5TH HAEE ENERGY TRANSITION SYMPOSIUM: "GLOBAL AND LOCAL PERSPECTIVES"

Panel Discussion on Oil and Gas: Challenges and Investment Opportunities

THE CURIOUS IDEA TO BAN HYDRAULIC FRACTURING IN THE U.S.

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Washington, DC

October 1, 2020

Source: BOEM, BSEE, Comisión Nacional de Hidrocarburos (CNH)

EPRINC

About EPRINC

- Founded 1944
- Not-for-profit organization
- Studies intersection of petroleum economics and public policy
- Provides independent and technical analyses for distribution to the public
- Supports USG projects, e.g. Quadrennial Energy Review, DoD strategic outlook
- EPRINC Embassy Series
- 4th Year of Joint IEEJ-EPRINC Project on "Future of ASIAN LNG
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EPRINC Recent Projects and Events

- Most Recent EPRINC Newsletter: Summer 2020
- "Crisis in the Oil Market: Remembrances of the Past, Policy Responses for the Future" Virtual Workshop
- "There Will Be Gas" Virtual Workshop and associated paper by Max Pyziur
- "There Will Be Oil" Virtual Workshop
- "Deepwater Oil Exploration in the Gulf of Mexico: A Spatial Model Provides Clues for Undiscovered Potential" by Peter Stark and Raphael Sandrea
- "Understanding the Safer Affordable Fuel-Efficient (SAFE) Rule for Automobiles" Virtual Workshop co-hosted with IER
- "Future of Asian LNG: Finding a Path Forward" Virtual Workshop co-hosted with IEEJ
- "Keeping the Lights on in California" Virtual Workshop

Ban on Fracking?

Influential political groups have called for a ban on hydraulic fracturing in the production of oil & gas in the United States

President Trump is a strong supporter of HF, and Candidate (former VP) Biden supports halting HF on new leases on federal lands.

Biden also calls for stricter controls on methane leaks

Some members of the Democratic Party have called for a total ban on HF across the oil and gas industry

Mandates and supply constraints are poor measures for addressing climate risks (but more on that later)

But even a ban of federal lands has important consequences……..

Competition in Upstream Development Yields Revenue to Government

New Mexico Collects Some Economic Rent

Katharine MacGregor, deputy assistant secretary of land and minerals management at the U.S. Department of Interior presents a check to the State of New Mexico for $486 million from a recent Federal lease sale, Dec. 11, 2018.

Source: Carlsbad Current Argus

Some in US are calling for rapid curtailment of US Oil and Gas production

But how should we deal with the

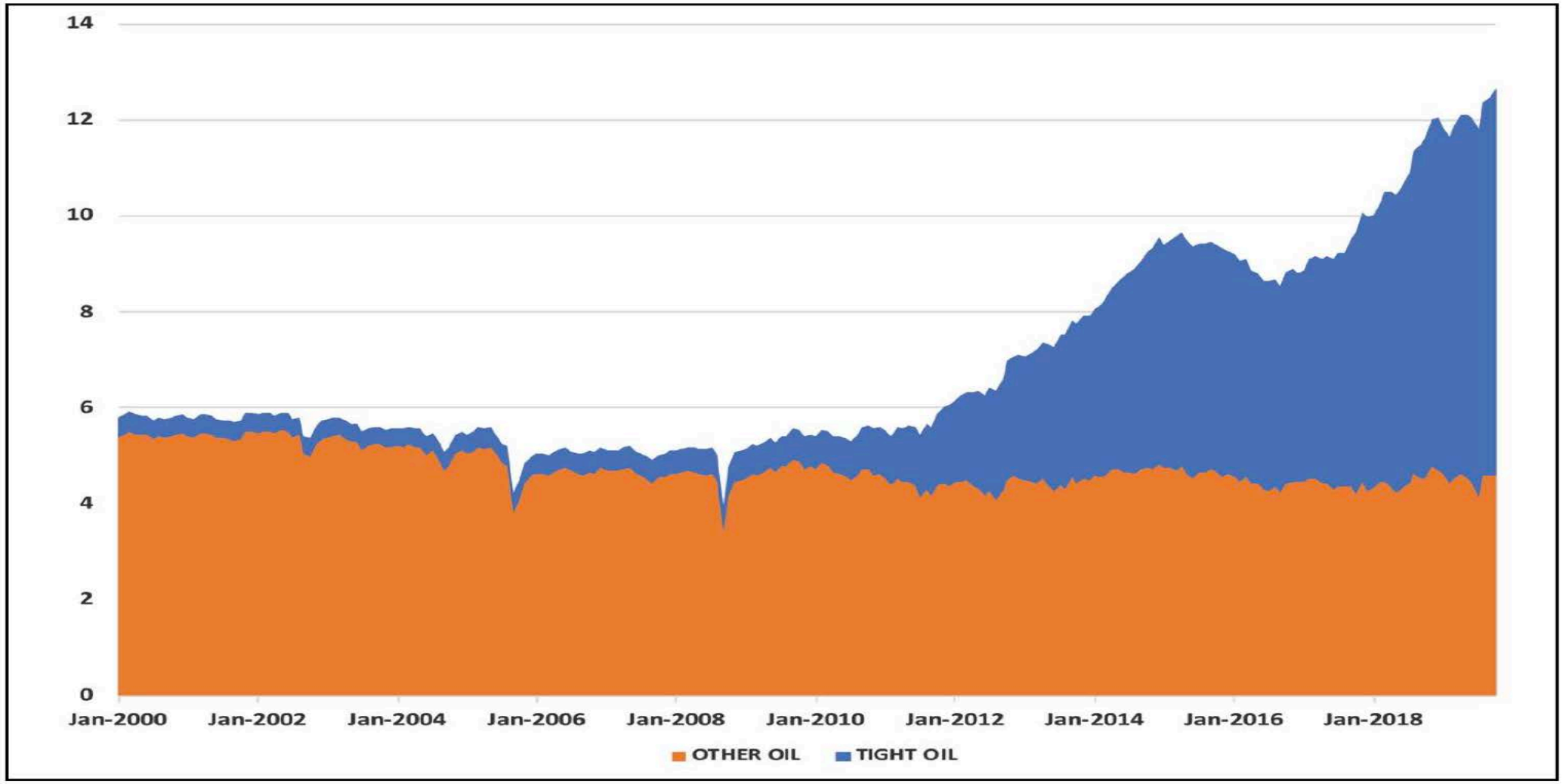
"Economic Rent"

New Mexico legislators oppose fracking gas shale development, should they give back the rent?

Federal Revenues in 2017 from oil & gas leases exceed $6 BILLION

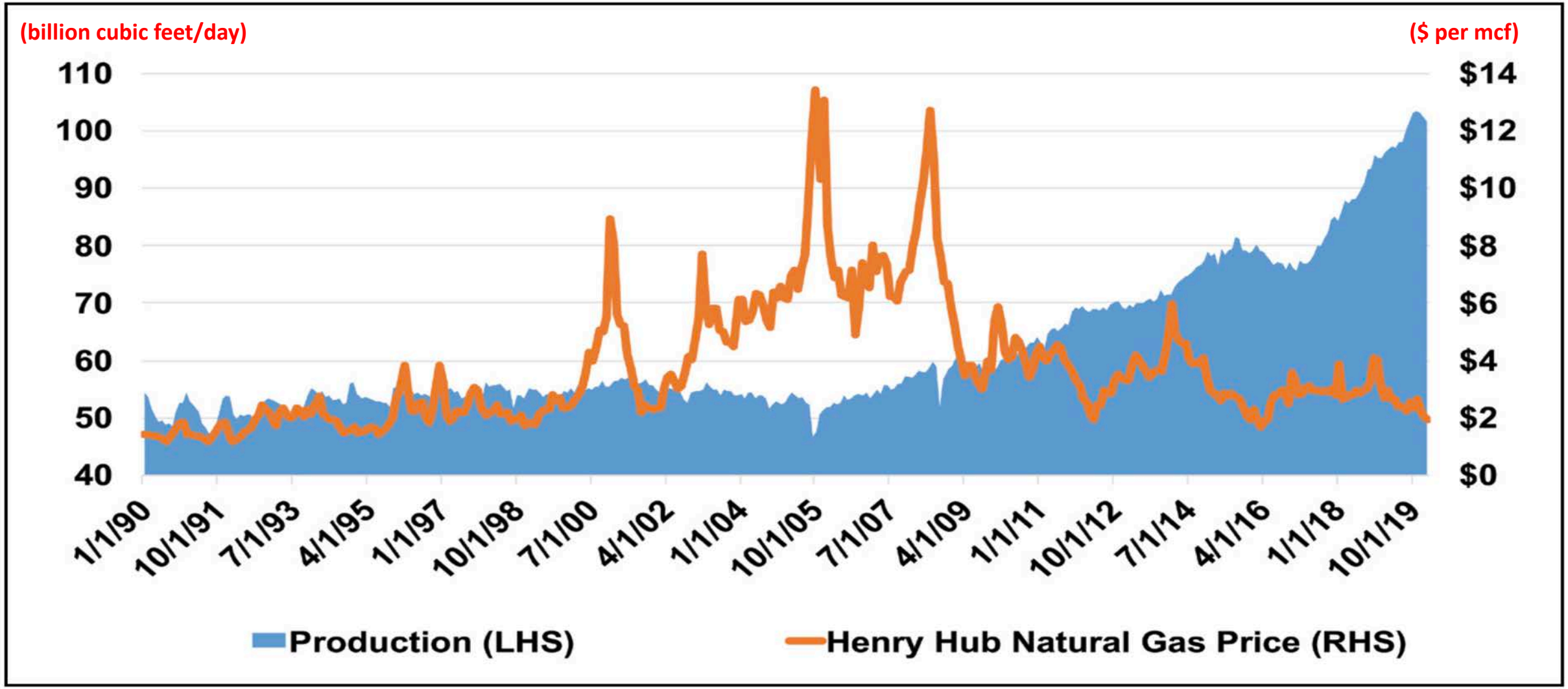
HF in Unconventional Formations Brought about a Rapid Rise in U.S. Oil Production

Million of barrels/day, 2000-2019



Source: Date from EIA. See EPRINC paper by Michael Lynch, ***The Impact of a Fracking Ban on Shale Production and the US Economy***, January 2020. https://eprinc.org/wp-content/uploads/2020/02/Fracking-Ban-Shale-Production-and-the-Economy-January-2020.pdf

Monthly U.S. Natural Gas Production (LHS) vs Henry Hub Price (RHS): to 01/31/2020



Analysis based on EIA data

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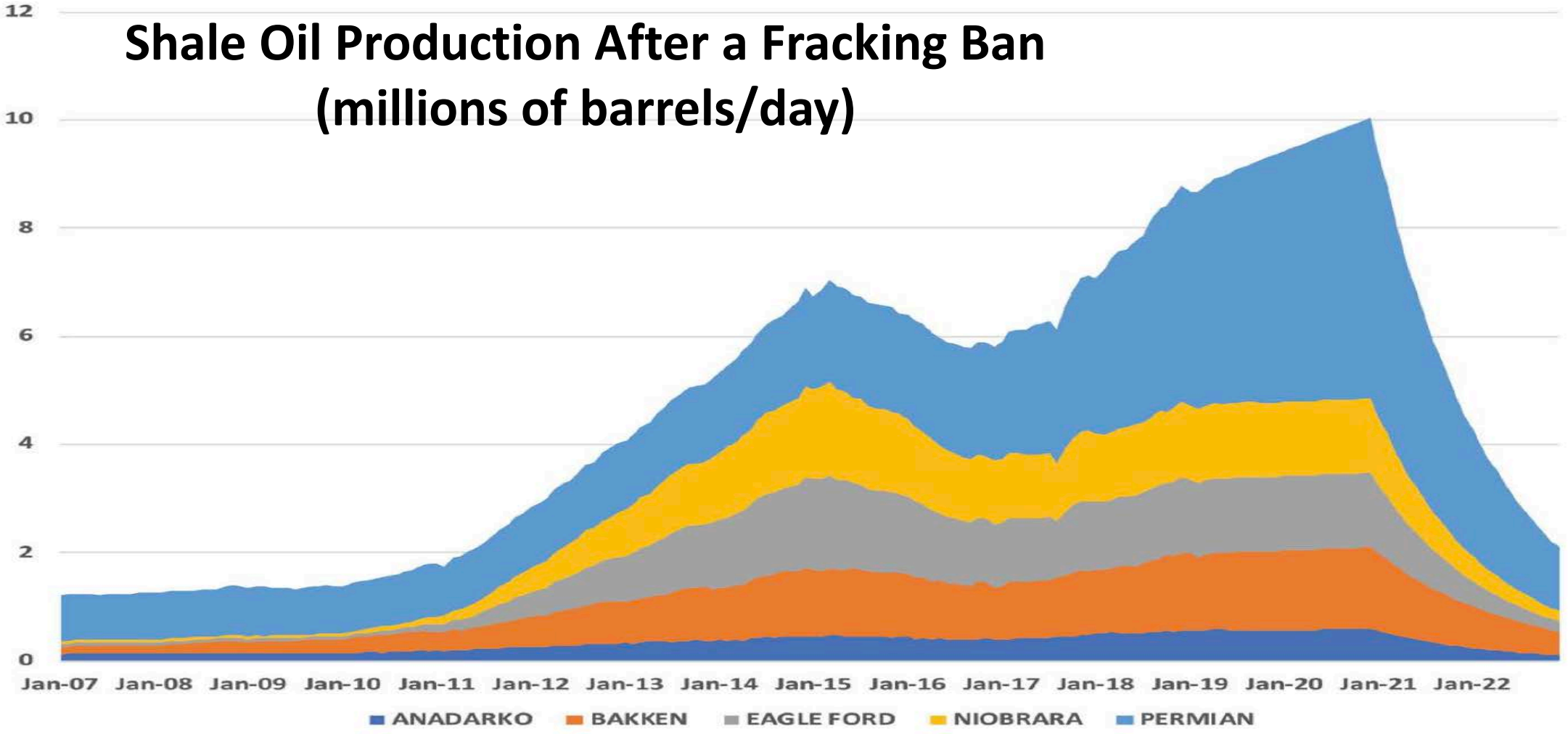
Source: See EPRINC Paper by Max Pyziur, ***There Will be Gas (As Assessment of US Natural Gas Supply in a Low Oil Price Environment)***, January 2020. https://eprinc.org/wp-content/uploads/2020/06/There-Will-Be-Gas-June-2020-FINAL.pdf

Shale Oil Production After a Fracking Ban (millions of barrels/day)



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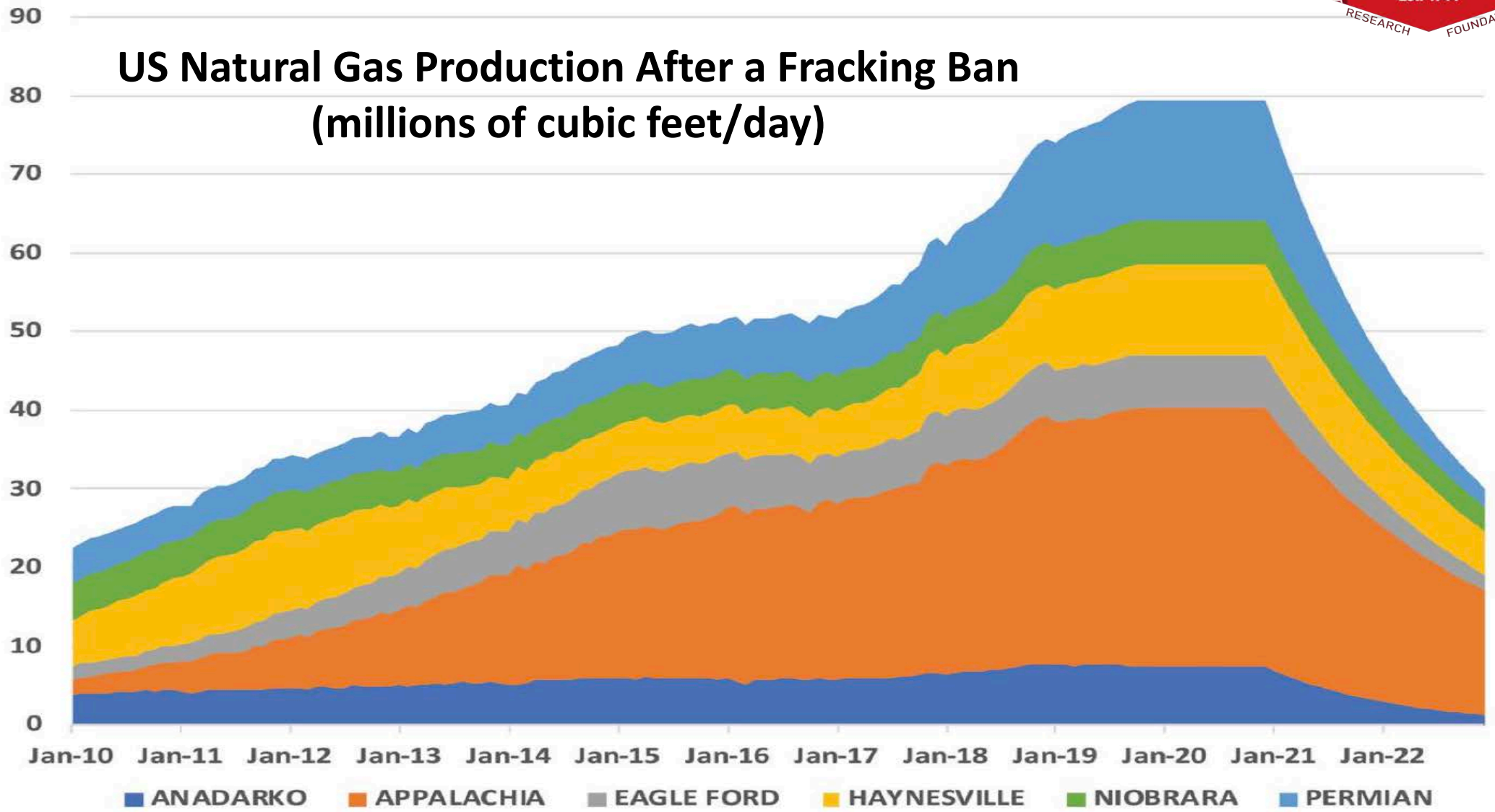
US Natural Gas Production After a Fracking Ban
(millions of cubic feet/day)



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Global Petroleum Trade: Impact of a U.S. Fracking Ban

	2018 Imports mb/d	2018 Price $71.06/bbl	Cost (trillion$)	
			$80.00/bbl	$100.00/bbl
Petroleum	70	$1.82 trillion	$2.04	$2.56
Natural Gas Pipeline	28.42 Tcf	$6.62/Mcf	$8.00/Mcf	$10.00/Mcf
LNG	15.21 Tcf	$10.00/Mcf	$12.00/Mcf	$15.00/Mcf
Revenue ($billions)		$340.26	$409.90	$512.38

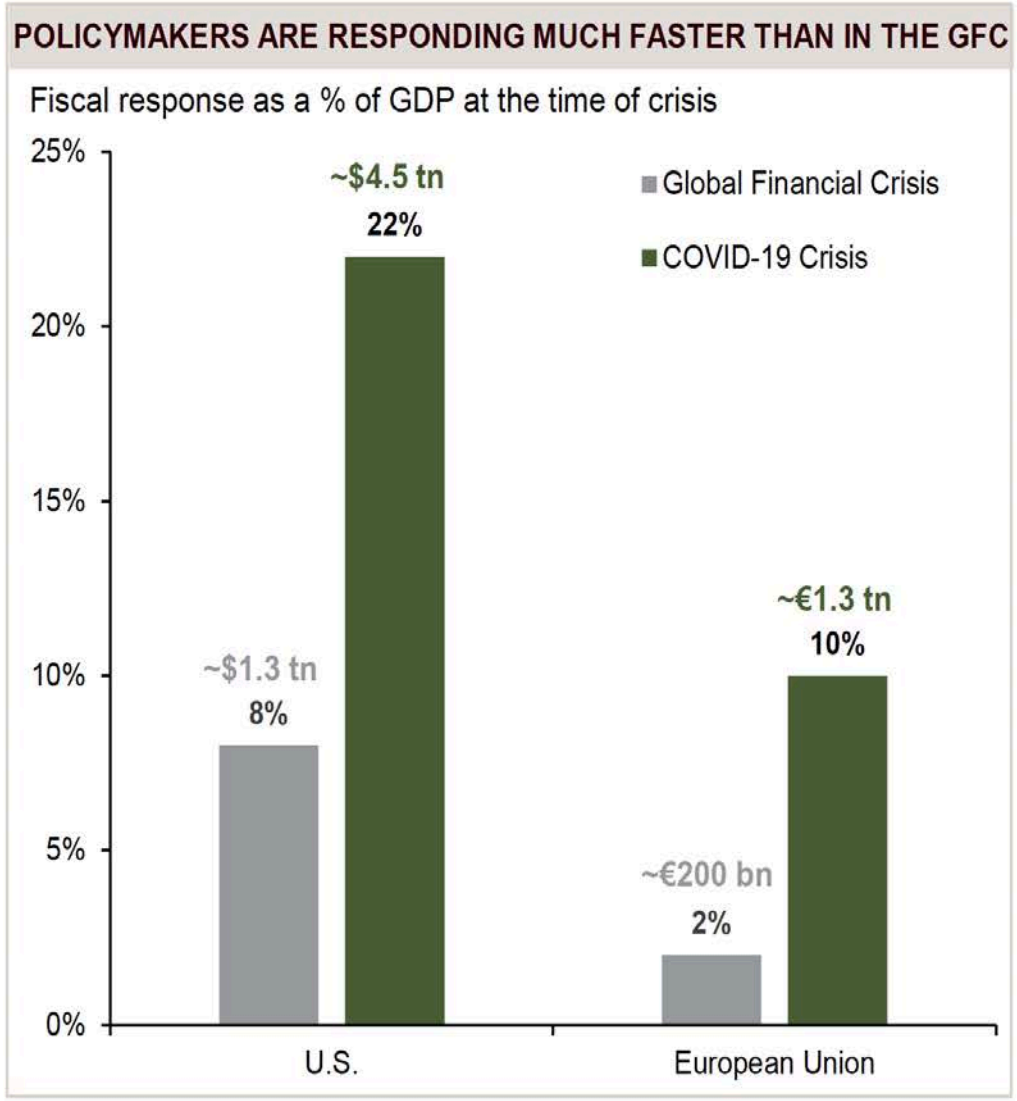
Source: See EPRINC paper by Michael Lynch, ***The Impact of a Fracking Ban on Shale Production and the US Economy***, January 2020. https://eprinc.org/wp-content/uploads/2020/02/Fracking-Ban-Shale-Production-and-the-Economy-January-2020.pdf

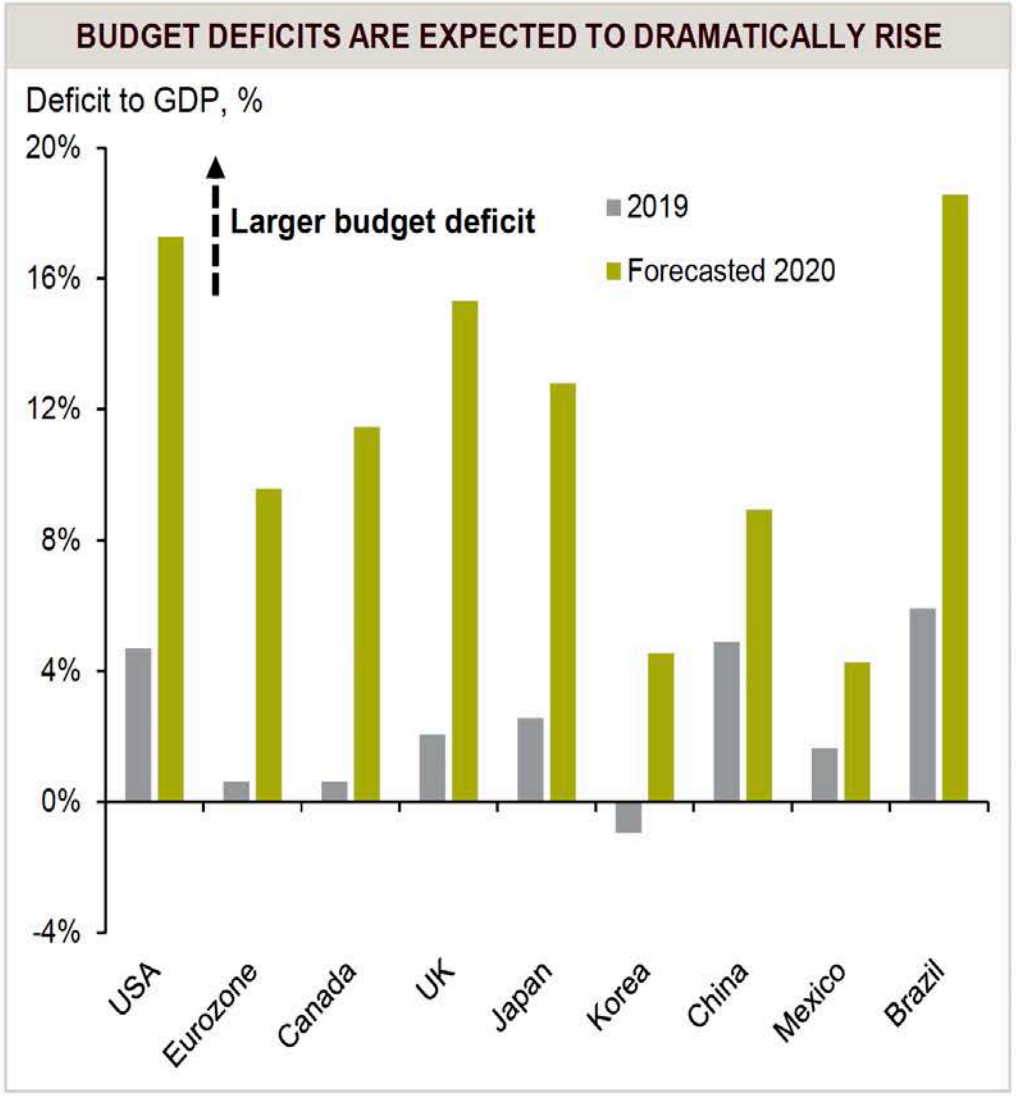
Climate Policy: Are Energy Economists Part of the Problem?

(A Perspective on the Misallocation of Economic Research in Energy and the Environment)

- *A preoccupation with mandates, targets, and transition technologies while abandoning marginal economic analysis (OK, there has been efforts underway on carbon pricing)*
- *Little progress in benefit calculation, timing of benefits and risk analysis (variant of marginal analysis)*
- *Environmental costs of so-called net zero solutions are largely ignored.*
- *Large number of college educated individuals believe supply constraints (e.g., HF ban) are productive measures to address climate concerns.*
- *Nearly all attention placed on research of mitigation measures (carbon control), but little effort made to understand benefits of adaption, i.e., What guidance should we give policy makers on how to spend public funds? Should more resources be directed, at the margin to adaption?*
- *Too much focus on transition in the OECD. If OECD emissions went to zero, total world emissions would only revert to 1995 levels (Medlock, et al). Debt overhang will make non-OECD countries reluctant to adopt expensive options.*

COVID-19 Fiscal Response has been Swift, but the Debt Overhand Will Remain

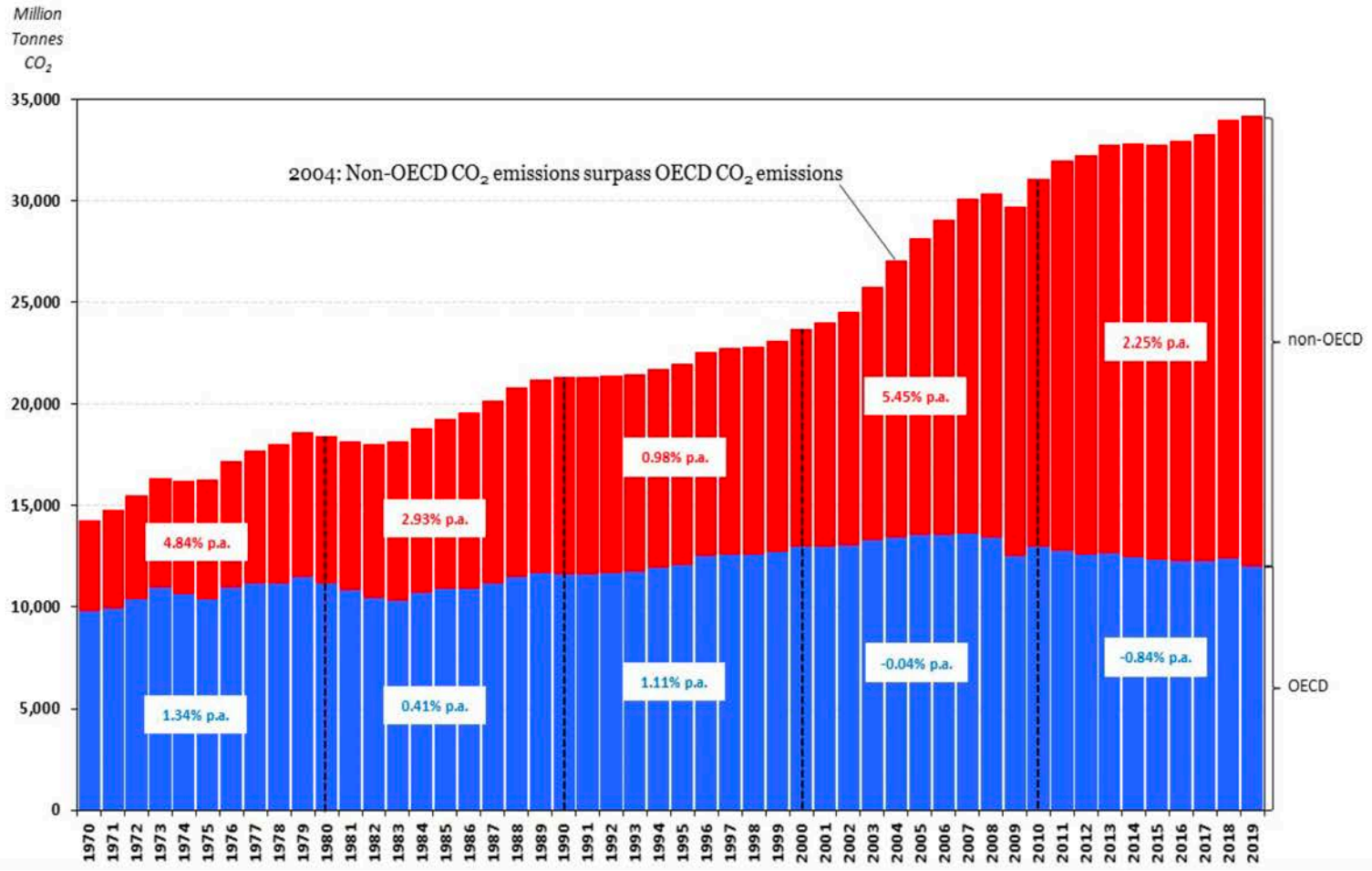




Source: JP Morgan, U.S. Government, European Commission. EU figures are not inclusive of individual member state fiscal stimulus efforts and may not be additive. Data is as of July 31, 2020. TARP = Troubled Asset Relief Program. ARRA = American Recovery and Reinvestment Act. (Right) Oxford Economics, HaverAnalytics, Bloomberg Finance L.P. Data is as of August 31, 2020.

No Substantial Transformation Without the Non-OECD World

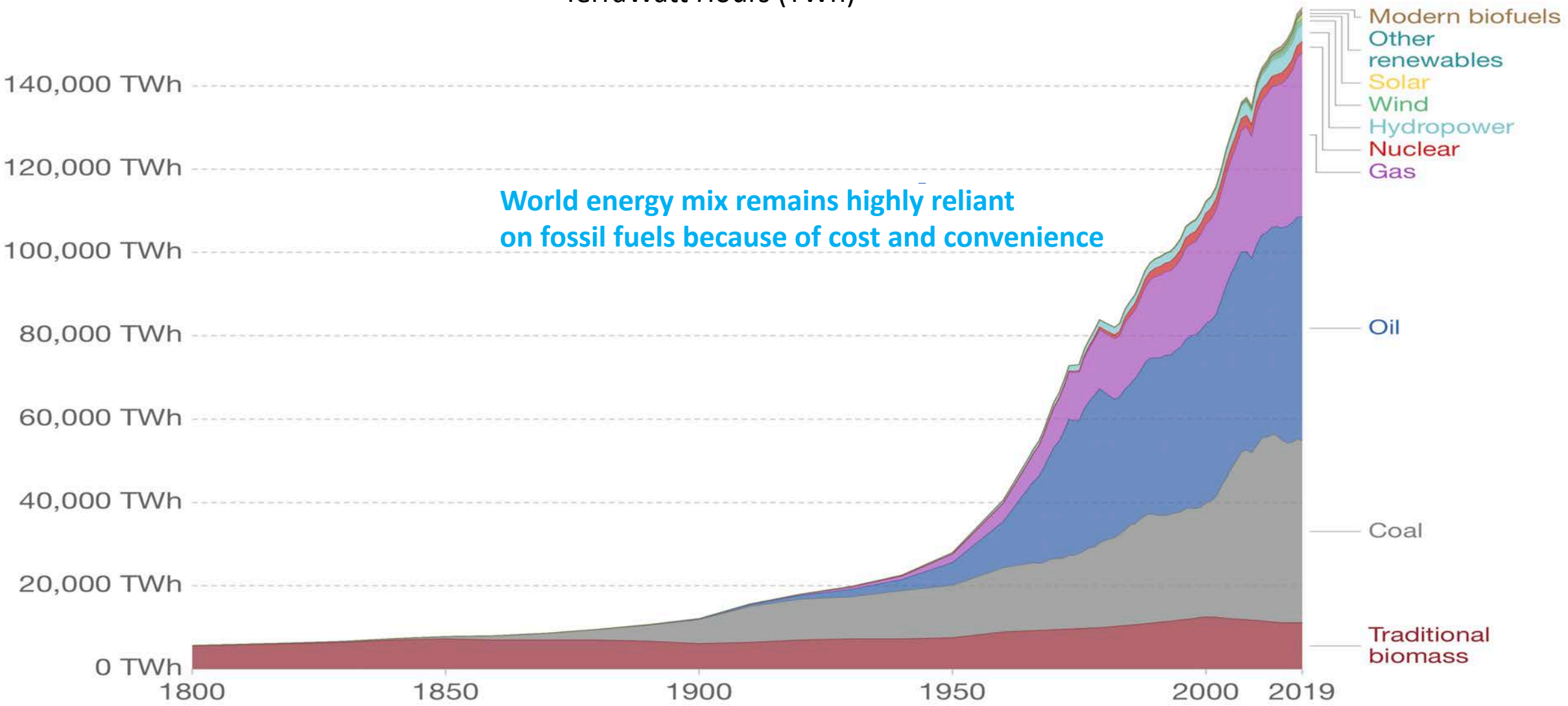
- Non-OECD emissions have grown substantially over the last 20 years, while OECD emission have declined.
- Even if OECD emissions dropped to zero now, global emissions would still exceed 1995 levels.
- Deep decarbonization requires action everywhere, which presents challenges related to legacy, scale and technology!



Source: Ken Medlock, Rice; BP Statistical Review 2020

Global Direct Primary Energy Consumption

TerraWatt Hours (TWh)



Sources: Vaclav Smil (2017), BP Statistical Review of Energy, OurWorldinData.org/energy