



FOOD BALANCE DATABASE

THE FIFTH EXECUTIVE BOARD MEETING
22 April 2020



FOOD BALANCE DATABASE



In accordance with the 5-year Action Plan of the Islamic Organisation for Food Security, adopted at the 1st General Assembly of the Islamic Organisation for Food Security, which includes among other issues elaboration of the database on State of Food Security in Member States of the Organisation of Islamic Cooperation (OIC). The first steps of elaborating the database, which should cover the issues of ensuring food balance in OIC Member States, included search for reliable statistics and upload of the indicators in the IOFS data visualization platform.

FOOD BALANCE ANALYTICAL PLATFORM

THE SAID PLATFORM CAN VISUALIZE THE STATISTICS ON VARIOUS INDICATORS:

- Levels of production (the IOFS Secretariat has made a Sharia-compliant list of food products);
- Trade turnover among OIC Member States, as well as outside the OIC area;
- Country passport on each OIC Member-State;
- Basic calculation of the food balance based on preliminary data;
- Statistics on water.

IT COMPANY IN ANALYTICS AND AGGREGATION OF DATA



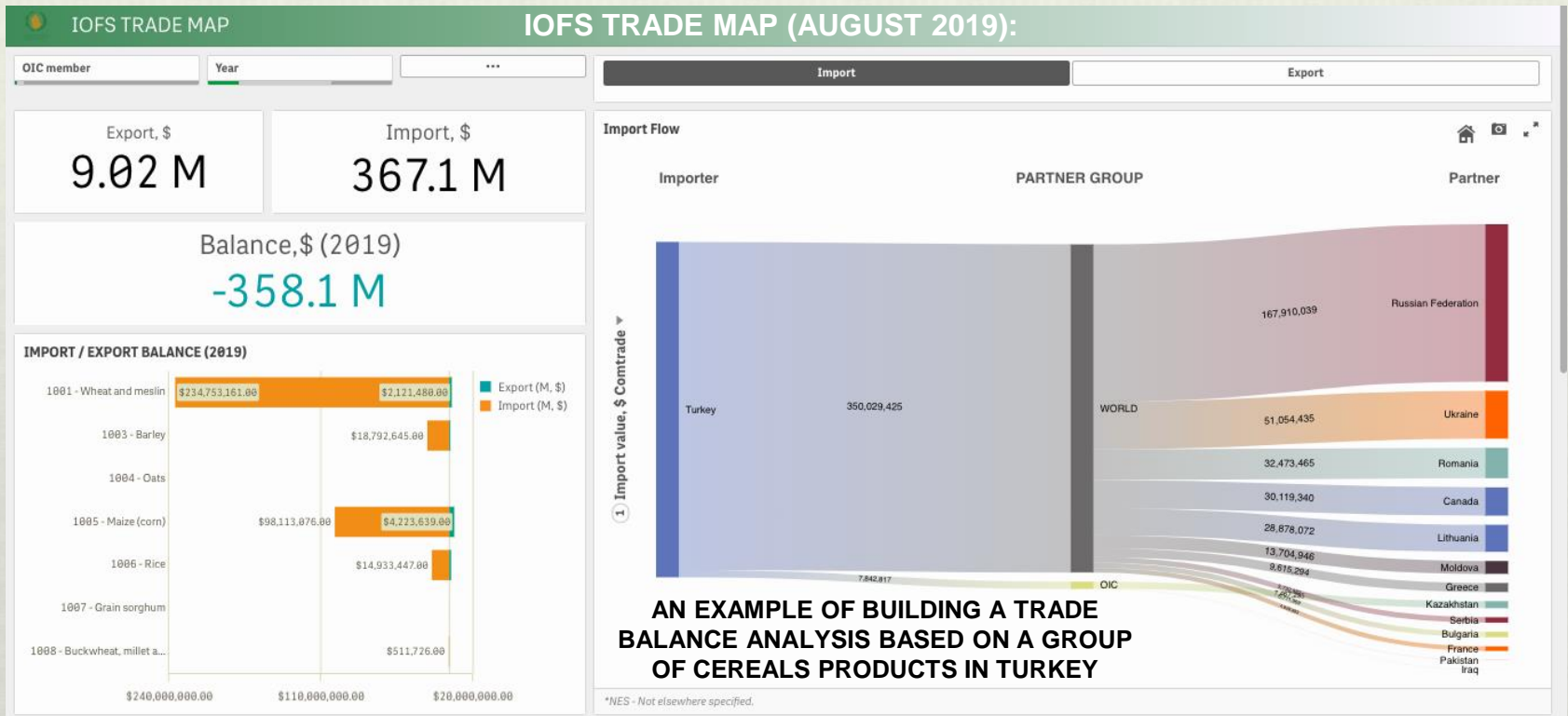
WITHIN THE PROJECT:

- ✓ Held search for open sources by trade and product balances, GDP, social, political, logistic indicators;
- ✓ Downloaded data to the application;
- ✓ Designed visualization;
- ✓ Checked the relevance of data downloaded from open sources;
- ✓ Held training of employees in the basics of data analysis and building visualization.

Competitive bidding among 115+ local IT companies was held. Data analysis company **Datanomix** was selected.

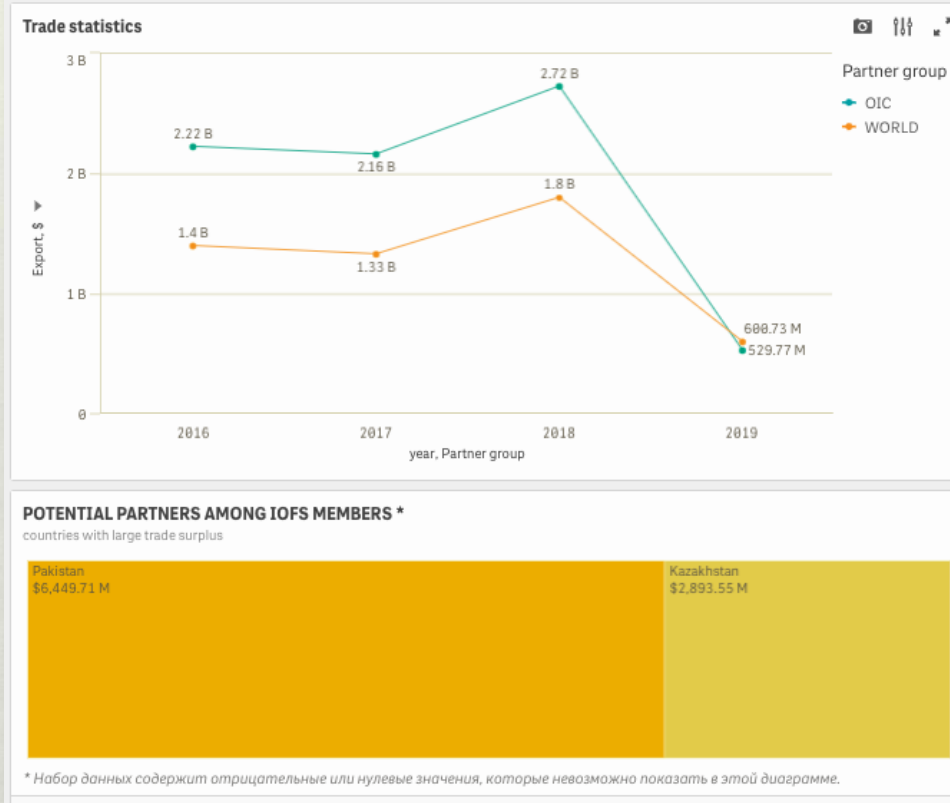
Reference: Datanomix specializes in Qlik technology

- **QlikTech** was established in 1993 in Sweden;
- Currently registered in Pennsylvania, US;
- 2000 employees and over 1700 partners in 100 countries;
- **QlikTech develops technologies for analysis & visualization of data.**
- Qlik has been leading in Gartner Magic Quadrant for BI and Analytics Platforms for 9 years in a row.
- **The Qlik Analytics Platform (QAP)** gives full API access to the Qlik associative engine to build rich & smart data-driven analytic applications.
- QAP's clients are world-renowned universities that introduced Qlik Academic Program into Graduate+ Award Framework.
- **Datanomix consultants are based in Nur-Sultan and Almaty, who help with the pilot, development and implementation of Qlik Sense. Datanomix school of data analysis and visualization trains IOFS analysts to make the most of the data.**



- The IOFS model is based on principles of a complexity and universality for assessing food security at the country level of the economy.
- The model helps for holding a comparative analysis of the level of food security in individual countries, taking into account IOFS requirements.
- It helps to visualize the country food balance

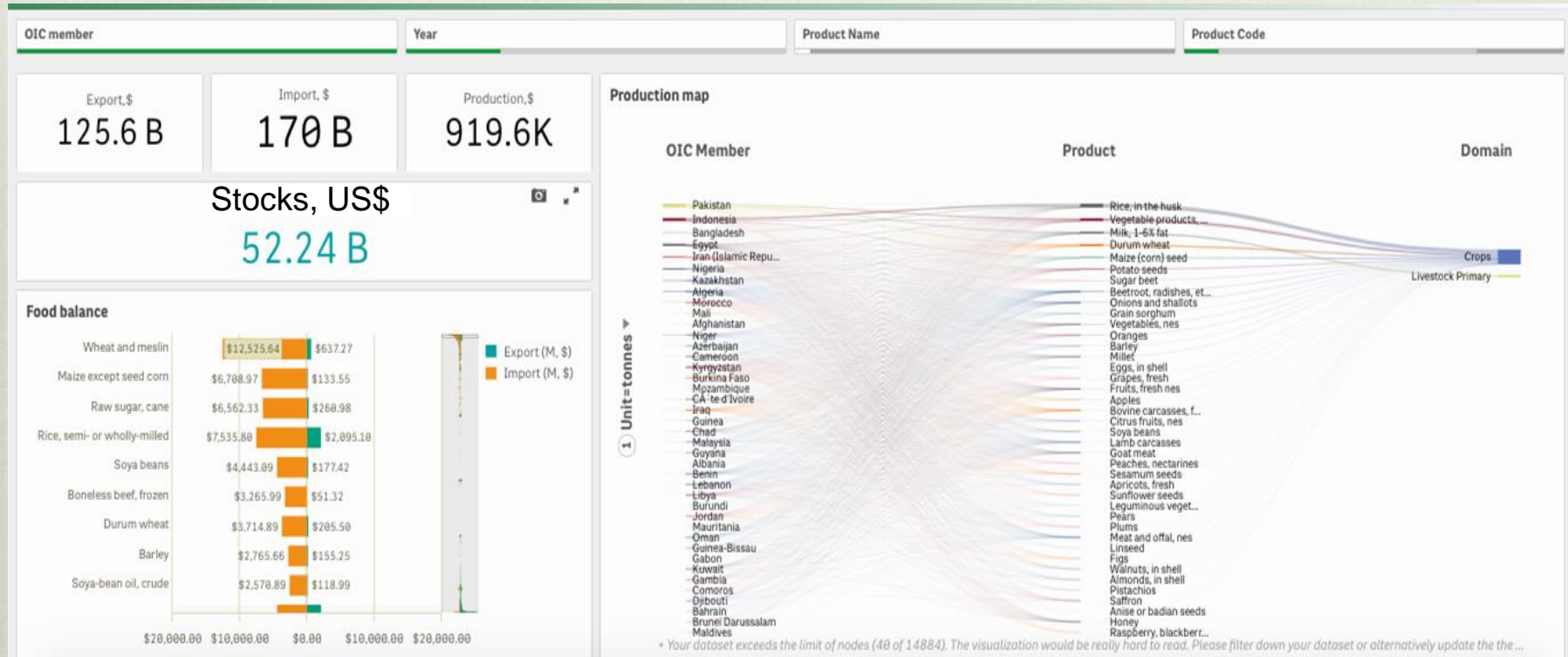
IOFS TRADE MAP (AUGUST 2019): RECOMMENDATION ANALYSIS



An example of building recommendation analysis of the trade balance based on a group of cereals products in Turkey, a list of countries with a trade surplus on a group of cereals products

IOFS PRODUCT MAP (DECEMBER 2019):

FOOD STOCKS CALCULATION



IOFS TRADE MAP (DECEMBER 2019):

COUNTRY FOOD SECURITY PROFILES (CASE: REPUBLIC OF UZBEKISTAN)

Uzbekistan

Uzbekistan

...

Food Security Index(FSI)

45.90

Minister of Agriculture of Uzbekistan: Jamshid...

Data resources: Year (2016-2017):
<http://atlas.cid.harvard.edu/>, Year(2018-

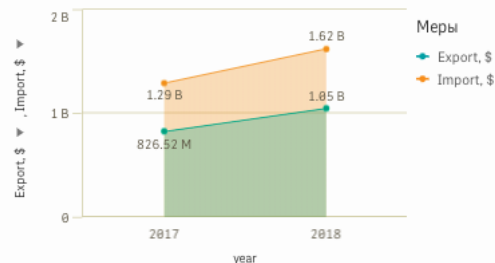
[Link to the Website of the Ministry]

<http://www.agro.uz/ru/>

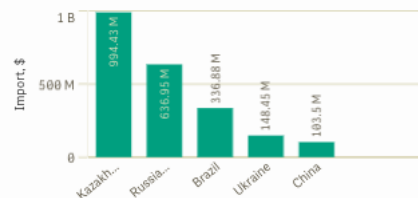
[source for food security index]

<https://foodsecurityindex.eiu.com/>

Trade balance, \$



Importers TOP -5



Exporters TOP -5



Top-5 products for import, \$

100199 - Cereals; wheat and meslin, other than durum wheat, other than seed	170199 - Sucrose; chemically pure, not containing added flavouring or colouring matter, in solid form
44513250600.0%	33088382100.0%
170113 - Sugars; cane sugar, raw, in solid form, as specified in Subheading Note 2 to this chapter, not containing added flavouring or colouring matter	151219 - Vegetable oils; sunflower seed or safflower oil and their fractions, other than crude, whether or not refined, but no...
33487131700.0%	110100 - Wheat or meslin flour
	1990966360...

Top-5 products for export, \$

080610 - Fruit, edible; grapes, fresh	080620 - Fruit, edible; grapes, dried
21884865400.0%	12037629100.0%
	110100 - Wheat or meslin flour
	11647959200.0%
080929 - Fruit, edible; cherries, other than sour cherries (Prunus cerasus), fresh	070200 - Vegetables; tomatoes, fresh or chilled
20807024500.0%	8707472200.0%

Top-5 products for re-import, \$

080232 - Nuts, edible; walnuts, fresh or dried, shelled	080620 - Fruit, edible; grapes, dried	040510 - Dairy produce; derived from milk, butter	081310 - Fruit, edible; apricots, dried
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Top-5 products for re-export, \$

110100 - Wheat or meslin flour

Import/Export share

Trade partner group	Import, % of Uzbekistan Comtrade	Import, \$ of Uzbekistan Comtrade	Export, % of Uzbekistan Comtrade	Export, \$ of Uzbekistan Comtrade	Trade balance Uzbekistan Comtrade
ИТОГИ	100.00%	2916246224	100.00%	1875759872	-1,040.5
OIC	41.56%	1212065721	73.83%	1384860407	172.8
WORLD	58.44%	1704180503	26.17%	490899465	-1,213.3

Top-5 products produced(FAO), \$

0806 - Grapes; fresh or dried	0804 - Dates, figs, pineapples, avocados, guavas...
10760065500.0%	207874...

PRODUCT MAP (MARCH 2020): TRADE SYSTEMS

DATA FROM 4 MAIN SOURCES HAS BEEN ADDED TO THE APPLICATION



Trade_system

Aquastat

Comtrade

FAO

FAS_USDA

Harvard

Year	Product codes hierarchy	Trade_system
2020 ✓	01 - Animals; live	FAS_USDA
2015	02 - Meat and edible meat offal	Aquastat
2016	07 - Vegetables and certain roots and ...	Comtrade
2017	08 - Fruit and nuts, edible; peel of citru...	FAO
2018	10 - Cereals	Harvard
2019	12 - Oil seeds and oleaginous fruits; m...	
	15 - Animal or vegetable fats and oils a...	
	20 - Preparations of vegetables, fruit, ...	
	23 - Food industries, residues and was...	
	03 - Fish and crustaceans, molluscs a...	

IOFS PRODUCT BALANCE MAP (DECEMBER 2019-MARCH 2020):

AVAILABILITY OF RELEVANT DATA

In our platform we use various reliable sources of data: Comtrade, FAS USDA, FAO, UN Aquastat, and Harvard.

Due to the unavailability of new data provided by National Statistical Agencies of OIC Member States, the most recent data on major part of OIC countries is as of 2014.

In the 4th quarter of 2019, the IOFS attempted to hold actualization of data through its focal points, which deemed problematic due to complexity of its approach and needed responsiveness of focal points on each inquiry of data. Therefore, the decision was made to postpone this process for implementation of Islamic Food Processing Association (IFPA) programs.

Data availability by year

Trade_system 🔍	year 🔍					
	-	2016	2017	2018	2019	2020
Aquastat	58 -	-	-	-	-	-
Comtrade	-	35	38	31	12	-
FAO	-	57	57	-	-	-
FAS_USDA	-	55	54	55	55	54
Harvard	-	57	57	-	-	-

For Aquastat data available for period: 2013-2017

IOFS PRODUCT BALANCE MAP (MARCH 2020):

ATTRIBUTE DESCRIPTIONS FOR BALANCE CALCULATION (RUSSIAN METHODOLOGY)

Product Balance: Attribute descriptions for balance calculation																
OIC member <input type="text"/>	Attribute_Descri... <input type="text"/>															
	Beef Cows Beg. Stocks	Beginning Stocks	Dairy Cows Beg. Stocks	Domestic Consumption	Ending Stocks	Feed Dom. Consumption	For Processing	Fresh Dom. Consumption	FSI Consumption	Human Dom. Consumption	Loss and Residual	Production	TY Exports	TY Imports		
Afghanistan	-	2979	-	84356	3408	8295	0	617100	68401	160	-	55267	1	28313		
Albania	-	687	-	8574	757	655	0	98600	7483	395	-	5462	7	3012		
Algeria	-	50990	-	199326	53907	31157	0	670300	100950	11969	-	39200	128	98603		
Azerbaijan	-	10069	-	132218	9975	14620	0	2227010	45950	1113	-	2970515	194	23230		
Bahrain	-	283	-	870	321	0	-	-	745	597	-	18	0	782		
Bangladesh	-	35962	-	521035	36797	34650	0	1395874	57780	16564	-	427151	45	60513		
Benin	-	1722	-	36245	1940	1735	-	-	17291	2000	-	26350	58	7432		
Brunei Darussalam	-	4	-	331	3	-	-	-	-	29	-	7	0	324		
Burkina Faso	-	3359	-	53031	3492	2700	-	-	35943	227	-	48076	250	6146		
Cameroon	-	3045	-	55206	2978	1400	-	-	31159	1051	-	45161	0	12180		
Chad	-	2681	-	31261	2858	900	-	-	19176	140	-	28888	0	2690		
Comoros	-	4	-	40	3	-	-	-	-	32	-	40	-	-		
Côte d'Ivoire	-	6563	-	44702	7100	690	-	-	12394	3419	-	42079	1645	16823		
Djibouti	-	275	-	3276	310	-	-	-	-	1532	-	0	0	0		
Egypt	0	136173	25720	538077	138945	122689	1045	1564630	242470	18180	1370	308372	8770	206452		
Gabon	-	50	-	2041	54	0	-	-	616	290	-	359	0	616		
Gambia	-	544	-	4999	533	0	-	-	796	1045	-	3409	0	1750		
Guinea	-	2402	-	38729	2603	400	-	-	10020	765	-	32481	670	7499		
Guinea-Bissau	-	143	-	2812	156	0	-	-	270	16	-	1457	0	1370		
Guyana	-	1697	-	3101	1734	208	-	-	426	309	-	8490	5413	621		
Indonesia	-	142384	-	1033896	143509	81030	0	2064414	93100	37439	-	1332267	2786	98209		
Iran	-	198574	-	822727	193044	179119	0	44760123	272850	20108	-	49828650	4812	161513		
Iraq	-	13258	-	315903	13804	17814	0	2738283	61711	5929	-	53033	0	46519		
Jordan	-	7031	-	121832	6606	10650	0	461800	8135	1193	-	9517	235	19865		
Kazakhstan	-	37862	-	120607	34801	39228	0	3987072	51734	2001	-	1800665	82486	1858		
Kuwait	-	171	-	15227	146	3426	0	149700	4552	409	-	1434	23	9623		
Kyrgyzstan	-	3111	-	93340	2932	8875	0	1074960	9444	435	-	1148458	1	3732		

Product Balance: Attribute descriptions for balance calculation

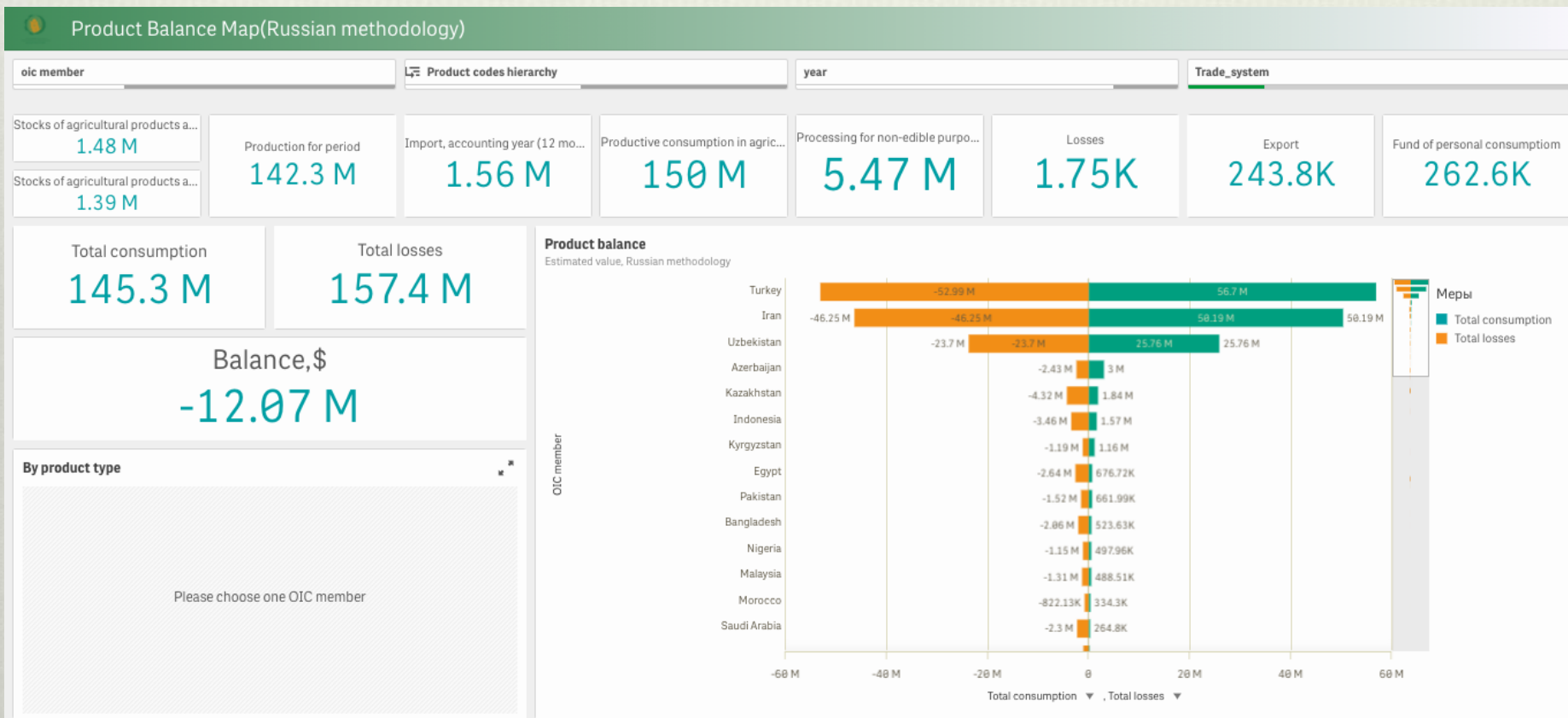
OIC member	Attribute_Descri...													
	Beef Cows Beg. Stocks	Beginning Stocks	Dairy Cows Beg. Stocks	Domestic Consumption	Ending Stocks	Feed Dom. Consumption	For Processing	Fresh Dom. Consumption	FSI Consumption	Human Dom. Consumption	Loss and Residual	Production	TY Exports	TY Imports
Libya	-	2227	-	26654	2083	7510	0	240200	14467	1481	-	2460	20	21560
Malaysia	-	47722	-	258399	47564	30770	0	944478	15580	12537	-	384070	1872	56718
Maldives	-	3	-	-	2	-	-	-	-	14	-	0	-	-
Mali	-	7385	-	66028	7955	6400	-	-	32409	503	-	62930	0	3702
Mauritania	-	1154	-	7607	1266	0	-	-	4143	2781	-	1938	0	4430
Morocco	-	69234	-	300378	71764	50477	340	229170	157558	10064	-	173049	2376	92013
Mozambique	-	2395	-	30529	2675	1600	0	573	18243	2665	-	21408	17	11279
Niger	-	1725	-	48228	1840	1600	-	-	39552	67	-	43492	0	4900
Nigeria	-	29425	-	464723	30310	25900	0	320800	292252	6385	-	395553	6515	72987
Oman	-	3032	-	13542	2934	1625	0	147300	3902	194	-	1412	56	7995
Pakistan	-	83450	-	678921	83452	42363	0	319600	301890	30800	-	572837	64267	5699
Qatar	-	4	-	3923	3	-	0	198900	-	36	-	206	0	1558
Saudi Arabia	-	68662	-	366383	68300	118659	0	1694571	43904	11484	-	35767	406	160371
Senegal	-	10036	-	86335	10252	987	-	-	28613	743	-	64675	324	29986
Sierra Leone	-	36	-	12299	33	0	-	-	1144	252	-	8755	0	3577
Somalia	-	740	-	6987	815	150	-	-	4320	4090	-	1359	0	5838
Sudan	-	14901	-	116008	15532	6650	-	-	89963	9839	-	100710	616	21707
Suriname	-	15	-	2920	12	-	-	-	-	79	-	5444	2572	0
Tajikistan	-	4062	-	20473	4460	5796	-	-	11935	112	-	11773	3	9046
Togo	-	1181	-	15754	1189	1045	-	-	8615	1740	-	12135	10	2955
Tunisia	-	21098	-	97256	21171	25420	-	-	55875	4317	-	41848	1407	48455
Turkey	23607	287320	64975	2375165	307167	99777	5463950	44487421	185700	15649	384	56252168	50683	71367
Turkmenistan	-	13422	-	36687	13735	9104	0	397200	17713	225	-	34959	256	2775
Uganda	-	5659	-	35018	5372	2130	-	-	25976	3272	-	60460	1716	3943
United Arab Emirates	-	6829	-	625579	7015	3701	0	1815466	10325	9726	-	11143	2050	23955
Uzbekistan	-	12330	-	74917	11647	15847	0	23556636	37980	246	-	25735623	1002	15288
Yemen	-	4111	-	50056	4109	2885	-	-	35172	4117	-	7863	73	37431

At the moment, various types of data visualization are available on the IOFS platform, which include data necessary for on-going programmes of the Organisation. Separate sheets for strategic commodities, water resources, export and import, production levels, and most importantly, food balance sheet both on FAO and Russian methodology have been uploaded to the platform.

At the current stage, this database arose great interest from renowned international institutions, including IsDB.

IOFS PRODUCT BALANCE MAP (MARCH 2020):

PRODUCT BALANCE ESTIMATED CALCULATION, RUSSIAN METHODOLOGY



IOFS PRODUCT BALANCE MAP (MARCH 2020):

PRODUCT BALANCE ESTIMATED CALCULATION, FAO METHODOLOGY



Product Balance Map(FAO methodology)

oic member

product name(only FAS USDA Trade system)

year

Trade_system

starting stocks
1.48 M

quantity produced
142.3 M

quantity imported
1.56 M
quantity re-imported
0

animal feed
1.03 M

Seed (nor found yet)

wast
1.75K

export
243.8K
quantity re-imported
0

other non-food uses
0

ending stocks
1.39 M

Food available for consumption

-142 M

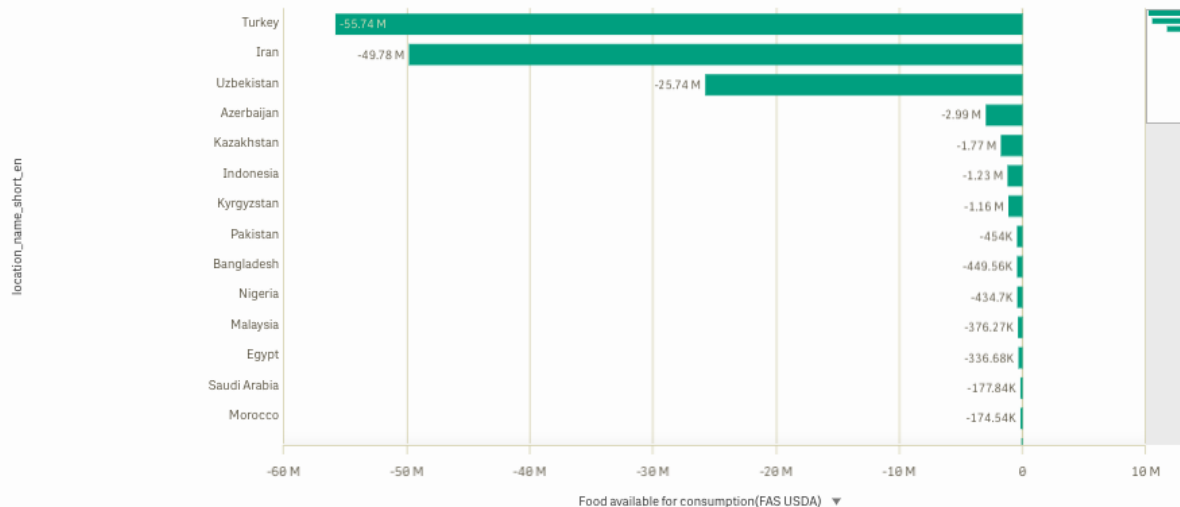
Estimated value, FAO methodology

By product type

Please choose at least one OIC member

Food available for consumption

Estimated value, FAO methodology



IOFS PRODUCT BALANCE MAP (MARCH 2020):

PRODUCT BALANCE ESTIMATED CALCULATION, FAO METHODOLOGY, PRODUCTS RESEARCH

products research product Balance Map (Russian methodology)

oic member		Product codes hierarchy		year		Trade_system									
Stocks of agricultural products a...	1.48 M	Production for period	142.3 M	Import, accounting year (12 mo...	1.56 M	Productive consumption in agric...	150 M	Processing for non-edible purpo...	5.47 M	Losses	1.75K	Export	243.8K	Fund of personal consumption	262.6K
Stocks of agricultural products a...	1.39 M														

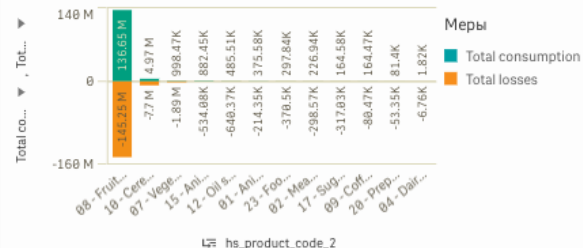
Total consumption
145.3 M

Total losses
157.4 M

Balance
-12.07 M

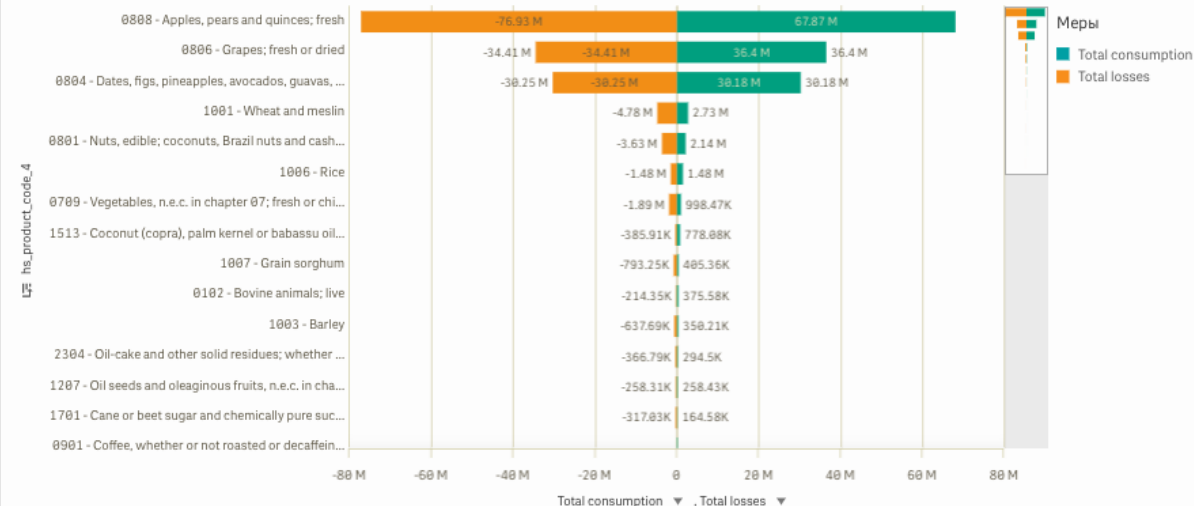
Product balance by product group: 1 (2 digits code)

Estimated value, Russian methodology



Product balance by product group: 2 and 3 (4 and 6 digits code)

Estimated value, Russian methodology



AQUASTAT WATER DATA



Aquastat- water data(2013-2017)

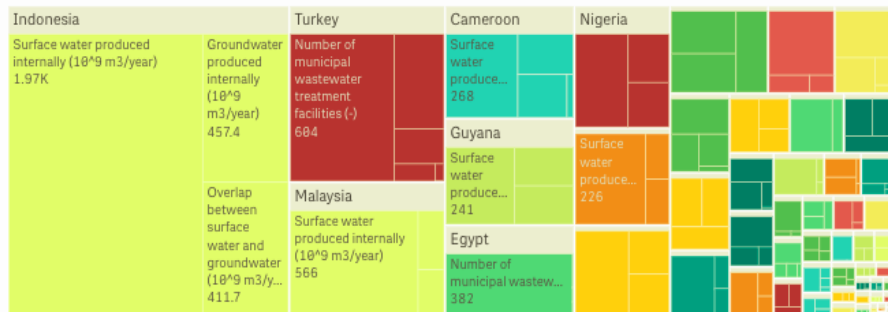
Country

Indicators

Total value
8.95K

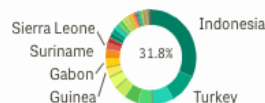
Data available for indicators
7

Water indicator index *



* Набор данных содержит отрицательные или нулевые значения, которые невозможно показать в этой диаграмме.

Water indicator index



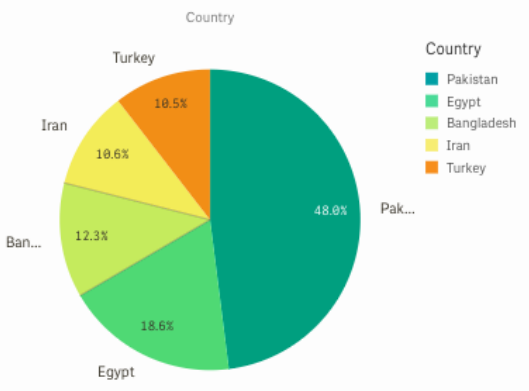
* Набор данных содержит отрицательные или нулевые значения, которые невозможно показать в этой диаграмме.

Table of indicators

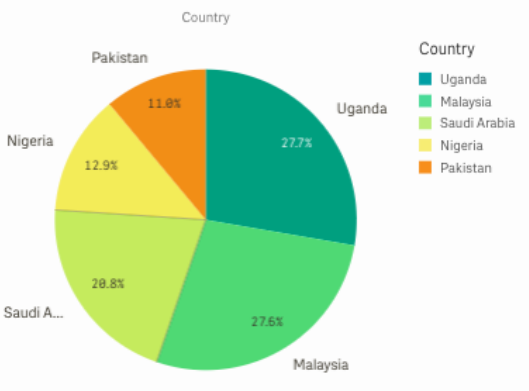
Country	Indicators	Value	Data available for period
Итого		8949.6631	
Afghanistan	Groundwater produced internally (10 ⁹ m3/year)	10.65	2013-2017
Afghanistan	Overlap between surface water and groundwater (10 ⁹ m3/year)	1	2013-2017
Afghanistan	Surface water produced internally (10 ⁹ m3/year)	37.5	2013-2017
Afghanistan	Surface water: total flow of border rivers (10 ⁹ m3/year)	33.4	2013-2017
Albania	Groundwater produced internally (10 ⁹ m3/year)	6.2	2013-2017
Albania	Number of municipal wastewater treatment facilities (-)	7	2013-2017
Albania	Overlap between surface water and groundwater (10 ⁹ m3/year)	2.35	2013-2017
Albania	Surface water produced internally (10 ⁹ m3/year)	23.05	2013-2017
Algeria	Direct use of treated municipal wastewater (10 ⁹ m3/year)	0.05	2013-2017
Algeria	Groundwater produced internally (10 ⁹ m3/year)	1.487	2013-2017
Algeria	Surface water produced internally (10 ⁹ m3/year)	9.76	2013-2017
Azerbaijan	Groundwater produced internally (10 ⁹ m3/year)	6.51	2013-2017
Azerbaijan	Overlap between surface water and groundwater (10 ⁹ m3/year)	4.35	2013-2017
Azerbaijan	Surface water produced internally (10 ⁹ m3/year)	5.955	2013-2017
Azerbaijan	Surface water: total flow of border rivers (10 ⁹ m3/year)	2.36	2013-2017
Bahrain	Direct use of treated municipal wastewater (10 ⁹ m3/year)	0.0392	2013-2017



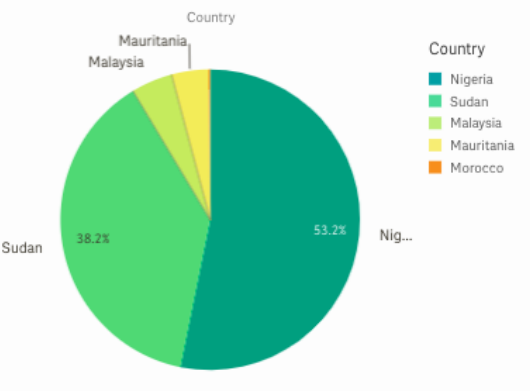
Top-5 importers(Palm oil, crude)



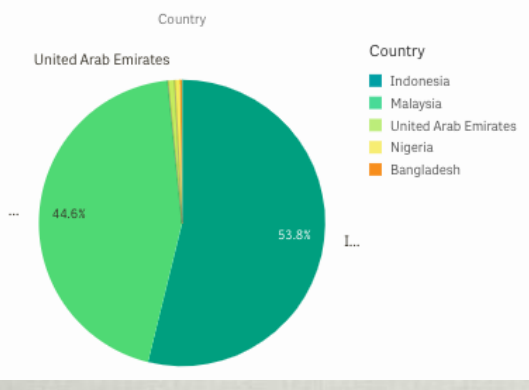
Top-5 importers(Palm oil, simply refined)



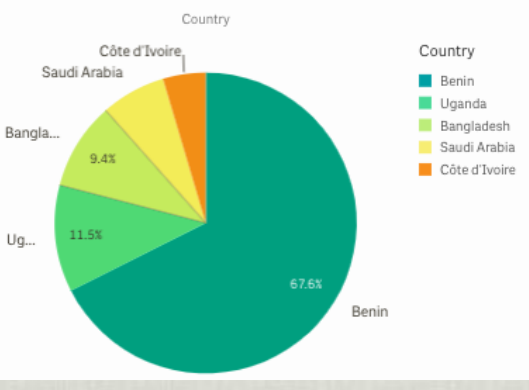
Top-5 importers(wheat and meslin)



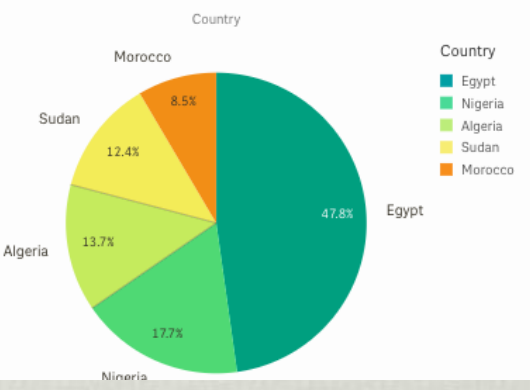
Top-5 importers(Manioc(cassava))



Top-5 importers(Rice brown (husked))



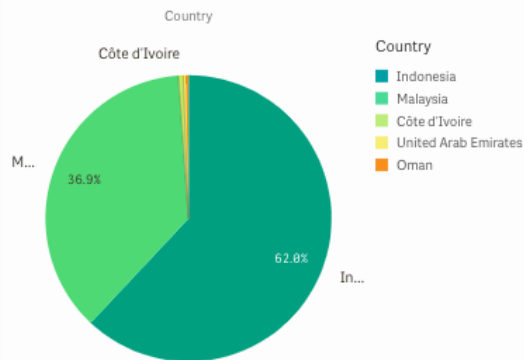
Top-5 importers(Durum wheat)



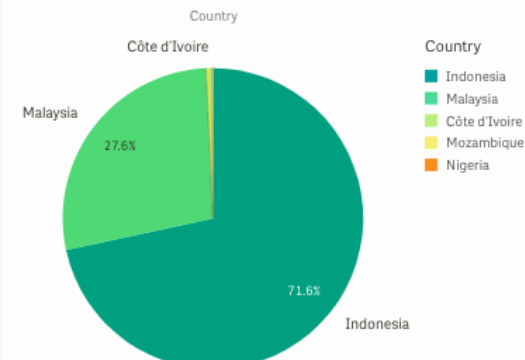
Top-5 strategic products
importers
(year-2017)

STRATEGIC PRODUCTS SHEET

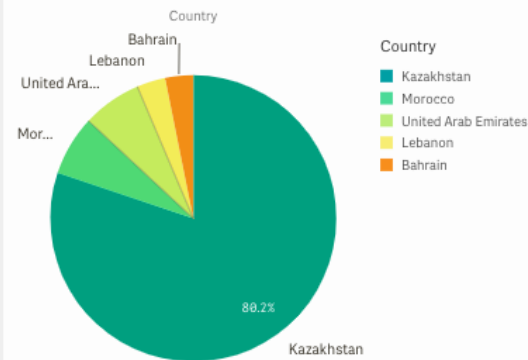
Top-5 importers(Palm oil, crude)



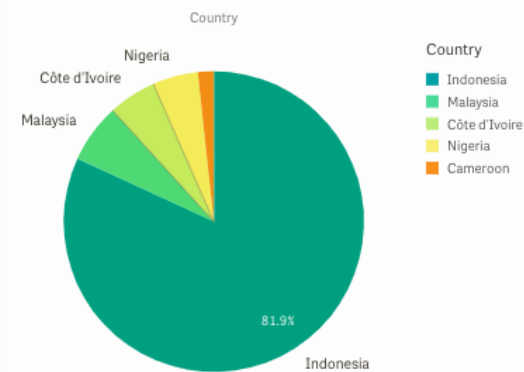
Top-5 importers(Palm oil, simply refined)



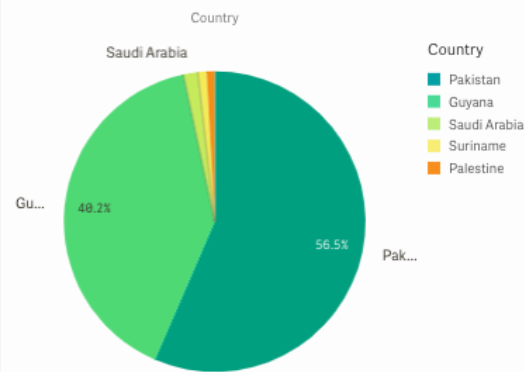
Top-5 importers(Wheat and meslin)



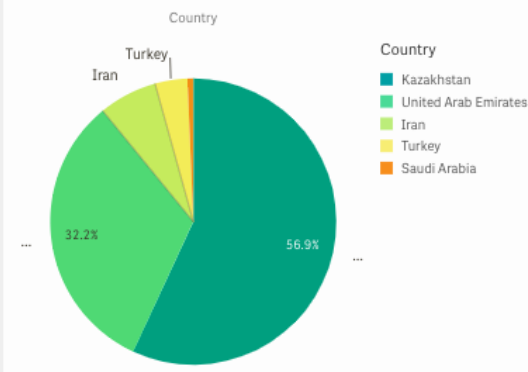
Top-5 importers(Manioc(cassava))



Top-5 importers(Rice, husked (brown))



Top-5 importers(Durum wheat)



Top-5 strategic products
exporters
(year -2017)



Thank you for attention!

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