WSTEP

Internationa debt statistics – Statystyki

<https://datacatalog.worldbank.org/dataset/international-debt-statistics>

Opis kolumn które wybraliśmy do przetwarzania:

"Average grace period on new external debt commitments (years)" - Grace period is the period from the date of signature of the loan or the issue of the financial instrument to the first of principal. To obtain the average, the grace periods for all public and publicly guaranteed loans have been weighted the amounts of the loans. Public debt is an external obligation of a public debtor, including the national government, a subdivision (or an agency of either), and autonomous public bodies. Publicly guaranteed debt is an external obligation of private debtor that is guaranteed for repayment by a public entity.

"Commitments official creditors (COM current US$)" - Commitments are the amount of long-term loans for which contracts were signed in the year specified. Debt from official creditors loans from international organizations (multilateral loans) and loans from governments (bilateral loans). Loans from organization include loans and credits from the World Bank, regional development banks, and other multilateral and agencies. Excluded are loans from funds administered by an international organization on behalf of a single donor these are classified as loans from governments. Government loans include loans from governments and their agencies (including central banks), loans from autonomous bodies, and direct loans from official export credit agencies. Long-term external debt is defined as debt that has an original or extended maturity of more than one year and that is owed to nonresidents by residents of an economy and repayable in currency, goods, or services. Data are in current U.S. dollars.

"Concessional debt (% of total external debt)" - Concessional debt to total external debt stocks. Concessional debt is defined as loans with an original grant element of 25 percent or more.

"Debt stock reduction (current US$)" - Debt stock reductions show the amount that has been netted out of the stock of debt using debt conversion schemes such as buybacks and swaps or the discounted value of long-term bonds that were issued in exchange for outstanding debt. It includes the effect of any operation that will reduce the debt stock other than debt stock restructuring, repayment of principal and debt forgiven. particular, debt stock reduction will include the face value of debt bought back, the face value of debt swapped for equity (or nature"" or ""development""), any face value reduction that might result as the consequence of a bond exchange, and any face value resulting from an exchange of debt for discount bonds. Data are in current U.S. dollars.

"External debt stocks total (DOD current US$)" - Total external debt is debt owed to nonresidents repayable in currency, goods, or services. It is the sum of public, guaranteed, and private nonguaranteed long-term debt, short-term debt, and use of IMF credit. Data are in current U.S. dollars.

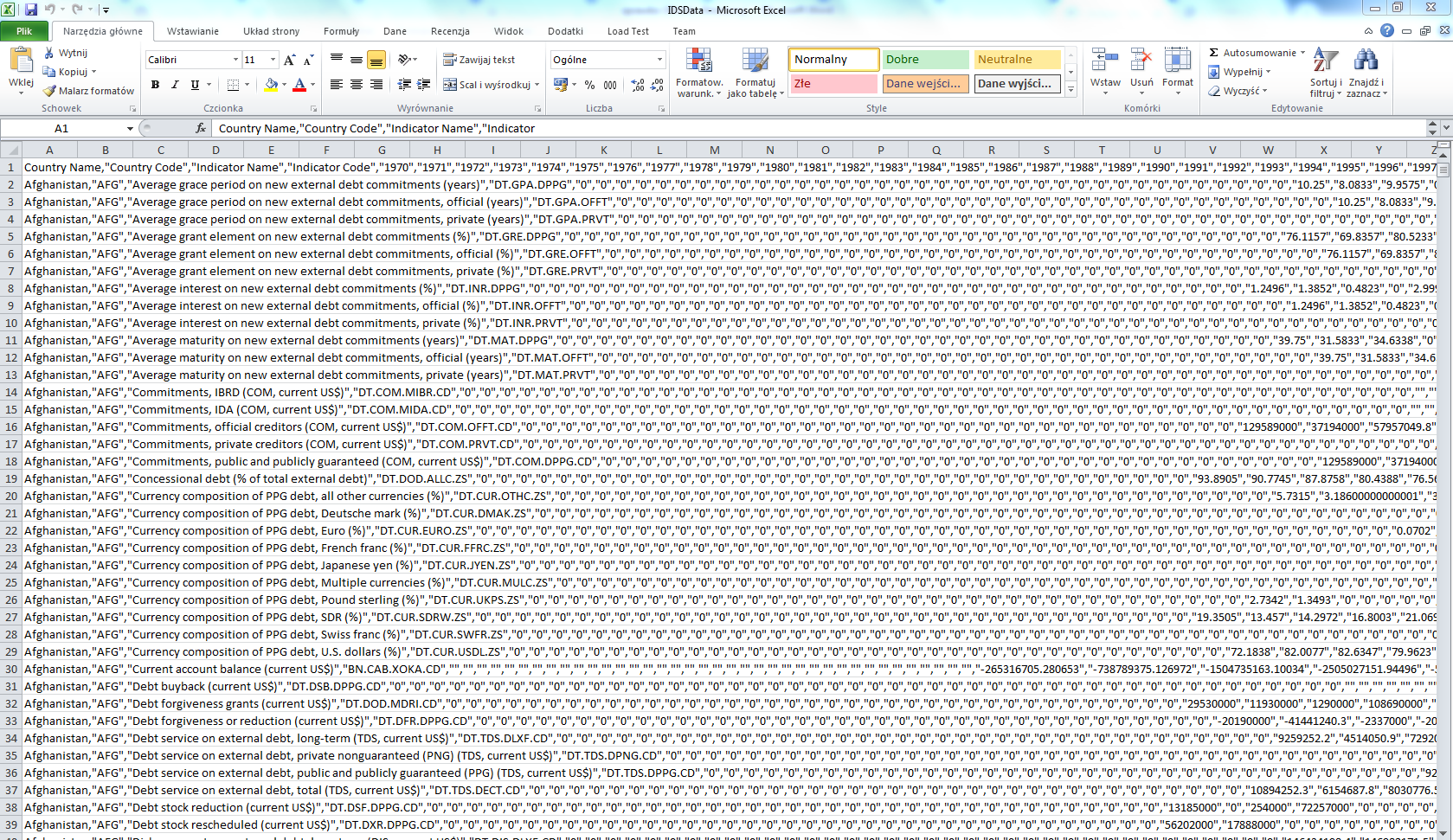
"Interest payments on external debt total (INT current US$)" - Interest payments are actual amounts of interest paid by the borrower in currency, goods, or services in the year specified. This includes interest paid on long-term debt, IMF charges, and interest paid on short-term debt. Long-term external debt is defined debt that has an original or extended maturity of more than one year and that is owed to nonresidents by residents of an economy repayable in currency, goods, or services. Short-term external debt is defined as debt that has an original maturity of one year less. Available data permit no distinction between public and private nonguaranteed short-term debt. Data are in current U.S. dollars.

"Short-term debt (% of total external debt)" - Short-term debt includes all debt having an original maturity of one year or less and interest in arrears on long-term debt. external debt is debt owed to nonresidents repayable in currency, goods, or services. Total external debt is the sum of public publicly guaranteed, and private nonguaranteed long-term debt, use of IMF credit, and short-term debt.

"Technical cooperation grants (current US$)" - Technical cooperation grants include free-standing technical cooperation grants, which are intended to finance the transfer of technical and managerial or of technology for the purpose of building up general national capacity without reference to any specific investment projects; investment-related technical cooperation grants, which are provided to strengthen the capacity to execute specific investment projects. Data are in current U.S. dollars.

Statystyki które zamierzamy utworzyć:

**PRZYGOTOWANIE DO PRZETWARZANIA W HIVE**



Rys. Dane przed prztworzeniem

import csv

old\_file = 'IDSData.csv'

new\_file = 'IDS/data.csv'

i = 0

add\_to\_buff = [

"Average grace period on new external debt commitments (years)",

"Commitments official creditors (COM current US$)",

r"Concessional debt (% of total external debt)",

"Debt stock reduction (current US$)",

"External debt stocks total (DOD current US$)",

"Interest payments on external debt total (INT current US$)",

r"Short-term debt (% of total external debt)",

"Technical cooperation grants (current US$)",

]

content = []

# otwieramy plik z ktorego bierzemy dane

with open(old\_file, 'r', newline='') as csv\_file\_read:

reader = csv.reader(csv\_file\_read)

buff\_row = []

next(reader)

for row in reader:

buff\_row = []

for i in range(0, 2):

buff\_row.append(row[i])

string = row[2].replace(',',' ')

string = string.replace(" "," ")

if string in add\_to\_buff:

buff\_row.append(string)

else:

continue

buff\_row.append(row[3])

for i in range(40, 50):

if row[i]:

buff\_row.append(row[i])

else:

buff\_row.append(0)

content.append(buff\_row)

# dane zapisujemy do nowej csvki

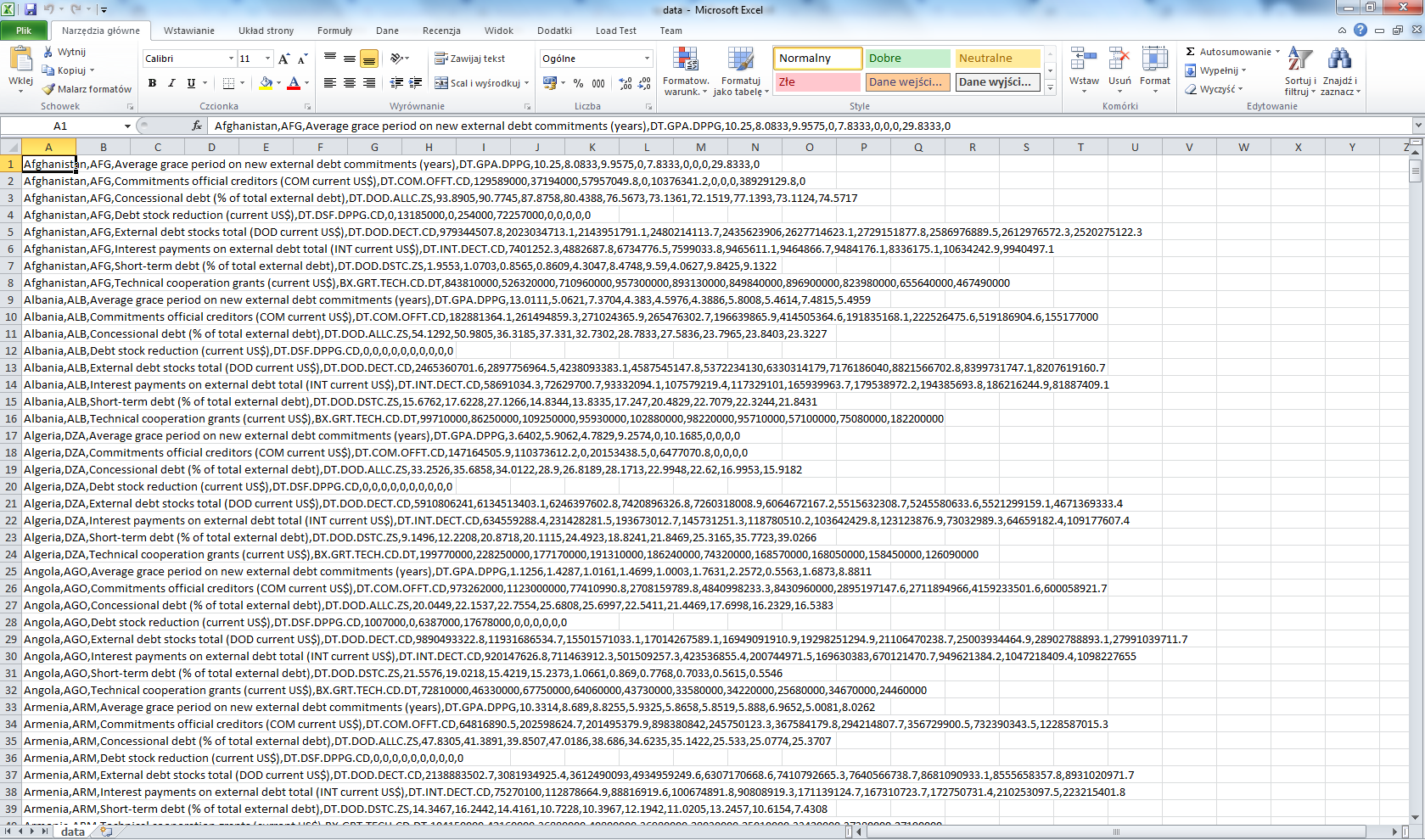
with open(new\_file, 'w', newline='') as csv\_file\_write:

writer = csv.writer(csv\_file\_write)

for row in content:

writer.writerow(row)

Listing Skryptu przetwarzającego dane



Rys. Po przetworzeniu

**Przetwarzanie w hivie**

Stworzyliśmy tabele w

CREATE TABLE ids\_data (CountryName string, CountryCode string, IndicatorName string, IndicatorCode string,

y2006 double, y2007 double, y2008 double, y2009 double, y2010 double, y2011 double,

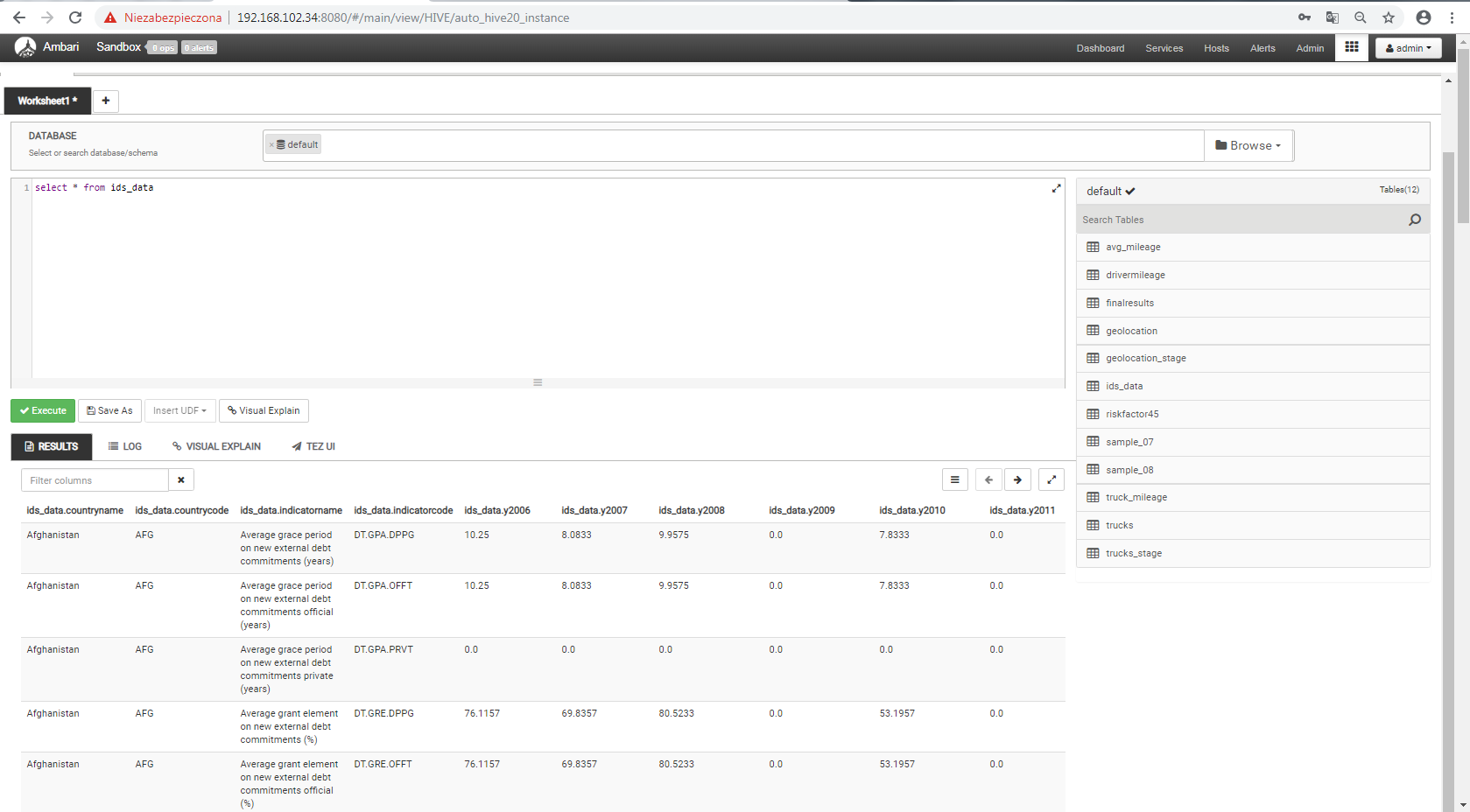
y2012 double, y2013 double, y2014 double, y2015 double)

row format delimited fields terminated by ',';

listing tworzenia tabeli

Uploadowalismy plik przez na stworzony na rysunku do katalogu/apps/hive/warehouse/ids\_data

Ids\_data.csv



Select wykonany po wstwieniu danych do tabeli ids\_data

**Przetwarzanie w Sparku**

Uruchamiamy piga komendą pig -useHCatalog

a = LOAD ‘ids\_data’ using org.apache.hive.hcatalog.pig.HCatLoader();

commitments = FILTER a BY indicatorname == ‘Commitments official creditors (COM current US$)’;

grace\_period = FILTER a BY indicatorname == ‘Average grace period on new external debt commitments (years)’;

concessional\_debt = FILTER a BY indicatorname == ‘Concessional debt (% of total external debt)’;

debt\_stock\_reduciton = FILTER a BY indicatorname == ‘Debt stock reduction (current US$)’;

external\_debt\_total = FILTER a BY indicatorname == ’External debt stocks total (DOD current US$)’;

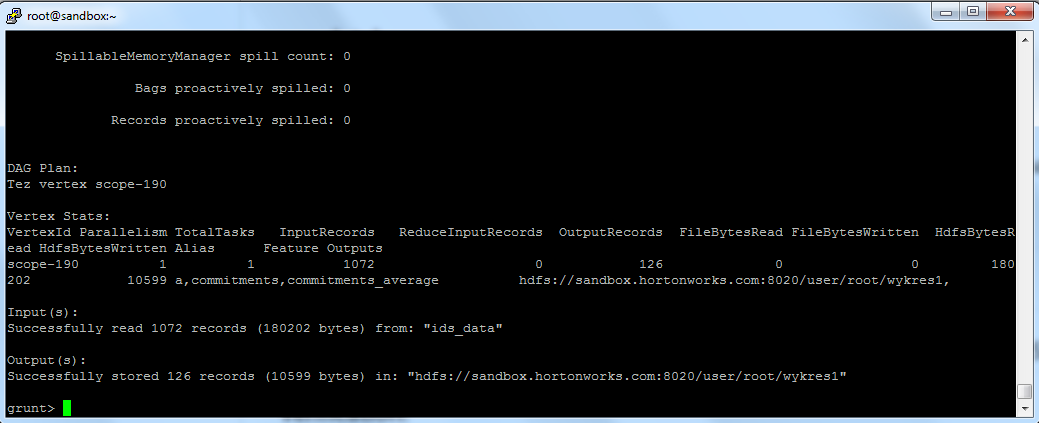
interest\_payments = FILTER a BY indicatorname == ‘Interest payments on external debt total (INT current US$)’;

short\_term\_debt = FILTER a BY indicatorname == ‘Short-term debt (% of total external debt)’;

commitments\_average = FOREACH commitments GENERATE (countryname, countrycode, indicatorname, ((y2006+y2007+y2008+y2009+y2010+y2011+y2012+y2013+y2014+y2015)/10) );

STORE commitments\_average INTO ‘wykres1’

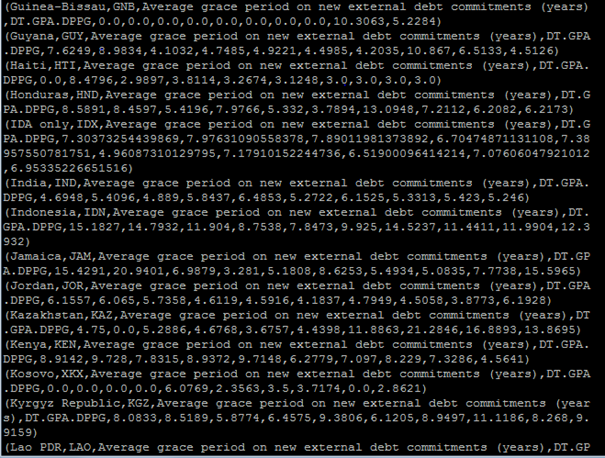
listing skryptu napisanego w pig latin



Rys. Komunikat po zapisaniu zmiennej pig

CREATE TABLE ids\_commitments(CountryName string, CountryCode string, IndicatorName string, srednia\_commitments double)

row format delimited fields terminated by ',');

Rys. Dump wszystkich danych

**PRZETWARZANIE W SPARKU**

Komendy:

%jdbc(hive) show tables

%spark2

val hiveContext = new org.apache.spark.sql.SparkSession.Builder().getOrCreate()

%spark2

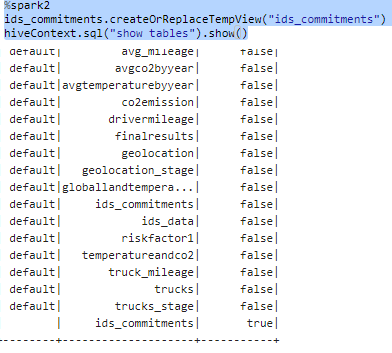
val ids\_commitments = hiveContext.sql("select \* from ids\_commitments")

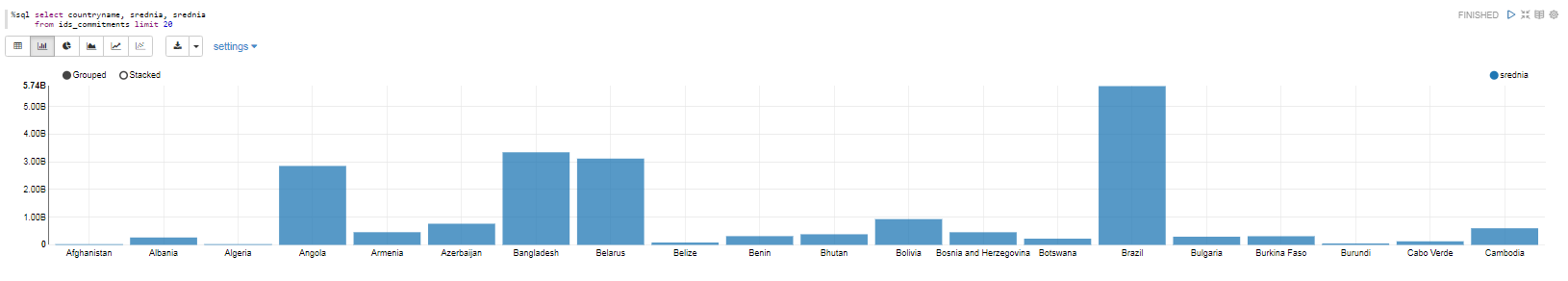
%spark2

ids\_commitments.createOrReplaceTempView("ids\_commitments")

hiveContext.sql("show tables").show()

Listing spark skrypty wszystkie





Jeszcze raz zrobimy tego skrina, można lepiej