

# Risk and Return in the Energy Sector: A Financial Case for Nuclear Energy (2015–2024, Yahoo Finance Data)



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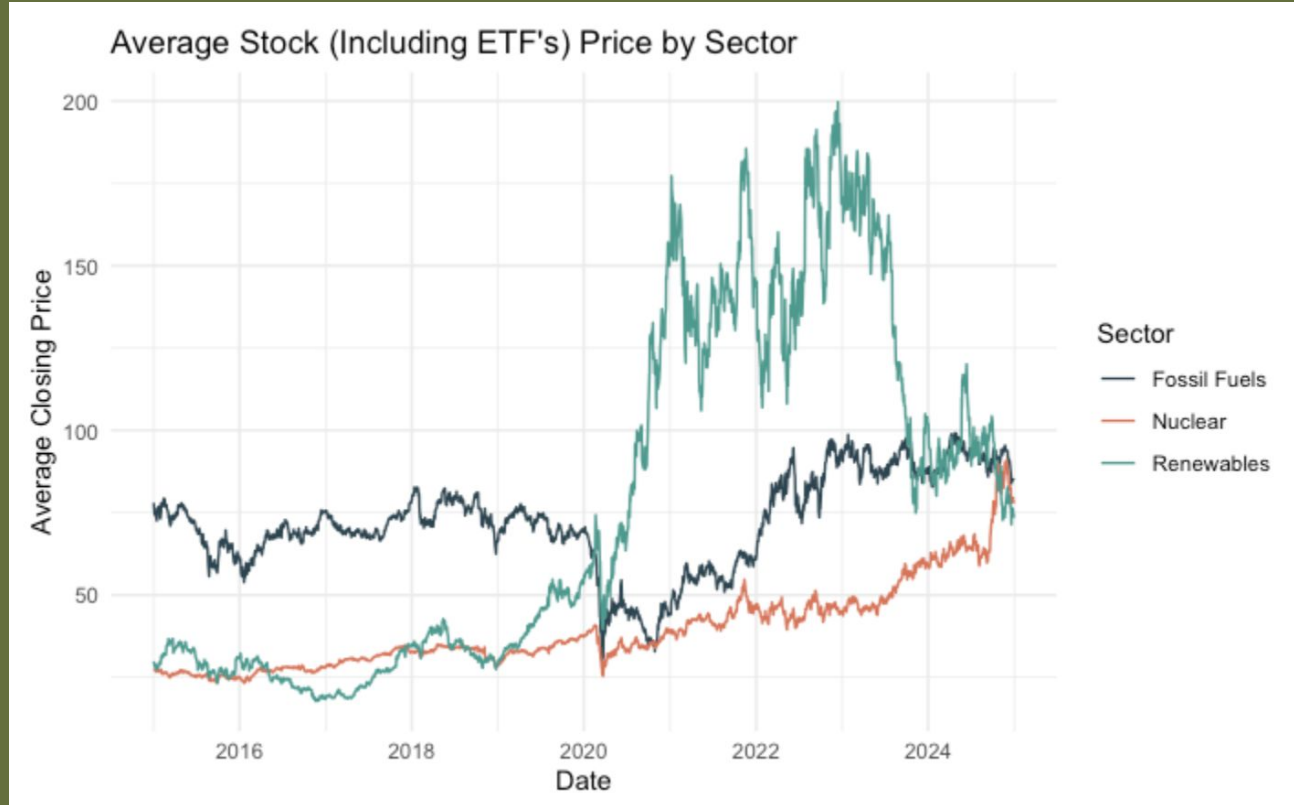
# Methodology

- Sectors Analyzed: Nuclear, Fossil Fuels, and Renewables
- Assets Included: 4 major stocks + 1 ETF per sector
- Timeframe: January 1, 2015 – December 31, 2024 (10 year period)

## Metrics Used to Evaluate Performance:

- CAGR – Annualized growth rate over the 10-year period
- Final Cumulative Price – Ending value of a \$100 investment on January 1, 2015
- Total Return – Overall percent gain or loss
- Max Drawdown – Worst peak-to-trough loss (risk indicator)
- Standard Deviation – Measures volatility
- Sharpe Ratio – Risk-adjusted return (higher = better efficiency)

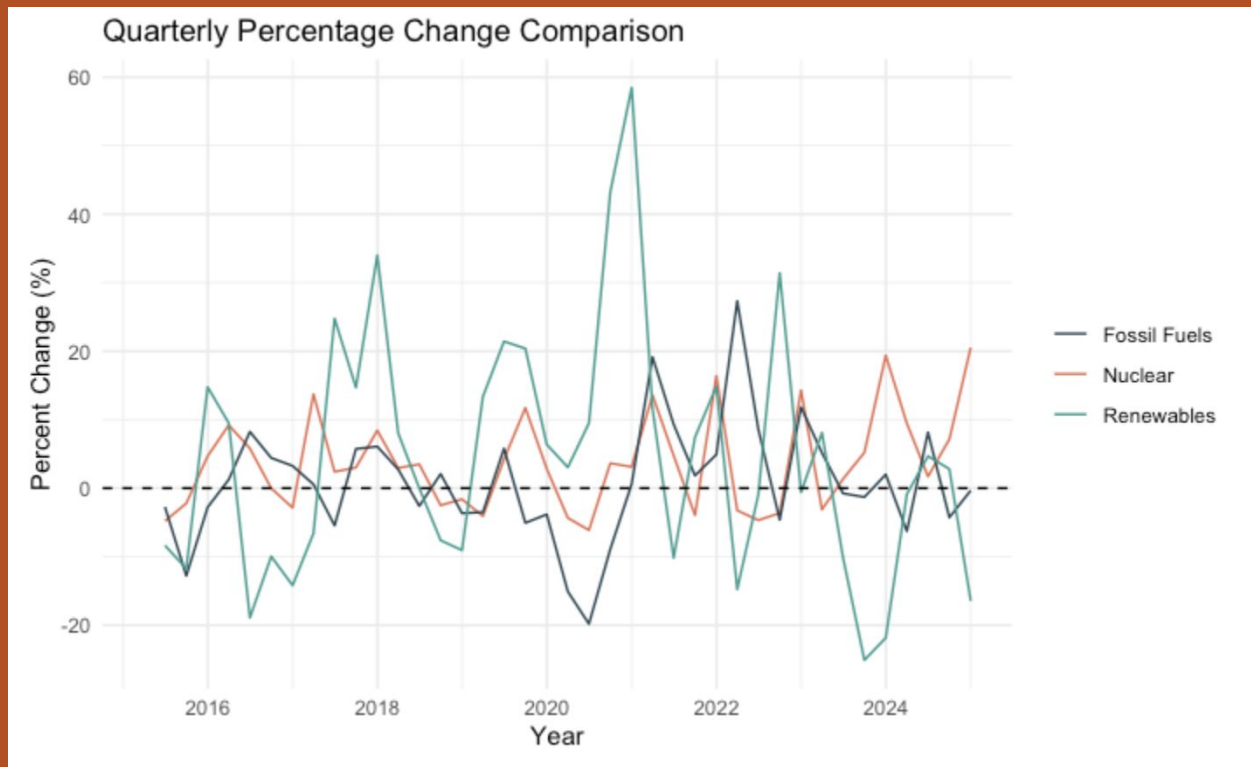
# Energy Sectors Average Stock Price



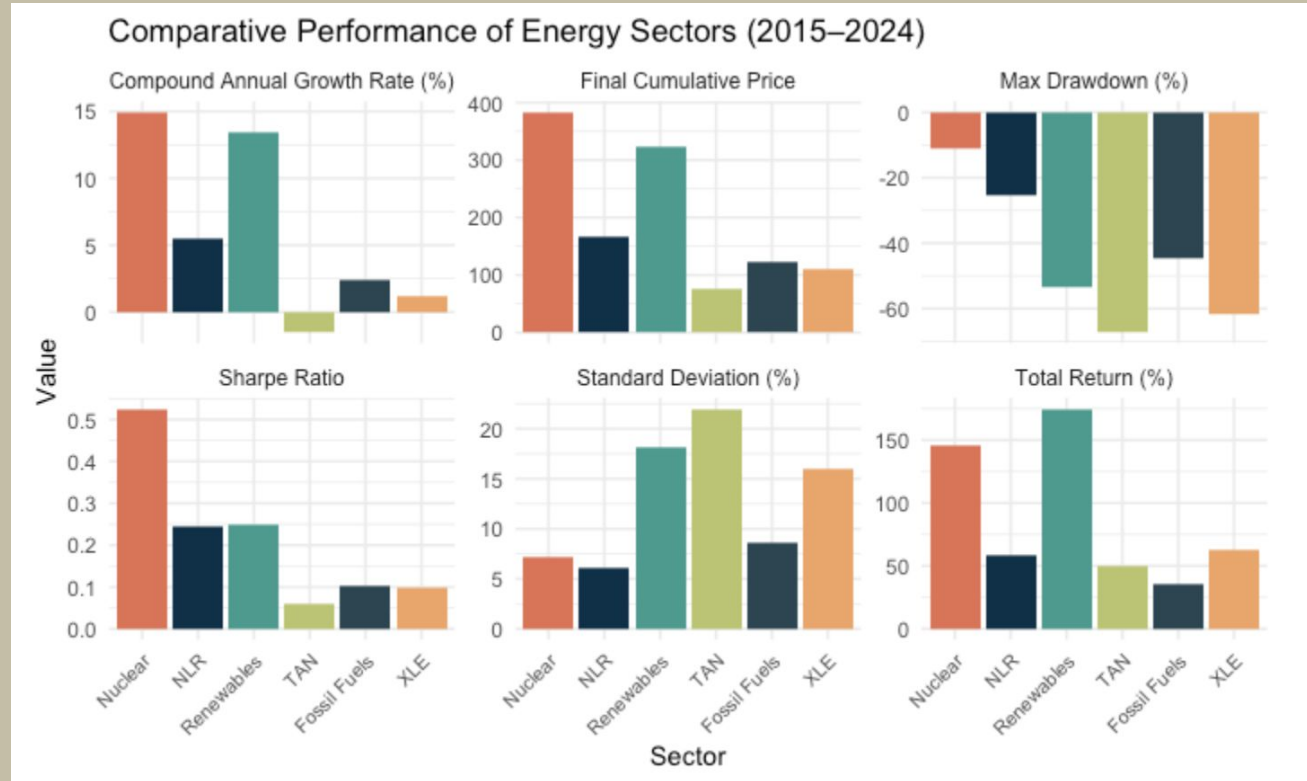
- Fossil fuels led early (2015–2020)
- Renewables surged post-2020
- All sectors converge in 2025
- Market reflects diversified energy future
- Nuclear best positioned going forward?

# Quarterly Percent Change Across the 3 Sectors

- Renewables = high risk, high reward
- Fossil fuels = unstable, cyclical swings
- Nuclear = steady, low-volatility growth
- Strong case for long-term nuclear investment



# 6 Key Metrics to Determine Sector's Successes



- CAGR, Final Cumulative Price, Total Return: nuclear and renewable stocks have by far the largest growth
- Max Drawdown: nuclear is the only sector without major declines in the past 10 years
- Standard Deviation: nuclear has the lowest volatility and has much less significant changes compared to renewables
- Sharpe Ratio: nuclear outperforms every sector and shows it has the best reward for its risk

# Sector-Specific Risks

## Renewables:

- Struggle to scale production to meet global energy demand.
- Require vast infrastructure (e.g., solar panels, wind turbines) to match output of other sectors.

## Fossil Fuels:

- High energy output, but contribute significantly to carbon emissions.
- Pose public health and environmental sustainability concerns.

## Nuclear:

- Risks include plant vulnerability to disasters or attacks.
- Modern safety technology has dramatically reduced the likelihood of major incidents (e.g., Chernobyl).
- Waste disposal remains a challenge, but a significant portion is recyclable and engineering advancements have led to safer long-term storage.

# Investment Takeaways

Nuclear energy has been the strongest and most resilient sector over the past decade, with momentum indicating continued growth and potential dominance. These visualizations underscores a key dynamic: while renewables offer high upside, they come with substantial risk. Nuclear, by comparison, demonstrates the kind of stability that long-term investors value — slow, consistent returns with lower volatility.

If investing in energy, nuclear is the best bet:

- Strong market performance
- Low carbon emissions
- Scalable and efficient energy production
- Positioned as a key solution in the global energy transition

