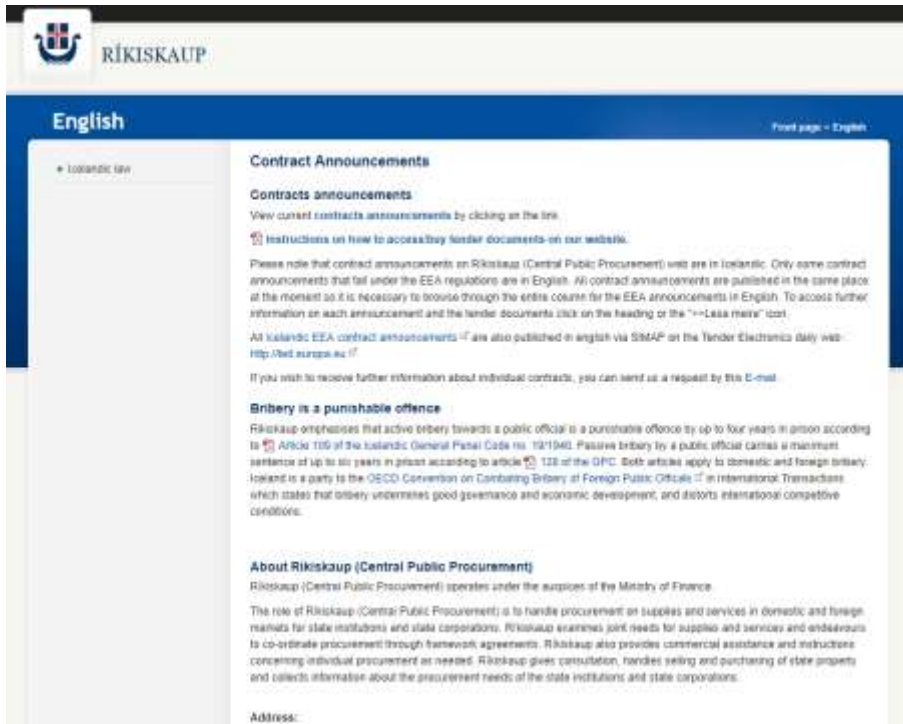
See: https://www.rikiskaup.is/english
Source: CRCB

2. How many countries publish procurement data in accordance with the OCDS?

The Open Contracting Data Standard (https://bit.ly/2upbYva) is a modern and innovative public procurement information publishing framework, which enables a structured, unified method of data publication concerning all phases of the procurement process – from calls for tender to awarded contracts. By using this unified model of data publication, procurement authorities can vastly increase transparency in procurement, and they can effectively fight against corruption and enable in-depth analysis of procurement data by all stakeholders.

Out of the 118 countries and regions featured in this study, only 11 publish public procurement data are in line with the OCDS[4]. This is less than 10% of all countries and regions in the sample. The 11 countries are the following: Canada, Colombia, Chile, Moldova, Nepal, Paraguay, Romania, Uganda, Ukraine, Uruguay, and Zambia.

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[4] According to OCDS records (https://bit.ly/2MRrvbt) Australia, Hunduras, Mexico, Nigeria and the UK also use the Open Contracting Data Standard. Our approach was more conservative than the OCDS's. We narrowly focused on data dissemination practices on the website of procurement authorities. The majority of the differences in the two lists comes from this. In Nigeria, a civil society initiative named Budeshi that is independent of the PPA published procurement data following the OCDS, the website of which was also inaccessible during data collection for this report. It was at the London Anti-Corruption Summit that Nigeria's government committed to the gradual implementation of OCDS fro the PPA (http://bit.ly/2NtIRAq). In Australia, the OCDS is utilised only for procurement in the state of New South Wales (http://bit.ly/2QP5j4S). As for Mexico, the country has a long and successful history of publishing procurement data using the OCDS, with data on procurement in Mexico City, the state of Jalisco, certain ministries, and a major construction project published following the OCDS scheme (http://bit.ly/2xHPHaL). However, the PPA itself uses the CompraNet system (http://bit.ly/2MUowPt), and has yet to implement its commitment to transferring to data publication using the OCDS (http://bit.ly/2PVzxC1). Honduras and the UK were not studied in this report.

Table 1: Countries publishing procurement data in the website of public procurement authorities in line with the OCDS

	countries
1	Canada
2	Chile
3	Colombia
4	Moldova, Republic of
5	Nepal
6	Paraguay
7	Romania
8	Uganda
9	Ukraine
10	Uruguay
11	Zambia

Source: CRCB

The CRCB is convinced that it should be a central aim of procurement authorities to publish procurement data in line with the OCDS, as well as seriously consider and adopt expert recommendations when developing data publication practices. This would significantly increase the transparency of public procurement and reduce corruption risks.

3. Which public procurement authorities make procurement data publicly accessible?

Individual contract-level data on calls for tender and awarded procurement contracts are the most crucial pieces of procurement data. Easily processable, they are invaluable sources of information for citizens, journalistic pieces on procurement, and empiricial economic analyses applying rigorous statistical methods. These empirical analyses can be aimed at identifying anomalies (corruption red flags, as well as cartells), scrutinise procurement competition, corruption risks, and economic networks and dynamics. Whichever the aim may be, all types of studies require structured, unified data tables on calls for tender and awarded contracts to be published by the procurement authority. Furthermore, another practice that makes data analysis easier is the publication of this contract-evel data in different downloadable formats (e.g. csv, xlsx, json).

In the next sections we examine where structured procurement data on individual awarded contracts are published on the website of the public procurement authority.

Of the 112 countries and 6 regions included in this report in 92 cases the website of public procurement authority had existed and only 67 countries or regions (56%) publish structured data tables of awarded procurement contracts (see Table 2). The tables are accessible in an online ordered html format in 64 countries and regions (54%), while only 29 (26%) make it possible to download the data. In total, 25 countries (21%) enable both the download of the contract-level data and publish it in ordered html format on the webpage.

Without publishing the contract level data in structured format there is no deep analysis. We consider the public procurement authorities structured format publications a very low percentage. This also means that in 46% of the cases, citizens cannot have any precise knowledge of how their states spend the taxpayers' money: when was the public contract concluded, how many public procurements have been managed by the public institutions case by case and how much was the value of each one; who were the winners, and how much value was won by each winner, etc. Without having answers to these questions, it is impossible to get to know how intense the competition was at public tenders and to what extent public tenders were characterized by collusion or corruption. The publication of contract level data in structured format provides answers to these types of questions and it is a very important tool to fight against corruption and collusion.

Besides this, we have to pay attention not only to publishing the data in structured format, but that the structured data must be downloadable, too. The data publication in directly downloadable format is very important, namely this method makes the data analysis faster and more cost-effective, while the launch and operation of this type of data publication protocol will not generate any

additional cost for the public procurement authorities. However, the lack of this method creates excessive expenses and it slows down the data transformation process in which the users have to produce from the structured but non downloadable data structured and directly analysable data tables. Meanwhile, all the costs of the data transformation go to the users whose goal is to analyse the public procurement data from several points of view, including corruption and collusion.

Let's suppose an extreme case that an imaginary government wants to promote the easiest way of collusion and corruption in public procurement in its country, and it has to choose one of the different data publication strategies. In this case the best option is not publish any contract-level data. A bit worse option that the government publishes contract level public procurement data, but in a completely unstructured format. And worse, if it publishes data in structured format. The worst option from this point of view is if this imaginary government publishes data in structured and directly downloadable format. Of course, these relationships are true also in the reverse way. If a government would like to effectively combat against corruption and collusion, the best option from the above data publication strategies is to publish the contract level public procurement data structured and directly downloadable format. As recommended by the OCDS. If a government does not act like this, it will indirectly ease *ceteris paribus* the occurrence of corrupt transactions.

Table 2: The availability of structured awarded contracts data tables on the website of procurement authorities around the world, N = 92

No.	Country	Continent	Awarded contract tables available
1	Algeria	Africa	0
2	Benin	Africa	0
3	Botswana	Africa	0
4	Burkina Faso	Africa	0
5	Burundi	Africa	0
6	Cameroon	Africa	x
7	Cape Verde	Africa	x
8	Chad	Africa	0
9	Côte d'Ivoire	Africa	x
10	Democratic Republic of the Congo	Africa	x
11	Egypt	Africa	x
12	Ethiopia	Africa	x
13	Gabon	Africa	0
14	Gambia	Africa	0
15	Ghana	Africa	x
16	Guinea	Africa	0
17	Kenya	Africa	x
18	Liberia	Africa	x
19	Mali	Africa	x
20	Mauritius	Africa	x
21	Morocco	Africa	x
22	Mozambique	Africa	x
23	Niger	Africa	0
24	Rwanda	Africa	0
25	Senegal	Africa	x
26	Sierra Leone	Africa	x
27	Somalia	Africa	x
28	South Sudan	Africa	x
29	Swaziland	Africa	0
30	Tanzania	Africa	0
31	Togo	Africa	0
32	Tunisia	Africa	x
33	Uganda	Africa	x
34	Zambia	Africa	x
35	Afghanistan	Asia	0
36	Bangladesh	Asia	x
37	China	Asia	x
38	China, Hong Kong	Asia	x
39	India - Maharashtra	Asia	0

40	Japan	Asia	x
41	Malaysia	Asia	x
42	Nepal	Asia	x
43	Pakistan	Asia	x
44	Republic of Korea	Asia	x
45	Russian Federation	Asia	x
46	Sri Lanka	Asia	0
47	Taiwan	Asia	x
48	Turkey	Asia	x
49	Australia	Australia	x
50	Albania	Europe	0
51	Austria	Europe	0
52	Belarus	Europe	x
53	Belgium	Europe	0
54	Bosnia and Herzegovina	Europe	0
55	Croatia	Europe	x
56	Czech Republic	Europe	x
57	Denmark	Europe	x
58	Estonia	Europe	x
59	Finland	Europe	x
60	France	Europe	x
61	Hungary	Europe	x
62	Iceland	Europe	x
63	Ireland	Europe	x
64	Latvia	Europe	x
65	Lithuania	Europe	x
66	Luxembourg	Europe	x
67	Macedonia	Europe	x
68	Malta	Europe	x
69	Montenegro	Europe	x
70	Portugal	Europe	x
71	Republic of Moldova	Europe	x
72	Romania	Europe	x
73	Serbia	Europe	x
74	Slovakia	Europe	x
75	Slovenia	Europe	x
76	Spain	Europe	x
77	Sweden	Europe	0
78	Switzerland	Europe	x
79	Ukraine	Europe	x
80	Canada	North America	x
81	United States of America	North America	x
82	United States - California	North America	x
83	Argentina	South America	0

84	Bolivia, Plurinational State of	South America	x
85	Chile	South America	x
86	Colombia	South America	x
87	Ecuador	South America	x
88	Guyana	South America	x
89	Paraguay	South America	x
90	Peru	South America	0
91	Uruguay	South America	x
92	Venezuela, Bolivarian Republic of	South America	0

Notes: x : yes; 0: no
Source: CRCB

The percentage of countries publishing structured tables on awarded contracts diverges significantly between continents. These ratios were calculated by dividing the number of countries with awarded contract tables by the number of examined countries in each continent. While in Australia and North America[5] all examined countries publish structured awerded tender data. In Europe this ratio is 83%, while in Africa it is a mere 59%.

The 2018 results therefore show that even the European countries have room to develop in that point of view. Of course, we should not overestimate the impact of data publication protocol on the effectiveness of fight against corruption and collusion in public procurement. But it is true that protocols that allow deeper, faster and most cost-effective analysis of public procurement tenders contribute to the detection of these anomalies and help to curb them.

Table 3: The availability of structured awarded contracts data tables on the website of procurement authority of the country around the world, continent ratios, N=91

Continent	Number of examined countries	Number of countries with awarded tenders data	% of countries with awarded tenders data
Africa	34	20	58.8
Asia	14	11	78.6
Australia	1	1	100.0
Europe	30	25	83.3
North America	2	2	100.0
South America	10	7	70.0
Total	91	66	72.5

* only countries where the procurement authority has a website were included here
Source: CRCB

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[5] While California is included in the sample of examined countries and regions with procurement authority websites, it was understandably not considered here.

4. How can the data be searched?

The searchability of the online ordered html tables of awarded contracts is a crucial indicator of how easily accessible the public procurement authority makes the data for those interested (e.g. citizens of the particular country or of other countries, investigative journalists, civil activists, analysts). Searchability indicates the ease of finding the information they are looking for, which can be one certain contract, procuring entity, winner, or any other available ifnromation. What matters here is that due to the sheer mass of data included in these tables – sometimes on the scale of millions or hunders of thousands of contracts –, it is practically impossible to find the needed information without a search engine and search filters.

Of the 64 online data tables 56 (88%) have search engines with the option of applying search filters, which enable a more advanced search than simply searching for keywords.

The Graph 1 and Table 4 contain the eleven search filters or search possibilities which this report identified as the most important. Table 5 contains the ranking of countries based on how many of these search filters are available in the search engine. According to this, Colombia and Portugal enable the highest number of options, followed by Denmark, Latvia, Paraguay, South Korea, and Romania. At the other end of the list, Kenya, Mauritius and Mozambique only provide one filtering option, making their service considerably less user-friendly. Congo fares worst, where not one single search filter is available out of the 11 most important ones we identified.

Table 4: The eleven selected search filters

	Search filters
1	Name of procuring entity
2	Name of winner
3	Tender value
4	Tender ID
5	Date of contract signing
6	Date of publication of winner
7	Procurement method
8	Procurement type
9	Region
10	Procurement status
11	Keyword(s)

Source: CRCB

Graph 1: The TOP24 countries by the number of search filters available
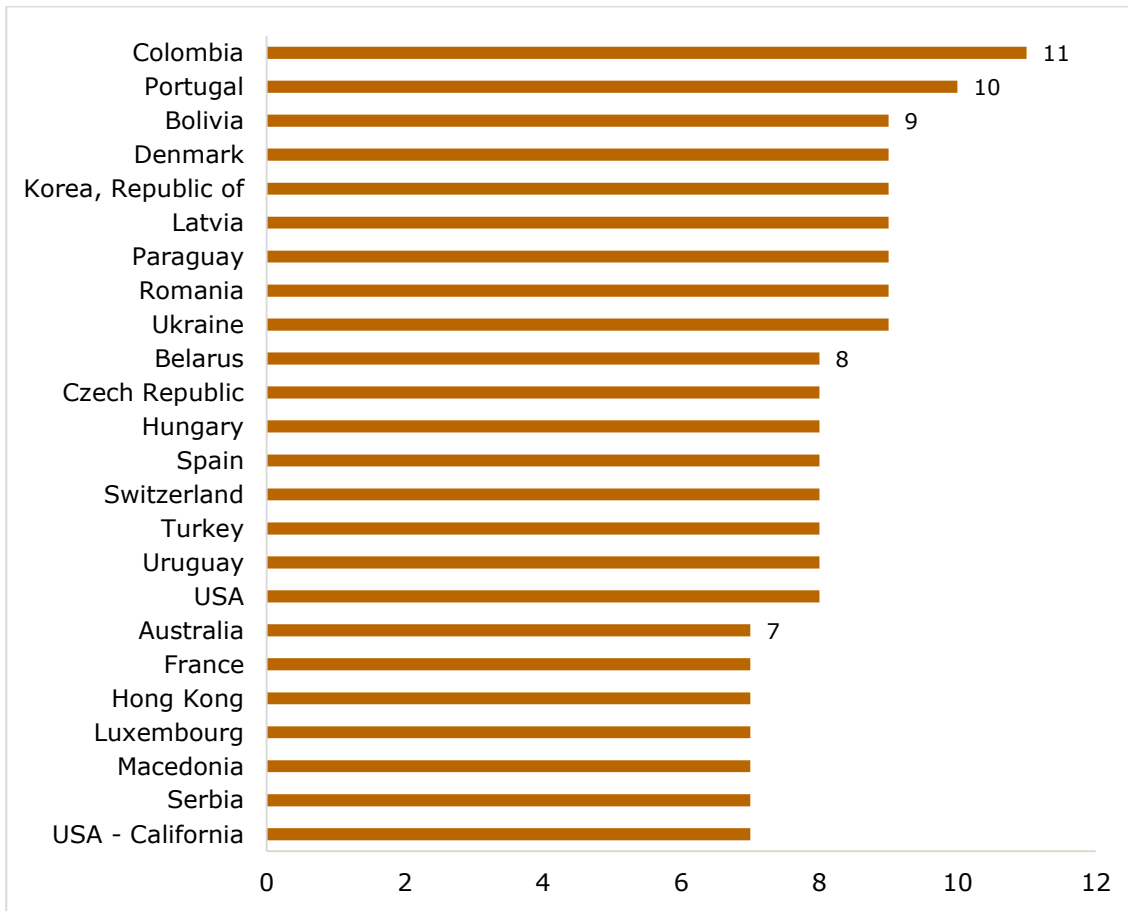
Source: CRCB

Table 5: The ranking of countries based on the number of search filters available, N=56

Ranking	Country	Number of search filters
1	Colombia	11
2	Portugal	10
3-9	Bolivia, Plurinational State of	9
	Denmark	9
	Latvia	9
	Paraguay	9
	Republic of Korea	9
	Romania	9
	Ukraine	9
10-17	Belarus	8
	Czech Republic	8
	Hungary	8
	Spain	8
	Switzerland	8
	Turkey	8
	United States of America	8
	Uruguay	8
18-24	Australia	7
	China, Hong Kong Special Administrative Region	7
	France	7
	Luxembourg	7
	Macedonia	7
	Serbia	7
	United States - California	7
25-29	Côte d'Ivoire	6
	Lithuania	6
	Malaysia	6
	Malta	6
	Slovakia	6
30-41	Canada	5
	Chile	5
	China	5
	Ecuador	5
	Egypt	5
	Liberia	5
	Morocco	5
	Nepal	5
	Russian Federation	5
	Slovenia	5
	Tunisia	5

	Uganda	5
42-45	Bangladesh	4
	Croatia	4
	Ireland	4
	Montenegro	4
46-49	Estonia	3
	Finland	3
	Japan	3
	Pakistan	3
50-53	Ethiopia	2
	Ghana	2
	Republic of Moldova	2
	Somalia	2
54-56	Kenya	1
	Mauritius	1
	Mozambique	1

Source: CRCB

5. From what date are awarded contracts data published?

Contract-level data tables enable more in-depth analysis only if the data are available for multiple years. It is also important how many contracts' data are available online or can be downloaded. The daily update of the data tables with adding the newest contracts further raises the quality of the website's data publication.
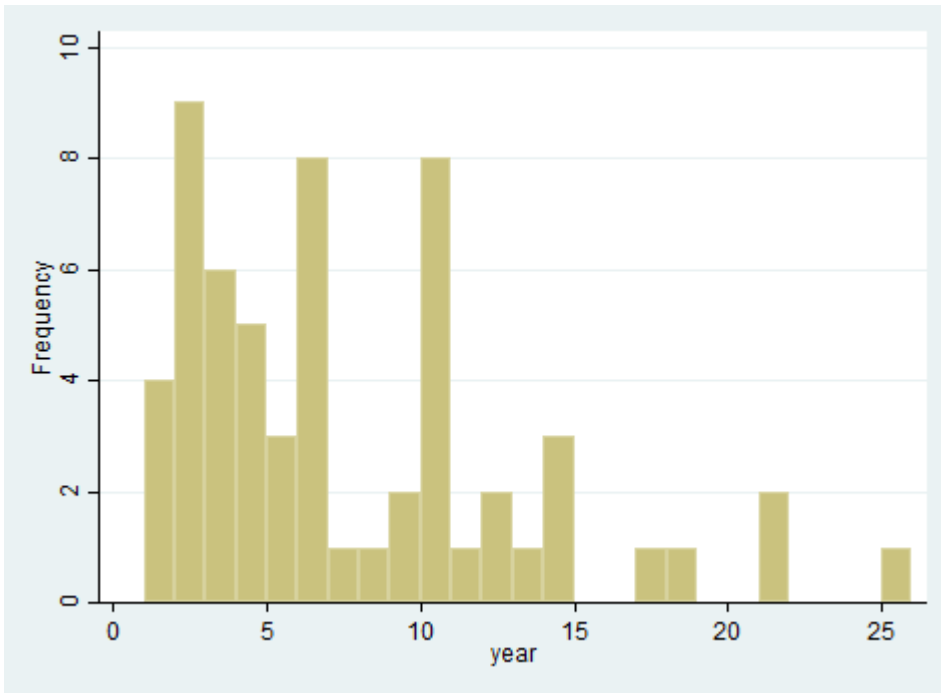
Of the 67 countries where awarded contract data were available, information on the publication or signing date of the first contact could be gleaned during data collection in the case of 59.[6] For these 59 countries where we identified the start date of data availability, the average length of the time period was 7 years, while the median was 6 (see Graph 1). The time period of data availability was the longest, 26 years, in the case of the state of California in the US. California was followed by Bangladesh and Uruguay with 21 years, and Latvia with 18. At the bottom of the ranking we find Iceland, Nepal, Pakistan, and Senegal, for which procurement data is available only from 2017 (see Graph 3 and Table 5).

Obviously, each country regulated the rules of public procurement at different times. In itself, these differences also contribute to the differences in length of time series of published contract level data amongst countries. However, many times the start of data publication via internet and data disclosure only happened several years after the regulation. That is, it would be possible to convert old, somewhat structured data to the new data structure available on the website of public procurement authorities, and put the old data into the new data tables. In countries (e.g. in Hungary) where this is the case, it would be useful to supplement the data tables currently available retroactively with historical data. This would allow a more accurate, deeper and more reliable analysis of public tenders.
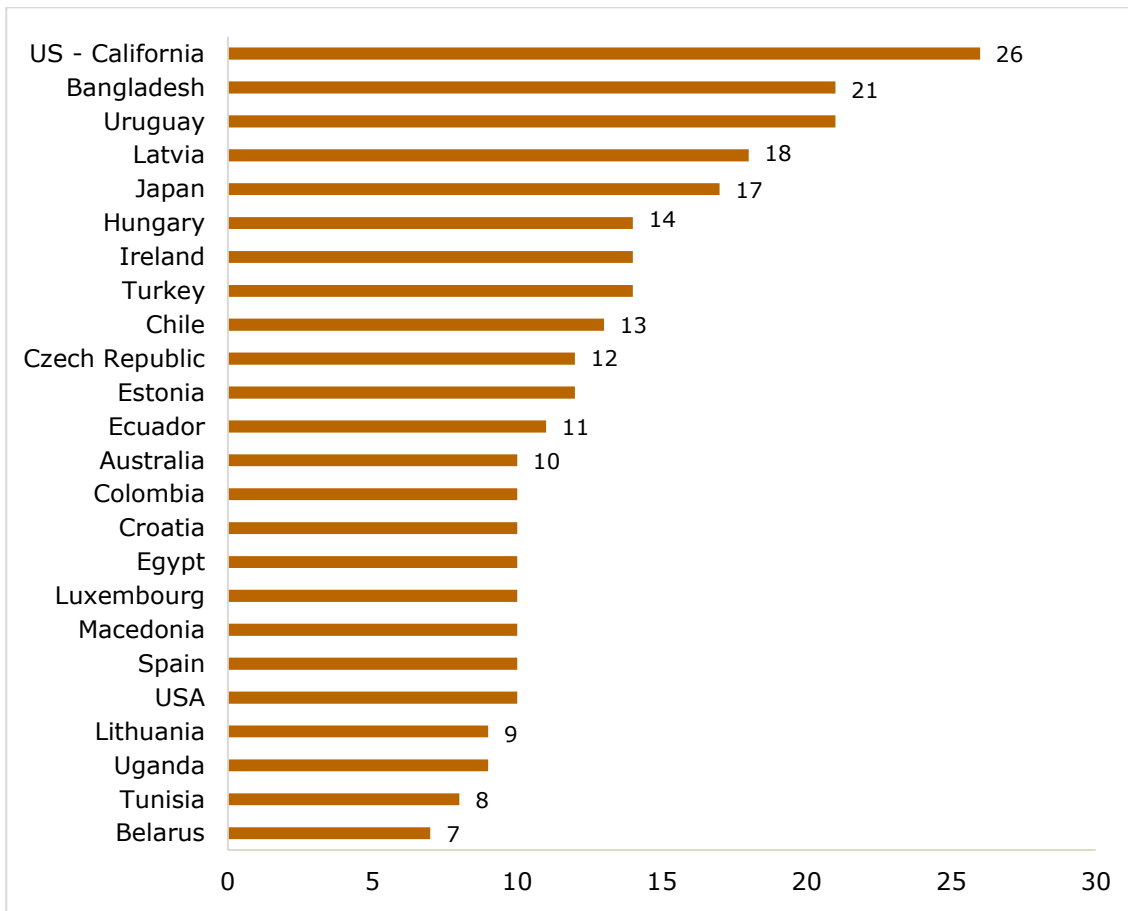
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[6] If those collecting the data could not find them within 10 minutes, it was deemed unknown. This could have occurred as for instance, in some cases only the data of 10 or 20 contracts were displaced on each page of the online ordered html tables, with no option of viewing all tens of thousands of contracts at once.

Graph 2: The distribution of the countries according to the length of the time period of awarded contract data availability, N=59

Source: CRCB

Graph 3: The TOP24 countries according to the length of the time period of awarded contract data availability

Country	Value
US - California	26
Bangladesh	21
Uruguay	21
Latvia	18
Japan	17
Hungary	14
Ireland	14
Turkey	14
Chile	13
Czech Republic	12
Estonia	12
Ecuador	11
Australia	10
Colombia	10
Croatia	10
Egypt	10
Luxembourg	10
Macedonia	10
Spain	10
USA	10
Lithuania	9
Uganda	9
Tunisia	8
Belarus	7

Source: CRCB

Table 6: Ranking of countries according to the length of the time period of awarded contract data availability, N=59

Ranking	Country	Years
1	United States - California	26
2-3	Bangladesh	21
	Uruguay	21
4	Latvia	18
5	Japan	17
6-8	Hungary	14
	Ireland	14
	Turkey	14
9	Chile	13
10-11	Czech Republic	12
	Estonia	12
12	Ecuador	11
13-20	Australia	10
	Colombia	10
	Croatia	10
	Egypt	10
	Luxembourg	10
	Macedonia	10
	Spain	10
	United States of America	10
21-22	Lithuania	9
	Uganda	9
23	Tunisia	8
24	Belarus	7
25-32	Bolivia, Plurinational State of	6
	Cape Verde	6
	China	6
	China, Hong Kong Special Administrative Region	6
	Ghana	6
	Malta	6
	Paraguay	6
	Republic of Moldova	6
33-35	Côte d'Ivoire	5
	Guyana	5
	Serbia	5
36-40	Canada	4
	Democratic Republic of the Congo	4
	Morocco	4
	Russian Federation	4

	Slovakia	4
41-46	Ethiopia	3
	Montenegro	3
	Mozambique	3
	Sierra Leone	3
	Switzerland	3
	Ukraine	3
47-55	Cameroon	2
	Finland	2
	Kenya	2
	Liberia	2
	Mali	2
	Mauritius	2
	Somalia	2
	South Sudan	2
	Zambia	2
56-59	Iceland	1
	Nepal	1
	Pakistan	1
	Senegal	1

Source: CRCB

6. How extensive is procurement authority's data publication for each procurement contract?

Certain data on the awarded contracts are vital for analyses aimed at analysing corruption risks and identifying the possible cartells. Of the pieces of contract-level data table we identified 20 fields, which we consider indispensable for the contract data analysis to yield meaningful results (see Table 7.). The information from these fields concerns all phases and aspects of the procuring process: the dates, the procuring entity, the tenderers, the winner, the subject and value of the call for tender, the process of tendering, and the final contract awarded.

Table 7: Fields required for the analysis of data in awarded contract data table

	Field name
1	Name of procuring entity
2	Address of procuring entity
3	ID of procuring entity
4	Name of tenderers
5	Address of tenderers
6	ID of tenderers
7	Name of winner
8	Address of winner
9	ID of winner
10	Number of bids
11	Estimated value of the tender
12	Winning price of the tender
13	Date of publication of the winner
14	Date when the contract was signed
15	Date when the call for tenders was posted
16	Date of the application deadline
17	Date of contract completion
18	Procuring method
19	Procurement type (sector)
20	Tender ID

Source: CRCB

Graph 8 and Table 8 present the ranking of the 66 countries or regions[7] according to the number of the selected fields present in the published tables of awarded contract data. On average 9 fields were available out of the 20 in the online or downloadable tables, while the median across the 66 websites was 9 fields (see Graph 4). At the top of the ranking we find Moldova and Ukraine with all 20 fields were present in the tables (see Graph 5 and Table 8). These two countries are followed by Columbia, Hungary and Russia with 17 fields, then

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[7] While 67 countries publish awarded contract tables, Taiwan was omitted from this section of the report as due to technical reasons, the downloadable data tables of Taiwan could not be accessed and the PPA of Taiwan do not disclose contract award data in non-downloadable format.

Belarus, Czechia, and Uganda, where 16 of the vital fields were found. The lowest ranked countries interestingly contain two European ones – Denmark and Luxembourg – with 3, and Japan with 2 fields, while the ranks are closed by Congo, where only one single field was found.

It is obvious that the more fields are accessible via internet out of 20 fields analysed by this report, the richer and the deeper analyses can be made based on the published data. A surprising result from this point of view is that most of the fields can be found not in the most advanced countries with low level of corruption (measured by the TI CPI) as France, Australia or Canada, but in the developing countries with high level of corruption as Moldova, Ukraine or Columbia. The volume of public procurement in real terms is higher in the former countries than in the latter ones, which means that in these countries publication of more data (disclosure of more fields) significantly could improve the effectiveness of the analysis and the detection of corrupt behaviour and collusion. Thus, the fight against such anomalies in these countries still have a backlog of work to do.

Graph 4: The distribution of procurement websites according to the number of selected fields in the awarded contract datatable, N=66
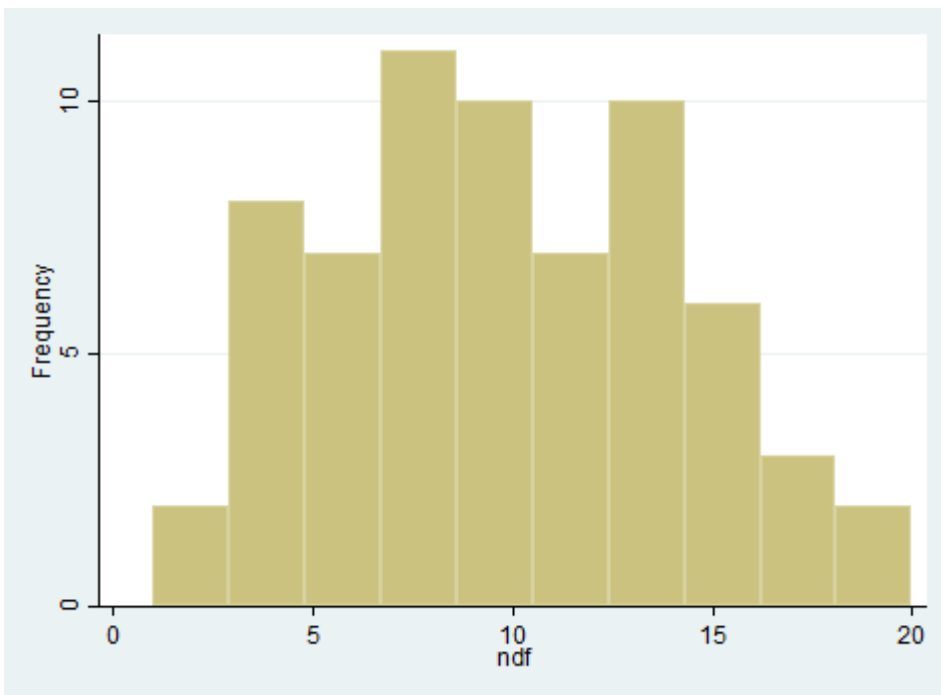
Source: CRCB

Graph 5: The TOP26 countries according to the number of selected fields in the awarded contract datatable
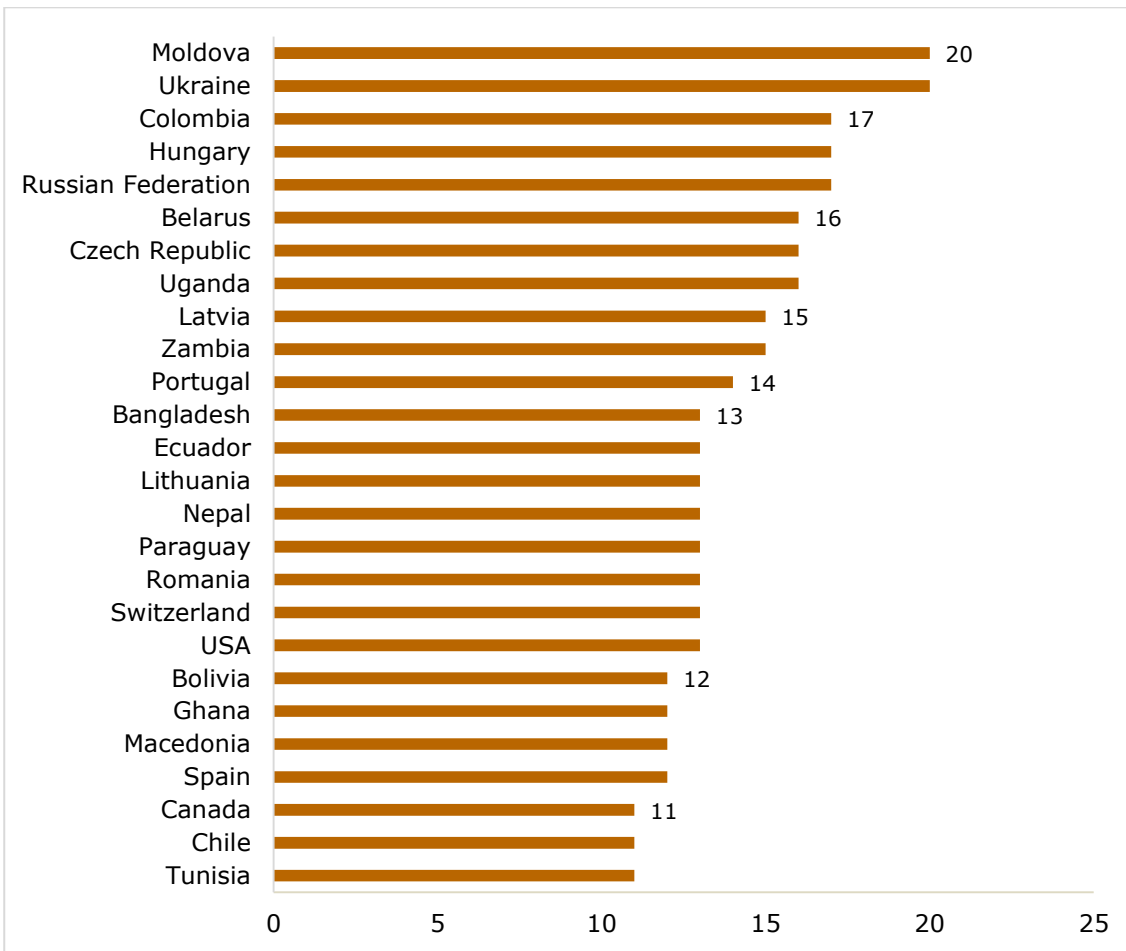
Note: We excluded Taiwan's data from this analysis
Source: CRCB

Table 8: The ranking of countries and regions according to the number of selected fields in the awarded contract datatable, N = 66

Ranking	Country	Number of fields
1-2	Republic of Moldova	20
	Ukraine	20
3-5	Colombia	17
	Russian Federation	17
	Hungary	17
6-8	Belarus	16
	Czech Republic	16
	Uganda	16
9-10	Latvia	15
	Zambia	15
11	Portugal	14
12-19	Bangladesh	13
	Ecuador	13
	Lithuania	13
	Nepal	13
	Paraguay	13
	Romania	13
	Switzerland	13
	United States of America	13
20-23	Bolivia, Plurinational State of	12
	Ghana	12
	Macedonia	12
	Spain	12
24-26	Canada	11
	Chile	11
	Tunisia	11
27-29	Côte d'Ivoire	10
	Mali	10
	United States - California	10
30-36	Australia	9
	China, Hong Kong Special Administrative Region	9
	Egypt	9
	Estonia	9
	Ethiopia	9
	France	9
	Turkey	9
37-43	Croatia	8
	Guyana	8
	Malta	8

	Country	
	Montenegro	8
	Republic of Korea	8
	Serbia	8
	Uruguay	8
44-47	Cameroon	7
	Finland	7
	Senegal	7
	Slovenia	7
48-51	China	6
	Iceland	6
	Malaysia	6
	Sierra Leone	6
52-55	Ireland	5
	Liberia	5
	Mauritius	5
	Morocco	5
56-62	Cape Verde	4
	Kenya	4
	Mozambique	4
	Pakistan	4
	Slovakia	4
	Somalia	4
	South Sudan	4
63-64	Denmark	3
	Luxembourg	3
65	Japan	2
66	Democratic Republic of the Congo	1

Source: CRCB

7. The availability of downloadable contract-level producement data

The availability of downloadable data on individual awarded procurement contracts is a crucial indicator of the quality of procurement data publication, as the option to download the data tables significantly increases transparency in procurement. This is due to the fact that it is downloadable data that makes empirical analysis of procurement data the easiest and most effective. Structured downloadable data enables the easy, fast and high-quality empirical study of procurement contract data aimed at assessing corruption risks and identifying anomalies such as corruption and cartels. We therefore believe that making stuctured data tables available should be a priority for all public procurement authorities committed to transparency and fighting against collusion and corruption.

Of the 92 procurement authorities studied in this report only 29, so 32%, make the download of structured individual contract-level data tables possible (the list of these countries see in table 9). This is a very low percentage: a mere 26% of all 118 countries and regions included in the sample of this report. As for proportion of countries with downloadable data out of the 92 procurement authorities within each continent, the highest proportions are in Australia (1 out of 1), North America (2 out of 2), and Europe (39%), while the lowest is in Africa, where only 18% of the countries enable data download (see Table 10). These low percentages indicate that there is significant room for progress in most regions of the world.

Table 9: The availability of downloadable tables of awarded contracts data, N=92

No.	Country	Continent	Downloadable awarded tenders data tables are available
1	Algeria	Africa	0
2	Benin	Africa	0
3	Botswana	Africa	0
4	Burkina Faso	Africa	0
5	Burundi	Africa	0
6	Cameroon	Africa	0
7	Cape Verde	Africa	x
8	Chad	Africa	0
9	Congo, Democratic Republic of	Africa	0
10	Côte d'Ivoire	Africa	0
11	Egypt	Africa	0
12	Ethiopia	Africa	0
13	Gabon	Africa	0
14	Gambia	Africa	0
15	Ghana	Africa	0
16	Guinea	Africa	0
17	Kenya	Africa	x
18	Liberia	Africa	x
19	Mali	Africa	x
20	Mauritius	Africa	0
21	Morocco	Africa	0
22	Mozambique	Africa	0
23	Niger	Africa	0
24	Rwanda	Africa	0
25	Senegal	Africa	0
26	Sierra Leone	Africa	0
27	Somalia	Africa	0
28	South Sudan	Africa	0
29	Swaziland	Africa	0
30	Tanzania	Africa	0
31	Togo	Africa	0
32	Tunisia	Africa	0
33	Uganda	Africa	x
34	Zambia	Africa	x
35	Afghanistan	Asia	0
36	Bangladesh	Asia	0
37	China	Asia	0
38	Hong Kong	Asia	0
39	India - Maharashtra	Asia	0
40	Japan	Asia	0

41	Malaysia	Asia	0
42	Nepal	Asia	x
43	Pakistan	Asia	0
44	Republic of Korea	Asia	0
45	Sri Lanka	Asia	0
46	Taiwan	Asia	x
47	Turkeyw	Asia	x
48	Australia	Australia	x
49	Albania	Europe	0
50	Austria	Europe	0
51	Belarus	Europe	0
52	Belgium	Europe	0
53	Bosnia and Herzegovina	Europe	0
54	Croatia	Europe	0
55	Czech Republic	Europe	x
56	Denmark	Europe	0
57	Estonia	Europe	x
58	Finland	Europe	0
59	France	Europe	0
60	Hungary	Europe	0
61	Iceland	Europe	0
62	Ireland	Europe	x
63	Latvia	Europe	x
64	Lithuania	Europe	0
65	Luxembourg	Europe	0
66	Macedonia	Europe	0
67	Malta	Europe	x
68	Moldova, Republic of	Europe	x
69	Montenegro	Europe	x
70	Portugal	Europe	x
71	Romania	Europe	x
72	Russian Federation	Europe	x
73	Serbia	Europe	x
74	Slovakia	Europe	0
75	Slovenia	Europe	0
76	Spain	Europe	0
77	Sweden	Europe	0
78	Switzerland	Europe	0
79	Ukraine	Europe	x
80	Canada	North America	x
81	United States of America	North America	x
82	United States - California	North America	x
83	Argentina	South America	0
84	Bolivia, Plurinational State of	South America	0

85	Chile	South America	x
86	Colombia	South America	x
87	Ecuador	South America	0
88	Guyana	South America	0
89	Paraguay	South America	x
90	Peru	South America	0
91	Uruguay	South America	x
92	Venezuela, Bolivarian Republic of	South America	0

Notations: x – yes, 0 – no
Source: CRCB

Table 10: The distribution of countries with downloadable awarded contracts data by continent, N=92

Continent	Number of examined countries	Number of countries with downloadable awarded tenders data	% of countries with downloadable awarded tenders data
Africa	34	6	17.7
Asia	13	3	23.1
Australia	1	1	100.0
Europe	31	12	38.7
North America	2	2	100.0
South America	10	4	40.0
Total	92	29	31.5

Source: CRCB

The ease of access to downloadable data

While the availability of downloadable data is in itself a commendable effort to transparency, wether it is fit for empirical study depends on a number of further criteria, one of which is the ease of locating and accessing downloadable data. The number of clicks required to reach the download page of awarded contracts data from the procurement authority's opening page reflects the time and effort needed to even acquire the data for later statistical analysis. When the download page is very difficult to reach, i.e. it takes 5 or more clicks from the opening page, those looking for data download option may even conclude prematurely that it does not exist as it is so challenging to locate.

The clicks needed to reach the download link from the opening page of the PPA website ranged from 1 to 7 in our sample of 28 countries, with a mean of 2.9 and median of 3. The lowest, 1 click, was registered for Latvia, where the download page was directly available from the opening page. The highest number of clicks is required on the Russian procurement authority's website, where only after 7 different pages can the user finally locate the download link.

In the following sections the downloadable data publication of 28 procurement authorities is evaluated, as Taiwan's json files were not opened to code the data.

Table 11: Ranking of countries with downloadable contract data tables based on the clicks required to reach the download page on the procurement authority website, N=29

No.	Country	Clicks to download page of awarded contracts data
1-2	Latvia	1
	Malta	1
3-12	Czech Republic	2
	Ireland	2
	Kenya	2
	Liberia	2
	Moldova, Republic of	2
	Nepal	2
	Paraguay	2
	Portugal	2
	Serbia	2
	Ukraine	2
13-24	Australia	3
	Cape Verde	3
	Chile	3
	Colombia	3
	Mali	3
	Romania	3
	Taiwan	3
	Uganda	3
	United States of America	3
	United States - California	3
	Uruguay	3
	Zambia	3
25-27	Canada	4
	Estonia	4
	Turkey	4
28	Montenegro	5
29	Russian Federation	7

Source: CRCB

The time period of downloadable data availability

Two crucial determinants of the usefulness of downloaded data is the length of the time period of data availability, and the number of awarded contract records in the data tables. As already noted in the previous section on the time period of data availability, the shorter the time period and the fewer the contract records, the less precise and reliable are the inferences that can be drawn from statistical analysis regaring corruption risks. The ranking below is therefore a possible indicator of the quality of procurement data publication.

The ranking shows that the downloadable data tables contain contracts published in the longest time period in California (26), Uruguay (21), Malta (19), and Latvia (18), while the shortest time period can be observed in Liberia and Nepal (1 year for both). The average time period length is 8.8 years.

The lowest number of contracts are available for Liberia (55), while countries where the number exceeds 1 million are the US (20 million), Russia (17 million), Colombia (6 million), and Ukraine (above 1 million). These countries perform the best, though it is imperative to note that these numbers do not say anything about the quality and reliability of the published data. There is no information on time period length for two countries, and record number for five.

Table 12: Ranking of countries with downloadable contract data tables based on the time period of awarded contract data availability, N=28

No.	Country	Time period of awarded contracts data availability, number of years	Number of awarded contract records
1	USA - California	26	489,974
2	Uruguay	21	673,865
3	Malta	19	n.a.
4	Latvia	18	191,975
5-6	Ireland	14	19,970
	Turkey	14	n.a.
7	Chile	13	n.a.
8-9	Czech Republic	12	474,024
	Estonia	12	72,556
10-12	Australia	10	5,000
	Colombia	10	6,325,799
	USA	10	27,545,425
13	Uganda	9	40,852
14-15	Paraguay	6	88,922
	Republic of Moldova	6	22,901
16	Serbia	5	274,973
17-18	Canada	4	134,349
	Russian Federation	4	17,000,000
19-20	Montenegro	3	n.a.
	Ukraine	3	1,398,621
21-24	Cape Verde	2	n.a.
	Kenya	2	577
	Mali	2	1,207
	Zambia	2	139
25-26	Liberia	1	55
	Nepal	1	225
(27-28)	Portugal	n.a.	869,272
	Romania	n.a.	n.a.

Note: We excluded Taiwan's data from this analysis due to technical reason
Source: CRCB

The extensiveness of contract-level downloadable data

As already noted in the previuos section on the extensiveness of data publication, there exist certain pieces of data on awarded contracts without which meaningful statistical analysis of the contract-level data cannot be performed. In the previous section, we identified 20 fields (see Table 7) that are especially important for identifying corruption risk and other anomalies. Here we rank the procurement authorities which publish downloadable structured data according to the number of selected fields available for each individual contract.

The ranking shows that Ukraine and Moldova publish the maximum, 20 fields, while Columbia (17), Russia (17), the Czech Republic (16) and Uganda (16) also publish close to all of the important fields. At the lower end of the table we find Ireland (5), Liberia (5), Kenya (4) and Cape Verde (4), where the lack of appropriate contract-level data is a serious impediment to empirical analysis. The US and Canada, countries with traditionally high quality data publication, perform relatively well too, with 13 and 11 fields available. The mean number of selected fields available is 11.3, while the median is 11. This is significantly higher than the 9.4 fields published on average by all countries in either online or downloadable data tables (See Graph 2.), which arguably shows that efforts to make data downloadable and extensive data publication go hand in hand.

Here, we can observe similar results as in the previous section: less developed countries with the highest level of corruption perform better than less corrupt and more developed countries. This also draws attention to the fact that in the case of more developed countries significant progress could be made in detecting different forms of corruption and collusion in public procurement if these countries would significantly improve their data publication practices.

Table 13: The ranking of countries and regions where awarded contracts data tables can be downloaded according to the number of selected fields in the tables, N = 28

No.	Country	Number of fields
1-2	Moldova, Republic of	20
	Ukraine	20
3-4	Colombia	17
	Russian Federation	17
5-6	Czech Republic	16
	Uganda	16
7-8	Latvia	15
	Zambia	15
9-12	Nepal	13
	Paraguay	13
	Romania	13
	United States of America	13
13-14	Canada	11
	Chile	11
15-16	Mali	10
	United States - California	10
17-20	Australia	9
	Estonia	9
	Portugal	9
	Turkey	9
21-24	Malta	8
	Montenegro	8
	Serbia	8
	Uruguay	8
25-26	Ireland	5
	Liberia	5
27-28	Cape Verde	4
	Kenya	4

Note: We excluded Taiwan's data from this analysis due to technical reason
Source: CRCB

8. Re-evaluation of procurement data publication in accordance with the OCDS

At the beginning of this report we presented the Open Contracting Data Standard, an innovative public procurement data publication scheme, which the CRCB deems especially desirable as a data publication strategy since it enables the highest levels of transparency and data usability. Having explored the data publication practices of the 90 countries in our sample, in this section we evaluate the comparative performance of PPA websites publishing data in accordance with the OCDS.

Table 9: Performance in indicators of PPA websites publishing procurement data in accordance with the OCDS, N = 11

No.	Country	Number of selected search filters	Period of data publication (year)	Daily update of awarded contracts data tables	Number of awarded contract records	Number of fields on awarded contract data tables
1	Canada	5	5	Yes	134,349	11
2	Colombia	11	11	Yes	6,325,799	17
3	Chile	5	13	Yes	n.a.	11
4	Moldova	2	7	No	22,901	20
5	Nepal	5	2	Yes	225	13
6	Paraguay	9	7	Yes	88,922	13
7	Romania	9	n.a.	Yes	n.a.	13
8	Uganda	5	10	Yes	40,852	16
9	Ukraine	9	4	Yes	1,398,621	20
10	Uruguay	8	22	Yes	673,865	8
11	Zambia		3	Yes	139	15

Source: CRCB

At first glance two insights are apparent. Firstly, countries employing the OCDS indeed fare very well in many of our examined categories, often ranked at the top of the list. However, the second noteable observation is that there are surprisingly significant divergences in the performance of countries using OCDS: it is apparent that not all websites fully comply with OCDS's specifications thus it results in diverging data publication quality even among these PPA websites.

A more in-depth exploration of the rankings yields additional insights. In the first examined category, the number of search filters, there are especially huge variations across PPA websites publishing data in accordance with the OCDS. This may stem from the especially high priority OCDS places on the publication

of machine-readable downloadable datasets, and while it highlights the importance of data searchability and appropriate filters, it lists it as the next step following structured publication [8] . The result is very different levels of searchability and numbers of search filters. While Colombia (11), Paraguay (9), Romania (9), Ukraine (9), and Uruguay (8) have quite advanced search engines, Moldova's (2) search engine is very underdeveloped, and Zambia does not use a filter at all, making it difficult to find information pertaining to specific contracts.

There are also very considerable differences in the length of contract data availability. Uruguay, Chile, Colombia, and Uganda publish organised data on contracts awarded covering at least 10 years (22 years, 13 years, 11 years and 10 years respectively), while the period of data availability for Ukraine, Zambia, and Nepal is under 5 years (4 years, 3 years and 2 years respectively). This can be presumably attributed to the fact that some countries only make data available in accordance with the scheme from the point when they adopted OCDS, and do not convert previous data to fit the OCDS publication standards. This in itself is not a problem if from the point of adoption, a significant proportion of contracts is published, since data should from now on continually increase, enabling better and better analysis.

This arguably becomes an issue when regardless of the length of data availability, extensive contract data publication for the available period does not occur. The number of records in the tables is a decisive determinant of the usefulness of published data. At the top of the ranking, Colombia and Ukraine publish data tables that include millions of contracts (Colombia above 6.3 million, Ukraine above 1.3 million), demonstrating a clear commitment to transparency and accountability. In Nepal and in Zambia there is a small number of contracts (225 and 139) which is obviously related to the small volume of public expenditure and so restricts the possibility of contract data analysis. We believe it is always worth thinking about expanding the existing data table. There is always a danger that contracts with high corruption risks are not included in the data tables and can thus not be identified. The CRCB believes that the already established excellent OCDS framework substantially increases the ease of implementing more information to the already published data tables.

Finally, the OCDS framework incorporates stringent and well-outlined regulations on what contract-level information should be published for each record. And indeed for OCDS user countries, this results in achieving very high rankings on our indicator of the number of selected fields in the awarded contract tables. The mean number of fields is 13.1 for OCDS user countries, substantially higher than the mean of 9.4 in the whole sample. Of the 11 PPA websites employing OCDS, Ukraine's and Moldova's publish all 20 fields we identified as crucial. These countries are followed by Colombia (17), Uganda (16), Zambia (15) and Chile (11). The fewest fields are published by Uruguay, where only 8 out of the 20 are available. This indicates that while the information is still useful and enables statistical analysis, but compliance with the more advanced data

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[8] OCDS How to publish - 5 star approach, see https://bit.ly/2O6RvVb

publication and prescriptions of OCDS would further enhance data usability[9].

In sum, while there is certainly scope for further improvement as outlined above, it is evident from the results of this report that OCDS-using PPA websites' data publication is of very high quality, further reaffirming our belief that OCDS is a highly efficient and desirable data publication scheme.

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[9] OCDS Publication levels: data https://bit.ly/2DgaJDr

9. Data publication quality and data availability

As a summary of our previous results on data publication quality and availability we have constructed two composite indicators: the first reflects the on-line data publication quality of national authorities of public procurement (Index of Data Publication Quality, IDPQ), and the second indicator concerns the data availability (Index of Data Availability, IDA). These indicators summarise the main aspects of the methods of data publication, i.e. are there downloadable and searchable contract level data in structured form; how easy is it to access the disclosed data; and how wide is the data publication?

The first index (IDPQ) reflects only two aspects of data disclosure:

1. Are there any downloadable datasets of contract award notices in structured formats on the webpage of the public procurement authority?

2. Are there any data on the public procurement webpage and if yes, can the users search and filter their search results from the non-downloadable data?

We are convinced that the best option is when a public procurement authority makes the contract level data of contract award notices in structured (json, csv, xlsx, etc.) format downloadable. And the worst solution is when there is no data published or the users have no possibility to search or to filter their results.

The IDPQ has three values: 0, 0.5 and 1 and the higher value means better method of data publication (See the construction of IDPQ in the Annex 6.1.). If the answer is yes for the first question, the value of IDPQ is one, if the answers are no for both questions its value is zero. If the answer is yes to only the second question, then its value is 0.5.

Accordingly, the IDPQ arranges the countries into three groups (see Table 10). The results show that all three groups are extremely heterogeneous: both developed and developing countries, and countries with high and with low TI CPI scores. In the best performing group (where the value of IDPQ is one) there are Australia, Canada, USA and also Colombia, Kenya or Zambia. And the group with the worst score (where the value of IDPQ is zero) is also very mixed: besides Afghanistan, Albania, Niger or Chad, Belgium, Iceland or Sweden are also included in this group.

Table 10: The rank of countries by the Index of Data Publication Quality (IDPQ) in 2018, N = 92

	idpq
Australia	1
Canada	1
Cape Verde	1
Chile	1
Colombia	1
Czech Republic	1
Estonia	1
Ireland	1
Kenya	1
Latvia	1
Liberia	1
Mali	1
Malta	1
Montenegro	1
Nepal	1
Paraguay	1
Portugal	1
Republic of Moldova	1
Romania	1
Russian Federation	1
Serbia	1
Taiwan	1
Turkey	1
Uganda	1
Ukraine	1
United States - California	1
United States of America	1
Uruguay	1
Zambia	1
Bangladesh	0.5
Belarus	0.5
Bolivia, Plurinational State of	0.5
China	0.5
China, Hong Kong Special Administrative Region	0.5
Côte d'Ivoire	0.5
Croatia	0.5
Democratic Republic of the Congo	0.5
Denmark	0.5

Ecuador	0.5
Egypt	0.5
Ethiopia	0.5
Finland	0.5
France	0.5
Ghana	0.5
Hungary	0.5
Japan	0.5
Lithuania	0.5
Luxembourg	0.5
Macedonia	0.5
Malaysia	0.5
Mauritius	0.5
Morocco	0.5
Mozambique	0.5
Pakistan	0.5
Republic of Korea	0.5
Slovakia	0.5
Slovenia	0.5
Somalia	0.5
Spain	0.5
Switzerland	0.5
Afghanistan	0
Albania	0
Algeria	0
Argentina	0
Austria	0
Belgium	0
Benin	0
Bosnia and Herzegovina	0
Botswana	0
Burkina Faso	0
Burundi	0
Cameroon	0
Chad	0
Gabon	0
Gambia	0
Guinea	0
Guyana	0
Iceland	0
India - Maharashtra	0
Niger	0
Peru	0

Rwanda	0
Senegal	0
Sierra Leone	0
South Sudan	0
Sri Lanka	0
Swaziland	0
Sweden	0
Tanzania	0
Togo	0
Venezuela, Bolivarian Republic of	0

Source: CRCB

The second index (IDA) reflects four different aspects of the data publication.

1. The number of clicks required to reach the non-downloadable awarded contracts data from the procurement authority's opening page (See Q15 in Annex 1.);
2. The number of clicks required to reach the download page of awarded contracts data from the procurement authority's opening page (See Q10 in Annex 1.);
3. Number of characteristics of downloadable or non-downloadable contract award notice data on the public procurement authority's website (See Q23 in Annex 1);
4. Number of search filters available in the search function of non-downloadable contract award notice data on the public procurement authority's website (See Q18 in the Annex 1.).

We calculated IDA only in the cases where there are any structured non-downloadable data of contract award notices on the PPA website. So, the IDA has value only in case of 66 countries or regions where awarded contract data were available (See Section 3).

The definition of IDA is the following (see its way of construction in Annex 6.2.) for every i*th* PPA:

$$IDA_i = \frac{\frac{8 - Q10_i}{7} + \frac{5 - Q15_i}{4} + \frac{nf_i}{11} + \frac{ndf_i}{20}}{4}$$

where $Q10_i$ is the numerical answer for the question 10 (the maximum number of clicks was 7);
$Q15_i$ is the numerical answer for the question 15; (the maximum number of clicks was 4);
nf_i: number of search filter available in the search function;
ndf_i: number of data field available in the downloadable or non-downloadable dataset of contract award notice.

The empirical value of IDA differs from 0.2286 to 0.8921 where the highest value means better data availability (See Graph 6). The IDA's mean value is 0.49 and its median value is 0.45.

Graph 6: The distribution of the PPAs according to the value of IDA, N=66
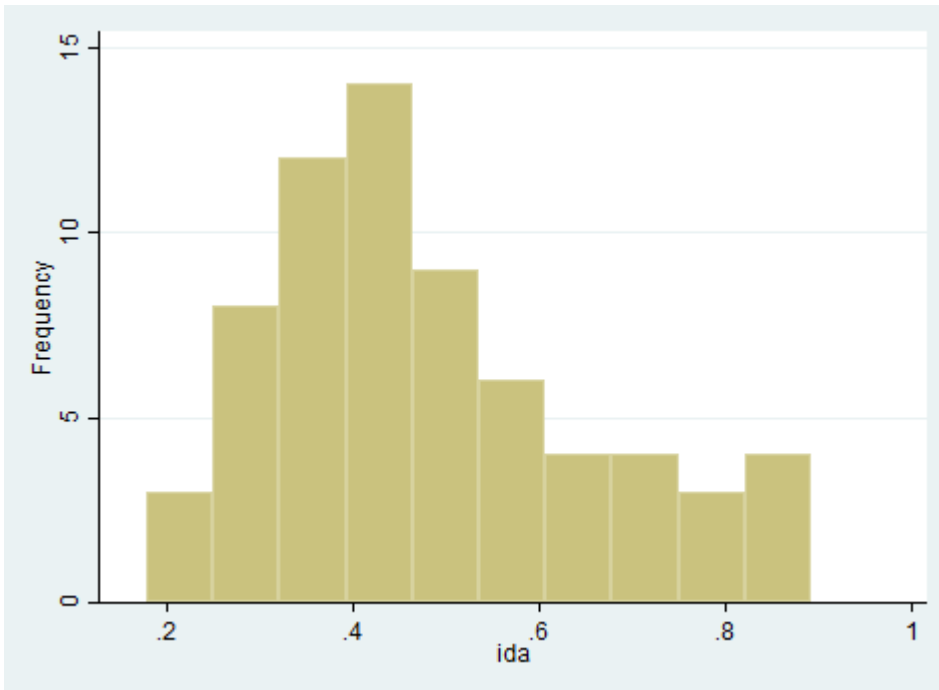
Note: We excluded Taiwan's data from this analysis due to technical reason
Source: CRCB

Table 11 shows the rank of countries by IDA. The best scores there were achieved by the Latvia, Portugal, Ukraine and Columbia. The Czech Republic, USA, Paraguay, Uganda, Nepal and Serbia are slightly behind them.

As we have seen earlier a lot of developed countries with low level of corruption (measured by the TI's CPI) and with high degree of rule of law (measured by The World Bank or by the World Justice Project[10]) have very good IDA's scores, e.g. the USA, Australia, Canada or Switzerland. There are some emerging countries where the availability of public procurement data is quite good, for example, in Ukraine, Colombia, Turkey, Russia or Chile. And some new EU member states also have quite a high performance from that point of view: Latvia, the Czech Republic and Romania. A very interesting result is that in the old EU member countries (except for Portugal) the data quality and availability of public procurement data are rather poor or average when we look at their IDPQ and IDA scores. These results point out that not only in developing and emerging countries there is still a to-do list to be accomplished concerning the improvement of quality of public procurement data publication but in the developed countries as well.

Beyond that, the results again draw attention to the fact that in the old EU member states (except for Portugal) the data publication quality and availability of public procurement data are rather poor or average. At European level this situation is fundamentally improved by some EU financed excellent research projects[11] that seek to publish data instead of the public procurement authorities or other state institiutions of the member state, but even so this might not be the right solution. We are convinced that the EU member states, state institutions and within them the public procurement authorities should improve their own data publication protocol and disclose contract award notice data at contract level in structured and downloadable format. As the EU has already done so[12].

The fundamental problems of public procurement data publication for each country should be resolved by the public procurement authorities or other state institutions itself.

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[10] See https://bit.ly/2DmtBjv and https://bit.ly/2E3fZJy.
[11] See https://bit.ly/2zwfweM and https://bit.ly/2RExlzB.
[12] The EU discloses contract award notices of the member states only above of certain threshold. See https://bit.ly/2z9d1ih and https://bit.ly/2ya51hd.

*Table 11: The rank of countries by the Index of Data Aviability (IDA) in 2018,
N = 66*

rank		ida
1	Latvia	0.8920
2	Portugal	0.8666
3	Ukraine	0.8563
4	Colombia	0.8286
5	Czech Republic	0.7836
6	United States of America	0.7729
7	Paraguay	0.7688
8	Uganda	0.7422
9	Nepal	0.7404
10	Serbia	0.7234
11	Republic of Moldova	0.6972
12	Romania	0.6706
13	United States - California	0.6502
14	Uruguay	0.6479
15	Australia	0.6377
16	Switzerland	0.5943
17	Belarus	0.5693
18	Turkey	0.5622
19	Chile	0.5547
20	Russian Federation	0.5494
21	Lithuania	0.5489
22	China, Hong Kong Special Administrative Region	0.5216
23	Canada	0.5190
24	Côte d'Ivoire	0.5114
25	Tunisia	0.5011
26	Ireland	0.4927
27	Denmark	0.4920
28	Zambia	0.4911
29	Bolivia, Plurinational State of	0.4795
30	Slovakia	0.4693
31	France	0.4591
32	Spain	0.4568
33	Liberia	0.4529
34	Slovenia	0.4511
35	Bangladesh	0.4409
36	China	0.4386
37	Sierra Leone	0.4375
38	Hungary	0.4341

39	Macedonia	0.4341
40	Republic of Korea	0.4295
41	Morocco	0.4261
42	Egypt	0.4136
43	Kenya	0.4120
44	Ecuador	0.4011
45	Estonia	0.3860
46	Luxembourg	0.3841
47	Ghana	0.3830
48	Croatia	0.3784
49	Montenegro	0.3606
50	Malta	0.3500
51	Ethiopia	0.3455
52	Finland	0.3432
53	Japan	0.3432
54	Senegal	0.3375
55	Mauritius	0.3352
56	Mozambique	0.3227
57	Pakistan	0.3057
58	Mali	0.3036
59	Guyana	0.2875
60	Somalia	0.2830
61	Cameroon	0.2750
62	Malaysia	0.2739
63	Democratic Republic of the Congo	0.2625
64	Iceland	0.2625
65	South Sudan	0.2375
66	Cape Verde	0.2286

Note: We excluded Taiwan's data from this analysis due to technical reason
Source: CRCB

Annex

A1. The questionnaire

ASSESSMENT OF DATA PUBLICATION BY PUBLIC PROCUREMENT AUTHORITIES AROUND THE WORLD

Questionnaire

December 2017

CRCB

Start date of data collection:

…..….…day …..….…month ……. year, …..….…hour …..….…minutes

1. Code of assessed country:

2. Name of assessed country: _____

3. URL of the public procurement authority website of the assessed country: _____

4. How many official websites does the PPA authority have?

_____

5. Is the PPA website available in the following languages?

	Is the PPA website available in the following language? 5.1.		Is this the official language of the country? 5.2.	
	yes	no	yes	no
a. In English	1	0	1	0
b. In French	1	0	1	0
c. In Portuguese	1	0	1	0
d. In Spanish	1	0	1	0
e. In a different second language that is not the most widely used language of the assessed country	1	0	1	0

5.1.f. If yes, what is this/are these language?

_____

6. Is the PPA website fully translated into English, including all databases?

0 – no

1 – yes

7. Is a database of awarded tenders available on the PPA website?

0 – no

1 – yes

8. Can the database of awarded tenders be downloaded from the PPA website?

0 – no ⟶ **If no, proceed to QUESTION 13.**

1 – yes

9. URL of the downloadable database of awarded tenders of the assessed country: _____

10. How many clicks does it take to reach the download link of the database of awarded tenders on the PPA website?

_____ clicks

11. If yes, in what format can the database of awarded tenders be downloaded?

	yes	no
a. In pdf format	1	0
b. In xlsx format	1	0
c. In csv format	1	0
d. In json format	1	0
e. In xml format	1	0
f. In a different format	1	0

11. g. If yes, what is the name of different format in which data is downloadable?

_____

12. In how many files is the downloadable database of awarded tenders split?

_____ files

13. Is the database of awarded tenders available in a non-downloadable ordered html format on the PPA website?

0 – no ⟶ **If no, proceed to QUESTION 19.**

1 – yes

14. URL of the non-downloadable ordered html database of awarded tenders of the assessed country: _____

15. How many clicks does it take to reach the non-downloadable online database of awarded tenders on the PPA website?

_____ clicks

16. Is the non-downloadable online database of awarded tenders on the PPA website searchable?

0 – no ⟶ **If no, proceed to QUESTION 19.**

1 – yes

17. Does the search function of the non-downloadable online database on the PPA website allow for search filters?

0 – no ⟶ **If no, proceed to QUESTION 19.**

1 – yes

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18. Are the following search filters available in the search function of the non-downloadable online database of awarded tenders on the PPA website?

	yes	no
a. Name of procuring entity	1	0
b. Name of winner	1	0
c. Value of tender	1	0
d. ID of tender	1	0
e. Date of contract awarded	1	0
f. Date of publication of contract award	1	0
g. Procurement method	1	0
h. Procurement type	1	0
i. Region	1	0
j. Procurement status	1	0
k. Keyword(s)	1	0

19. From what date are records of awarded tenders available in the database?

day: _____ month: _____ year: _____

20. Until what date are records of awarded tenders available in the database?

day: _____ month: _____ year: _____

21. Is the database of awarded tenders updated daily?

0 – no

1 – yes

22. Information on how many tenders is included in the database of awarded tenders?

_____ tenders

23. Is the following information available for all individual tenders in the database of awarded tenders?

	yes	no
a. Name of procuring entity	1	0
b. Address of procuring entity	1	0
c. ID of procuring entity	1	0
d. Name of tenderers	1	0
e. Address of tenderers	1	0
f. ID of tenderers	1	0
g. Name of winner	1	0
h. Address of winner	1	0
i. ID of winner	1	0
j. Number of bids	1	0
k. Estimated value of the tender	1	0
l. Winning price of the tender	1	0
m. Date of publication of the winner	1	0

n. Date when the contract was signed	1	0
o. Date when the call for tenders was posted	1	0
p. Date of the application deadline	1	0
q. Date of contract completion	1	0
r. Procuring method	1	0
s. Procurement type	1	0
t. Tender ID	1	0

24. Are the CPV codes available for individual tenders in the database of awarded tenders?

0 – no

1 – yes

25. Are the UNSPSC codes available for individual tenders in the database of awarded tenders?

0 – no

1 – yes

26. Are there any missing values in the database of awarded tenders?

0 – no

1 – yes

27. Are there any other mistakes in the database of awarded tenders?

0 – no ⟶ **If no, proceed to QUESTION 29.**

1 – yes

28. If yes, what are these mistakes in the database of awarded tenders?

_____

29. Is a database of calls for tender available on the PPA website?

    0 – no ⟶ **If no, proceed to QUESTION 40.**

    1 – yes

30. URL of the database of calls for tender of the assessed country:

    _____

31. How many clicks does it take to reach the online database of calls for tender on the PPA website?

    _____ clicks

32. Is the online database of calls for tender on the PPA website searchable?

    0 – no ⟶ **If no, proceed to QUESTION 35.**

    1 – yes

33. Does the search function of the database of calls for tender allow for search filters?

    0 – no ⟶ **If no, proceed to QUESTION 35.**

    1 – yes

34. Are the following search filters available in the search function of the database of calls for tender?

	yes	no
a. Procuring entity name	1	0
b. Procurement type	1	0
c. Deadline for application	1	0
d. Location	1	0
e. Industry	1	0

35. How many calls for tender are included in the database of calls for tender?

_____ tenders

36. Is the following information available for all individual tendering opportunity in the database of tendering opportunities?

	yes	no
a. ID of tender	1	0
b. Description	1	0
c. Date of publication of tendering opportunity	1	0
d. Deadline for application	1	0
e. Procurement type	1	0
f. Location	1	0
g. Procuring entity name	1	0
h. Funding source	1	0

37. Are there any missing values in the database of tendering opportunities?

0 – no

1 – yes

38. Are there any other mistakes in the information included in the database of tendering opportunities?

0 – no ⟶ **If no, proceed to QUESTION 39.**

1 – yes

39. If yes, what are these mistakes in the database tendering opportunities?

_____

40. Does the PPA website reference the Open Contracting Data Standard?

     0 – no

     1 – yes

41. How much time did data collection for the assessed country require?

     _____ minutes

42. When was the website of the PPA of the assessed country last accessed for data collection?

     day: _____ month: _____ year: _____

43. Further notes on the assessed country:

_____

End date of data collection:

…..………day …..………month …….. year, …..………hour …..………minutes

A2. The existence of public procurement authority websites

Table A2.1: The availability of Public Procurement Authority websites, 112 countries and 6 administrative regions

No.	Country or region	PPA website available
1	Afghanistan	x
2	Albania	x
3	Algeria	x
4	Angola	0
5	Argentina	x
6	Australia	x
7	Austria	x
8	Bangladesh	x
9	Belarus	x
10	Belgium	x
11	Benin	x
12	Bhutan	0
13	Bolivia, Plurinational State of	x
14	Bosnia and Herzegovina	x
15	Botswana	x
16	Brazil	0
17	Burkina Faso	x
18	Burundi	x
19	Cameroon	x
20	Canada	x
21	Cape Verde	x

22	Central African Republic	0
23	Chad	x
24	Chile	x
25	China	x
26	China - Guangdong	0
27	China, Hong Kong Special Administrative Region	x
28	China, Macao Special Administrative Region	0
29	Colombia	x
30	Comoros	0
31	Congo	0
32	Côte d'Ivoire	x
33	Croatia	x
34	Czech Republic	x
35	Democratic Republic of the Congo	x
36	Denmark	x
37	Djiobuti	0
38	Ecuador	x
39	Egypt	x
40	Equatorial Guinea	0
41	Eritrea	0
42	Estonia	x
43	Ethiopia	x
44	Finland	x
45	France	x
46	Gabon	x
47	Gambia	x
48	Germany	0

49	Germany - North Rhine-Westphalia	0
50	Ghana	x
51	Guinea	x
52	Guinea-Bissau	0
53	Guyana	x
54	Hungary	x
55	Iceland	x
56	India - Maharashtra	x
57	Iran, Islamic Republic of	0
58	Ireland	x
59	Japan	x
60	Kenya	x
61	Latvia	x
62	Lesotho	0
63	Liberia	x
64	Libya	0
65	Lithuania	x
66	Luxembourg	x
67	Macedonia	x
68	Madagascar	0
69	Malawi	0
70	Malaysia	x
71	Mali	x
72	Malta	x
73	Mauritania	0
74	Mauritius	x
75	Montenegro	x

76	Morocco	x
77	Mozambique	x
78	Namibia	0
79	Nepal	x
80	Niger	x
81	Pakistan	x
82	Paraguay	x
83	Peru	x
84	Portugal	x
85	Republic of Korea	x
86	Republic of Moldova	x
87	Romania	x
88	Russian Federation	x
89	Rwanda	x
90	Sao Tome and Principe	0
91	Senegal	x
92	Serbia	x
93	Sierra Leone	x
94	Slovakia	x
95	Slovenia	x
96	Somalia	x
97	South Africa	0
98	South Sudan	x
99	Spain	x
100	Sri Lanka	x
101	Sudan	0
102	Suriname	0

103	Swaziland	x
104	Sweden	x
105	Switzerland	x
106	Taiwan	x
107	Tanzania	x
108	Togo	x
109	Tunisia	x
110	Turkey	x
111	Uganda	x
112	Ukraine	x
113	United States of America	x
114	United States - California	x
115	Uruguay	x
116	Venezuela, Bolivarian Republic of	x
117	Zambia	x
118	Zimbabwe	0

Note: the administrative regions or federal states are in a light gray cell
Source: CRCB

Table A2.2.: The URLs of the public procurement authority websites of countries and two regions included in the report, N=92

No.	Country or region	Url of PPA website
1	Afghanistan	http://www.npa.gov.af/en/home
2	Albania	http://www.app.gov.al/home/
3	Algeria	http://www.mf.gov.dz/article/49/March%C3%A9s-publics/563/Site-web-des-March%C3%A9s-Publics.html
4	Argentina	http://www.argentinalicitaciones.com/
5	Australia	https://www.tenders.gov.au/
6	Austria	https://www.bbg.gv.at/
7	Bangladesh	http://www.cptu.gov.bd/
8	Belarus	http://zakupki.butb.by/auctions/index.html, http://www.icetrade.by/
9	Belgium	http://www.publicprocurement.be/nl/publicprocurementbe-english-0
10	Benin	http://www.marches-publics.bj/
11	Bolivia, Plurinational State of	http://www.sicoes.com.bo/adquisicion-de-impresoras-lct320454.html
12	Bosnia and Herzegovina	https://www.javnenabavke.gov.ba/index.php?id=01&jezik=en
13	Botswana	http://www.ppadb.co.bw/
14	Burkina Faso	http://www.dgmp.gov.bf/
15	Burundi	http://www.armp.bi/
16	Cameroon	http://minmap.cm/, http://armp.cm/JDM.php#tzM52
17	Canada	https://buyandsell.gc.ca/
18	Cape Verde	http://www.arap.cv/index.php/centro-do-conhecimento/publicacoes
19	Chad	http://www.marchespublics-tchad.com/
20	Chile	http://www.chilecompra.cl/ , www.mercadopublico.cl
21	China	http://www.ccgp.gov.cn/
22	China, Hong Kong Special Administrative Region	http://www.fstb.gov.hk/tb/en/government-procurement.htm
23	Colombia	https://www.colombiacompra.gov.co/
24	Côte d'Ivoire	https://marchespublics.ci/fr/
25	Croatia	http://www.javnanabava.hr/, https://eojn.nn.hr/Oglasnik/
26	Czech Republic	http://www.isvz.cz/isvz/Podpora/ISVZ.aspx, https://nen.nipez.cz/

27	Democratic Republic of the Congo	http://www.armp-rdc.org/index.php/en/
28	Denmark	https://udbud.dk/
29	Ecuador	https://www.compraspublicas.gob.ec/
30	Egypt	https://etenders.gov.eg
31	Estonia	https://riigihanked.riik.ee/register/
32	Ethiopia	http://www.ppa.gov.et/index.php
33	Finland	https://www.tutkihankintoja.fi, https://www.hankintailmoitukset.fi/fi/
34	France	https://www.marches-publics.gouv.fr
35	Gabon	http://dgmp.ga/
36	Gambia	http://www.gppa.gm/
37	Ghana	http://www.ppaghana.org/
38	Guinea	http://www.armpguinee.org/
39	Guyana	http://www.npta.gov.gy/index.html
40	Hungary	https://www.kozbeszerzes.hu/ , http://kba.kozbeszerzes.hu
41	Iceland	https://www.rikiskaup.is/english
42	India - Maharashtra	https://allgom.maharashtra.etenders.in/common/home.asp
43	Ireland	http://www.etenders.gov.ie/
44	Japan	https://www.jetro.go.jp/en/database/procurement.html
45	Kenya	http://www.ppoa.go.ke, http://supplier.treasury.go.ke/site/tenders.go/index.php/public/tenders/type:expired
46	Latvia	https://www.iub.gov.lv
47	Liberia	http://www.ppcc.gov.lr/
48	Lithuania	http://www.cvpp.lt, https://cvpp.eviesiejipirkimai.lt
49	Luxembourg	http://www.marches.public.lu/fr.html, https://pmp.b2g.etat.lu/
50	Macedonia	http://www.bjn.gov.mk/pocetna-en.nspx
51	Malaysia	http://myprocurement.treasury.gov.my/
52	Mali	http://www.dgmp.gouv.ml
53	Malta	https://www.etenders.gov.mt
54	Mauritius	http://publicprocurement.govmu.org
55	Montenegro	http://portal.ujn.gov.me

56	Morocco	https://www.marchespublics.gov.ma/index.php5?page=entreprise.EntrepriseHome
57	Mozambique	http://www.ufsa.gov.mz/
58	Nepal	http://ppmo.gov.np/
59	Niger	http://www.armp-niger.com/
60	Pakistan	http://www.ppra.org.pk/
61	Paraguay	https://www.contrataciones.gov.py/
62	Peru	http://www.perucontrata.com.pe/, http://www.osce.gob.pe/opcion.asp?ids=1&ido=2
63	Portugal	http://www.base.gov.pt/Base/pt/Homepage
64	Republic of Korea	https://www.pps.go.kr/eng/index.do, http://www.g2b.go.kr/index.jsp
65	Republic of Moldova	http://tender.gov.md/en
66	Romania	http://www.e-licitatie.ro/Public/Common/Content.aspx?f=PublicHomePage
67	Russian Federation	http://www.zakupki.gov.ru/epz/main/public/home.html
68	Rwanda	http://rppa.gov.rw/
69	Senegal	www.marchespublics.sn/
70	Serbia	http://www.ujn.gov.rs/en.html, http://portal.ujn.gov.rs/Default.aspx
71	Sierra Leone	http://www.publicprocurement.gov.sl/
72	Slovakia	https://www.uvo.gov.sk/
73	Slovenia	http://www.djn.mju.gov.si/, https://www.enarocanje.si/
74	Somalia	https://sppa.so/
75	South Sudan	http://rssprocurement.org/pages
76	Spain	https://contrataciondelestado.es/wps/portal/plataforma
77	Sri Lanka	http://www.nprocom.gov.lk/web/index.php?lang=en
78	Swaziland	http://www.sppra.co.sz/
79	Sweden	https://www.upphandlingsmyndigheten.se/
80	Switzerland	https://www.simap.ch/
81	Taiwan	http://web.pcc.gov.tw/tps/pss/tender.do?method=goNews
82	Tanzania	https://www.ppra.go.tz/
83	Togo	https://armp-togo.com/

84	Tunisia	http://www.marchespublics.gov.tn/onmp/content/index.php?lang=en
85	Turkey	http://www.ihale.gov.tr/default.aspx, https://ekap.kik.gov.tr/EKAP/Default.aspx?ReturnUrl=%2fEKAP
86	Uganda	https://www.ppda.go.ug/
87	Ukraine	https://prozorro.gov.ua/en
88	United States of America	https://www.fpds.gov/fpdsng_cms/index.php/en/, https://www.usaspending.gov/#/
89	United States - California	https://caleprocure.ca.gov/pages/index.aspx
90	Uruguay	https://www.comprasestatales.gub.uy/inicio/capacitacion/manual-de-contratacion-publica
91	Venezuela, Bolivarian Republic of	http://www.snc.gob.ve/
92	Zambia	https://www.zppa.org.zm/home

Source: CRCB

CORRUPTION RESEARCH CENTER BUDAPEST

A3. The availability of structured public procurement data

A3.1.: The availability of structured public procurement data, 90 countries and two administrative regions with official PPA website

No.	Country or region	PP data	Awarded tenders dataset	Calls for tenders dataset	Downloadable awarded tenders dataset (in csv, json, pdf, tsv, xlsx, xml formats)	Time period of awarded tender data availability	Date that PPA website was last accessed
1	Afghanistan	x	0	x	0		21.01.2018
2	Albania	0	0	0	0		21.01.2018
3	Algeria	0	0	0	0		21.01.2018
4	Argentina	x	x	x	0		26.03.2018
5	Australia	x	x	x	x	08.01.2008 - 19.01.2018	20.01.2018
6	Austria	x	0	x	0		20.01.2018
7	Bangladesh	x	0	x	0	06.03.1997 - 08.03.2018	21.03.2018
8	Belarus	x	x	x	0	30.06.2011 - 13.03.2018	21.03.2018
9	Belgium	0	0	0	0		21.03.2018
10	Benin	x	0	x	0		16.01.2018
11	Bolivia, Plurinational State of	x	x	x	0	30.05.2012 - 22.03.2018	25.03.2018
12	Bosnia and Herzegovina	0	0	0	0		16.01.2018
13	Botswana	x	0	x	0		16.01.2018
14	Burkina Faso	0	0	0	0		17.01.2018
15	Burundi	0	0	0	0		21.03.2018
16	Cameroon	x	x	x	0	24.11.2016 - 25.04.2017	21.03.2018
17	Canada	x	x	x	x	31.03.2014 - 16.01.2018	17.01.2018
18	Cape Verde	x	x	0	x	19.01.2012 - 16.12.2014	23.01.2018

19	Chad	0	0	0	0		17.01.2018
20	Chile	x	x	x	x	19.10.2005 - 23.03.2018	25.03.2018
21	China	x	0	x	0	05.04.2012 - 24.02.2018	24.03.2018
22	China, Hong Kong Special Administrative Region	x	x	x	0	12.2012 - 09.02.2018	17.01.2018
23	Colombia	x	x	x	x	06.08.2008 - 22.03.2018	22.03.2018
24	Côte d'Ivoire	x	x	x	0	05.02.2013 - 02.02.2018	23.03.2018
25	Croatia	x	x	x	0	04.01.2008 - 06.04.2018	04.02.2018
26	Czech Republic	x	x	x	x	04.01.2006 - 12.03.2018	13.03.2018
27	Democratic Republic of the Congo	x	x	0	0	06.01.2014 - 18.01.2018	20.01.2018
28	Denmark	x	x	x	0	? - 23.03.2018	23.03.2018
29	Ecuador	x	x	x	0	03.04.2007 - 06.04.2018	04.02.2018
30	Egypt	x	x	x	0	14.07.2008 - 01.02.2018	05.02.2018
31	Estonia	x	x	x	x	18.04.2006 - 20.01.2018	21.01.2018
32	Ethiopia	x	x	x	0	2015 - 2017	22.01.2018
33	Finland	x	x	x	0	01.01.2016 - 10.02.2018	10.02.2018
34	France	x	x	x	0	2013 - 23.03.2018	23.03.2018
35	Gabon	x	0	x	0		22.01.2018
36	Gambia	0	0	0	0		10.02.2018
37	Ghana	x	x	x	0	02.02.2012 - 29.01.2018	11.02.2018
38	Guinea	x	0	x	0		23.01.2018
39	Guyana	x	x	0	0	21.01.2013 - 04.12.2018	23.01.2018
40	Hungary	x	x	x	x	07.06.2004 -	11.03.2018

						29.01.2018	
41	Iceland	x	x	x	0	9.11.2017 - 20.03.2018	26.03.2018
42	India - Maharashtra	x	0	x	0		01.02.2018
43	Ireland	x	x	x	x	11.02.2004 - 23.03.2018	25.03.2018
44	Japan	x	x	x	0	06.01.2001 - 01.02.2018	01.02.2018
45	Kenya	x	x	x	x	09.2015 - 09.2017 (Q1)	01.02.2018
46	Latvia	x	x	x	x	17.01.2000 - 02.02.2018	02.02.2018
47	Liberia	x	x	0	x	07.07.2016 - 15.08.2017	02.02.2018
48	Lithuania	x	x	x	0	19.06.2009 - 09.03.2018	11.03.2018
49	Luxembourg	x	x	x	0	22.05.2008 - 18.01.2018	02.02.2018
50	Macedonia	x	x	x	0	27.02.2008 - 02.02.2018	02.02.2018
51	Malaysia	x	x	x	0	? - 2018	02.02.2018
52	Mali	x	x	x	x	01.01.2016 - 19.03.2018	23.03.2018
53	Malta	x	x	x	x	26.11.2012 - 12.03.2018	24.03.2018
54	Mauritius	x	x	x	x	2016 - 21.03.2018	25.03.2018
55	Montenegro	x	x	x	x	25.05.2015 - 23.03.2018	26.03.2018
56	Morocco	x	x	x	0	04.02.2014 - 02.02.2018	03.02.2018
57	Mozambique	x	x	x	0	26.01.2015 - 20.11.2017	03.02.2018
58	Nepal	x	x	x	x	04.05.2017 - 22.01.2018	26.03.2018
59	Niger	0	0	0	0		25.03.2018
60	Pakistan	x	x	x	0	31.12.2017 - 25.01.2018	07.02.2018
61	Paraguay	x	x	x	x	09.05.2012 -	12.03.2018

						12.03.2018	
62	Peru	x	0	x	0		12.03.2018
63	Portugal	x	x	x	x	? - 23.03.2018	25.03.2018
64	Republic of Korea	x	x	x	0	? - 23.03.2018	25.03.2018
65	Republic of Moldova	x	x	x	x	12.06.2012 - 23.03.2018	25.03.2018
66	Romania	x	x	x	x	? - 23.03.2018	25.03.2018
67	Russian Federation	x	x	x	x	01.01.2014 - 10.02.2018	10.02.2018
68	Rwanda	0	0	0	0		10.02.2018
69	Senegal	x	x	x	0	30.10.2017 - 02.02.2018	08.02.2018
70	Serbia	x	x	x	x	29.03.2013 - 23.03.2018	26.03.2018
71	Sierra Leone	x	x	x	0	20.08.2015 - 19.07.2016	25.03.2018
72	Slovakia	x	x	x	0	27.02.2014 - 23.03.2018	25.03.2018
73	Slovenia	x	x	x	0	? - 26.03.2018	07.03.2018
74	Somalia	x	x	x	0	16.10.2016	07.03.2018
75	South Sudan	x	x	0	0	29.02.2016 - 08.03.2018	25.03.2018
76	Spain	x	x	x	0	24.10.2008 - 07.03.2018	07.03.2018
77	Sri Lanka	0	0	0	0		07.03.2018
78	Swaziland	x	0	x	0		24.03.2018
79	Sweden	x	0	0	0		26.03.2018
80	Switzerland	x	x	x	0	09.03.2015 - 08.03.2018	08.03.2018
81	Taiwan	x	x	x	x		24.03.2018
82	Tanzania	x	0	x	0		24.03.2018
83	Togo	0	0	0	0		24.03.2018
84	Tunisia	x	x	x	0	08.07.2010 - 12.03.2018	12.03.2018
85	Turkey	x	x	x	x	08.01.2004 - 09.03.2018	26.03.2018

86	Uganda	x	x	x	x	11.09.2009 - 15.03.2018 (open data only from 2013)	24.03.2018
87	Ukraine	x	x	x	x	06.02.2015 - 19.03.2018	20.03.2018
88	United States of America	x	x	x	x	01.10.2008 - 24.03.2018	24.03.2018
89	US - California	x	x	x	x	23.01.1992 - 24.03.2018	24.03.2018
90	Uruguay	x	x	x	x	08.07.1997 - 24.03.2018	24.03.2018
91	Venezuela, Bolivarian Republic of	0	0	0	0		24.03.2018
92	Zambia	x	x	x	x	01.07.2016 - 10.03.2018	09.03.2018

Source: CRCB

A4. Methodology of the data collection
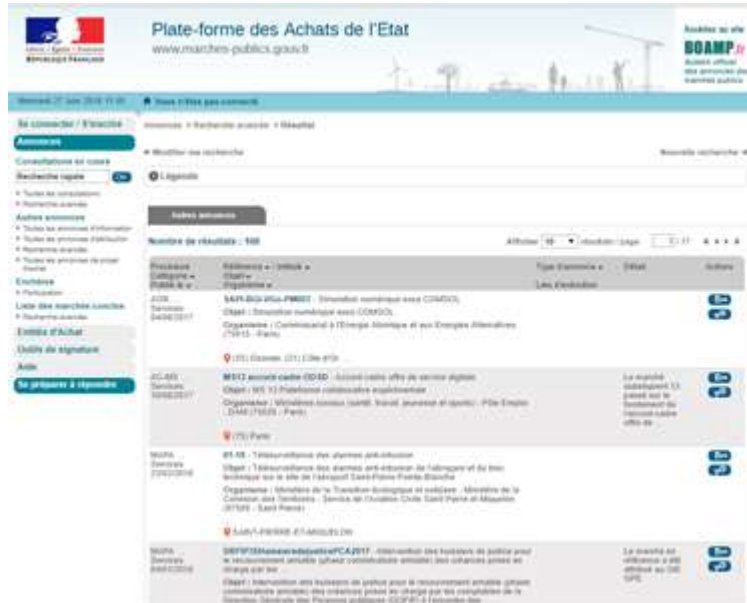
For this report the dataset on the data publication of public procurement authorities was constructed by coding the PPA websites following the questionnaire in Annex 1. Data was collected for 112 countries and 6 administrative regions or federal states. Data collection occurred between 16th January and 26th March 2018.

The following section provides a detailed overview of the methodology used in the coding process for certain variables, where further explanation was deemed necessary.

1. Q23: awarded tenders information
   a. Questions Q23.a to Q23.t provide information on whether certain crucial pieces of information are available for individual awarded tenders in the table. For PPA websites where the awarded tenders tables are both downloadable (Q8=1) and available online in an ordered html format (Q13=1), questions Q23.a to Q23.t were answered for the downloadable awarded tenders table. While for most countries the online and downloadable tables were identical, for the following countries the exact content of information publication differed for the two types of tables: Czech Republic, Ireland, Kenya, Liberia.
   b. In the case of Slovakia, the coding of the availability of downloadable awarded contract data tables warrants an explanation. While there is a pdf link on the page containing the online awarded contracts data tables, clicking on which downloads only a maximum of 80 contracts at a time (the number of contracts shown on each page), and only very limited information on each contract. This means that as there are above 153,000 contracts, it would take above 1,900 clicks to download all pdfs, and this would still yield above 1,900 separate pdfs, which would be highly inconvenient for analysis. Furthermore, these downloadable pdf data tables only contain very limited information on individual contracts: only the contract notice ID, journal number, publication date, name of procuring entity, and description of contract are disclosed in the pdf tables. As a result, we concluded that a useable awarded contracts data table cannot be downloaded from the Slovakian PPA website, and therefore we coded it as unavailable.
2. Q26, Q37: Missing values
   a. Q26 and Q37 refer to missing values in the awarded tenders and calls for tender tables respectively, with 1 indicating the existence of missing values, 0 indicating the lack of missing values. For an individual table, 1 was given as a value if for any tender, any of the
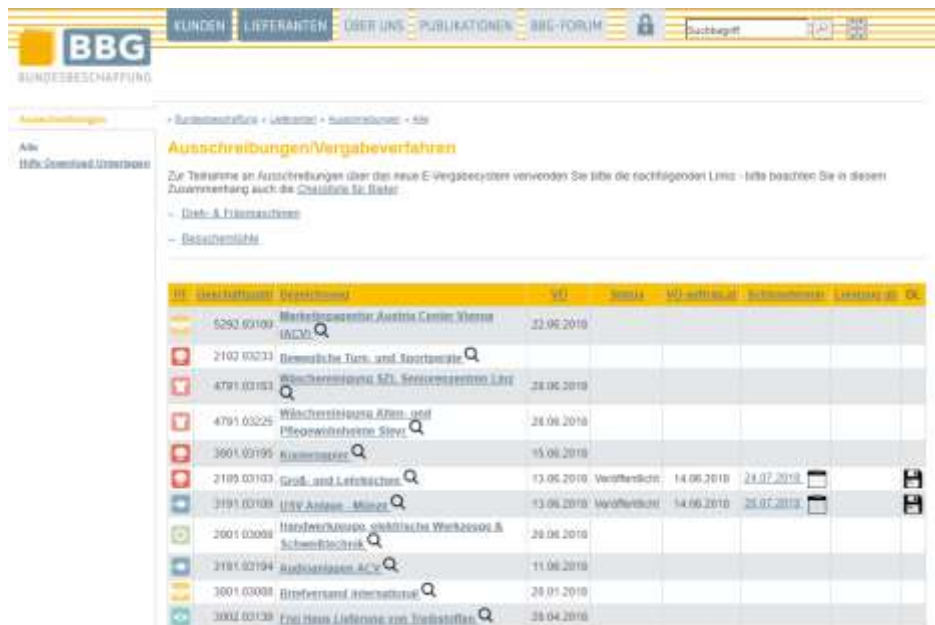
key individual tender-level information was missing for at least one tender. These key individual tender-level pieces of information are indicated in questions Q23 and Q36 for the awarded tenders and calls for tender tables respectively.

b. An example of missing values in the awarded tenders table: France, where procurement method is almost always missing.

c. An example of missing values in the calls for tender table: Austria

3. Q27-28, Q38-39: Mistakes
    a. Q27 and Q38 refer to mistakes in the awarded tenders and calls for tender tables respectively, while Q28 and Q39 provide detailed notes on the exact nature of these mistakes. There are a wide range of possible mistakes for both tables, which can refer to either the content, searchability or accessibility of the tables. Typical mistakes – those occurring for more than one PPA website – for awarded tenders include the search function not working, future dates given as publication date, date of contract signing or application deadline for already awarded tenders. For the calls for tender tables, a common mistake is that expired calls for tender are still included in the tables. In some extreme cases, the table included solely expired calls for tender.
    b. An example of mistakes in the awarded tenders table: Liberia, where the search function does not work.

c. An example of mistakes in the calls for tender table: Botswana, where all calls for tender have expired

A5. Definition of the fields/terms used

Public procurement is "the purchase by governments and state-owned enterprises of goods, services and works" (http://www.oecd.org/gov/public-procurement/). The procurement life cycle is comprised of four phases: preparing bids, submitting bids, evaluating bids, and awarding and executing contracts[13] The following is a glossary of terms used in our analysis of data publication practices at the four phases by public procurement authorities around the world.

Term	Definition
award	The action taken by the buyer based on the evaluation of offers, to approve the selection of the supplier for a specific contract. (UN, 2012)
award date	The date of the contract award. This is usually the date on which a decision to award was made. (OCDS)
bid, proposal	An offer submitted by a bidder in response to a call for tender to supply goods, perform works or provide services. (World Bank, 2016, p. vii)
buyer	The entity whose budget will be used to purchase the goods. This may be different from the procuring entity who may be specified in the tender data. (OCDS)
call for tenders, invitation to bid, tender notice	The public invitation for all suppliers to submit bids to supply goods, perform works or provide services. (World Bank, 2016, p. vii)
CPC	The Central Product Classification (CPC) is a product classification for goods and services promulgated by the United Nations Statistical Commission. It is intended to be an international standard for organizing and analyzing data on industrial production, national accounts, trade and prices. (https://unstats.un.org/unsd/cr/registry/cpc-21.asp)
CPV code	The Common Procurement Vocabulary is a standard adopted by the Commission of the European Community, and consisting of a main vocabulary for defining the subject of a contract, and a supplementary vocabulary for adding further qualitative information. (https://simap.ted.europa.eu/cpv)
date signed	The date the contract was signed. In the case of multiple signatures, the date of the last signature. (OCDS)

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[13] See World Bank 2016. *Benchmarking public procurement 2016: assessing public procurement systems in 77 economies.* Washington, D.C.: https://bit.ly/2MS0WTn

description of the subject matter of the procurement	Technical, quality and performance characteristics of the subject matter of the procurement and any other requirements that the submission must meet in order to be considered responsive, identified by the procuring entity in the solicitation documents. (UNCITRAL, 2011, p. 5-6)
e-procurement	Electronic procurement that occurs when the activities of the purchasing process are conducted electronically, typically over the Internet, to shorten the cycle time and lower the transaction costs of the acquisition process. (UN, 2012)
estimated value	The total upper estimated value of the procurement. A negative value indicates that the contracting process may involve payments from the supplier to the buyer (commonly used in concession contracts). (OCDS)
funder, funding source	The funder is an entity providing money or finance for this contracting process. (OCDS)
Open Contracting Data Standard (OCDS)	An open data standard for publication of structured information on all stages of a contracting process: from planning to implementation. The publication of OCDS data can enable greater transparency in public contracting, and can support accessible and in-depth analysis of the efficiency, effectiveness, fairness, and integrity of public contracting systems. (OCDS)
procurement	The process which creates, manages and fulfils contracts. (Open Contracting Guide, 2016, p. 99)
procurement contract	The contract awarded to the supplier that submitted the winning bid, it establishes the details of the execution of the procurement between the procuring entity and the supplier. (World Bank, 2016, p. viii)
procurement method	The tendering method used, which may be open, selective, limited, or direct. (OCDS)
→ **Open**	All interested suppliers may submit a tender. (OCDS)
→ **Selective**	Only qualified suppliers are invited to submit a tender. (OCDS)
→ **Limited**	The procuring entity contacts a number of suppliers of its choice. (OCDS)
→ **Direct**	The contract is awarded to a single supplier without competition. (OCDS)
procurement plan	Plan of expenditure issued by the government to establish its procuring needs over a delimited period of time (i.e. a year, half a year or a trimester). (World Bank, 2016, p. viii)
procurement type, procurement category	The primary category describing the main object of this contracting process from the procurement. The possible procurement categories are Goods and Supplies, Works, and Services. (OCDS)

→ **Goods and Supplies**	The primary object of this contracting process involves physical or electronic goods or supplies. (OCDS)
→ **Works**	The primary object of this contracting process involves construction, repair, rehabilitation, demolition, restoration or maintenance of some asset or infrastructure. (OCDS)
→ **Services**	The primary object of this contracting process involves professional services of some form, generally contracted for on the basis of measurable outputs or deliverables. (OCDS)
procuring entity	Any government entity that engages in public procurement in accord with the national or local procurement regulatory framework. (World Bank, 2016, p. viii)
Public notice of the award	Announcement to the public in general through publication in the media specified in the legislation of the enacting State to whom the procurement contract or the framework agreement was awarded and the price of the procurement contract. (UNCITRAL, 2011, p. 16)
tender	Designation of the proposal, or bid, submitted by a supplier in response to a call for tender. (World Bank, 2016, p. viii)
tenderer, bidder, proposer, offeror	An agent who submit a bid on a tender. (OCDS)
tender ID	A unique identifier for a tendering process. (OCDS)
→ **OCID**	The Open Contracting ID is a globally unique identifier for this Open Contracting Process. It is composed of a publisher prefix and an identifier for the contracting process. (OCDS)
tender period	The period when the tender is open for submissions. The end date is the closing date for tender submissions. (OCDS)
tender status	The current status of the tendering process. The tender status may be planning, planned, active, cancelled, unsuccessful, complete, or withdrawn. (OCDS)
UNSPSC	The United Nations Standard Products and Services Code (UNSPSC) is a hierarchical convention that is used to classify all products and services. (http://www.unspsc.org/codeset-downloads)
winner, supplier, vendor	The entity awarded or contracted to provide supplies, works or services. (OCDS)
winning price, value	The total estimated lifetime value, or maximum value of the winning tender as specified by the procurement contract. A negative value indicates that the award may involve payments from the supplier to the buyer (commonly used in concession contracts). (OCDS)

A6. Definition of IDPQ and IDA

A6.1. IDPQ (Stata commands)

```
gen     i4=1 if Q8==1
replace i4=0 if i4==.

gen     i7=1 if Q17==1
replace i7=0 if i7==.

gen  idpq=.
replace idpq=1   if i4==1
replace idpq=0   if i4==0 & i7==0
replace idpq=0.5 if i4==0 & i7==1
```

A6.2. IDA (Stata commands)

```
gen     ndf=ndf + 1 if Q23_a==1
replace ndf=ndf + 1 if Q23_b==1
replace ndf=ndf + 1 if Q23_c==1
replace ndf=ndf + 1 if Q23_d==1
replace ndf=ndf + 1 if Q23_e==1
replace ndf=ndf + 1 if Q23_f==1
replace ndf=ndf + 1 if Q23_g==1
replace ndf=ndf + 1 if Q23_h==1
replace ndf=ndf + 1 if Q23_i==1
replace ndf=ndf + 1 if Q23_j==1
replace ndf=ndf + 1 if Q23_k==1
replace ndf=ndf + 1 if Q23_l==1
replace ndf=ndf + 1 if Q23_m==1
replace ndf=ndf + 1 if Q23_n==1
replace ndf=ndf + 1 if Q23_o==1
replace ndf=ndf + 1 if Q23_p==1
replace ndf=ndf + 1 if Q23_q==1
replace ndf=ndf + 1 if Q23_r==1
replace ndf=ndf + 1 if Q23_s==1
replace ndf=ndf + 1 if Q23_t==1


gen     i1=(8 - Q10)/7
replace i1=0 if i1==.

gen     i2=(5 - Q15)/4
replace i2=0 if i2==.

gen     i3=1 if Q7==1
replace i3=0 if i3==.

gen nf=0
replace nf=nf + 1 if Q18_a==1
replace nf=nf + 1 if Q18_b==1
replace nf=nf + 1 if Q18_c==1
replace nf=nf + 1 if Q18_d==1
replace nf=nf + 1 if Q18_e==1
replace nf=nf + 1 if Q18_f==1
replace nf=nf + 1 if Q18_g==1
replace nf=nf + 1 if Q18_h==1
replace nf=nf + 1 if Q18_i==1
replace nf=nf + 1 if Q18_j==1
replace nf=nf + 1 if Q18_k==1
replace nf=. if i3==0
gen i9=nf/11

gen     i10= ndf/20
replace i10=0 if i10==.
```

```
gen     ida=.
replace ida= (i1 + i2 + i9 + i10)/4 if i3==1
```

Distribution of PPAs by Q10:

Q10: How many clicks does it take to reach the download link of the database of awarded tenders on the PPA website?	Freq.	Percent	Cum.
1	2	6.9	6.9
2	10	34.48	41.38
3	12	41.38	82.76
4	3	10.34	93.1
5	1	3.45	96.55
7	1	3.45	100
Total	29	100	

Distribution of PPAs by Q15:

Q15: How many clicks does it take to reach the non-downloadable online database of awarded tenders on the PPA website?	Freq.	Percent	Cum.
1	21	33.33	33.33
2	24	38.1	71.43
3	13	20.63	92.06
4	5	7.94	100
Total	63	100	