Renewable Energy and Financial Impact

Analysis of global data on renewable energy, nuclear, CO2 emissions and sustainability to assess the environmental impact and performance of countries over time.

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Github

Google Drive

Introduction

This project aims to explore data on renewable energy, electricity, and socio-environmental data to paint a clear picture of the situation at a global level

What is the global trend in the use of renewables?
Which countries are leading this transition?
What is being done about nuclear?
Is financing for developing countries paying off?

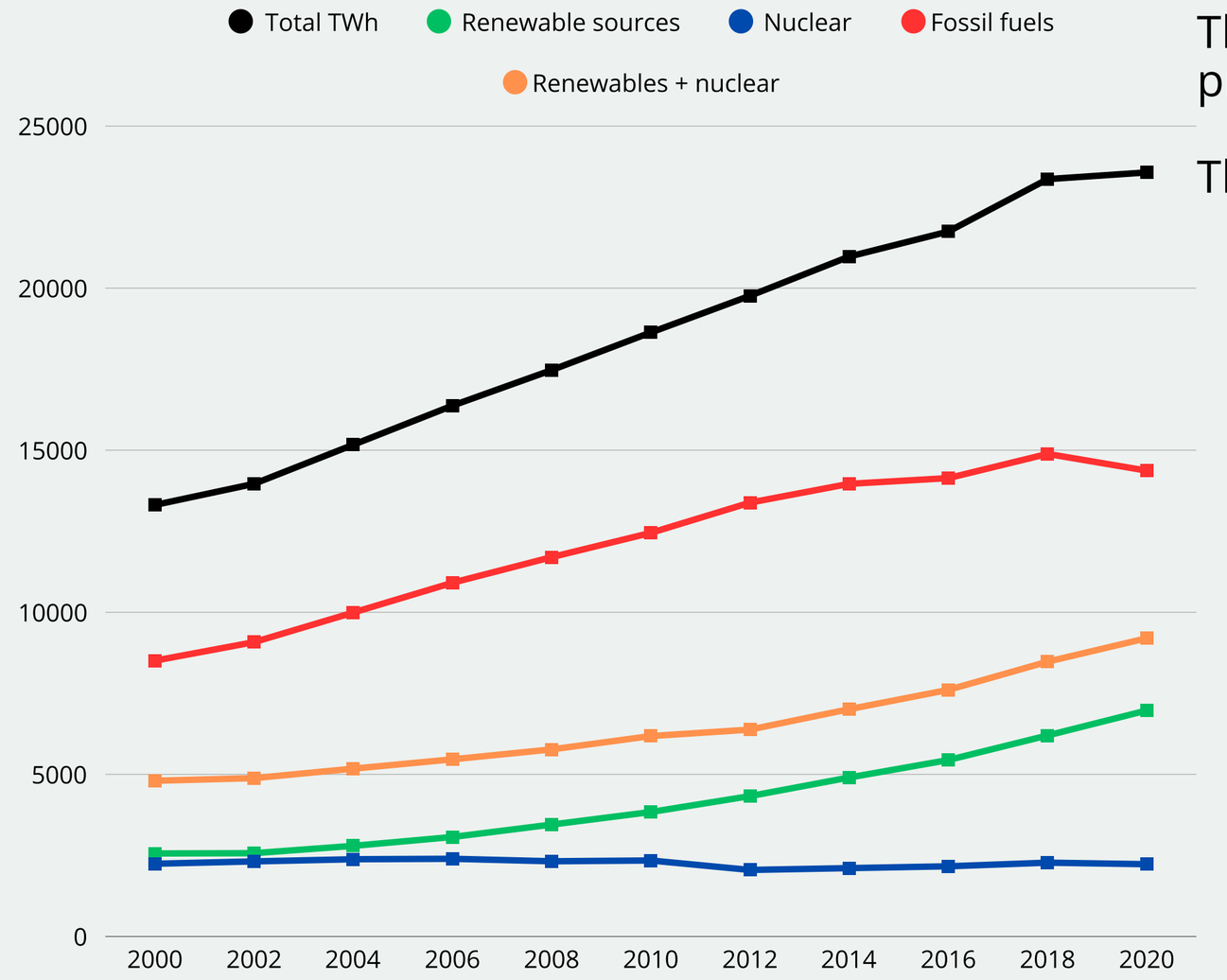
Through detailed analysis, we will answer these questions.
A journey through the numbers to understand our impact on the planet and how we are facing this epochal challenge

Data source

Global Data on Sustainable Energy (2000-2020)
Explore insights into sustainable energy in the first two decades of the 21st century

Global Country Information Dataset 2023
A comprehensive dataset that allows for in-depth analysis and cross-country insights

Global Energy Trends 2000-2020

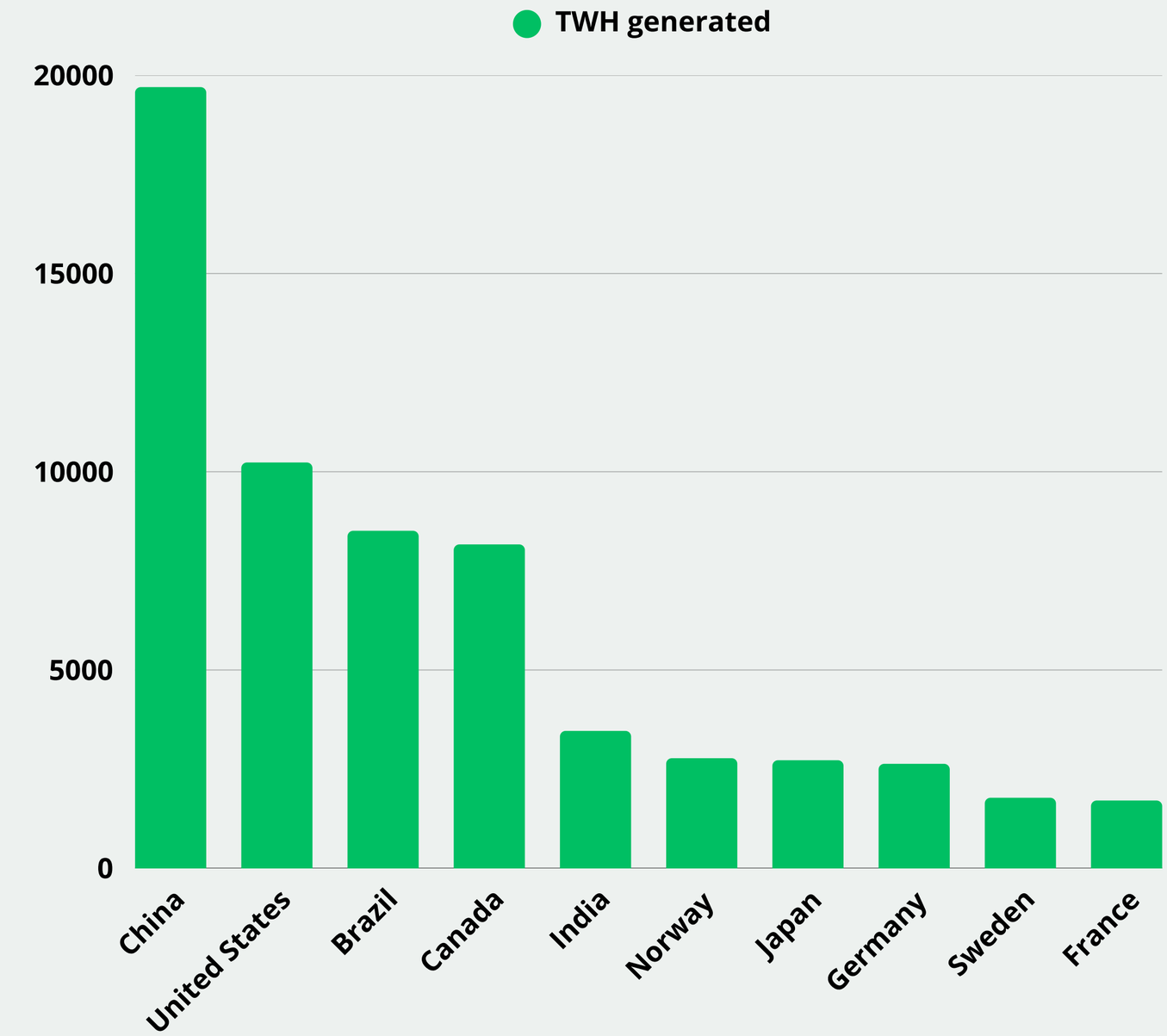


The ordinate axis shows the quantities of Terawatt hours produced annually using the various sources.

The conclusions we can draw are:

- Despite the increase in the use of renewables, by 2020 Fossil fuels remain by far the most exploited sources
- The only recorded decline in the use of fossil fuels occurred in the last two years
- Nuclear is the only source to have suffered a decline, albeit minimal, over the last 20 years.
- As of 2020, the terawatt-hours produced from the combined use of renewables and nuclear energy (*9,199.64*) were significantly lower than the amount generated using fossil fuels alone (*14,369.39*).

The 7 countries that generated the most Terawatt hours (TWH) of energy from renewable sources between 2000 and 2020

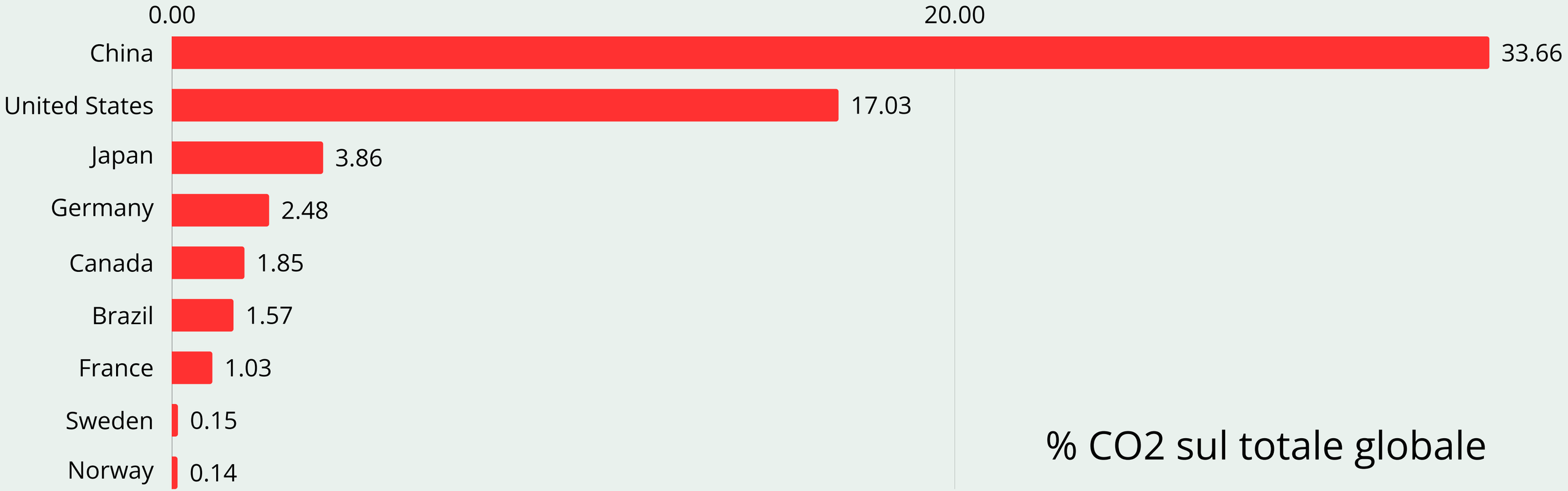


This bar chart shows the 7 countries that produced the most TWH from renewable sources in the period 2000-2020.

China is the leader in renewable energy production.

Of the total 86,955.94 TWH produced globally between 2000-2020,
China and the United States produced 29,937.04 TWH,
about **34.4%** of all energy generated from renewable sources worldwide.

Green energy leaders' CO2 emissions as a share of global emissions (2023)



China and the United States, despite increasing use of renewables, produced more than 50% of CO2 emissions in 2023.
This data highlights how the main global players driving the green transition are still dependent on high-emission sources.

The starting dataset does not have the emissions value of India, so the country is not present in the table.

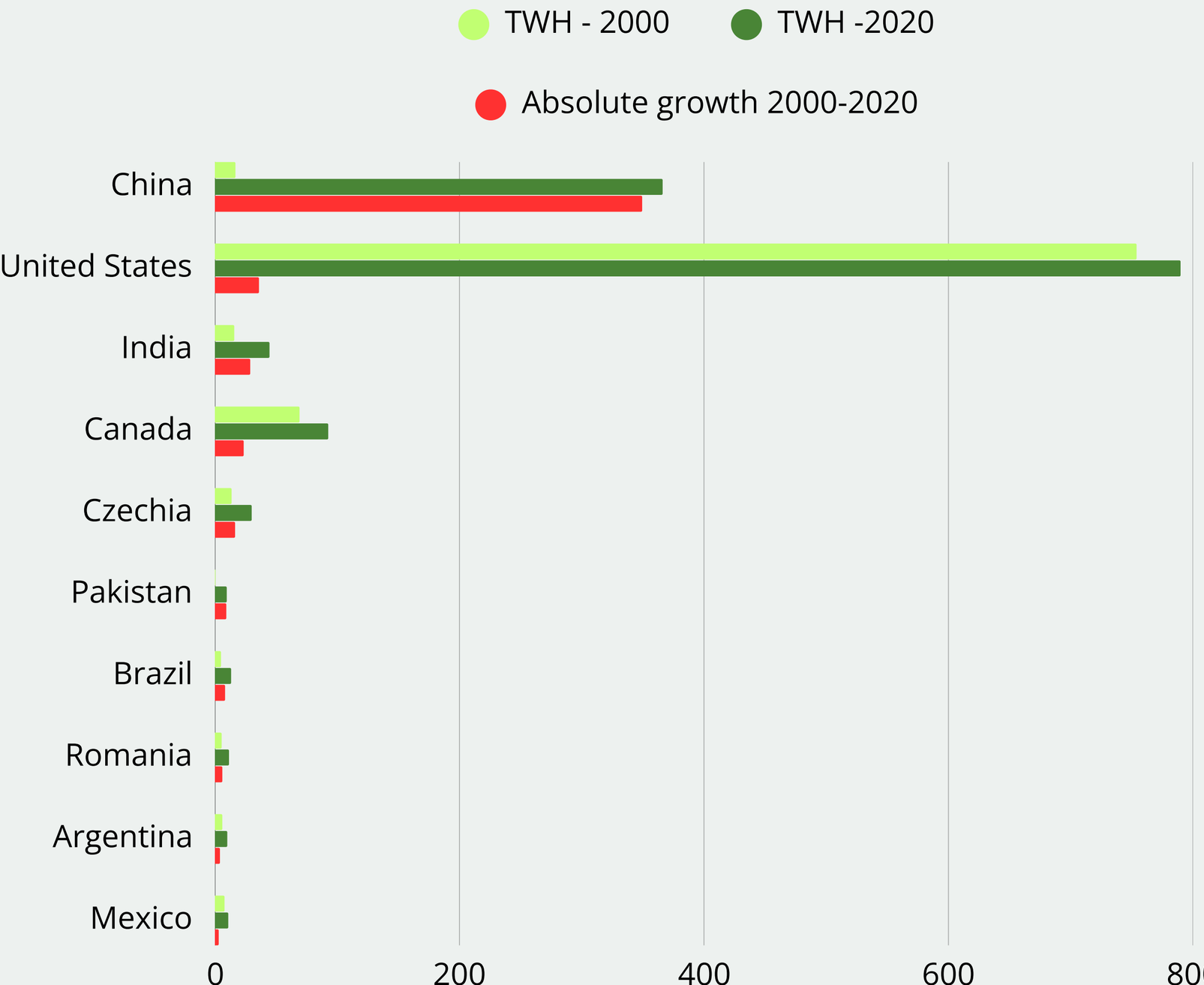
Energy production from nuclear sources

The next data aims to give an insight into the global situation on the nuclear energy production front.

In the third page of the project we have already seen, through a graph, the global trend on the use of this source, in relation to other sources.

For the graph, refer to slide 3

Change in the amount of Energy (TWH) produced by nuclear sources between 2000 and 2020



The graph shows the countries with the highest nuclear energy production in 2020, and the variation over the last 20 years.

The United States is the country that produces the most Terawatt hours from nuclear sources (789.88 TWH)

However, **China reports the largest growth in absolute terms**, from 16.74 TWH to 366.2 TWH of energy in the last 20 years, a change of 349.46 TWH,
in *percentage terms of 2087.57 %*

...And the more developed countries?

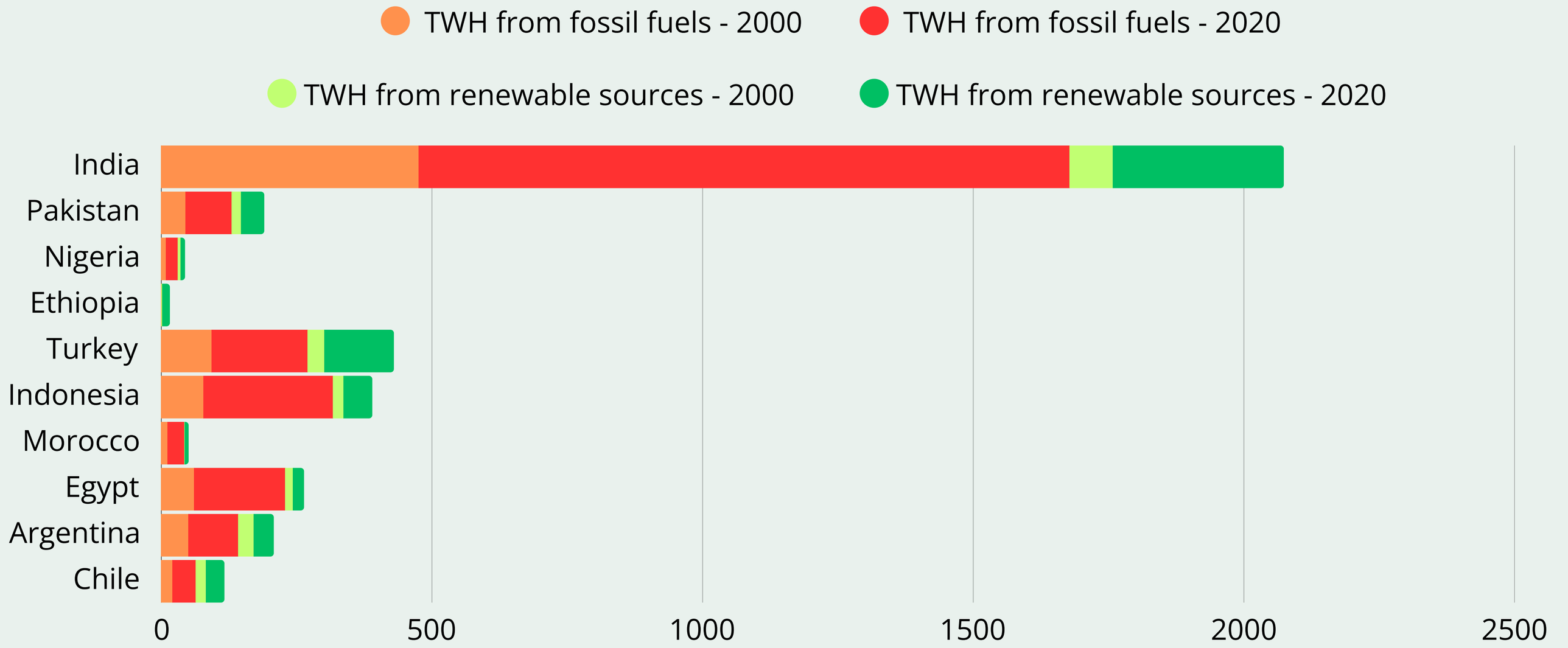
From this graph it appears that, among the 10 most developed countries, ***China*** *is the only one to have significantly increased electricity production from nuclear sources.*
The general tendency of other countries is to reduce the use of this source, or not to increase it much.
Italy *is the only one among the 10 most developed countries to have never generated nuclear energy in these years.*

Financing developing countries for green projects

The following data analyzes the effects of financing, aid and assistance from developed countries for clean energy projects.

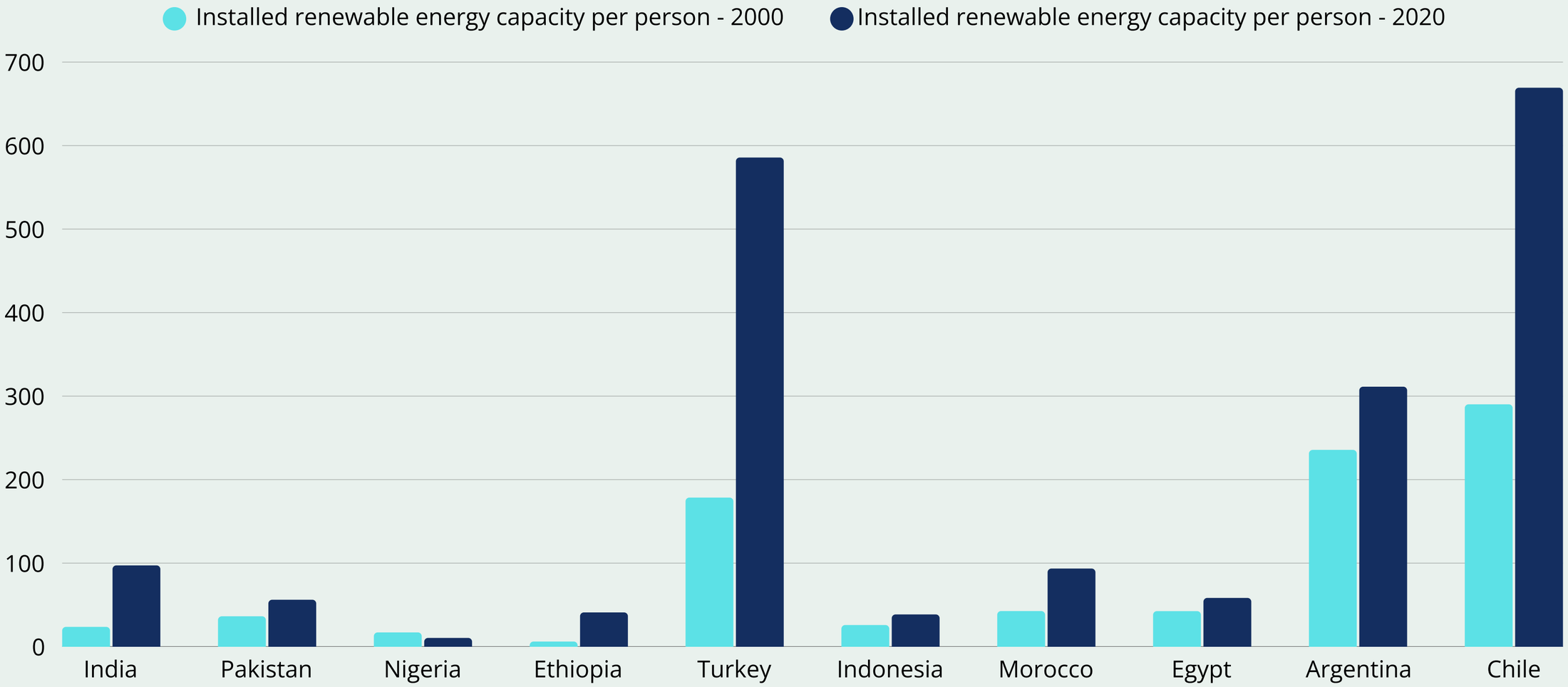
Are they increasing their use of renewables?
What are the effects on a per capita level?

Effects on electricity generation (TWH) from renewables in the most financed countries between 2000 and 2020



In all the countries that have received the most funding, there has been an increase in electricity generation from renewable sources.
However, with rare exceptions, **the use of fossil fuels remains by far the predominant one**.

Comparison of installed renewable energy capacity per person



Thank you very much!

PostgreSQL

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