NOTEWORTHY

CO2-AUSSTOSS

16.11.2019

nach Land – welche Regierung ist verantwortlich?

nach Einwohner – welche Menschen sind verantwortlich?

Quelle
Territorial emissions

Original
CDIAC: Boden, TA, Marland, G and Andres, RJ 2017. Global, Regional, and National Fossil--Fuel CO2 Emissions, Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tenn., USA. DOI: 10.3334/CDIAC/00001_V2017.
UNFCCC, 2017. National Inventory Submissions 2017. United Nations Framework Convention on Climate Change.
BP, 2017. Statistical Review of World Energy.

```
# R
co2pp <- read.csv("/Users/xxx/Desktop/export_20191116_1913.csv",sep =
";", quote = "\"'",)
visited <- colnames(co2)[-1]
register_google(key="???")
ll.visited <- geocode(visited)
ll.visited[, "country"] <-
c("Afghanistan","Albania","Algeria","Andorra","Angola","Anguilla","Ant
igua.and.Barbuda","Argentina","Armenia","Aruba","Australia","Austria",
"Azerbaijan","Bahamas","Bahrain","Bangladesh","Barbados","Belarus","Be
lgium","Belize","Benin","Bermuda","Bhutan","Bolivia","Bonaire..Saint.E
ustatius.and.Saba","Bosnia.and.Herzegovina","Botswana","Brazil","Briti
sh.Virgin.Islands","Brunei.Darussalam","Bulgaria","Burkina.Faso","Buru
ndi","Cambodia","Cameroon","Canada","Cape.Verde","Cayman.Islands","Cen
tral.African.Republic","Chad","Chile","China","Colombia","Comoros","Co
```

```
ngo","Cook.Islands","Costa.Rica","Côte.d.Ivoire","Croatia","Cuba","Cur
açao","Cyprus","Czech.Republic","Democratic.Republic.of.the.Congo","De
nmark","Djibouti","Dominica","Dominican.Republic","Ecuador","Egypt","E
l.Salvador","Equatorial.Guinea","Eritrea","Estonia","Ethiopia","Faeroe
.Islands","Falkland.Islands..Malvinas.","Fiji","Finland","France","Fre
nch.Guiana","French.Polynesia","Gabon","Gambia","Georgia","Germany","G
hana","Gibraltar","Greece","Greenland","Grenada","Guadeloupe","Guatema
la","Guinea","Guinea.Bissau","Guyana","Haiti","Honduras","Hong.Kong","
Hungary","Iceland","India","Indonesia","Iran","Iraq","Ireland","Israel
","Italy","Jamaica","Japan","Jordan","Kazakhstan","Kenya","Kiribati","
Kuwait","Kyrgyzstan","Laos","Latvia","Lebanon","Lesotho","Liberia","Li
bya","Liechtenstein","Lithuania","Luxembourg","Macao","Macedonia..Repu
blic.of.","Madagascar","Malawi","Malaysia","Maldives","Mali","Malta","
Marshall.Islands","Martinique","Mauritania","Mauritius","Mexico","Micr
onesia..Federated.States.of.","Moldova","Mongolia","Montenegro","Monts
errat","Morocco","Mozambique","Myanmar","Namibia","Nauru","Nepal","Net
herlands","New.Caledonia","New.Zealand","Nicaragua","Niger","Nigeria",
"Niue","North.Korea","Norway",NA,"Oman","Pakistan","Palau","Panama","P
apua.New.Guinea","Paraguay","Peru","Philippines","Poland","Portugal","
Qatar","Republic.of.South.Sudan","Réunion","Romania","Russian.Federati
on","Rwanda","Saint.Helena","Saint.Kitts.and.Nevis","Saint.Lucia","Sai
nt.Pierre.and.Miquelon","Saint.Vincent.and.the.Grenadines","Samoa","Sa
o.Tome.and.Principe","Saudi.Arabia","Senegal","Serbia","Seychelles","S
ierra.Leone","Singapore","Slovakia","Slovenia","Solomon.Islands","Soma
lia","South.Africa","South.Korea","Spain","Sri.Lanka","Sudan","Surinam
e","Swaziland","Sweden","Switzerland","Syria","Taiwan","Tajikistan","T
anzania","Thailand","Timor.Leste","Togo","Tonga","Trinidad.and.Tobago"
,"Tunisia","Turkey","Turkmenistan","Turks.and.Caicos.Islands","Tuvalu"
,"Uganda","Ukraine","United.Arab.Emirates","United.Kingdom","United.St
ates.of.America","Uruguay","Uzbekistan","Vanuatu","Venezuela","Vietnam
","Wallis.and.Futuna.Islands","Western.Sahara","Yemen","Zambia","Zimba
bwe")
ll.visited <- as.data.frame(ll.visited)
cnd <- ll.visited$country %in% colnames(co2)
for(i in 1960:2017){
  ll.visited[cnd,"CO2"] <-
as.vector(t(co2pp[i-1959,ll.visited$country[cnd]]))
  p <- ggplot() +
    geom_polygon(data = map_data("world"), aes(x=long, y=lat,
group=group), fill="grey", alpha=0.2) +
    theme_void() +
```

```
    xlim(-160,190) +
    ylim(-60,90) +
    geom_point( data=ll.visited, aes(x=lon, y=lat, size=CO2,
fill=CO2), alpha=.8, pch=21) +
    scale_fill_continuous(low="blue4", high="red",
breaks=seq(0,10000,2500), limits=c(0,10000) ) +
    scale_size(range = c(.1,35), breaks=seq(0,10000,2500),
limits=c(0,10000) ) +
    annotate("text", label=i, x=170, y=85, size=8.5) +
    scale_size(range = c(.1,14)) +
    guides( size = FALSE, fill = guide_colourbar(order = 1,
title=expression('t CO'[2]*' per pers '), ) )
  fn <- paste("/Users/xxx/Desktop/tmp/",str_pad(i-1959, 3, pad =
"0"),".png",sep="")
  ggsave(p, file=fn, width = 9, height = 4.5)
}
# ffmpeg -framerate 5 -i /Users/xxx/Desktop/tmp/%3d.png -r 5 -pix_fmt
yuv420p -y /Users/wjst/Desktop/X/CO2.mp4
```

Anmerkung

- Ich weiss nicht, worauf die Differenz zu anderen Angaben beruht.
- Der Plot CO2 pro Kopf hat “capped outliers”, alles was über der Skala lag, wurde auf die obere Grenze gelegt. Dennoch imponieren hier weiterhin Länder wie Curaçao mit einer starken Öl-Ökonomie (Shell…), ebenso auch Katar.
- Eine fixe Skala über die Zeit (die Zeile mit scale_fill_continuous…) hat Vor- und Nachteile. Vorteil – man sieht besser die Entwicklung der Gesamtemission. Nachteil – die relative Entwicklung zu anderen Ländern geht etwas verloren.