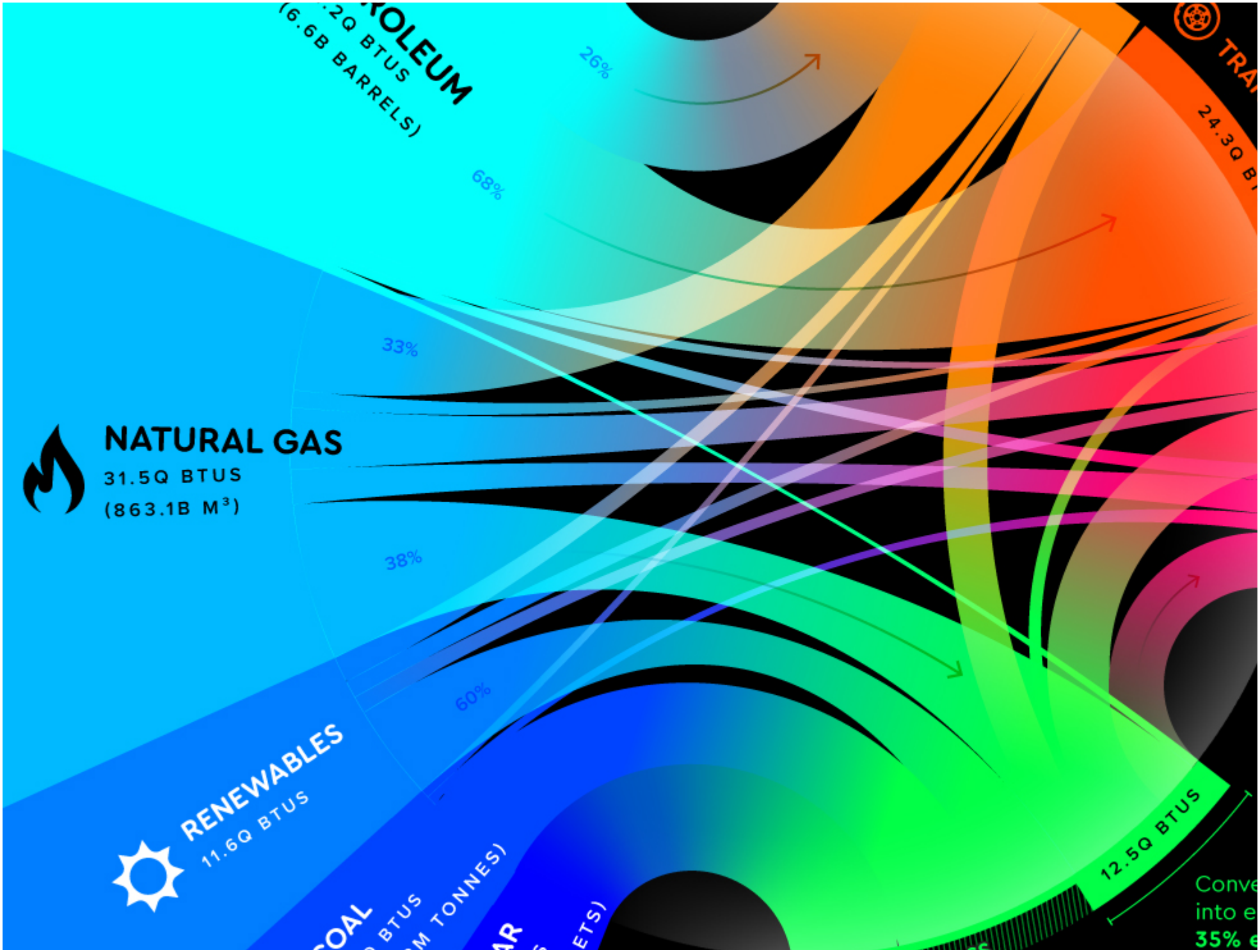
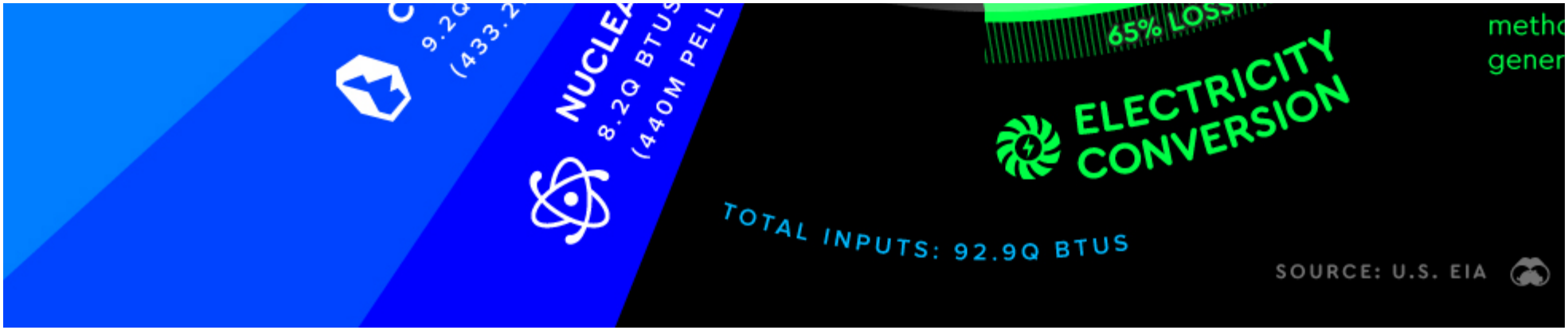
# Visualizing the Flow of U.S. Energy Consumption

Published 3 months ago on July 6, 2021
By **Niccolo Conte** Graphics/Design: **Harrison Schell**


(6.6B BARRELS)
26%
68%
24.3Q B
33%
NATURAL GAS
31.5Q BTUS
(863.1B M³)
38%
60%
RENEWABLES
11.6Q BTUS
12.5Q BTUS
35% e

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# Breaking Down America's Energy Consumption in 2020

The United States relies on a complex mix of energy sources to fuel the country's various end-sectors' energy consumption.

While this energy mix is still dominated by fossil fuels, there are signs of a steady shift to renewable energy over the past decade.

This radial Sankey diagram using data from the EIA (Energy Information Administration) breaks down U.S. energy consumption in 2020, showing us how much each sector relies on various energy sources.

## The Balance of Energy Production and Consumption

In 2019 and now in 2020, America's domestic energy production has actually been greater than its consumption—a development that hasn't taken place since 1957.

Last year's numbers were severely impacted by the COVID-19 pandemic, seeing a 5% drop in energy production and a 7% drop in consumption compared to 2019. Total energy production and consumption for 2020 came in at 95.75 and 92.94 quads respectively.

The energy amounts are equalized and measured in quadrillion BTUs (British thermal units), also known as quads. A quad is a huge amount of energy, equivalent to 183 million barrels of petroleum or 36 million tonnes of coal.

So how is America's overall energy production and consumption split between energy sources?

## U.S. Energy Production and Consumption Share by Source

| Energy Source | Percentage of U.S. Energy Production | Percentage of U.S. Energy Consumption |
|---|---|---|
| Petroleum | 32% | 35% |
| Natural Gas | 36% | 34% |
| Renewable Energy | 12% | 12% |
| Coal | 11% | 10% |
| Nuclear | 9% | 9% |

*Source: IEA*

America's new margin of energy production over consumption has resulted in the country being a net total energy exporter again, providing some flexibility as the country continues its transition towards more sustainable and renewable energy sources.

# Fossil Fuels Still Dominate U.S. Energy Consumption

While America's mix of energy consumption is fairly diverse, 79% of domestic energy consumption still originates from fossil fuels. Petroleum powers over 90% of the transportation sector's consumption, and natural gas and petroleum make up 74% of the industrial sector's direct energy consumption.

There are signs of change as consumption of the dirtiest fossil fuel, coal, has declined more than 58% since its peak in 2005. Coinciding with this declining coal dependence, consumption from renewable energy has increased for six years straight, setting record highs again in 2020.

However, fossil fuels still make up 79% of U.S. energy consumption, with renewables and nuclear accounting for the remaining 21%. The table below looks at the share of specific renewable energy sources in 2020.

### Distribution of Renewable Energy Sources

| Renewable Energy Source | 2020 Energy Consumption in Quads | Share of 2020 Renewable Energy Consumption |
|---|---|---|
| Biomass | 4.52 | 39% |
| Wind | 3.01 | 26% |
| Hydroelectric | 2.55 | 22% |
| Solar | 1.27 | 11% |
| Geothermal | 0.23 | 2% |

*Source: IEA*

## The Nuclear Necessity for a Zero-Emission Energy Transition

It's not all up to renewable energy sources to clean up America's energy mix, as nuclear power will play a vital role in reducing carbon emissions. Technically not a renewable energy source

due to uranium's finite nature, nuclear energy is still a zero-emission energy that has provided around 20% of total annual U.S. electricity since 1990.

Support for nuclear power has been growing slowly, and last year was the first which saw nuclear electricity generation overtake coal. However, this might not last as three nuclear plants including New York's Indian Point nuclear plant are set to be decommissioned in 2021, with a fourth plant scheduled for retirement in 2022.

It's worth noting that while other countries might have a higher share of nuclear energy in their total electricity generation, the U.S. still has the largest nuclear generation capacity worldwide and has generated more nuclear electricity than any other country in the world.

## Converting Energy to Electricity

The energy produced by nuclear power plants doesn't go directly to its end-use sector, rather, 100% of nuclear energy in the U.S. is converted to electricity which is sold to consumers. Along with nuclear, most energy sources aside from petroleum are primarily converted to electricity.

Unfortunately, electricity conversion is a fairly inefficient process, with around 65% of the energy lost in the conversion, transmission, and distribution of electricity.

This necessary but wasteful step allows for the storage of energy in electrical form, ensuring that it can be distributed properly. Working towards more efficient methods of energy to electricity conversion is an often forgotten aspect of reducing wasted energy.

Despite the dip in 2020, both energy production and consumption in the U.S. are forecasted to continue rising. As Biden aims to reduce greenhouse gas emissions by 50% by 2030 (from 2005 emission levels), U.S. energy consumption will inevitably continue to shift away from fossil fuels and towards renewable and nuclear energy.

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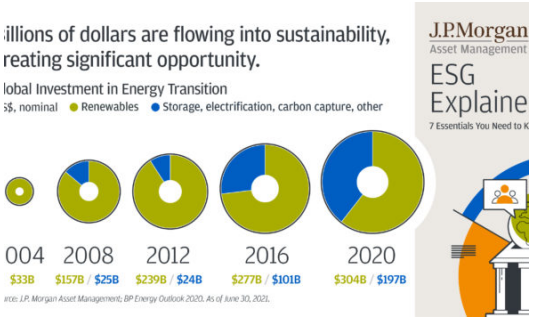


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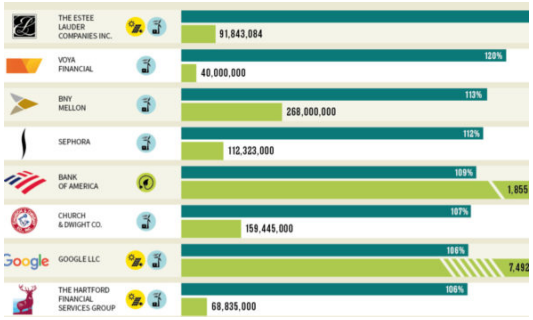


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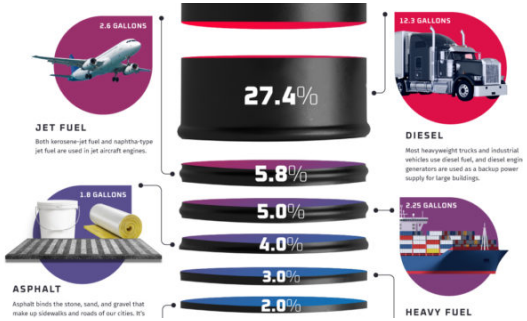


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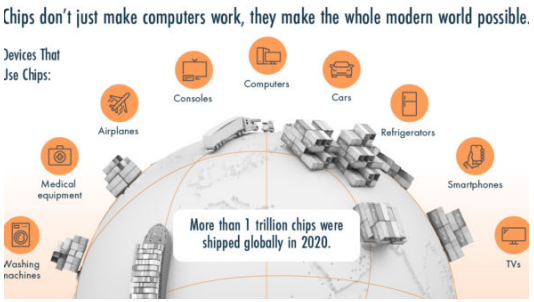


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ENERGY

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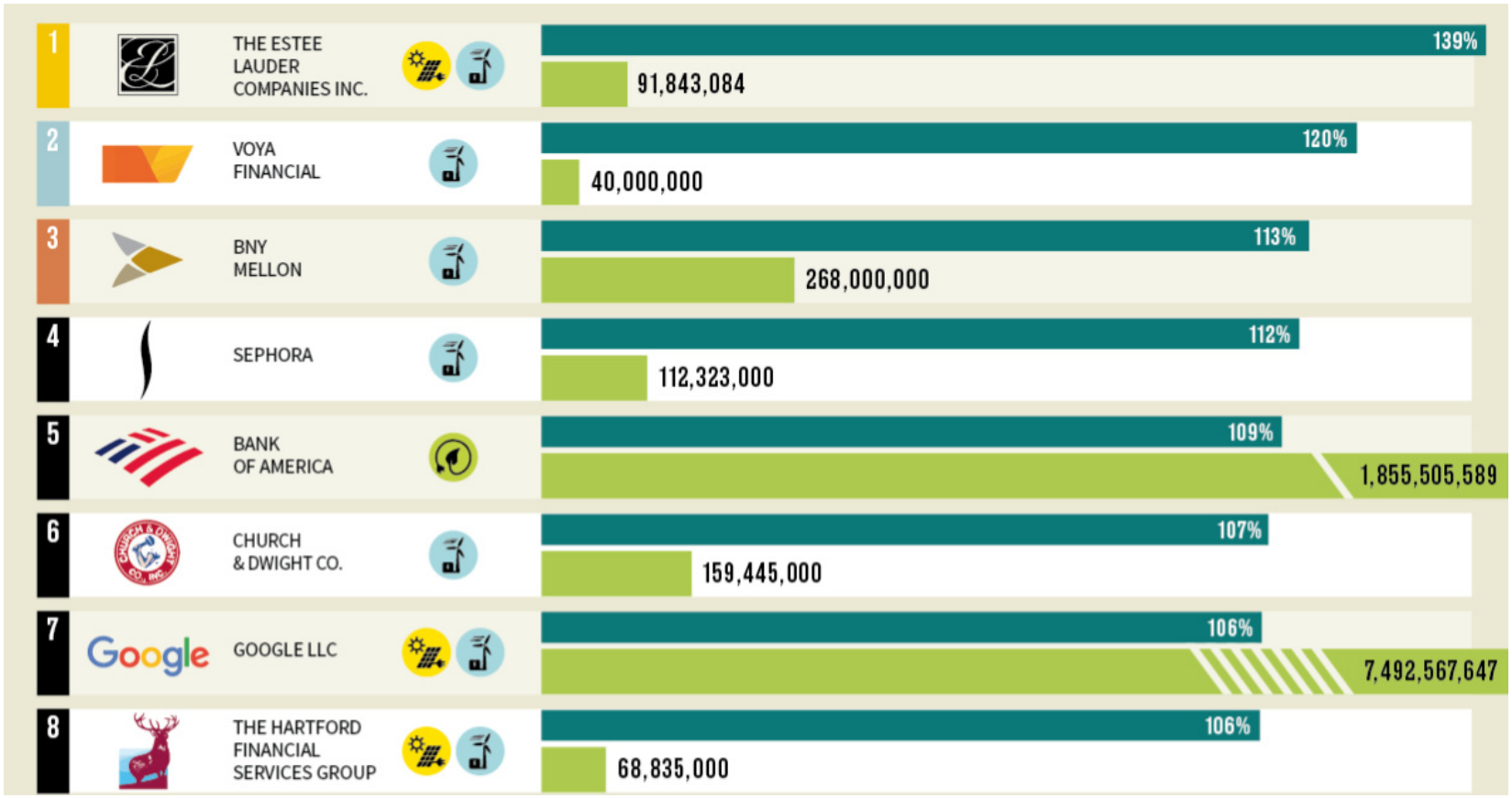
Which U.S. companies use the most green energy as a percentage of total energy used? Here are the 50 highest ranked companies according to the EPA.

Published 1 day ago on September 27, 2021
By **Anshool Deshmukh**




### Which Companies Use the Most Green Energy?

Green energy was once a niche segment of the wider energy industry, but it's quickly becoming an essential energy source in many regions and nations across the globe.

Based on data from the Environmental Protection Agency (EPA), this infographic by SolarPower.Guide shows the top 50 greenest companies, based on the highest proportion of green energy used in their overall consumption mix.

## Leaders in Green Energy Use

As green energy becomes more affordable, some major businesses like Google, Wells Fargo, and Apple are embracing it in a big way.

It also helps that institutional investors are nudging companies in that direction.

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ENERGY

# What's Made from a Barrel of Oil?

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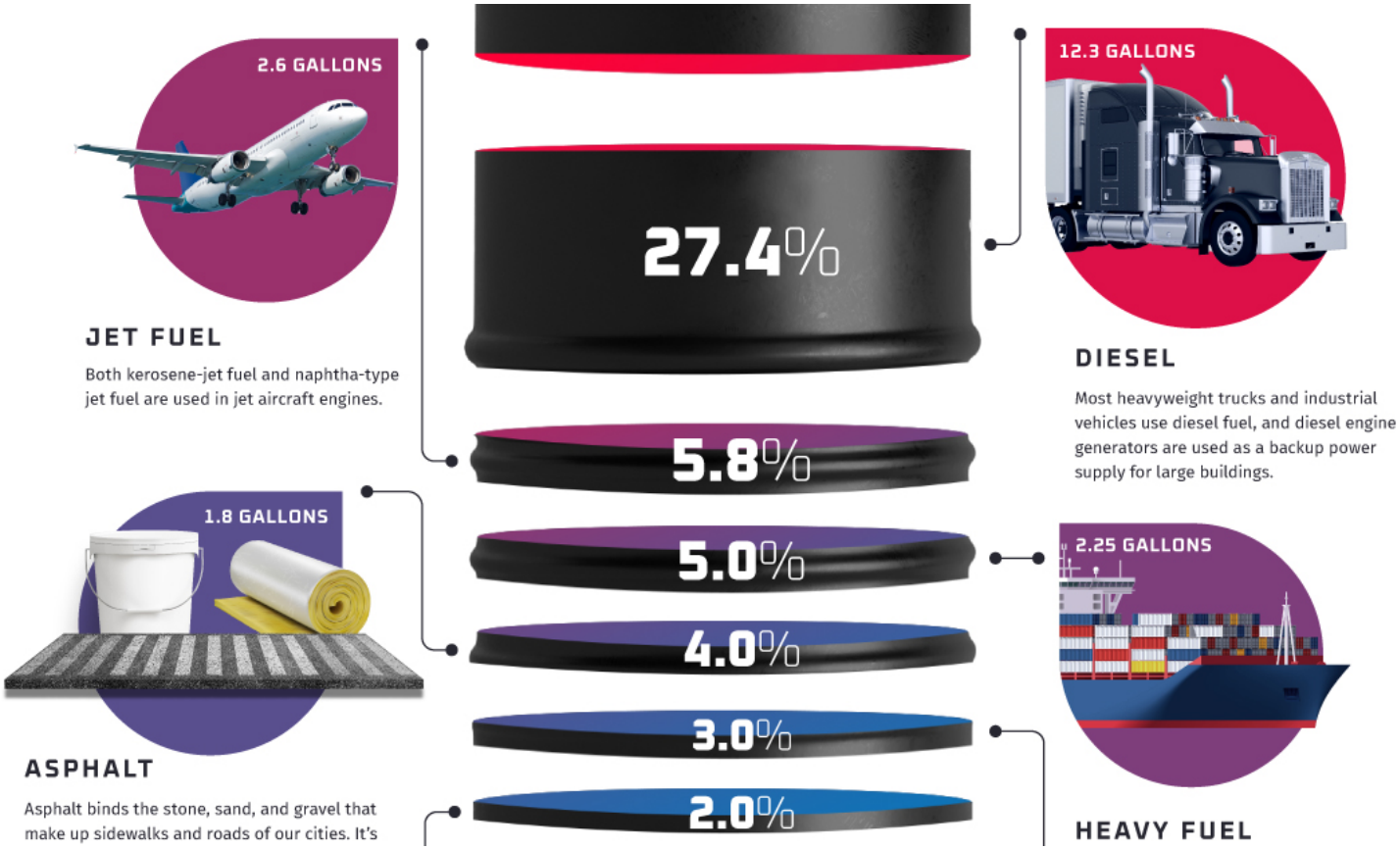
Published 2 weeks ago on September 14, 2021
By **Niccolo Conte**




**What Products Are Made from a Barrel of Oil?**

*This was originally posted on Elements. Sign up to the free mailing list to get beautiful visualizations on natural resource megatrends in your email every week.*

From the gasoline in our cars to the plastic in countless everyday items, crude oil is an essential raw material that shows up everywhere in our lives.

With around 18 million barrels of crude oil consumed every day just in America, this commodity powers transport, utilities, and is a vital ingredient in many of the things we use on a daily basis.

This graphic visualizes how much crude oil is refined into various finished products, using a barrel of oil to represent the proportional breakdown.

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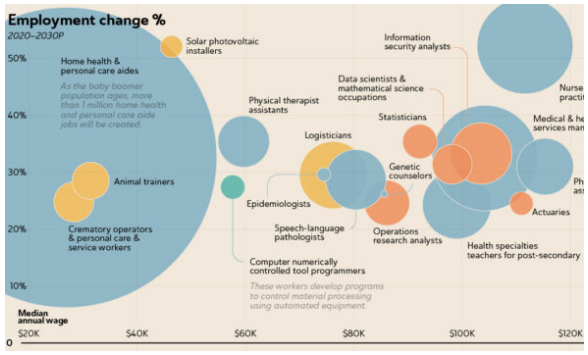


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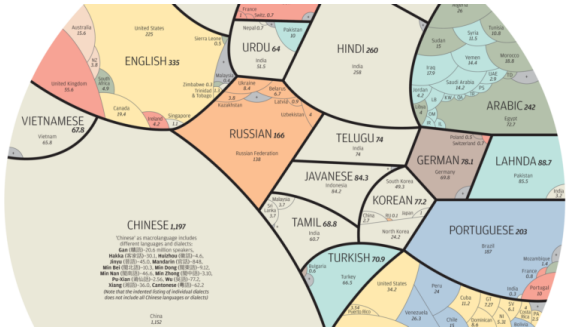


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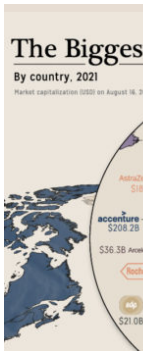


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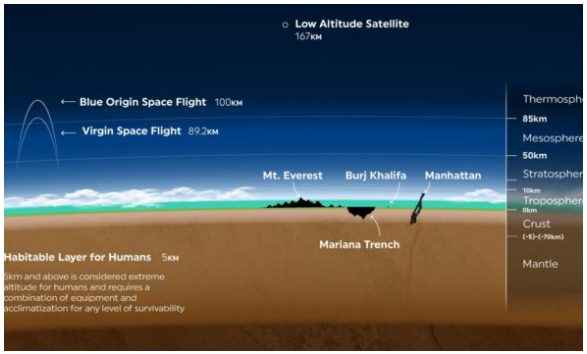


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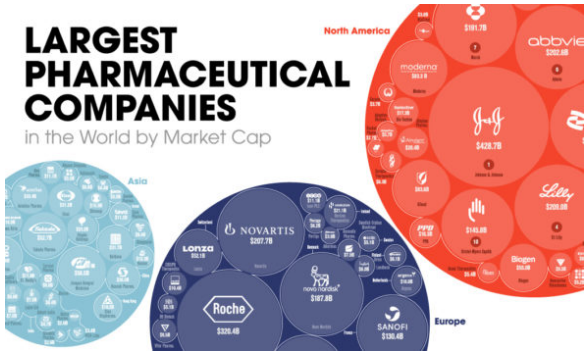


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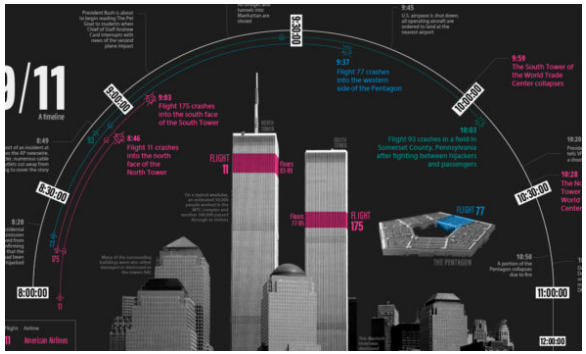


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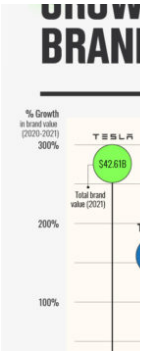


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