



Sustainable development for the most populated countries

Group 1

Anastasiya Lis

Camille Ripoull

Gabriela Romero

Mikolaj Bogusz

Wen-Tung Huang

Xu Yize

Identification of the top 5 most populated countries

```
select country, population_rank  
from population_index  
order by population_rank  
limit 5;
```

We used **LIMIT** to choose the top 5 countires in terms of population_rank

country	population_rank
China	1.00
India	2.00
United States	3.00
Indonesia	4.00
Pakistan	5.00

- The more populated country — the higher level of carbon emission and the higher impact on the environment.
- We decided to evaluate the most populated countries to get the insight into their efforts in fighting climate change.
- Also, the current level of sustainable development of those countires is crucial for the envrionment, so it is necessary to examine their scores.

Analysis of pandemic_pivot

```
select o.country_id, o.pandemic_pivot,o.climate_action,o.agriculture_strategy,t.energy_investment,o.carbon_pricing,u.carbon_emissions  
from climate_policy o  
join clean_innovation t  
using (country_id)  
join carbon_emissions u  
using (country_id)  
where pandemic_pivot like '4.0%'  
and country_id regexp 'Pakistan|^China|Indonesia|United States|India';
```

We used **LIKE** and **REGEXP** with the country's names to search among them ones with pandemic_pivot = 4

country_id	pandemic_pivot	climate_action	agriculture_strategy	carbon_pricing	carbon_emissions
Indonesia	4.00	2.00	9.00	2.00	4.08
Pakistan	4.00	2.00	9.00	1.00	5.18
United States	4.00	1.00	9.00	5.00	1.71

- 3 of our 5 chosen countries have a 4 pandemic_pivot, which seems to be strongly correlated to green_index
- We analysed the pandemic_pivot as an aggregate of other values like climate_action, agriculture_strategy or carbon_pricing we consequently displayed carbon_emissions to measure the impact of the carbon_pricing

Evaluation of the carbon emission growth of the top 5 populated countries and the undertaken tangible efforts to reduce it

```
select gs.country_id, gs.green_buildings, gs.forestation_change, ce.carbon_growth
from green_society gs
join carbon_emissions ce
using (country_id)
where gs.country_id regexp '^China|United States|Indonesia|Pakistan|India'
group by gs.country_id
order by ce.carbon_growth desc;
```

In front of the **China** is used the sign **^**, which means that the word should start with 'China', without this condition we will get additionally in the output the overview of the country_id "Hong Kong, China"

For our analysis we have chosen `green_buildings` and `forestation_change` indicators as they both are tangible and directly related to the reduction of carbon emissions and sustainability.

As the analysis is concentrated on the top 5 populated countries, we use operator **REGEXP** to match the names of these countries which were determined before so that we will get the overview only for them.

country_id	green_buildings	forestation_change	carbon_growth
United States	10.00	7.92	6.46
China	5.53	3.43	5.83
India	5.16	2.00	3.88
Indonesia	2.67	2.40	3.41
Pakistan	3.68	2.60	2.13

Evaluation of the carbon_emissions in different economic branches

```
select pi.country, ce.carbon_emissions, ce.emissions_transport, ce.emissions_industry, ce.emissions_agriculture  
from population_index as pi  
join carbon_emission as ce  
on pi.country=ce.country_id  
where pi.population_rank < '6.00'  
order by ce.carbon_emissions;
```

To get the required result we need to **JOIN** 2 tables - population_index and carbon_emission using 'country' field from population_index table and 'country_id' field from carbon_emission.

We set the condition using **WHERE** for the population_rank to amount less than 6 to select the top 5 populated countries

country	carbon_emissions	emissions_transport	emissions_industry	emissions_agriculture
China	1.00	4.52	6.84	6.50
United States	1.71	6.38	5.64	6.15
India	2.52	3.38	4.67	6.25
Indonesia	4.08	5.83	3.47	4.48
Pakistan	5.18	1.46	2.28	1.00

- The higher industrialization level — the lower score in carbon emissions
- We decided to evaluate the „industrialization level” of selected countries by displaying the emissions for different areas.

Evaluation of the balance of the contribution in renewable energy

```
select * from (
  select country,
    (select (renewable_energy-renewable_contribution) as ContributionGap
     from energy_transition
    where pi.country=country_id) as ContributionGAP,
    (select energy_investment from clean_innovation where country_id=pi.country) as Energy_Invest
   from population_index pi
  where pi.country regexp 'China|United States|Indonesia|Pakistan|India'
  order by ContributionGap) as summary
 where ContributionGap is not null;
```

country	ContributionGAP	Energy_Invest
Pakistan	-1.71	7.97
Indonesia	-1.26	6.65
India	-0.15	7.57
United States	2.51	4.97
China	3.42	5.04

We used **IS NOT NULL** to get rid of the null value row at the bottom of the table.

Subquery in **FROM** and **SELECT** clause.

- If the value is close to 0 — **the efforts between renewable energy production and renewable contribution are balanced.**
- We decided to calculate the Contribution Gap to examine the level of renewable energy contribution and investments in renewable Energy sources in selected countries.

Recommendations

	China	USA	Pakistan	Indonesia	India
Renewable energy production and consumption			↑	↑	
Investment in energy structuring	↑	↑			
Climate actions and carbon pricing	↑	↑	↑	↑	↑

country_id	pandemic_pivot	climate_action	agriculture_strategy	energy_investment	carbon_pricing	carbon_emissions
Indonesia	4.00	2.00	9.00	6.65	2.00	4.08
Pakistan	4.00	2.00	9.00	7.97	1.00	5.18
United States	4.00	1.00	9.00	4.97	5.00	1.71

country	ContributionGAP	Energy_Invest
Pakistan	-1.71	7.97
Indonesia	-1.26	6.65
India	-0.15	7.57
United States	2.51	4.97
China	3.42	5.04

Recommendations

	China	USA	Pakistan	Indonesia	India
Foodtech_investments to shift food production and consumption toward sustainability	↑	↑			↑
Waste recycling and reforestation efforts	↑		↑	↑	↑
Green patents			↑	↑	

country_id	green_buildings	forestation_change	carbon_growth
United States	10.00	7.92	6.46
China	5.53	3.43	5.83
India	5.16	2.00	3.88
Indonesia	2.67	2.40	3.41
Pakistan	3.68	2.60	2.13

country	waste_recycling_efforts	foodtech_investment	green_patents
China	1.00	4.33	10.00
India	2.00	4.42	4.99
Indonesia	2.40	5.50	1.00
Pakistan	2.60	7.97	1.00
United States	7.92	4.97	5.27

Recommendations

	China	USA	Pakistan	Indonesia	India
Meat and diary consumption		↓			
Carbon emissions		↓	↓		↓
country_id	meat_diary_consume	foodtech_investment			
United States	2.18	4.97			
China	5.47	4.33			
Pakistan	5.83	7.97			
India	8.05	4.42			
Indonesia	9.71	5.50			
country	carbon_emissions	emissions_transport	emissions_industry	emissions_agriculture	
China	1.00	4.52	6.84	6.50	
United States	1.71	6.38	5.64	6.15	
India	2.52	3.38	4.67	6.25	
Indonesia	4.08	5.83	3.47	4.48	
Pakistan	5.18	1.46	2.28	1.00	

Recommendations

	China	USA	Pakistan	Indonesia	India
Carbon growth			↓	↓	↓

country_id	green_buildings	forestation_change	carbon_growth
United States	10.00	7.92	6.46
China	5.53	3.43	5.83
India	5.16	2.00	3.88
Indonesia	2.67	2.40	3.41
Pakistan	3.68	2.60	2.13



One of the first difficulties was to choose a perspective of analysis for this project. We overcame it by spending multiples days to search individualy differents study angles before regrouping and discuss them.



Was hard to agree in some point of the analysis because we didnt know the ultimate goal



We faced some challenge to use "like" queries in a practical and meaningfull way with these data.

Reflection