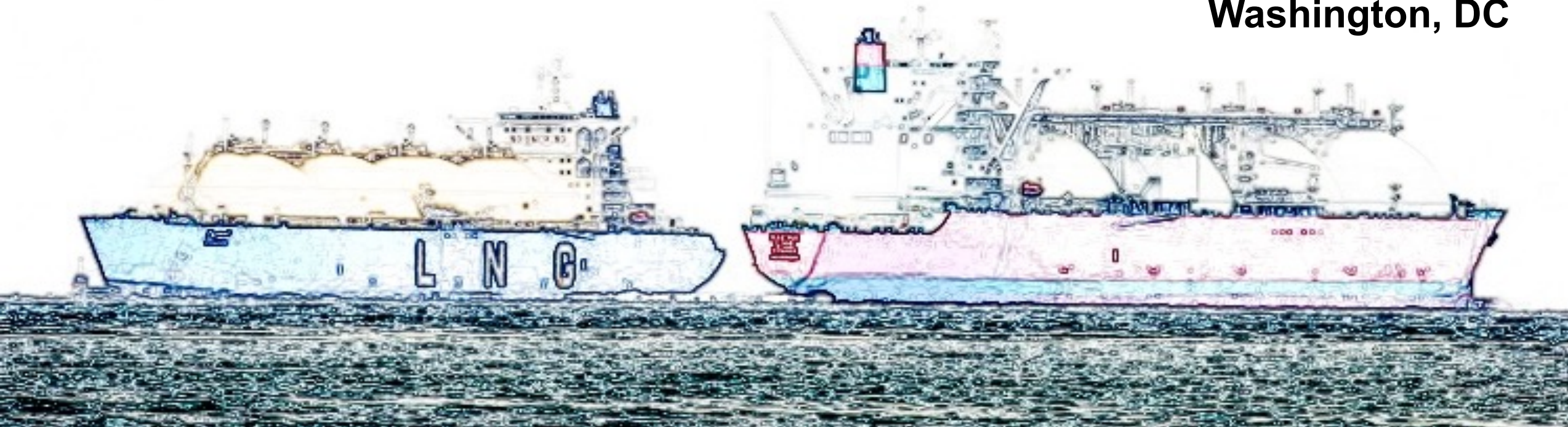
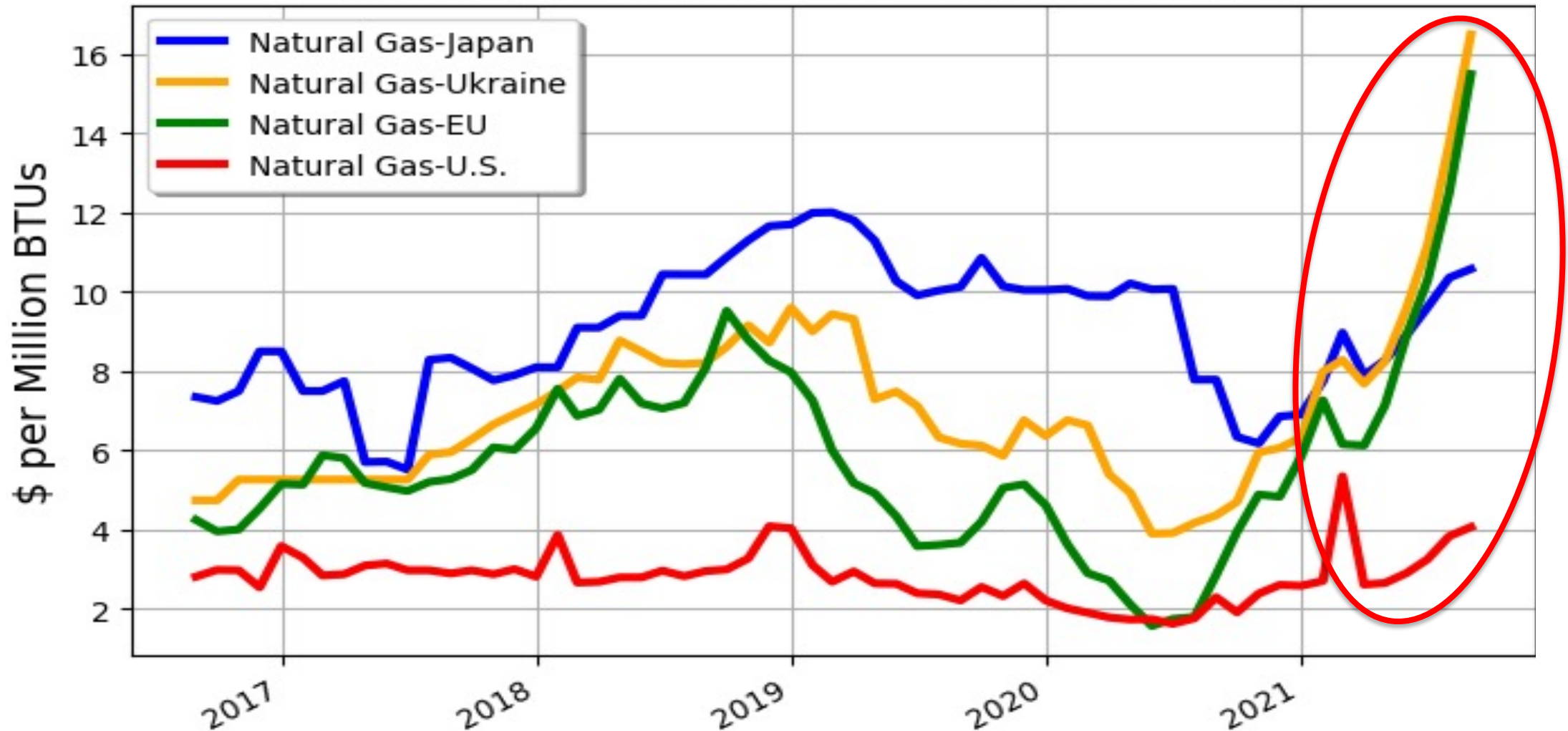


Chart of the Week #27: **Natural Gas Prices are Signaling Tight Energy Markets Ahead of Winter**

Max Pyziur
September 22, 2021
Washington, DC



Regional Natural Gas Benchmarks Have Risen Considerably In 2021, Signaling Concern Ahead Of Winter (8/22/2016 to 8/31/2021)



Analysis based on Barchart, EIA, IMF, and World Bank Data

Regional Natural Gas Benchmarks Have Risen Considerably In 2021, Signaling Concern Ahead Of Winter

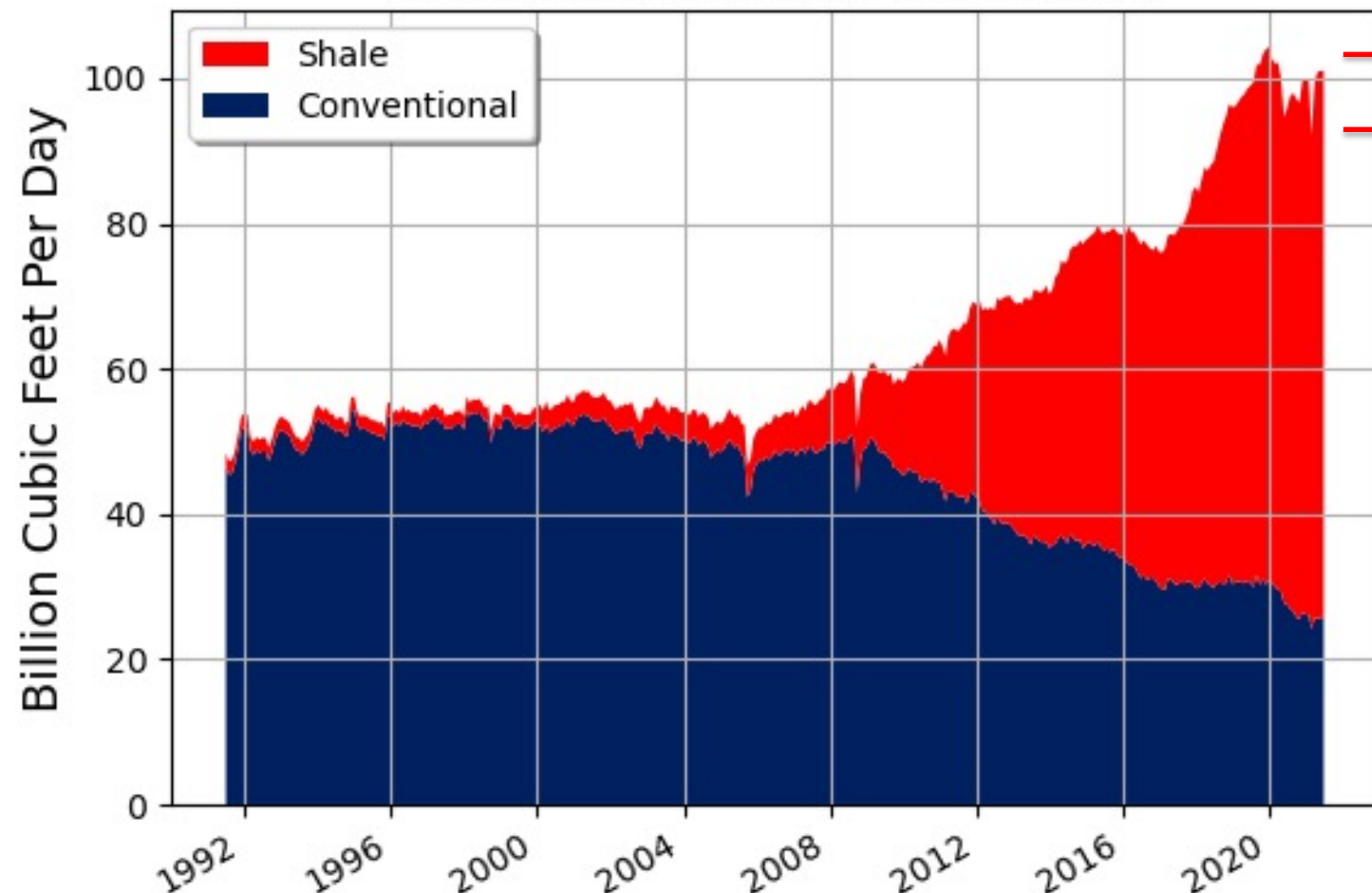
There are multiple causes of the current situation:

- **Lower global natural gas production, in part due to lower associated gas supplies in the U.S.**
- **Natural gas inventories that are below the five-year trend in both Europe and the U.S.**
- **Higher demand, especially in European power generation sectors, utilizing higher amounts of natural gas due in part to environmental policies requiring the displacement of coal.**
- **European natural gas imports have been lower since 2020, mostly from Russia, but also from North Africa, despite ample pipeline capacity, especially 10+ BCF/d of a total of 15 BCF/d through Ukraine.**
- **Decreasing natural gas production from Norway, a key source of European supply.**
- **Higher LNG demand in northeast Asia, especially China, requiring a larger portion of U.S. LNG exports.**
- **More U.S. LNG cargos are headed to Brazil as the country experiences its largest drought in the last ninety years, thereby limiting hydroelectric production.**
- **In addition, thermal coal inventories in both Europe and the U.S. are at five-to-ten-year lows.**
- **The expanded version of this slide deck is available at: <https://eprinc.org/chart-of-the-week/>**
- **For more information on this chart, please contact Max Pyziur (maxp@eprinc.org)**

Additional Slides

- **U.S. Natural Gas Production**
- **Natural Gas Inventories in three Regions**
- **European Natural Gas Demand: UK, Spain, Italy**
- **U.S. Natural Gas Trade and LNG Exports**
- **Coal Inventories: Europe, U.S.**

Monthly U.S. Natural Gas Production - Conventional Vs Shale: 06/30/1991 through 06/30/2021



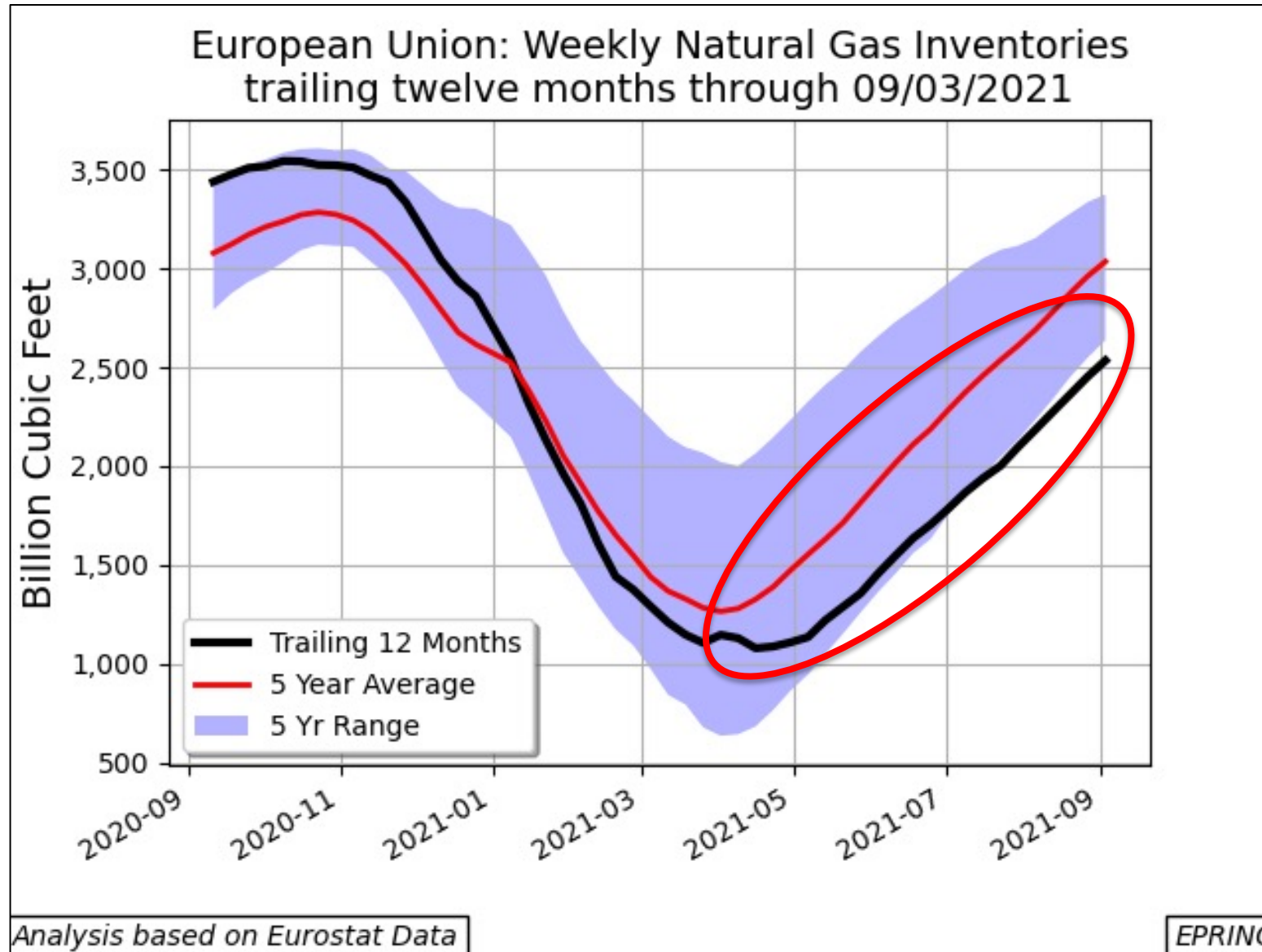
While off by ~5 BCF/d in 2021, at the margin, U.S. natural gas production trends significantly affect global natural gas prices.

Analysis based on EIA Data

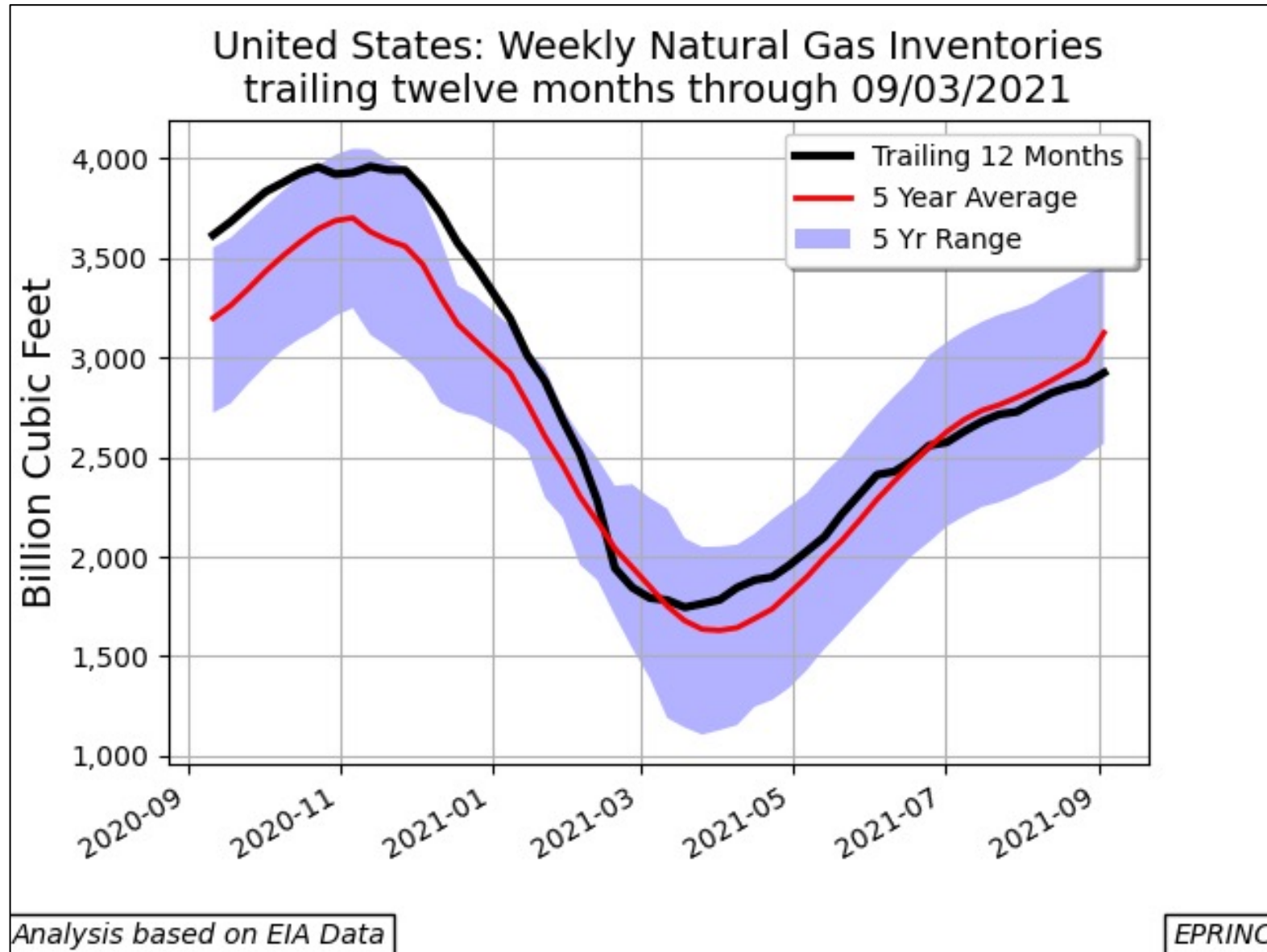
EPRINC

Natural Gas Inventories in Three Key Regions: U.S., Europe, Ukraine

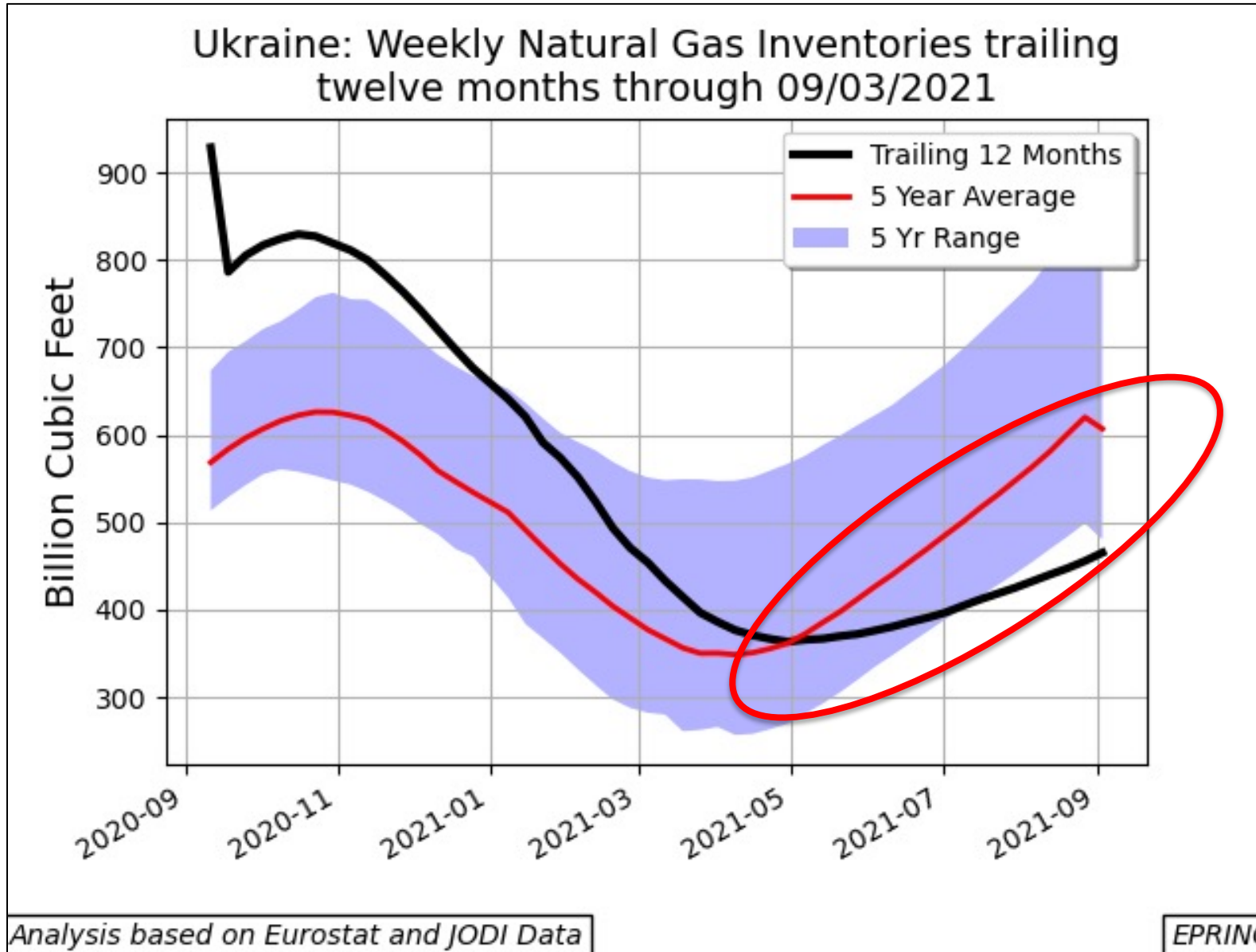
Total European NG storage is Significantly Below Trend ...



U.S. NG Storage is at Trend ...

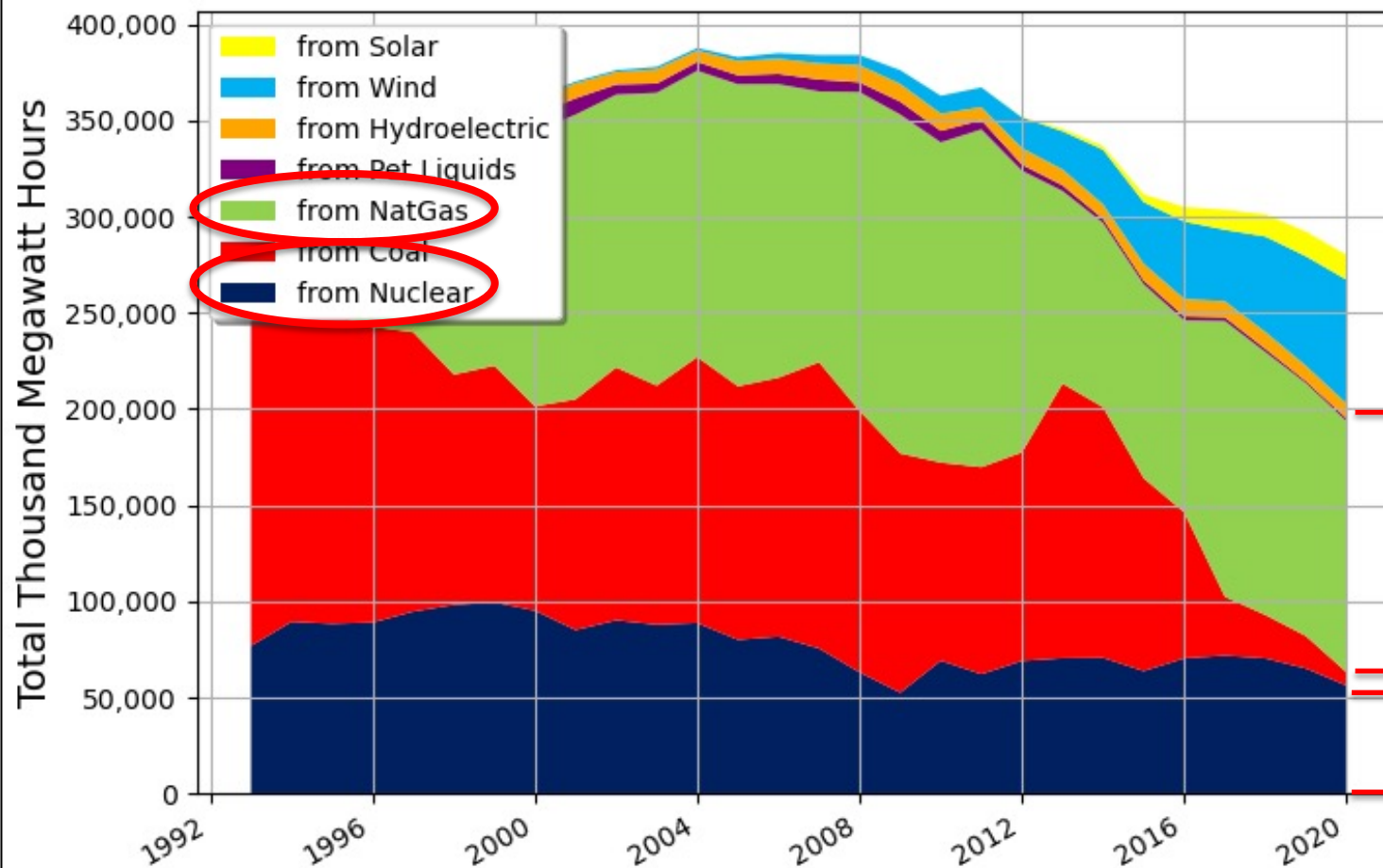


Ukraine's NG storage is Strongly Below Trend ...



Increased Natural Gas Consumption in European Power Generation: United Kingdom, Spain, Italy

United Kingdom Electricity Production: from Nuclear, from Coal, from NatGas, from Pet Liquids, from Hydroelectric, from Wind, from Solar: 01/01/1992 to 12/31/2020

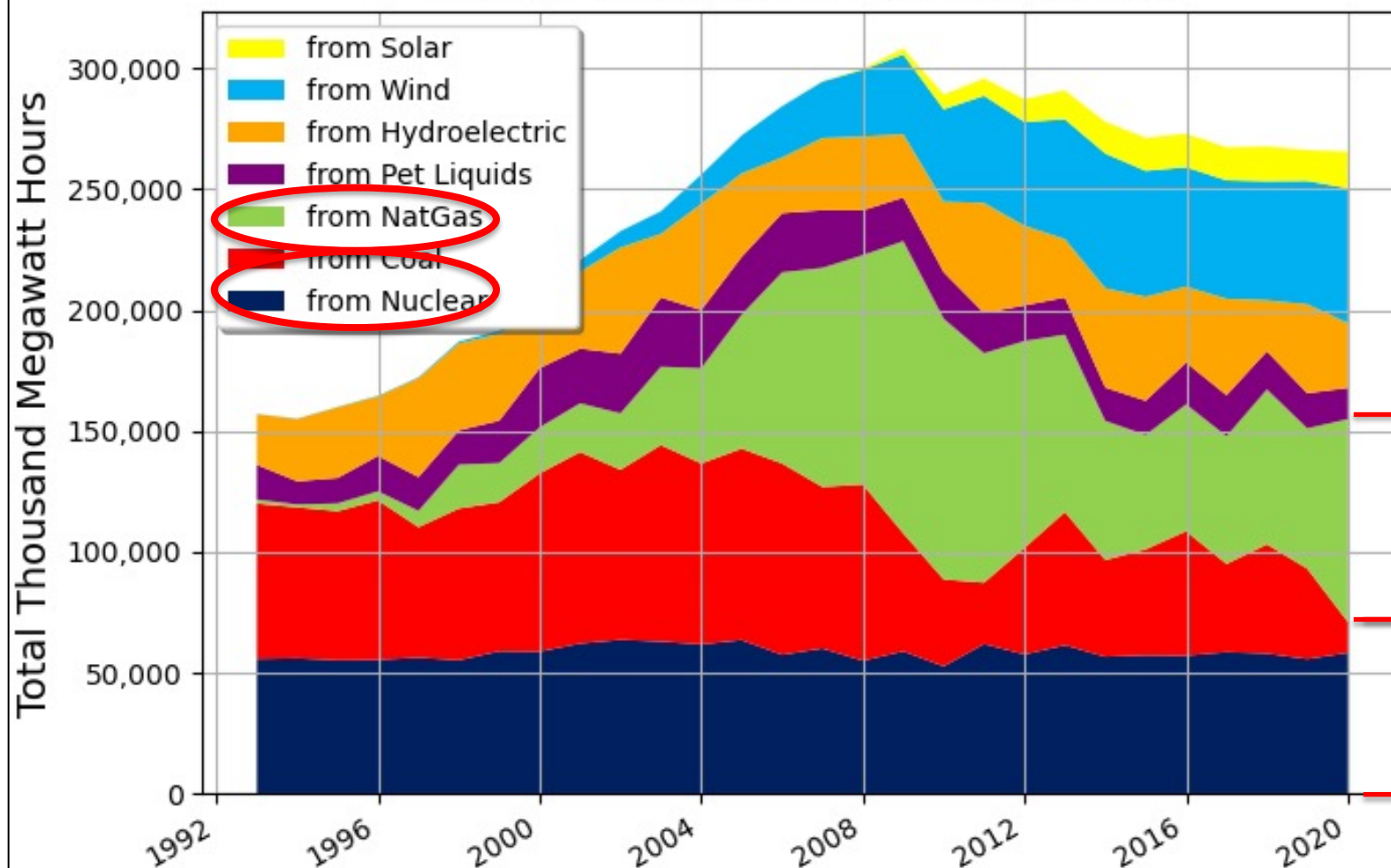


Lower utilization and retirements of coal and nuclear capacity has led to greater reliance on natural gas generation

Analysis based on Annual Eurostat Data

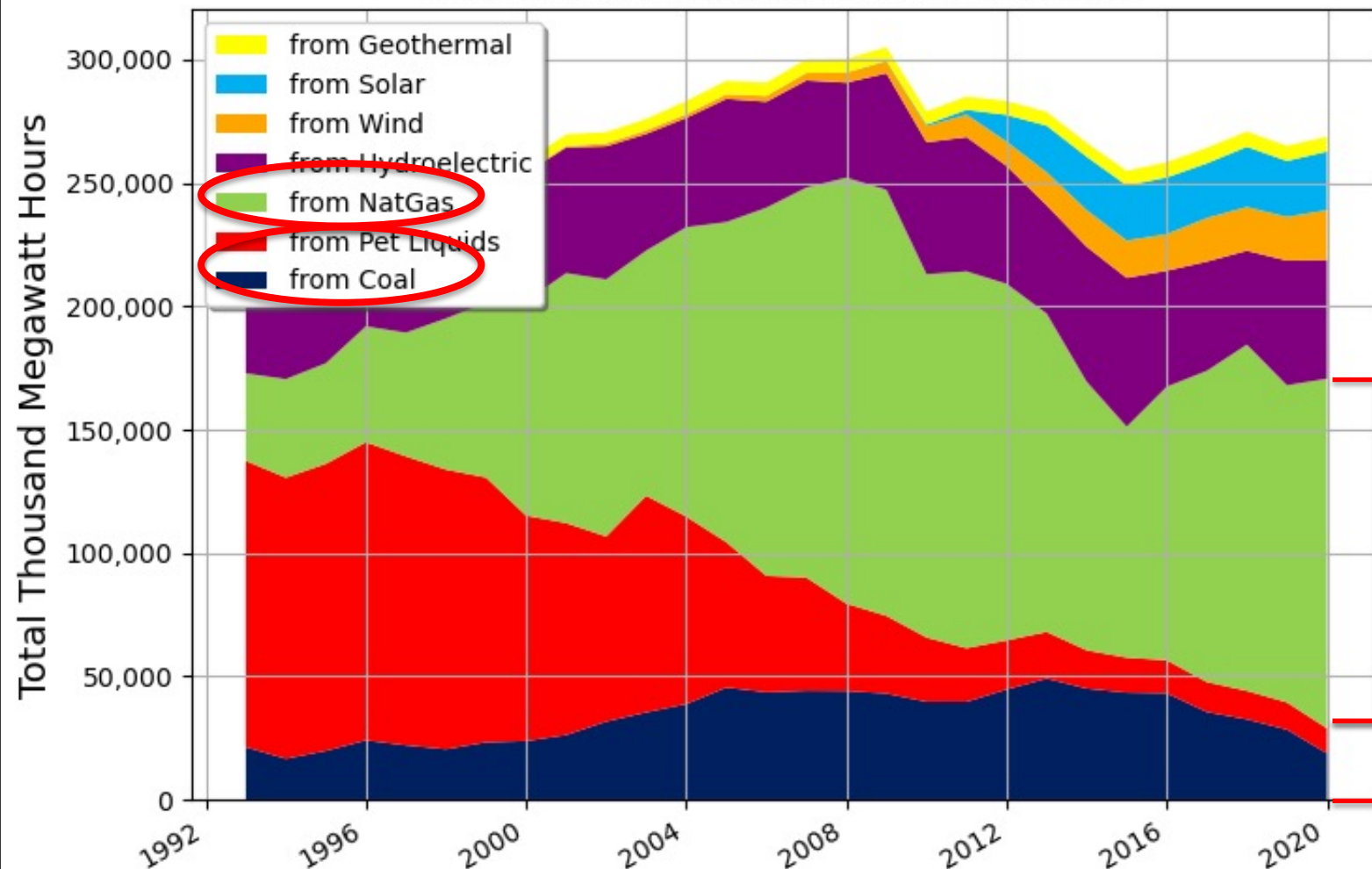
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Spain Electricity Production: from Nuclear, from Coal, from NatGas, from Pet Liquids, from Hydroelectric, from Wind, from Solar: 01/01/1992 to 12/31/2020



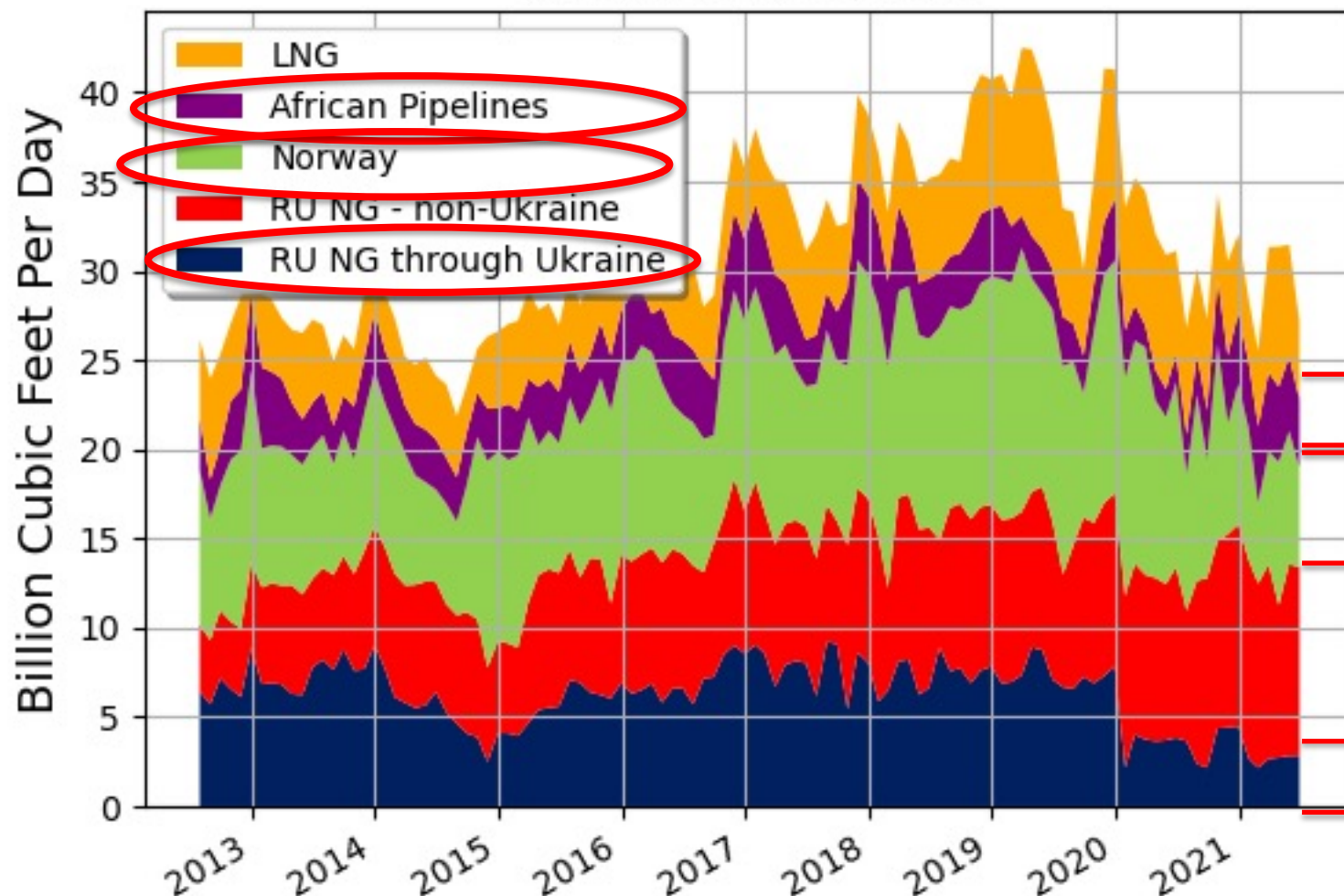
Lower utilization and retirements of coal and nuclear capacity has led to greater reliance on natural gas generation

Italy Electricity Production: from Coal, from Pet Liquids, from NatGas, from Hydroelectric, from Wind, from Solar, from Geothermal: 01/01/1992 to 12/31/2020



Lower utilization and retirements of petroleum liquids and nuclear capacity has led to greater reliance on natural gas generation

Monthly EU Natural Gas Imports By Sourced Region: 07/31/2012 through 06/30/2021



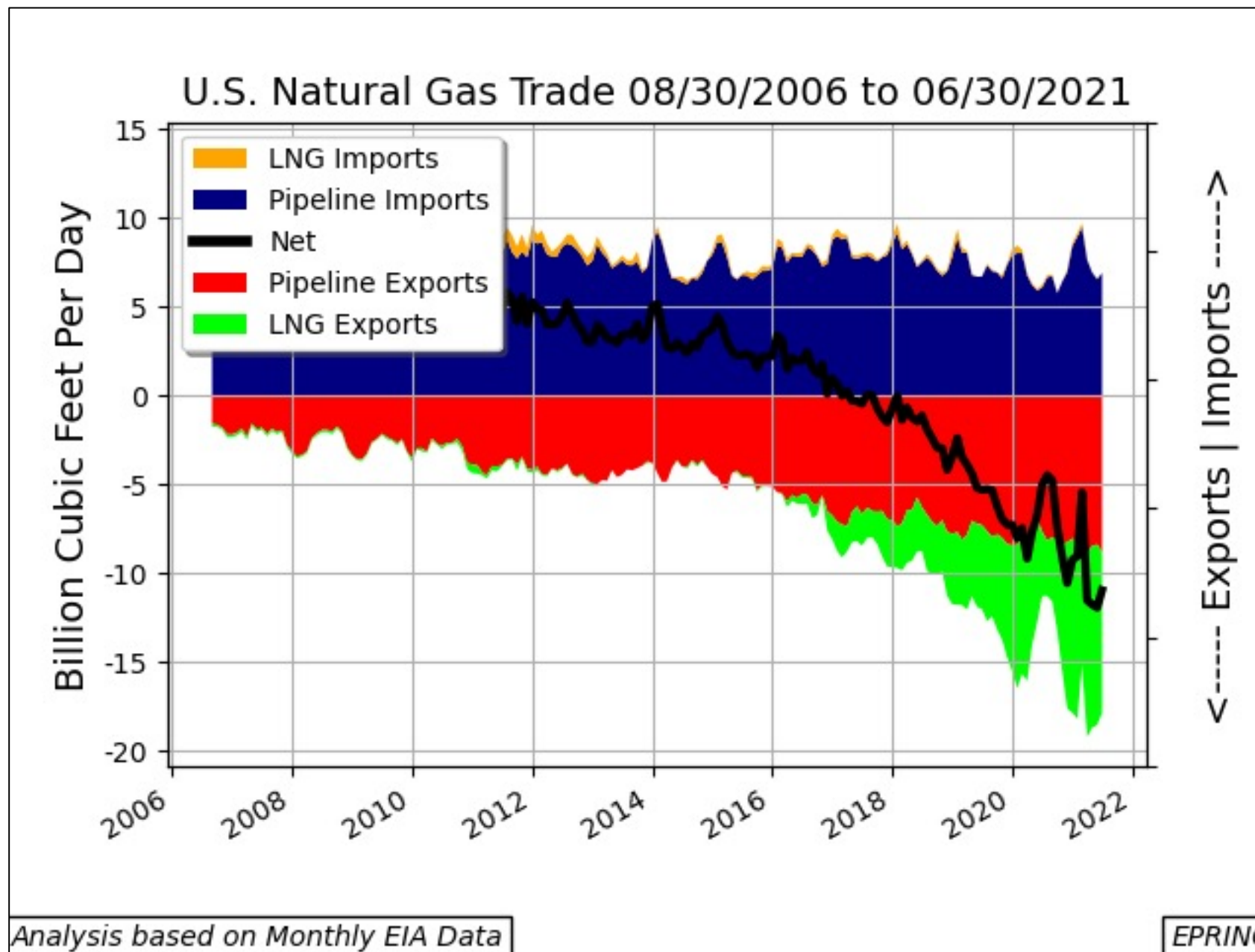
Norway's production has been declining, a key source of European NG supplies.

European natural gas imports have been lower since 2020, mostly from Russia, but also from North Africa, despite ample pipeline capacity, especially 10 BCF/d of a total of 15 BCF/d through Ukraine.

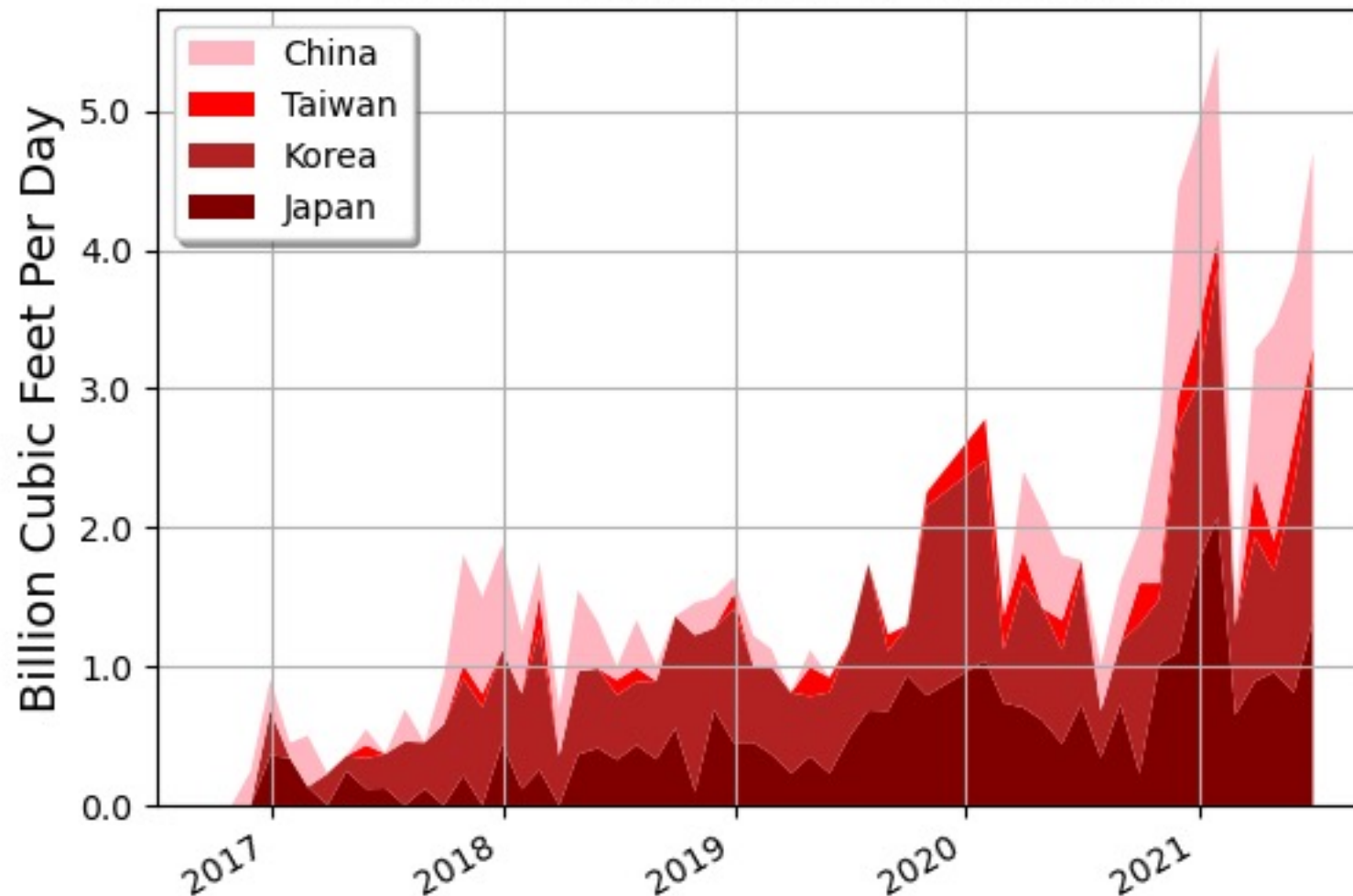
Analysis based on Eurostat, JODI, and IEA Data

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U.S. LNG Exports in Three Regions: Asia, Europe, Latin America



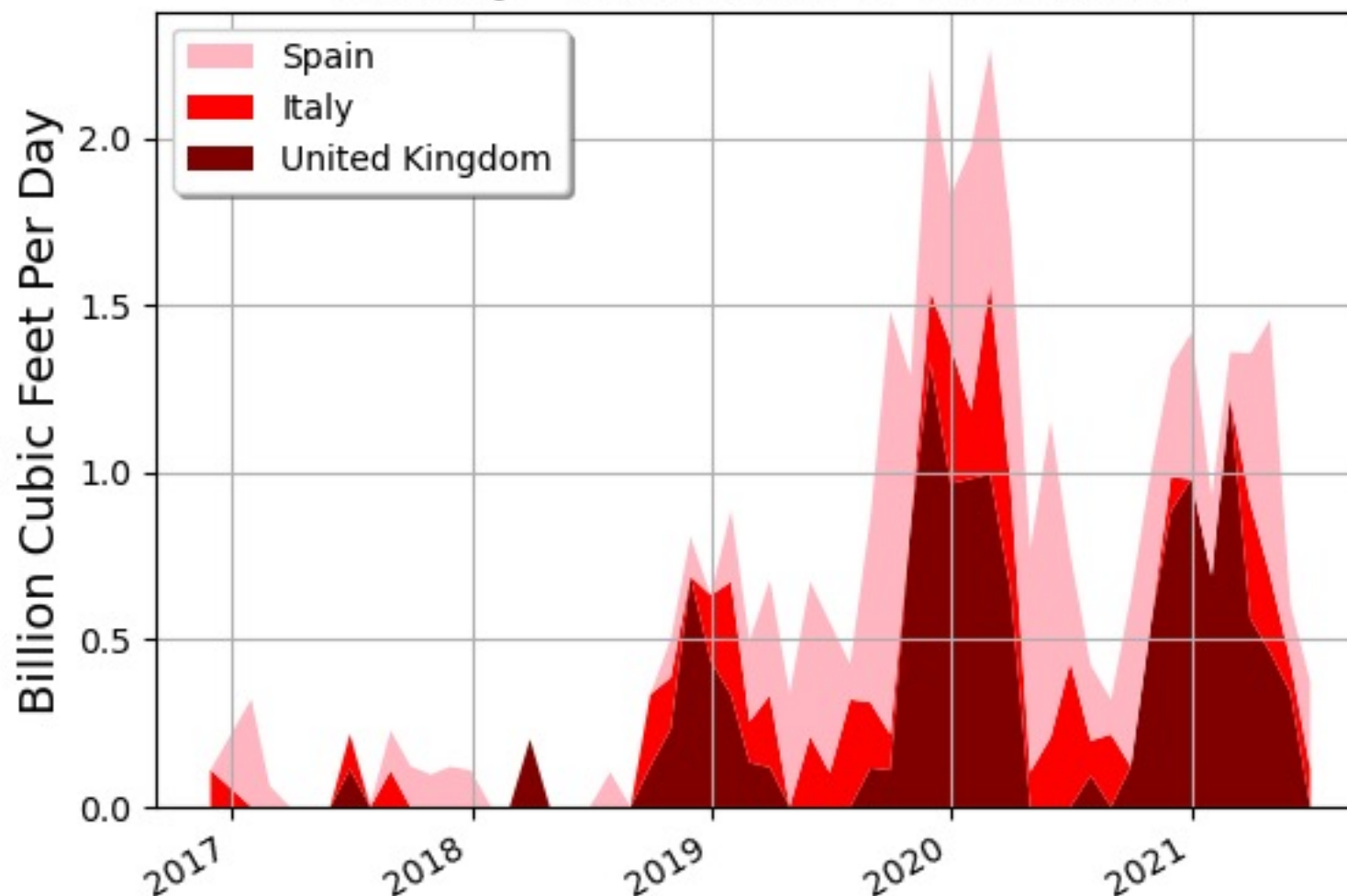
U.S. Natural Gas Exports-LNG by Destination Country - 09/04/2016 to 06/30/2021



Analysis based on Monthly EIA Data

EPRINC

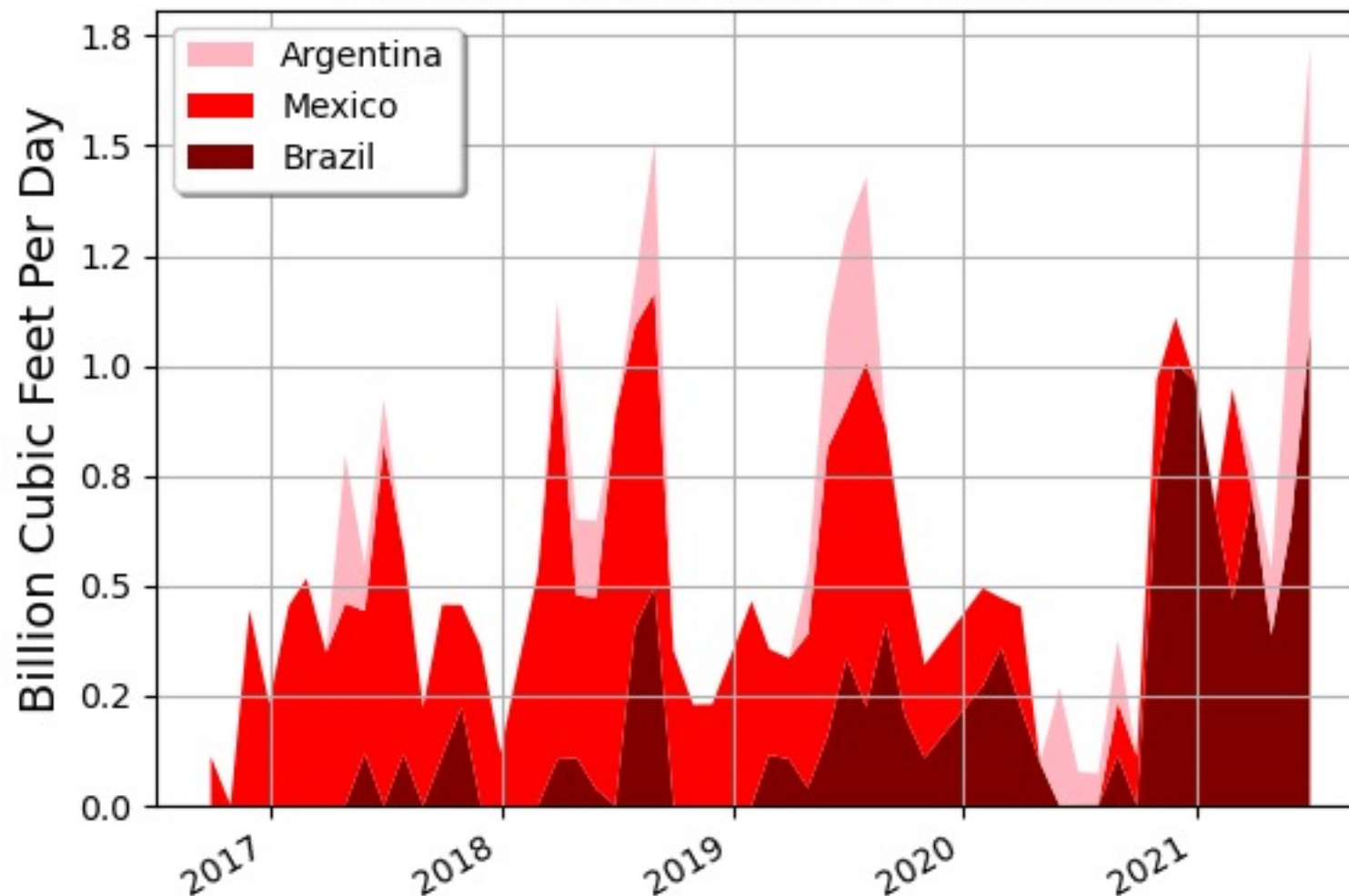
U.S. Natural Gas Exports-LNG by Destination Country - 09/04/2016 to 06/30/2021



Analysis based on Monthly EIA Data

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U.S. Natural Gas Exports-LNG by Destination Country - 09/04/2016 to 06/30/2021

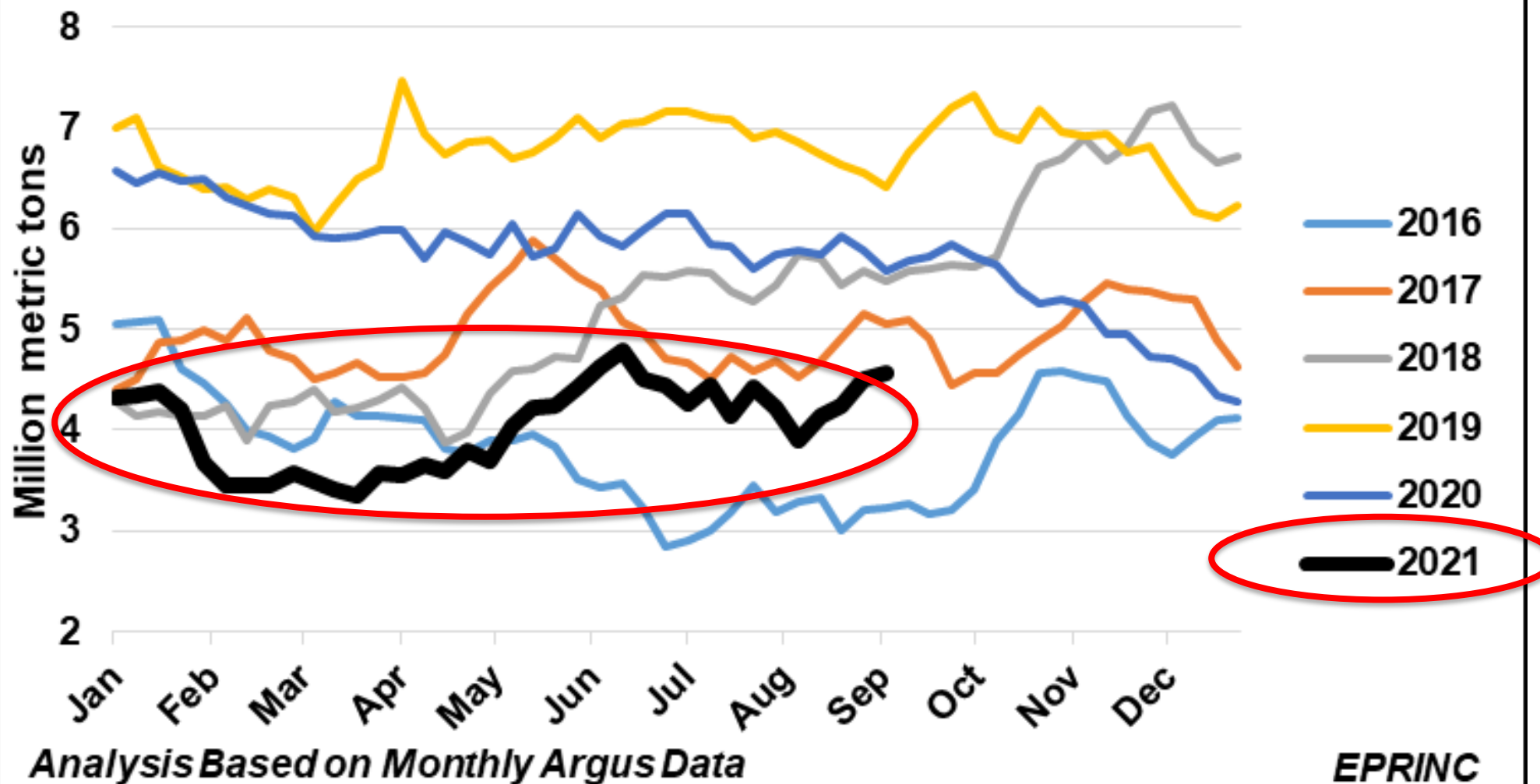


Analysis based on Monthly EIA Data

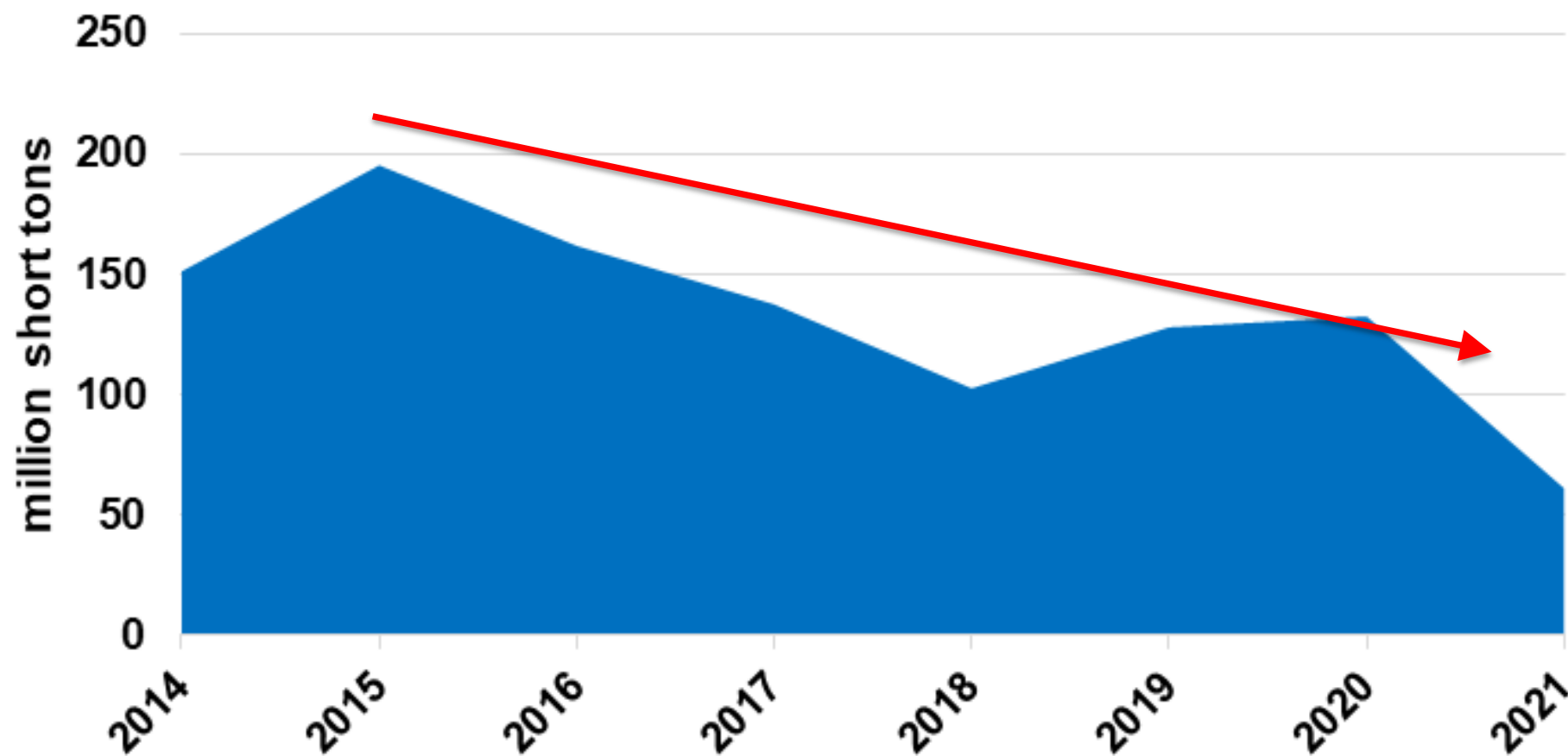
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Thermal Coal Inventories: Europe, U.S.

Thermal Coal Stocks at European Harbors



End of year U.S. Coal Inventory for Electricity



Analysis Based on Annual EIA Data

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