



# INTRO

# ENERGY FOR HUMANITY \_



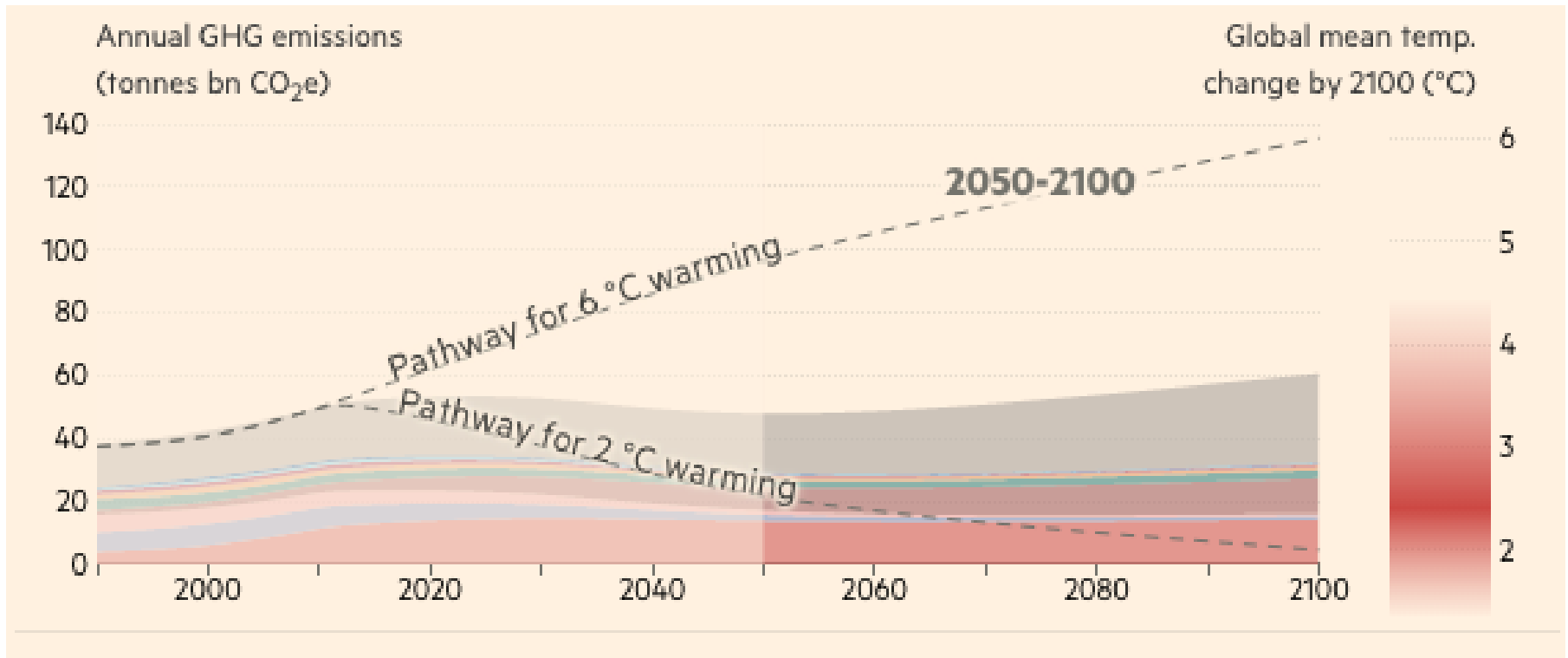
# Our Values

"A GREEN NGO THAT  
PROMOTES NUCLEAR  
AS PART OF THE  
SOLUTION, NOT THE  
ONLY SOLUTION, IN A  
LOW CARBON FUTURE  
IS FANTASTIC AND  
ABSOLUTELY VITAL."

UK CLIMATE AND ENERGY MINISTER MATT HANCOCK

[WWW.ENERGYFORHUMANITY.ORG](http://WWW.ENERGYFORHUMANITY.ORG)

- Global in scope.
- Optimistic, pragmatic, & pro-technology.
- Profoundly committed to improving quality of life for all people.
- Not affiliated with any political party, industrial or corporate enterprise.



➔ Even if every country met the pledges it has made to date, we would still be looking at a rise in emissions. Average global temperatures would likely rise by between 3°C to 4°C by 2100 (depending on your level of optimism or pessimism) compared to 6°C increase with no action.

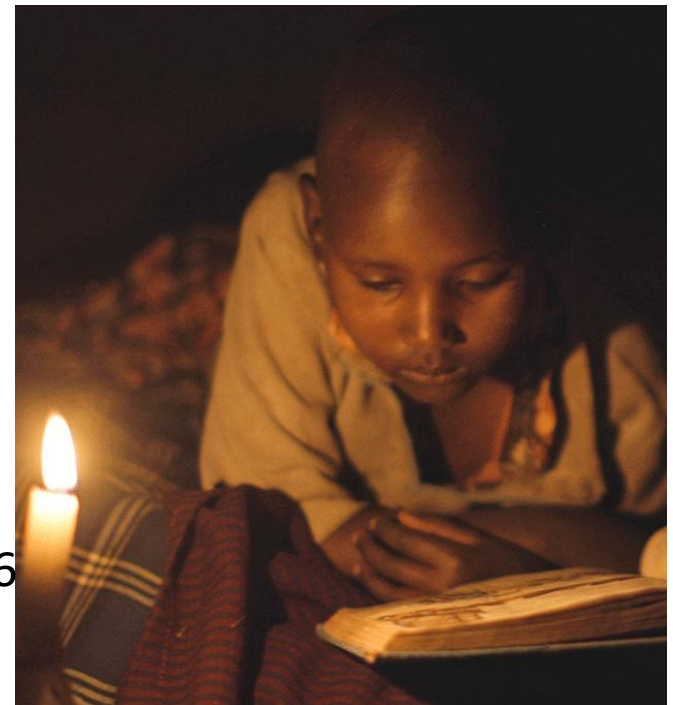
➔ Source: FT COP 21 Climate Change Calculator <http://ig.ft.com/sites/climate-change-calculator/>





- Today nearly three billion people cook over open fires fueled by wood, dung, coal, or charcoal.
- The health consequences are severe: every year, indoor air pollution causes two million premature deaths, one million cases of chronic lung disease, and half of all of pneumonia deaths among children under the age of five.

A child doing her homework by candle light  
Bill and Melinda Gates Annual Letter 2016



- Nearly every serious study of deep carbon reductions concludes that multiple low carbon energy technologies will be needed.
- But to date the global solutions discussion has been largely around specific renewable technologies only (especially wind and solar).
- The Paris framework forces a discussion on which multi-technology strategies provide the optimum ways to cut carbon.



# WIND AND SOLAR?

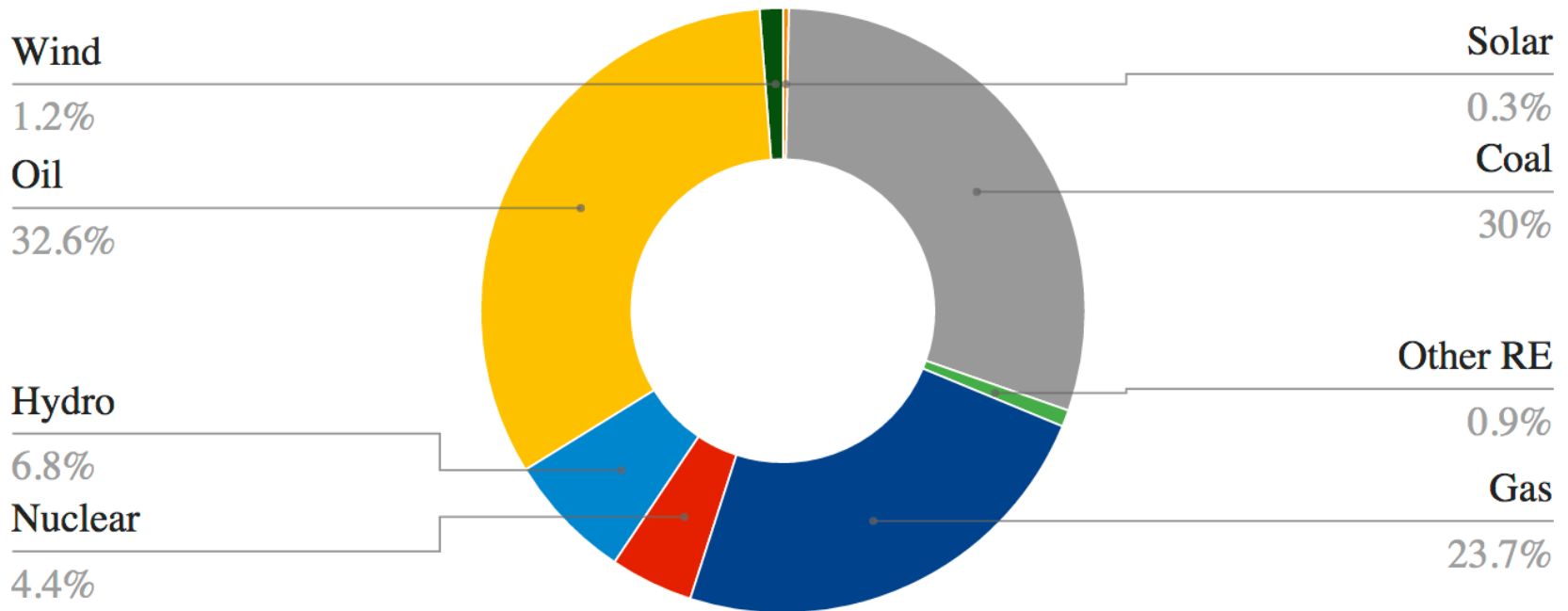
Wind power provides 2.6% of global electricity.

Solar power provides 0.5% of global electricity.

Coal provides more than 40% and is fastest growing source.



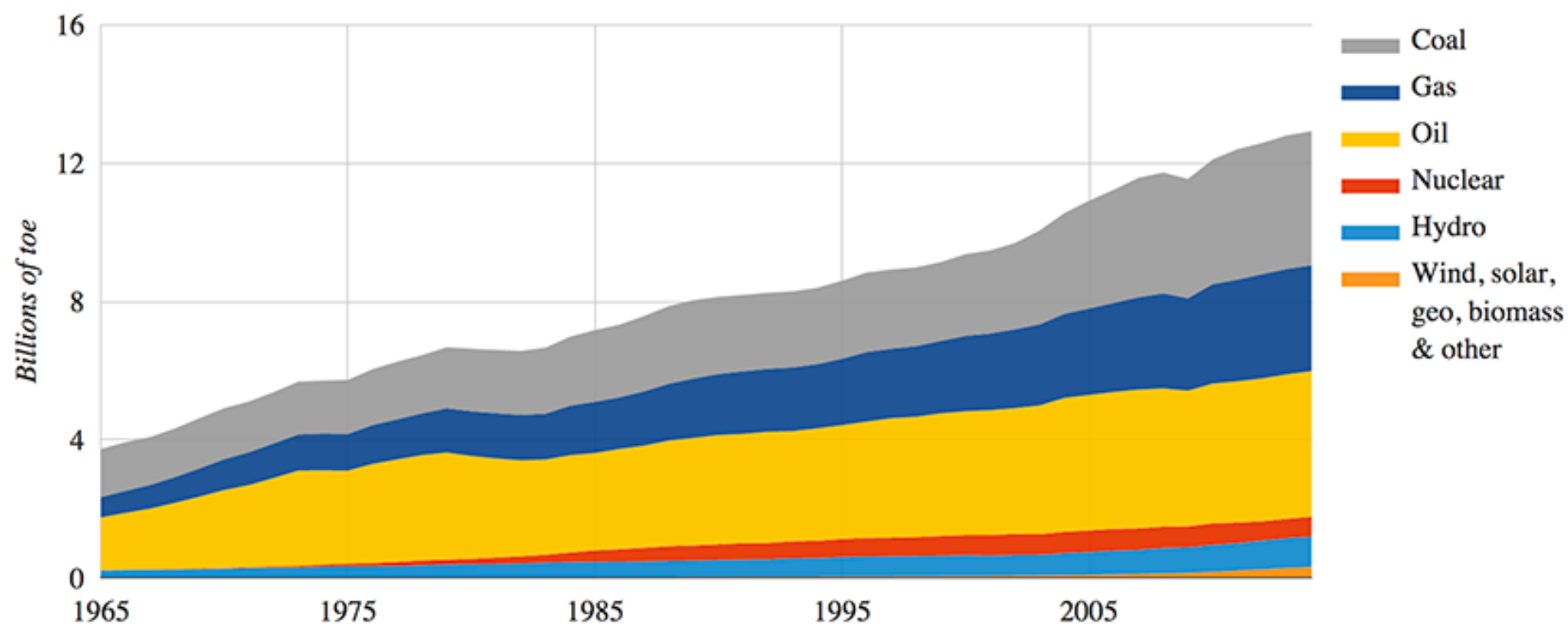
## Shares of world demand met by different sources of energy in 2014.



Other RE includes geothermal, biomass, biofuels wave and tidal energy.

Source: [BP Statistical Review of World Energy 2015](#). Chart by Carbon Brief.





**World energy use by source, 1965-2014.**

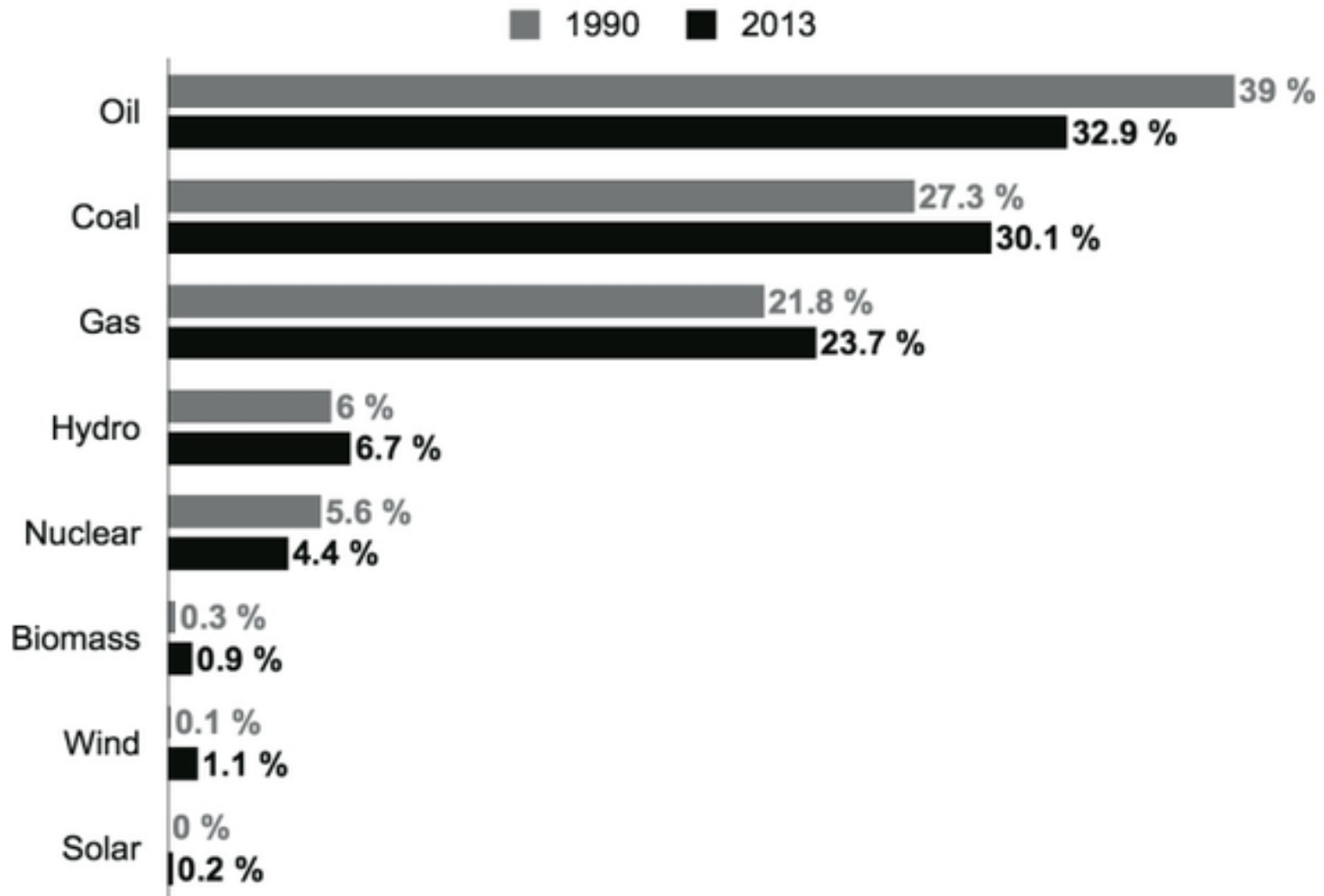
Source: [BP Statistical Review of World Energy 2015](#). Chart by Carbon Brief.

# Urban growth in China: Shenzhen in 1980 versus 2013

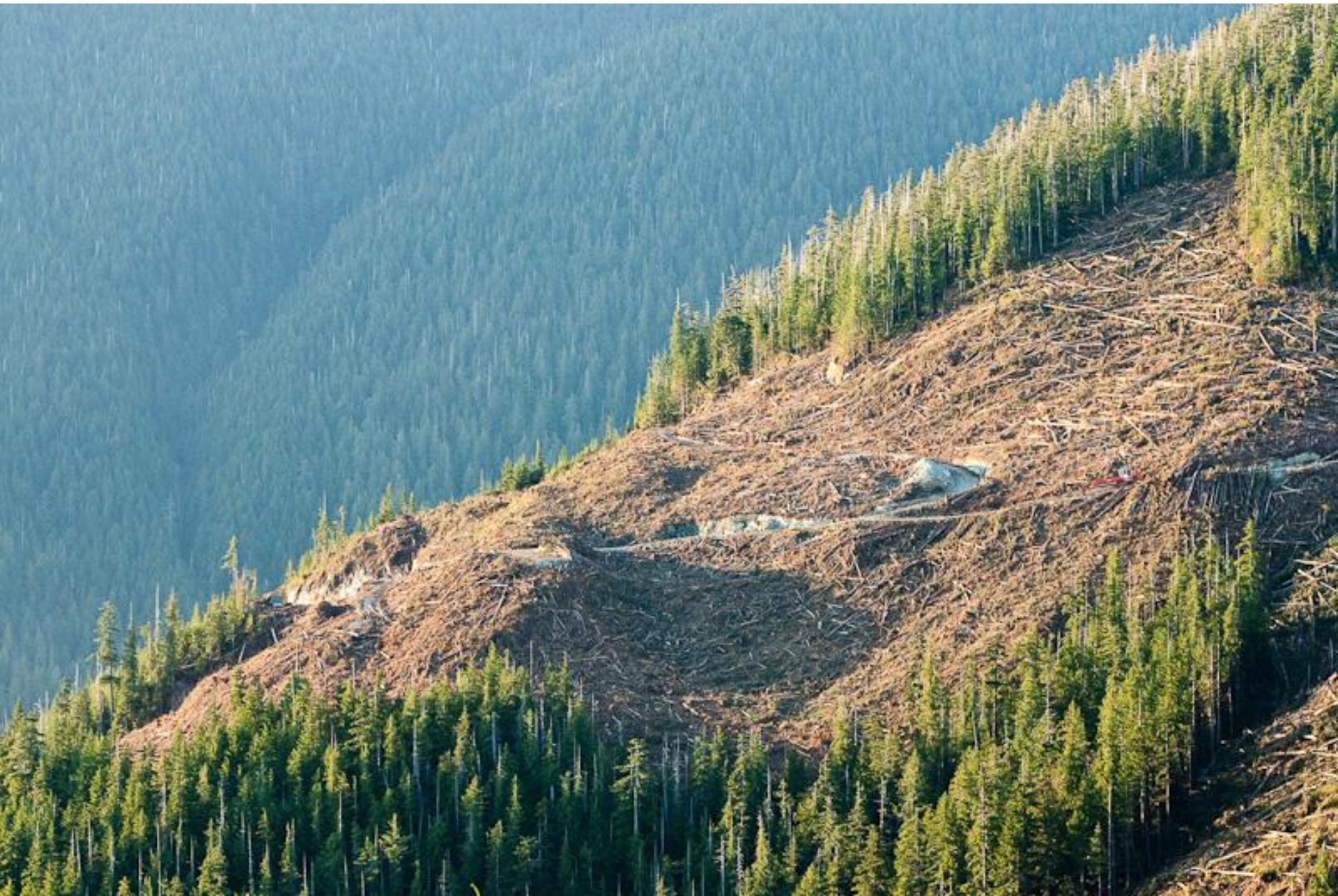




## Sources of world's energy in 1990 and 2013



Source: BP World Energy Outlook Chart by Climate Gamble



# Can we afford to bet the planet by insisting on the goal of 100 per cent renewable energy?

*Is it possible for the United States to run on 100% renewable energy (wind, water and solar) by 2050?*

- Current US installed electric generating capacity (2015) **1.2 TW**
- Total US energy demand in 2050: **2.6 TW**
- To meet that energy demand with wind, water and solar: **6.5 TW**



# Hinkley Point C land area and energy output compared to other types of energy production sites



Hinkley Point C =  
**430 acres**

26TWh (terrawatt hours) per year

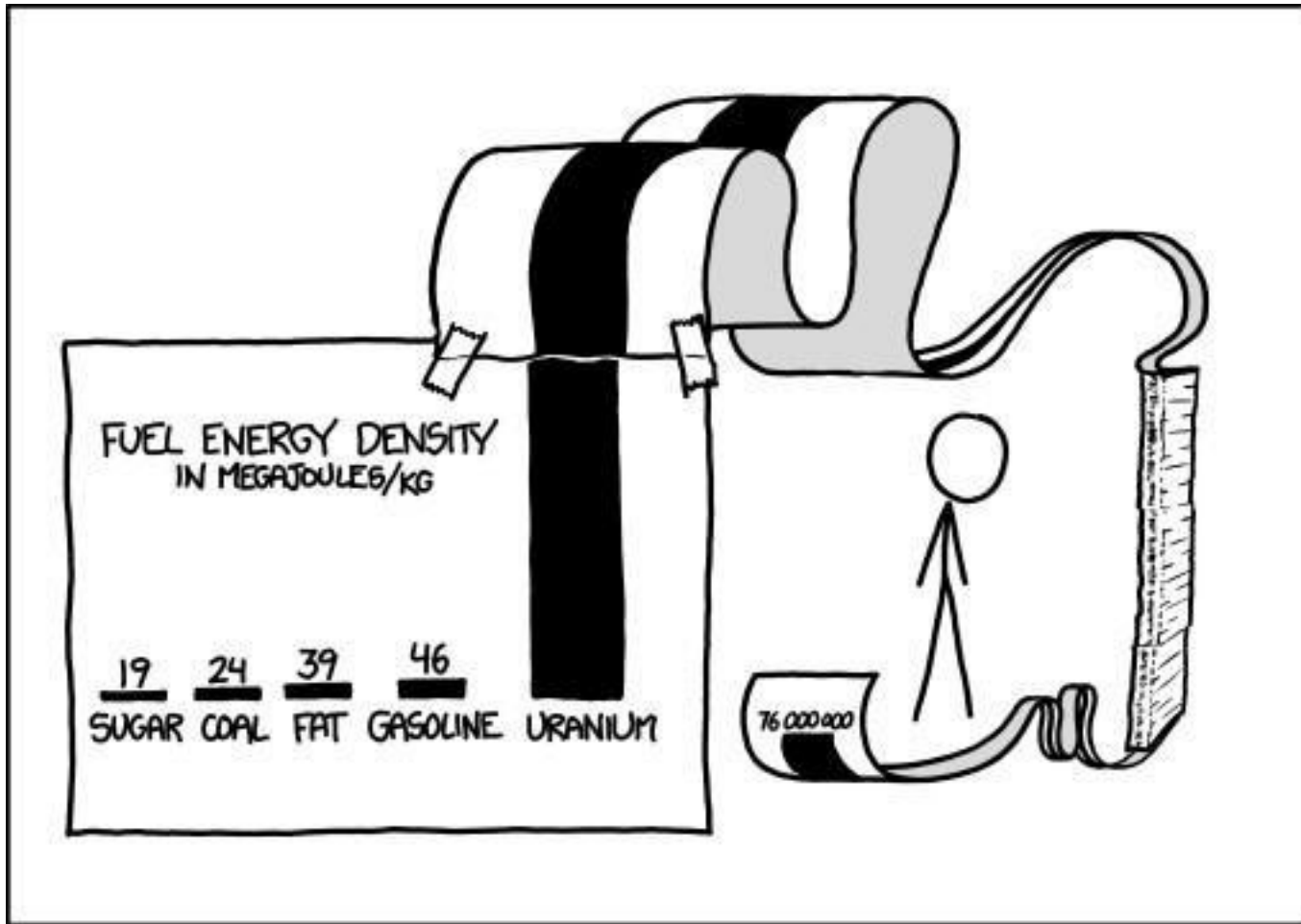
This is estimated to be equal to around 7% of UK electricity consumption in 2025 and enough to power nearly 6 million homes.

Solar farms =  
**130,000 acres**

Onshore wind farms =  
**250,000 acres\***

\*The footprint will depend on the location and turbine technology deployed. DECC estimates the footprint could be between 160,000 and 490,000 acres.

A webcomic of romance, sarcasm, math and language.  
<http://xkcd.com/1162/>



SCIENCE TIP: LOG SCALES ARE FOR QUITTERS WHO CAN'T  
FIND ENOUGH PAPER TO MAKE THEIR POINT PROPERLY.



## Efficiency

Kilowatt hours of energy produced from 1kg of fuel

**Coal**

6

*Enough to power a  
60 watt light bulb  
for 4 days*

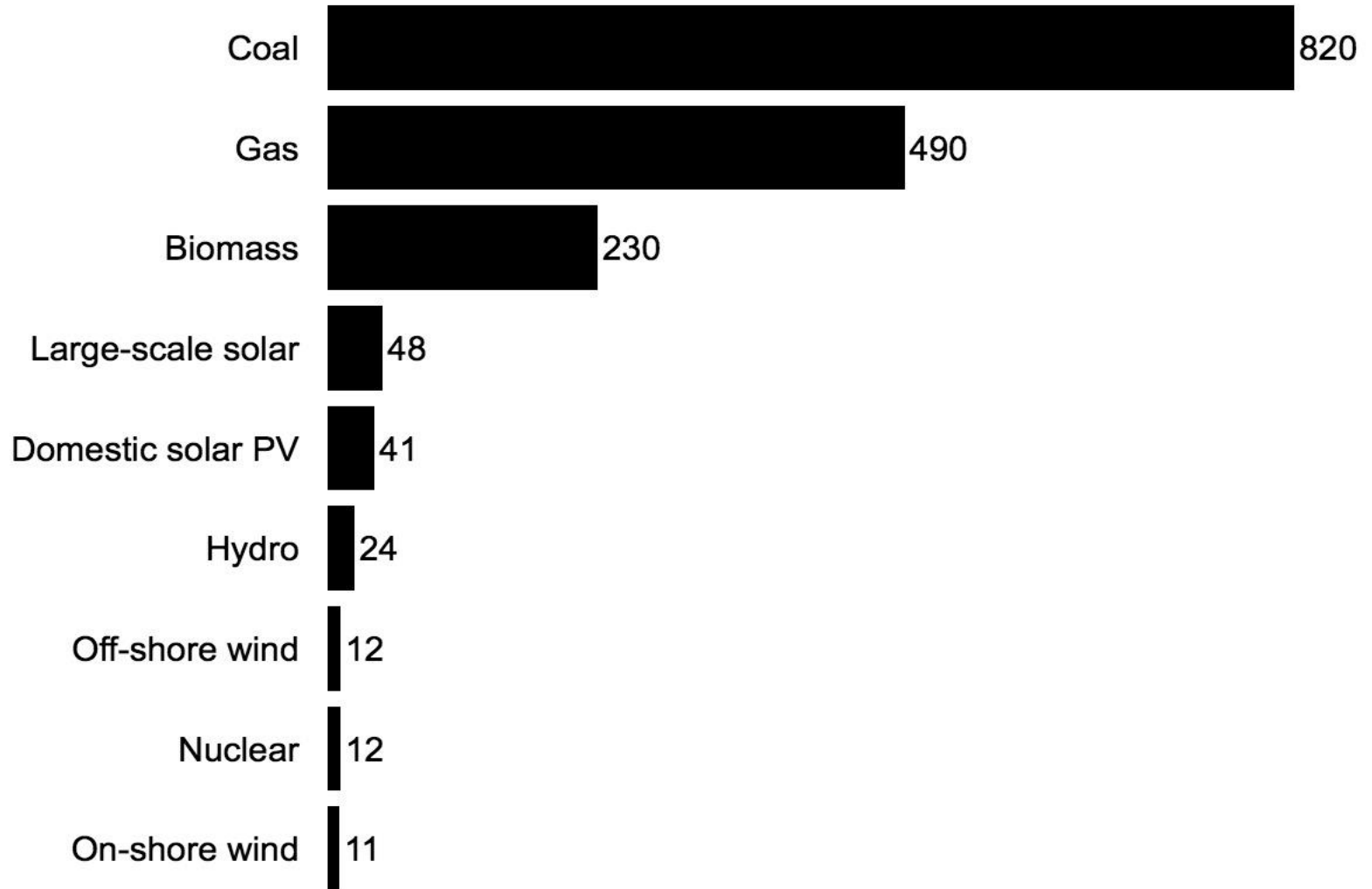
**Nuclear**

**360,000**

**(uranium)**

*Enough to power a 60 watt  
light bulb for 685 years*

**Life cycle emissions from electricity generation, gCO<sub>2</sub>/KWh**



Source: Median carbon balances of various energy sources, IPCC AR5 2014.

# Hinkley Point C: Number power

**7%**

Of UK's electricity,  
enough for...

over **5m**  
homes

**£100m**

contribution annually to the  
local economy during peak  
construction or £2bn during  
project lifetime

**9,000,000**

tonnes (approximately) of CO2  
avoided each year, equivalent  
to roughly 2 million cars

**1995**

Last time UK opened a  
new nuclear power station

**3.2**

Gigawatt power plant  
with two reactors

**25,000**

new employment  
opportunities created  
during construction





**Leslie Dewan, CEO and Co-founder, TransAtomic Power**

Leslie Dewan, Transatomic Power

USING EXISTING  
WASTE

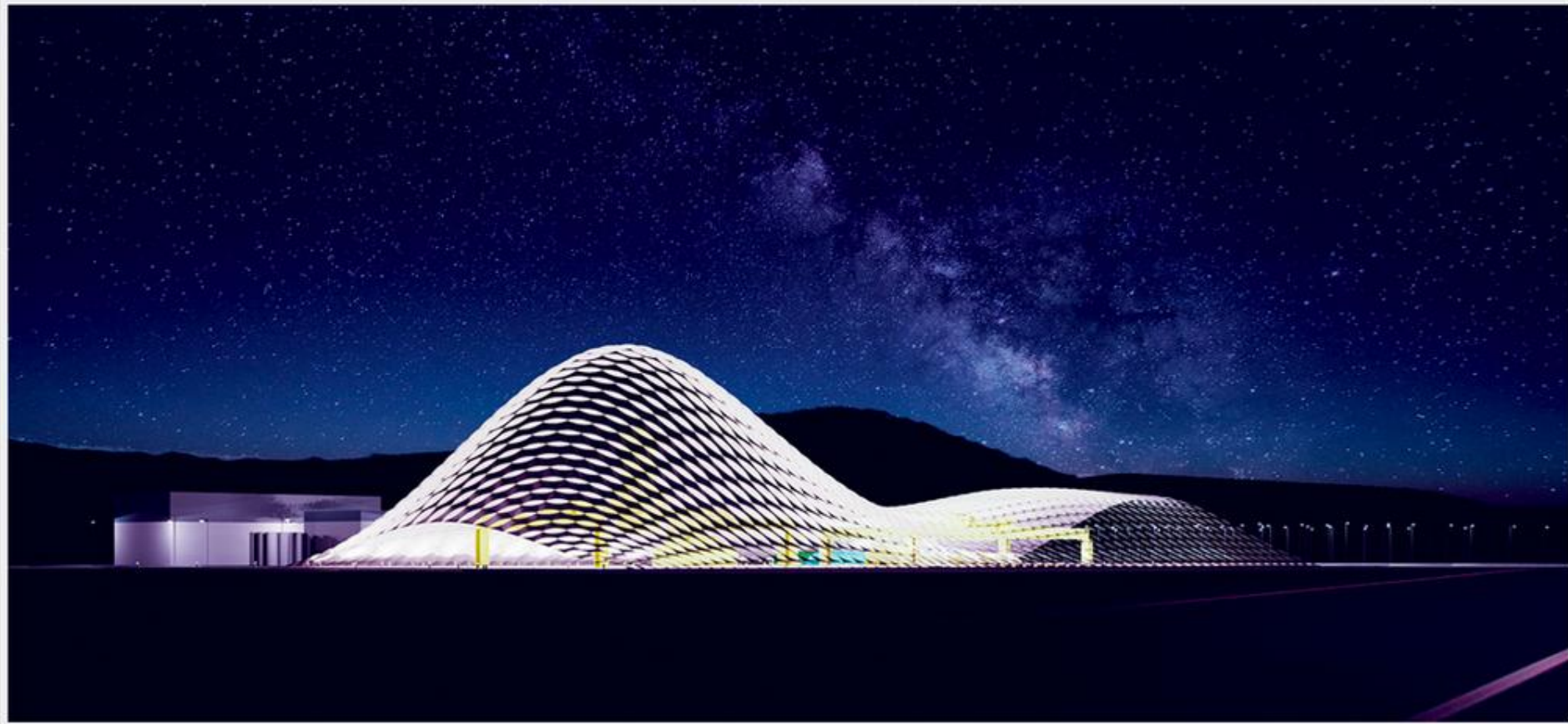


CAN POWER  
THE ENTIRE  
WORLD FOR  
72 YEARS

[www.energyforhumanity.org](http://www.energyforhumanity.org)

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# TransAtomic Power



Just six countries have so far achieved the goal of decarbonising electricity generation



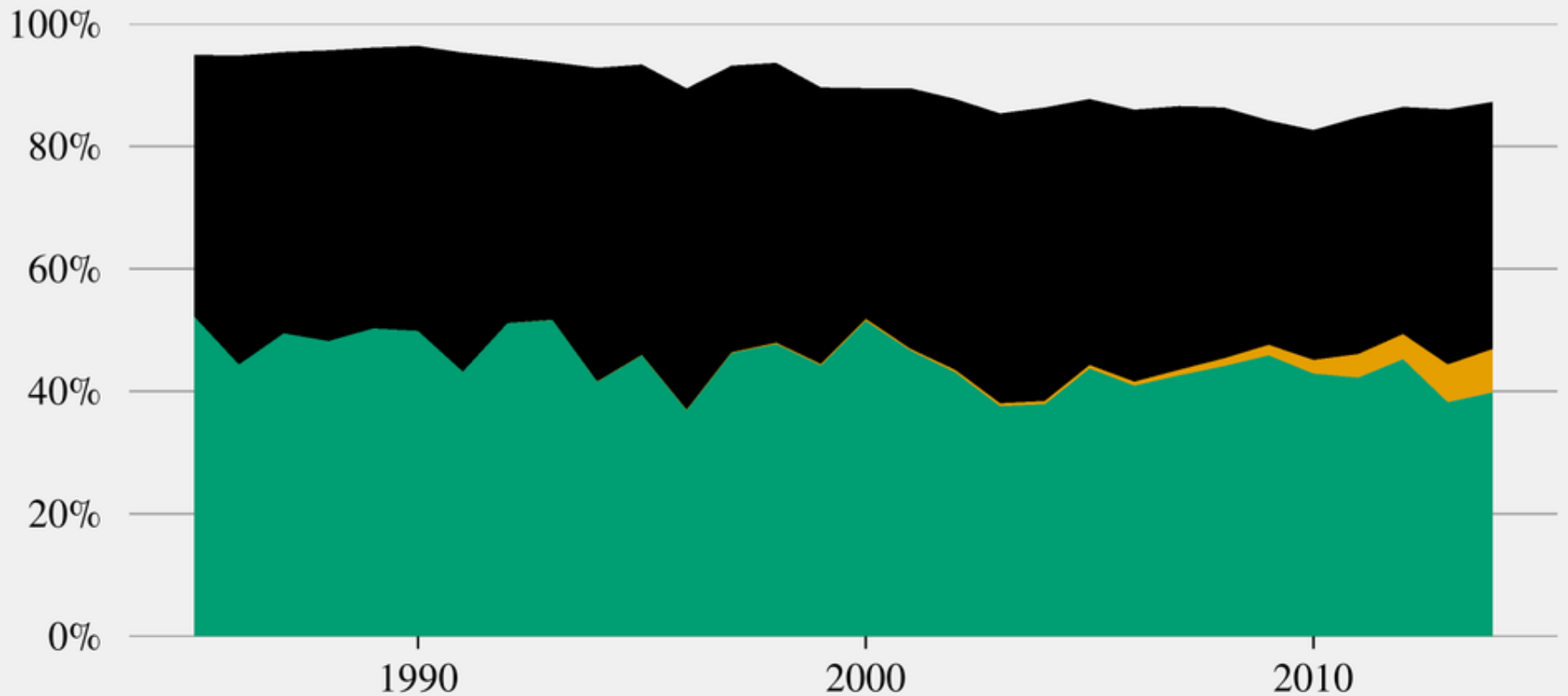
Iceland (geothermal) and Norway (hydropower)



➔ France, Switzerland Brazil and Sweden (combination of nuclear & renewables)



# How much of Sweden's electricity generation comes from nuclear, hydro, wind and solar?

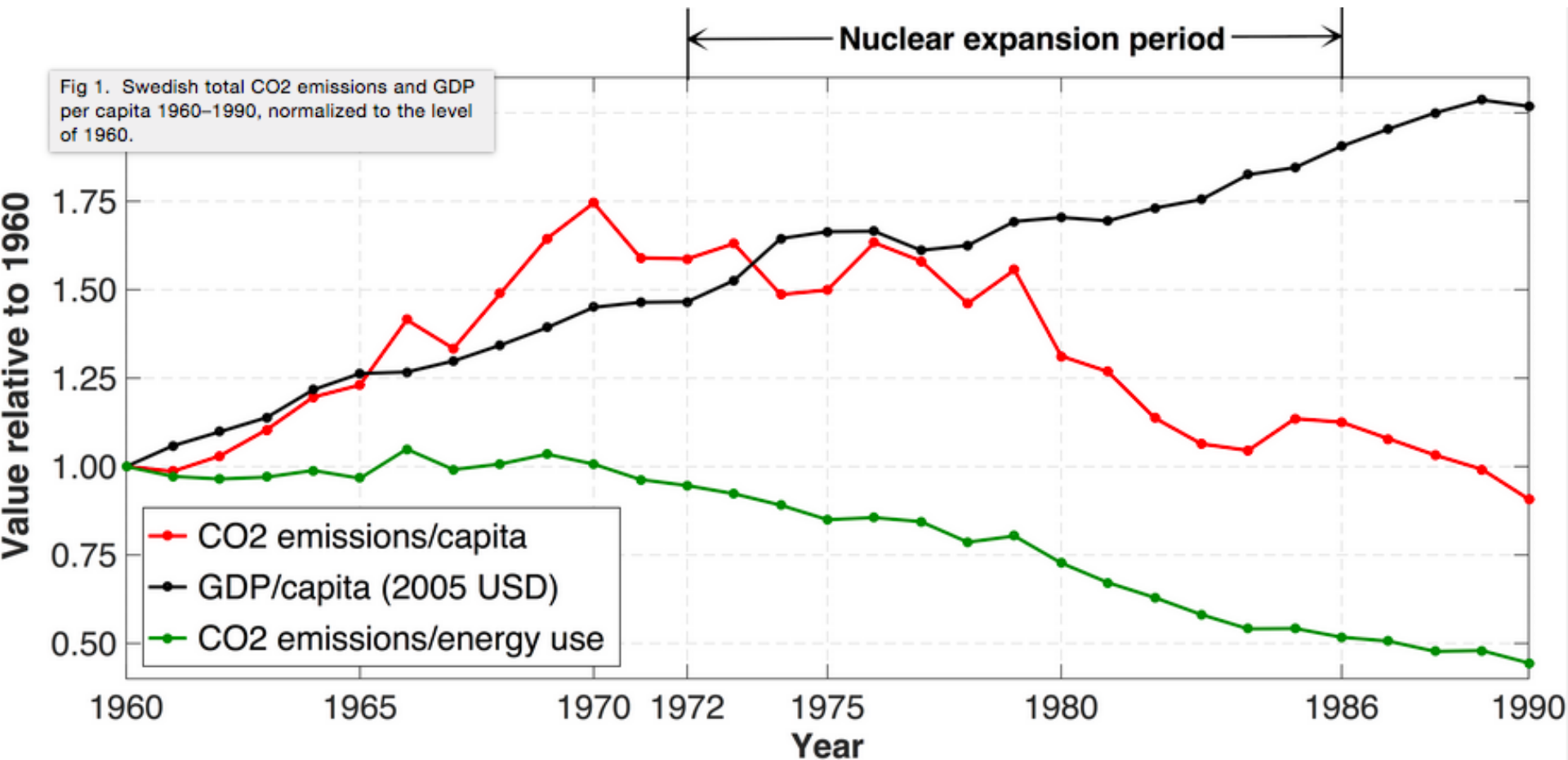


Data: BP

Figure: @CountCarbon

***“No other carbon-neutral electricity source has been expanded anywhere near as fast as nuclear.”***

Barry Brook and Staffan Qvist



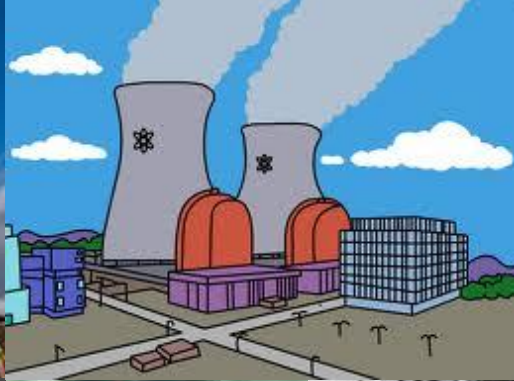


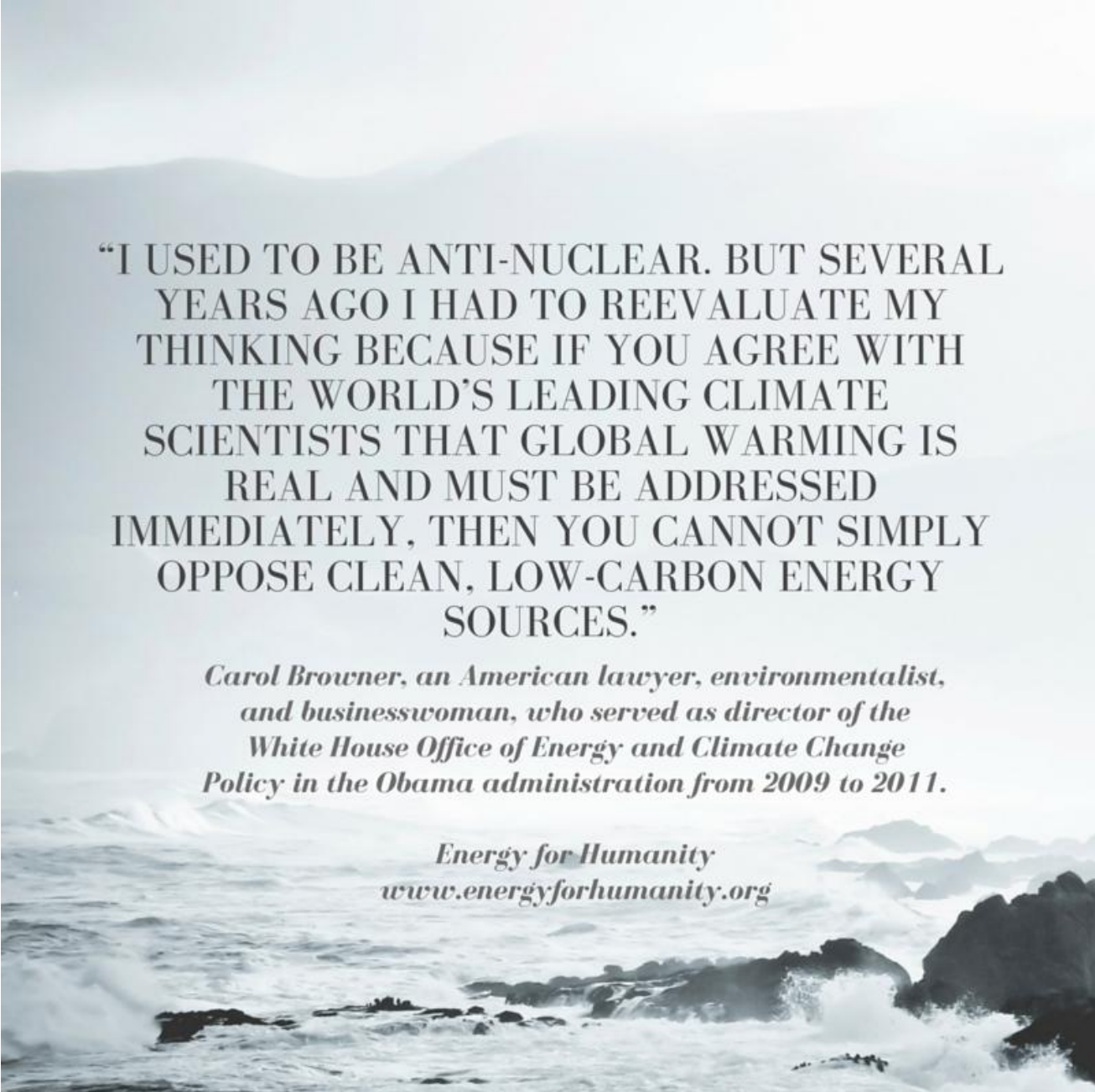
## **What can we learn from the Swedish energy transition?**

No renewable energy technology or energy efficiency approach has ever been implemented on a scale or pace which has resulted in the magnitude of reductions in CO<sup>2</sup> emissions that is needed to avert catastrophic climate change.

Real world experience shows that a replacement of current fossil fuel electricity by nuclear at a pace which might limit the more severe effects of climate change is technologically and industrially possible.

Whether this will happen depends primarily on political will, strategic economic planning and public acceptance.



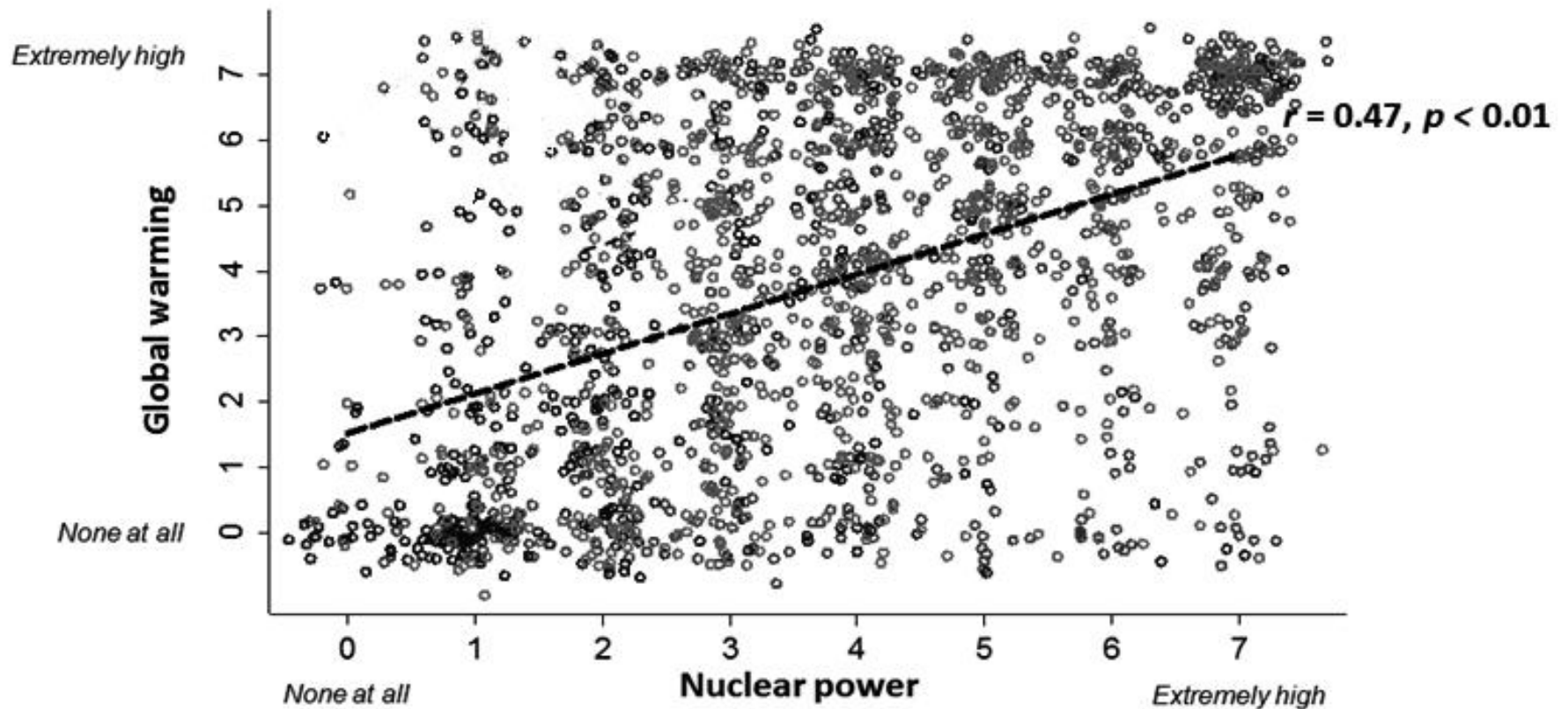


“I USED TO BE ANTI-NUCLEAR. BUT SEVERAL YEARS AGO I HAD TO REEVALUATE MY THINKING BECAUSE IF YOU AGREE WITH THE WORLD’S LEADING CLIMATE SCIENTISTS THAT GLOBAL WARMING IS REAL AND MUST BE ADDRESSED IMMEDIATELY, THEN YOU CANNOT SIMPLY OPPOSE CLEAN, LOW-CARBON ENERGY SOURCES.”

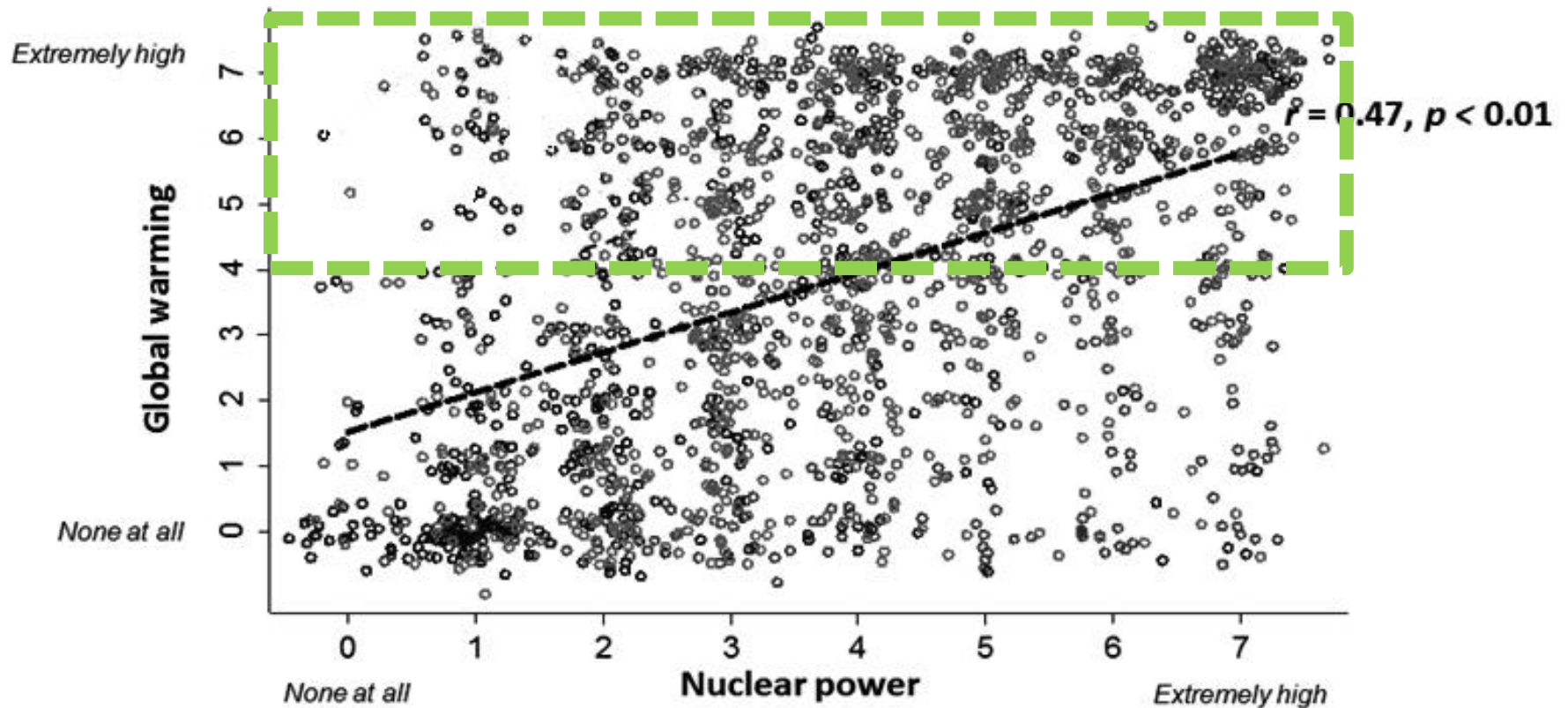
*Carol Browner, an American lawyer, environmentalist, and businesswoman, who served as director of the White House Office of Energy and Climate Change Policy in the Obama administration from 2009 to 2011.*

*Energy for Humanity  
[www.energyforhumanity.org](http://www.energyforhumanity.org)*

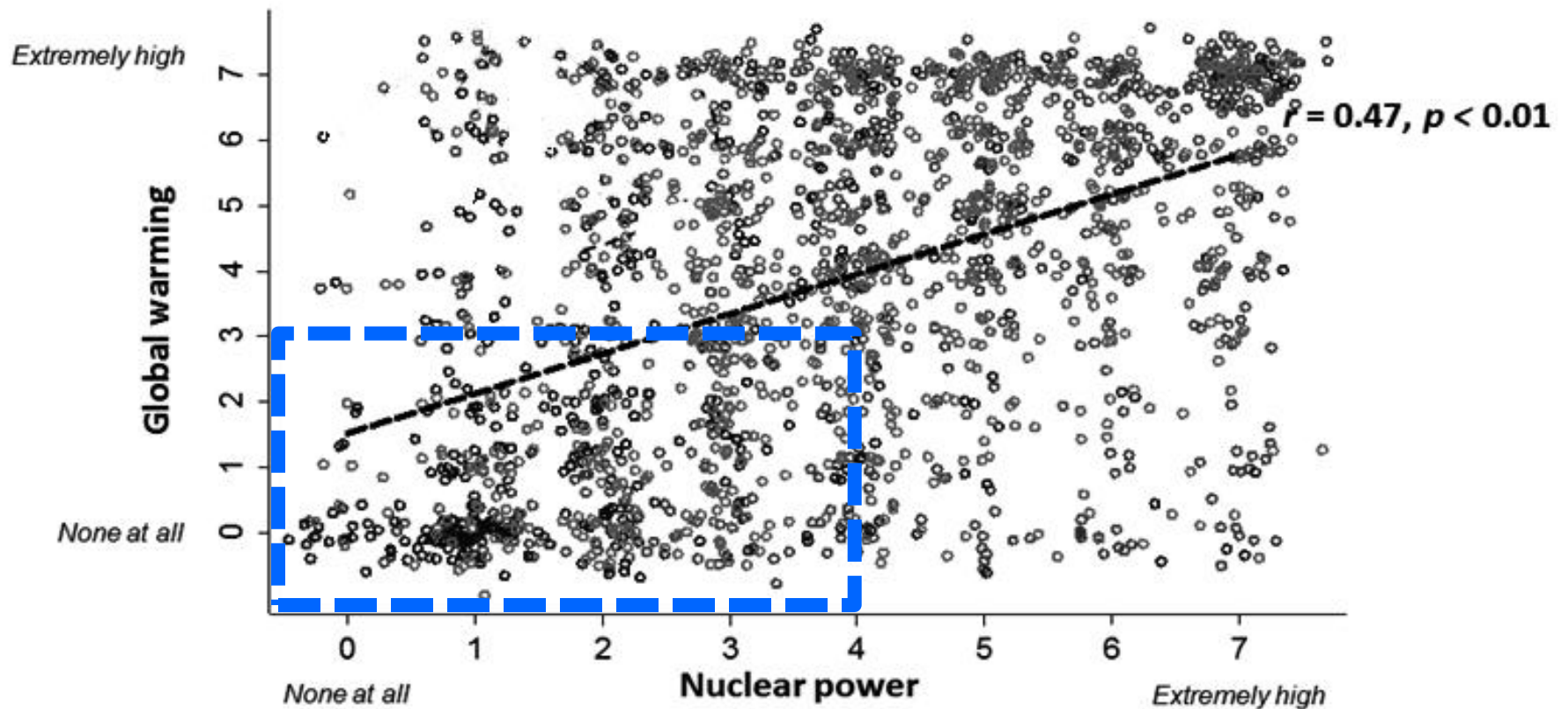
“How much risk do you believe . . . poses to human health, safety, or prosperity?”



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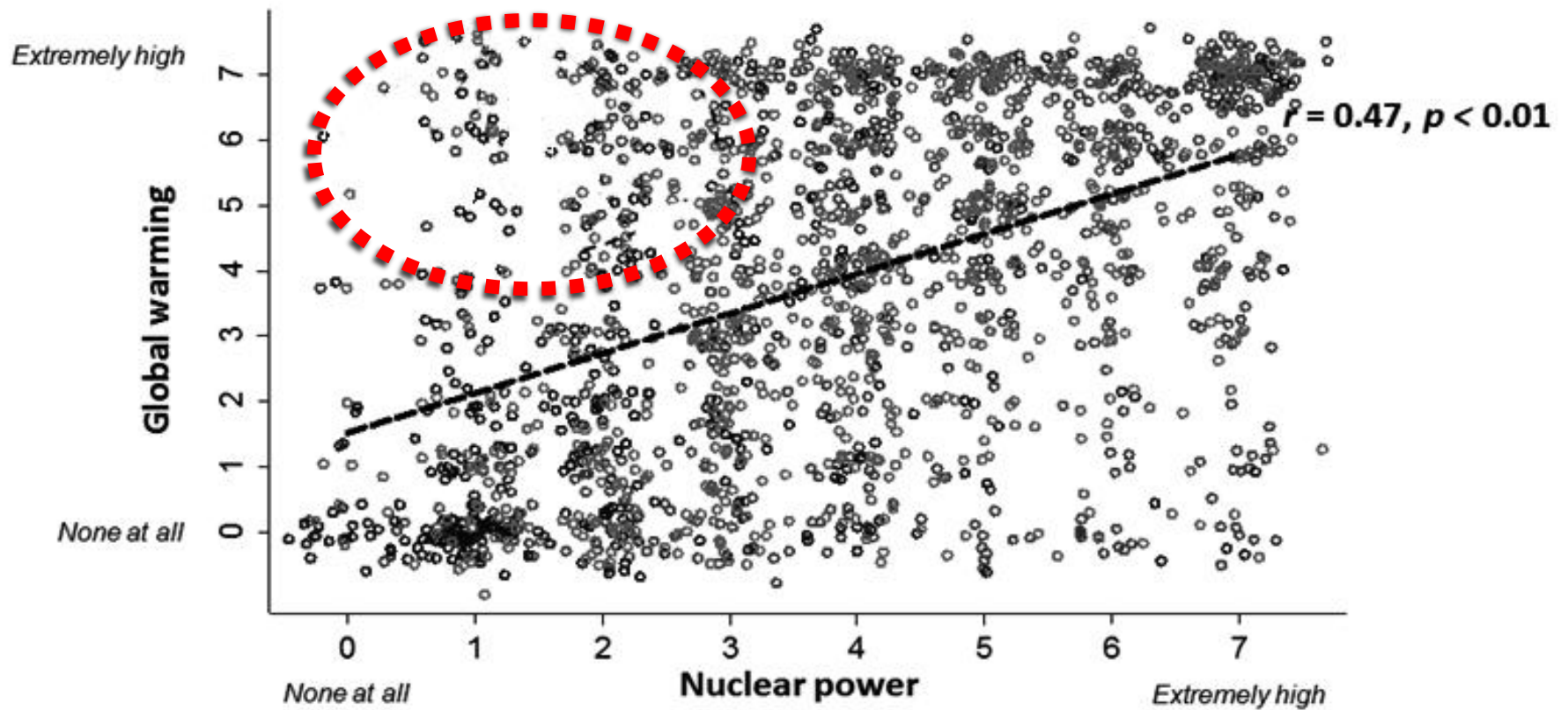


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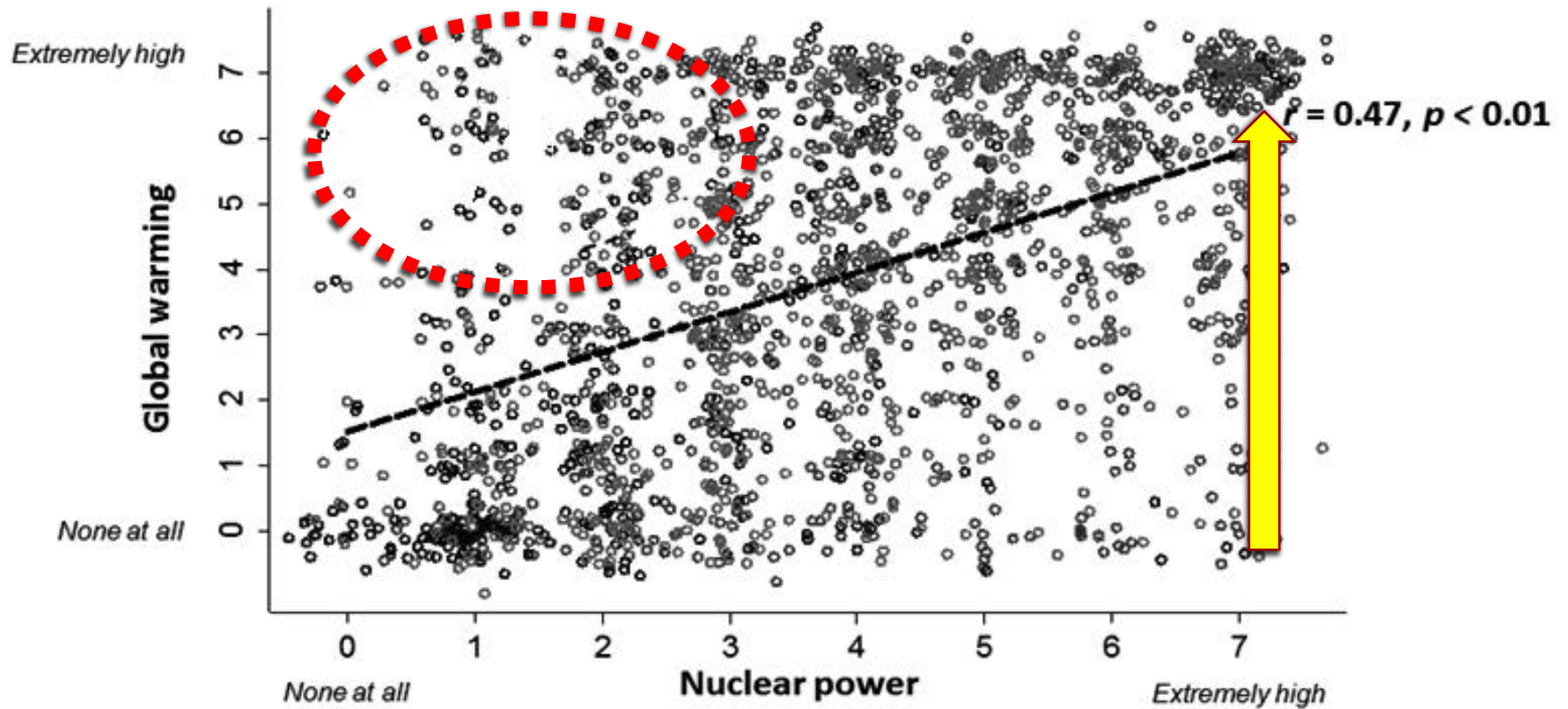




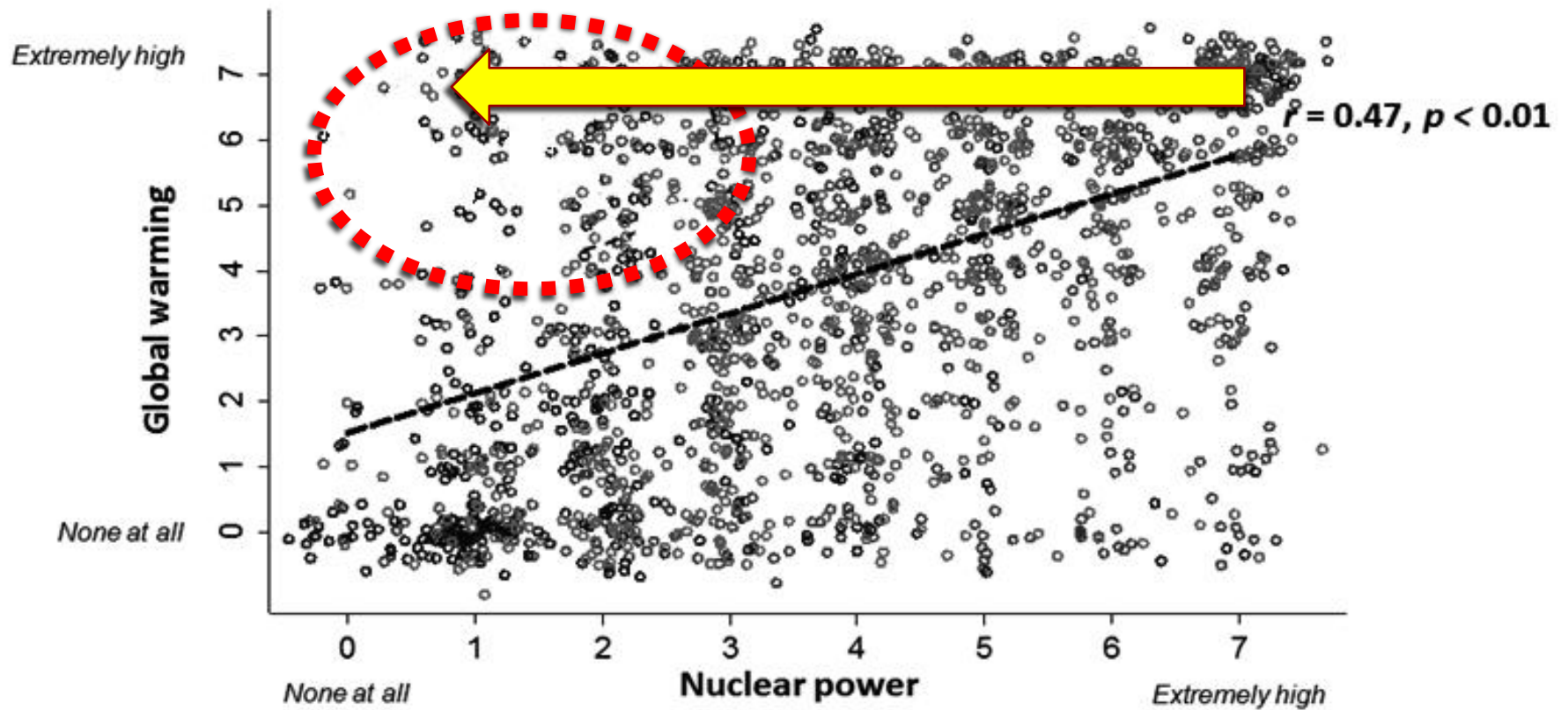
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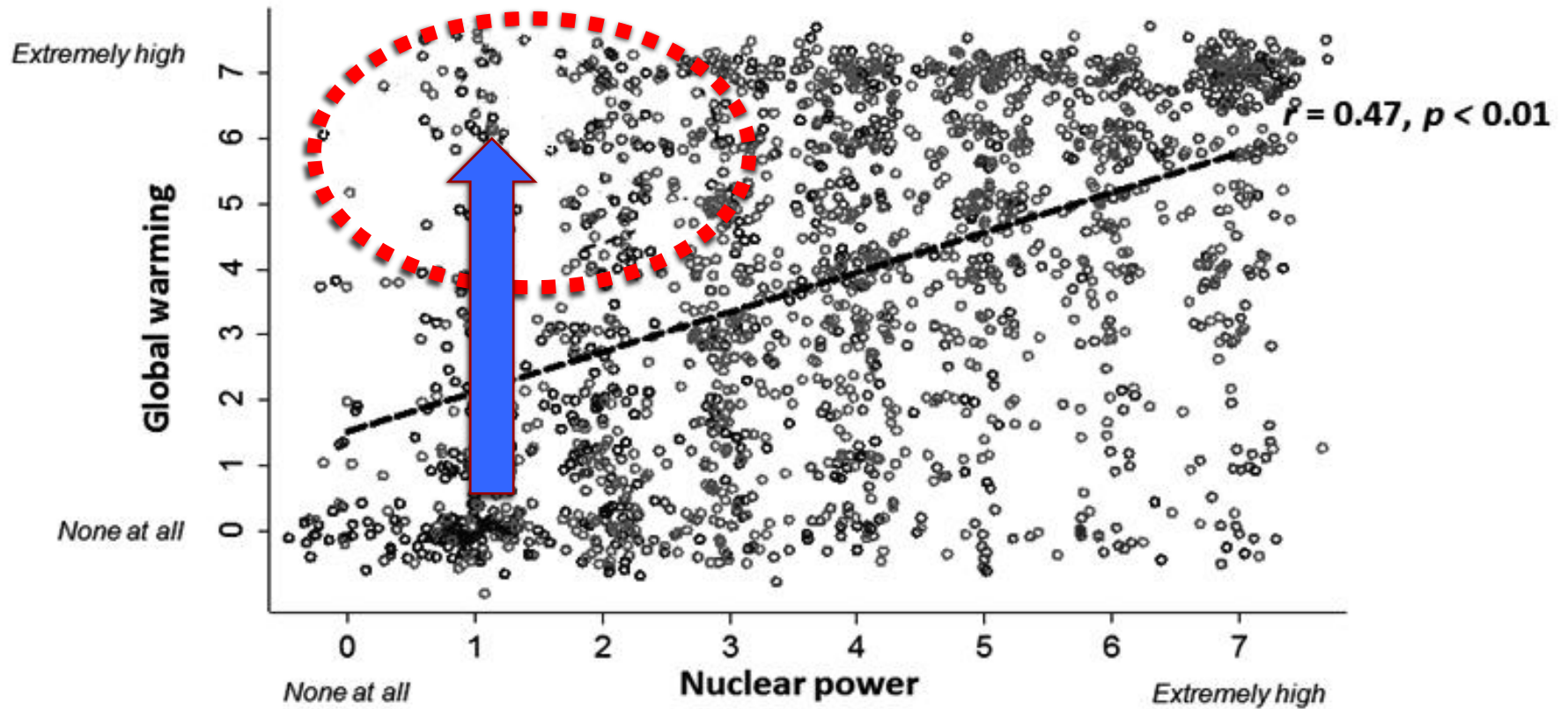
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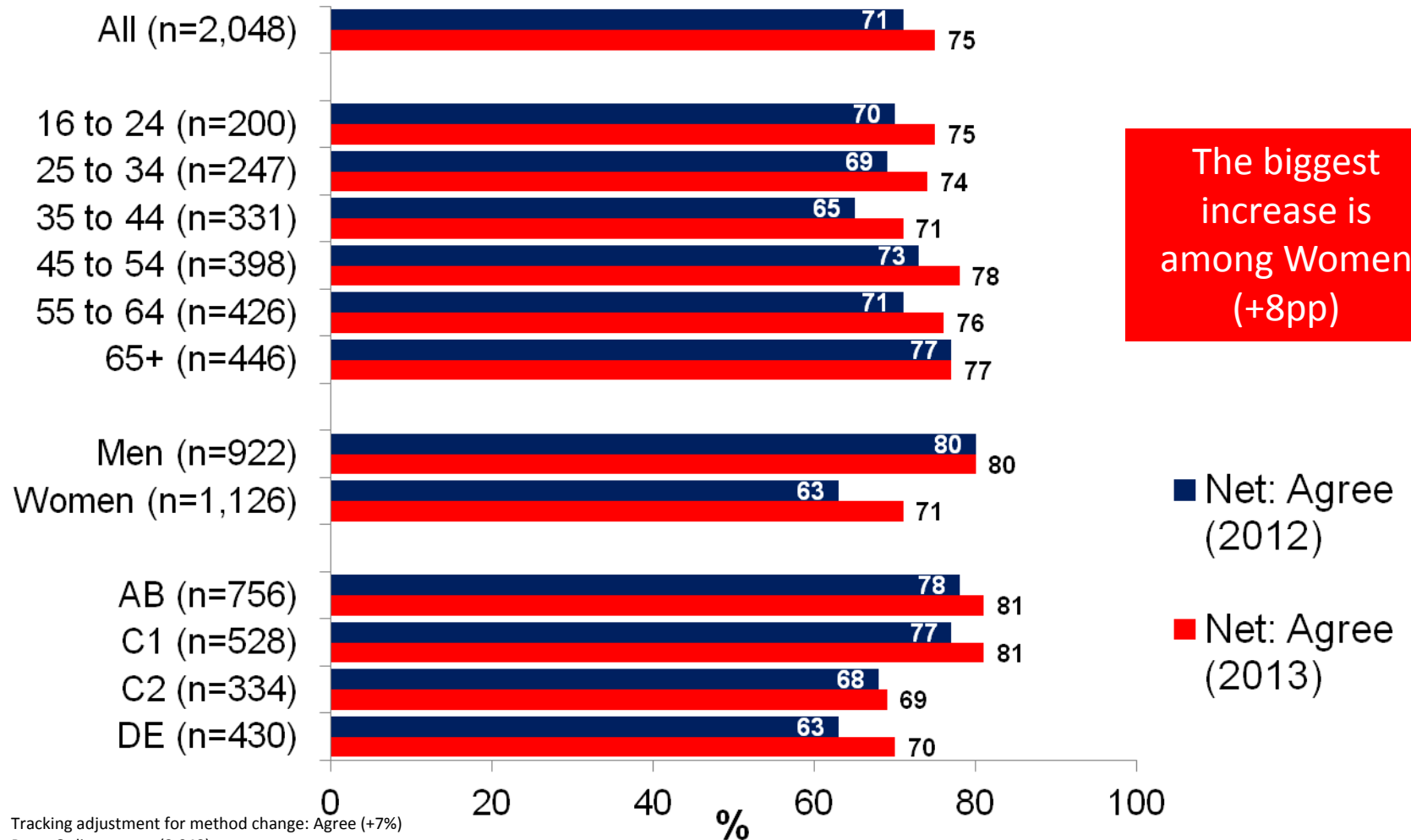


“How much risk do you believe . . . poses to human health, safety, or prosperity?”



# 75% SUPPORT BALANCED ENERGY MIX INCLUDING NUCLEAR AND RENEWABLES

How far do you agree or disagree that ... Britain needs a mix of energy sources to ensure a reliable supply of electricity, including nuclear power and renewable energy sources? (Strongly / tend to agree)



# Low Carbon Alliance

THE INDEPENDENT THURSDAY 16 OCTOBER 2014



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News > UK > UK Politics

## Nuclear, wind and wave power chiefs in joint appeal on green energy



GREENPEACE



# ENGAGING WOMEN

- RECRUIT
- PROGRESS
- ADVOCATE



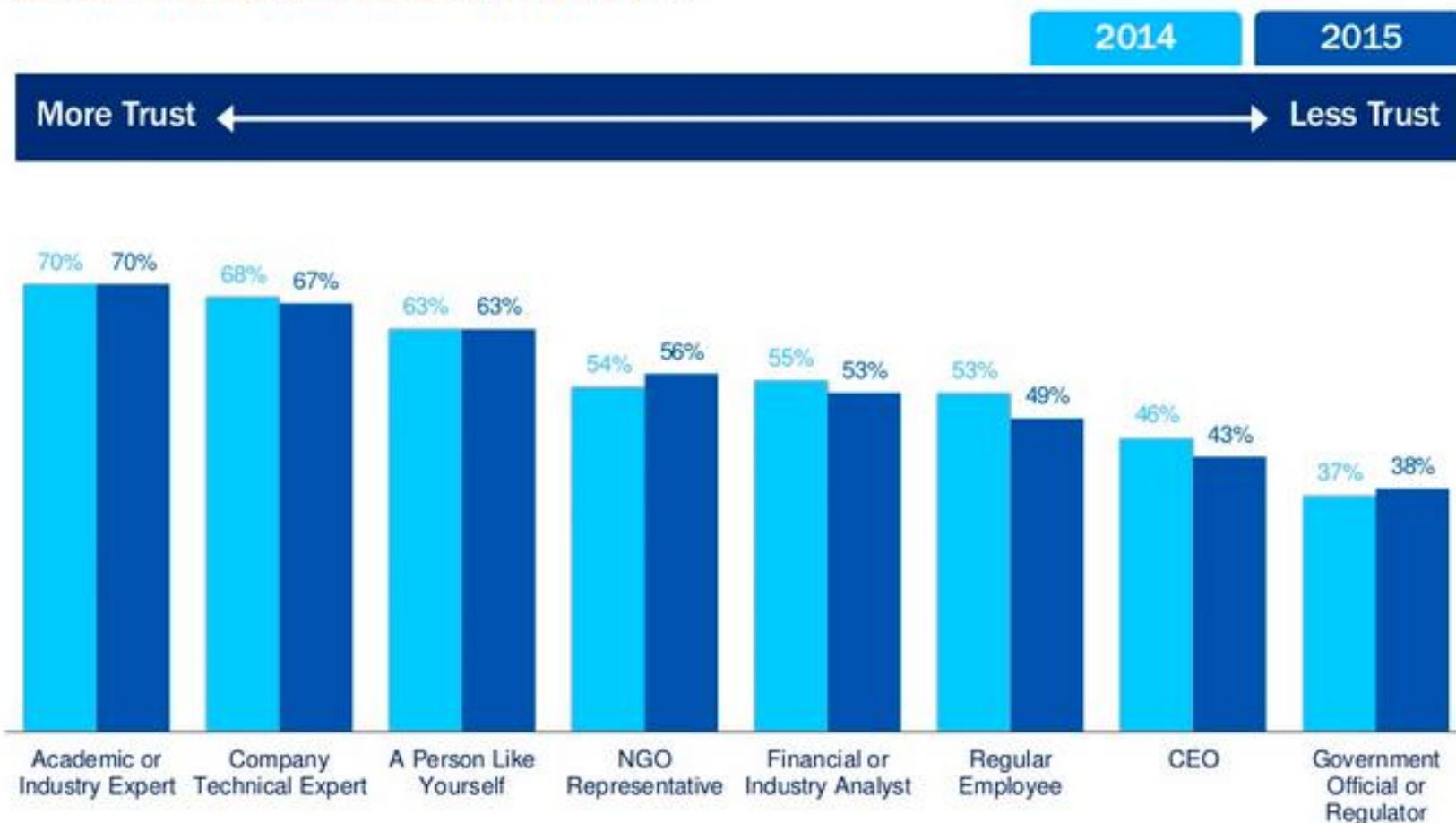


# LEADERSHIP: EXPERT AND “A PERSON LIKE YOURSELF” MORE CREDIBLE THAN CEO



Informed Public

CREDIBILITY OF SPOKESPERSONS, 2014 VS. 2015

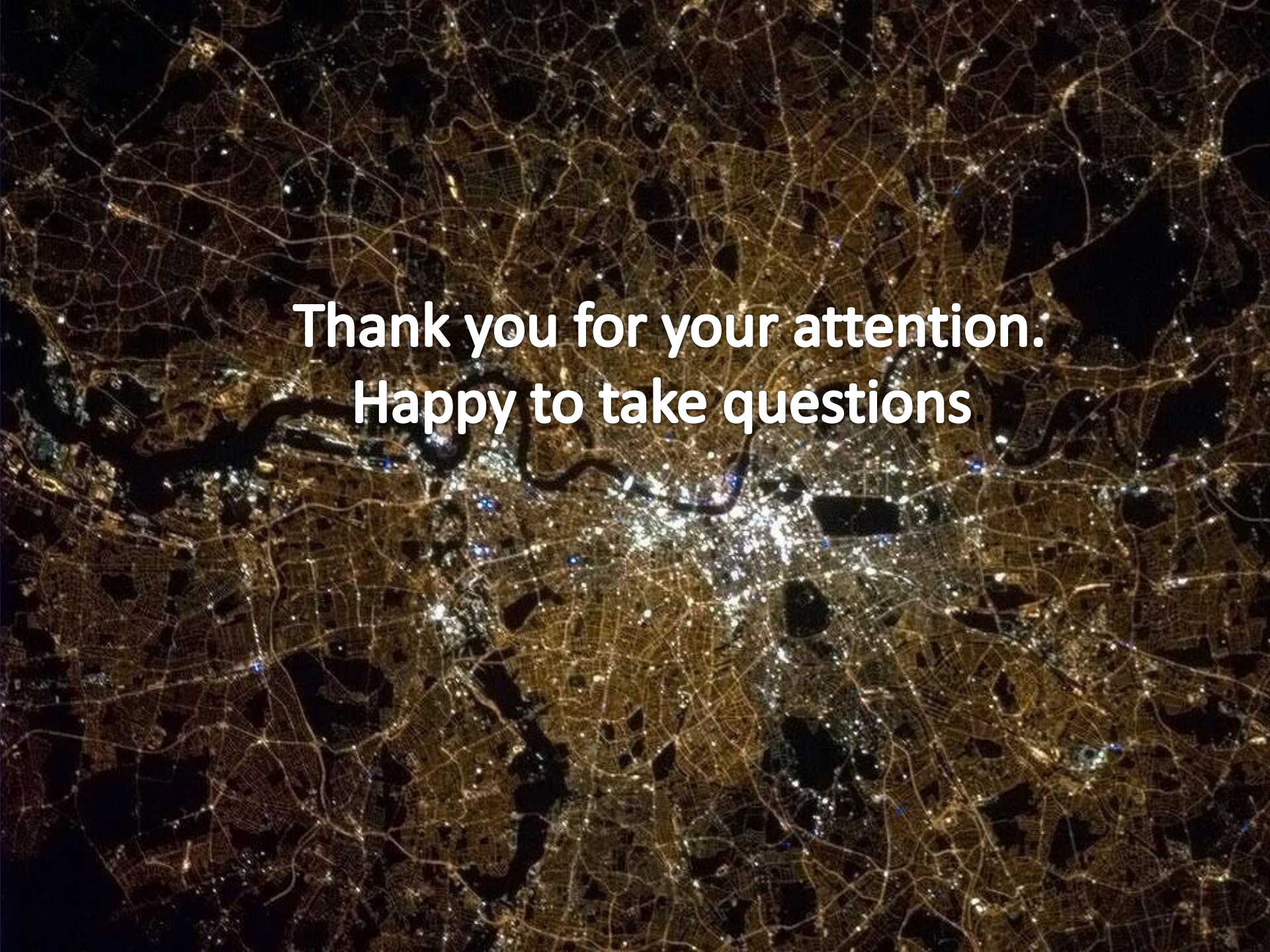


Q130-143. [TRACKING] Below is a list of people. In general, when forming an opinion of a company, if you heard information about a company from each person, how credible would the information be—extremely credible, very credible, somewhat credible, or not credible at all? (Top 2 Box, Very/Extremely Credible) Informed Publics, 27-country global total.

**Racing Extinction. I want my daughter to see a whale shark.**

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An aerial night photograph of a city, showing a dense network of streets and buildings illuminated by warm yellow and white lights. A prominent river or canal winds through the city, reflecting the lights. The overall scene is a vibrant, glowing urban landscape.

**Thank you for your attention.  
Happy to take questions**