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and Applied Sciences

Energy Subsidies in the United States

Harvard Energy Journal Club

April 3rd, 2020

Jordan Sosa

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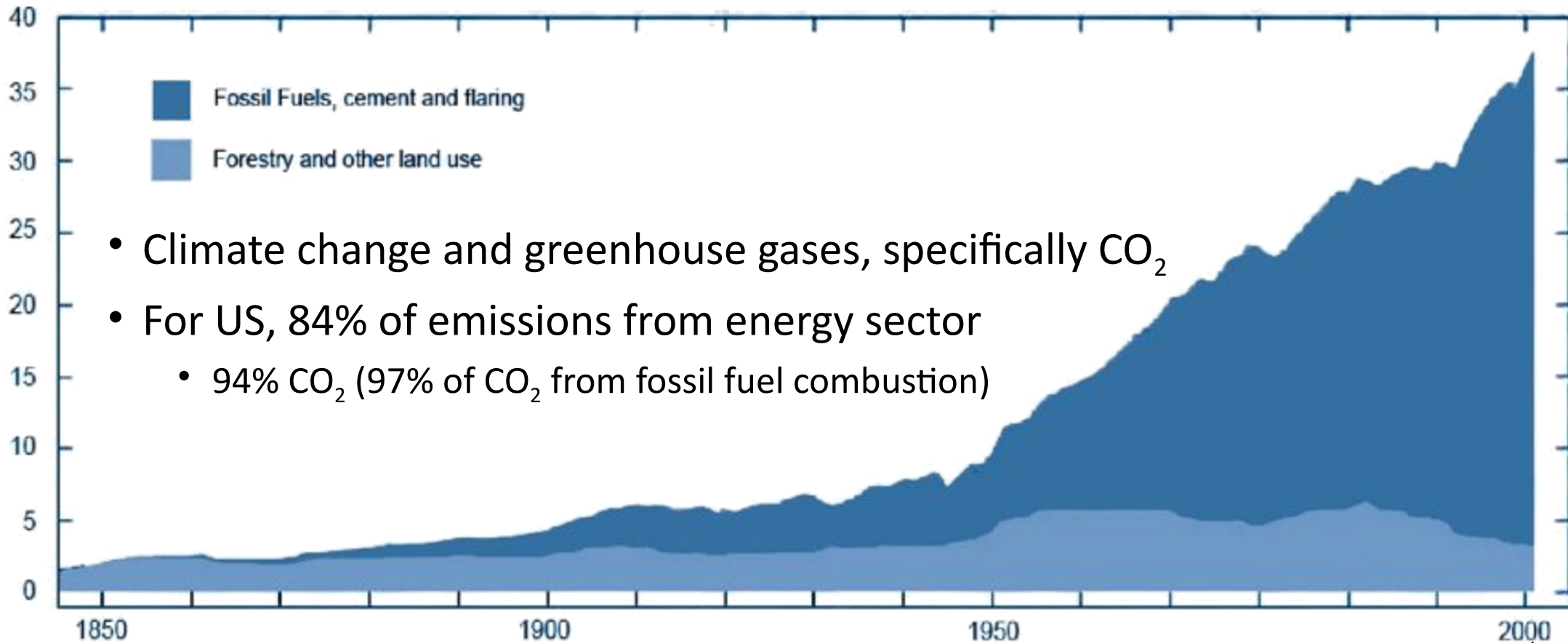
Outline

- Climate Change
- Background on Subsidies
- History of Subsidies in US
- Current distributions and their Effects
- Future possibilities



Climate Change and Energy

Gt CO₂ per year



- Climate change and greenhouse gases, specifically CO₂
- For US, 84% of emissions from energy sector
 - 94% CO₂ (97% of CO₂ from fossil fuel combustion)

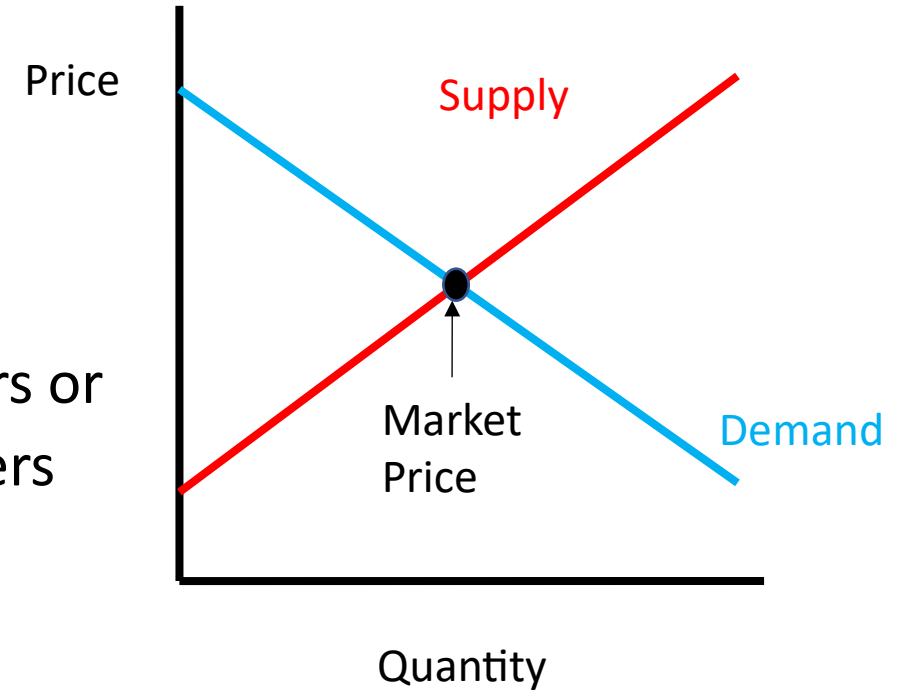
Global numbers, Reference #2



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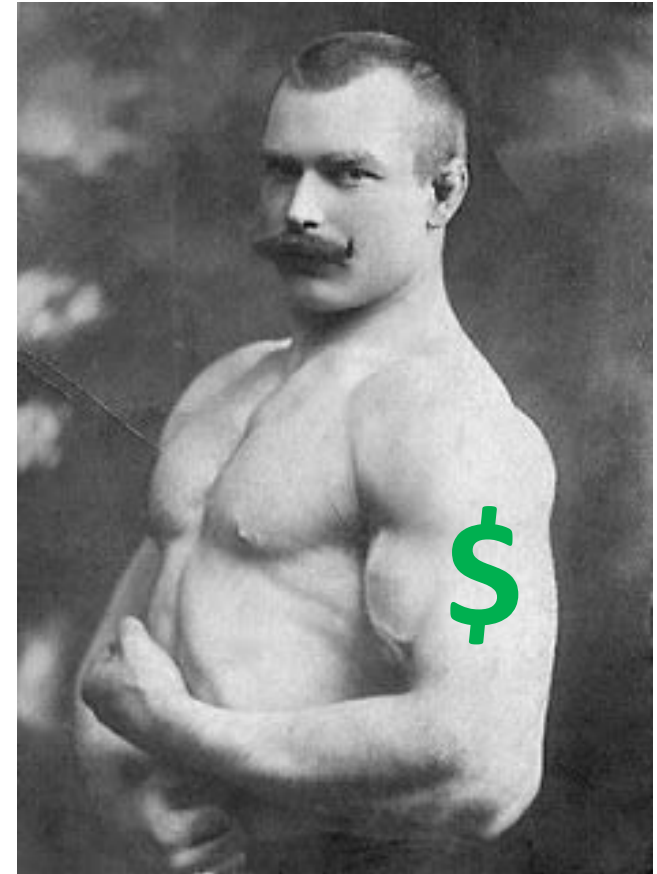
Subsidies

- Goals
 - Keep prices above market price for producers or
 - Keep prices below market price for consumers
- Direct examples (\$\$\$)
 - Grants, loans
- Indirect examples
 - Tax exemptions, competition limitations, lowered service costs, limiting legislation
 - Percentage depletion deduction



Positive Influences of Fossil Fuel Subsidies

- Maintain economic strength
 - Ideally for consumers and producers
- Maintain energy system in place
- Impact emissions positively



Negative Influences of Fossil Fuel Subsidies

- Make investments preferable to energy production and other industries requiring high energy usage
- Slow down growth of other industries
- Burden the tax payer
- Can increase public debt and decrease public spending
- Environmentally and economically impact parties typically not involved in profits
- Currently written as permanent funding



History of Documentation on Subsidies

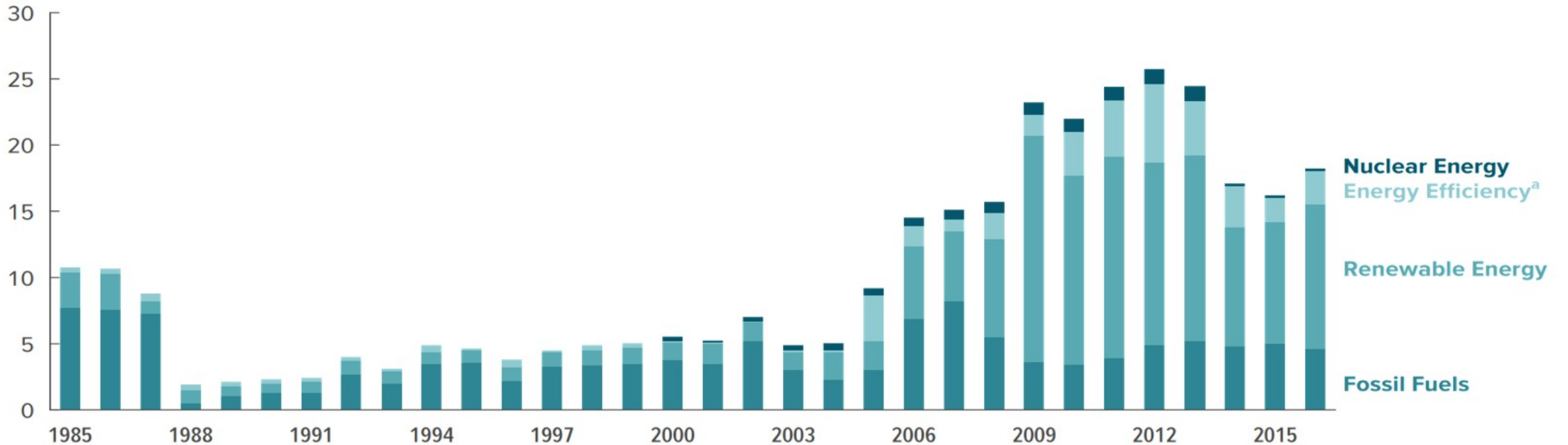
- No official economic analysis before 2010, only estimated numbers by IEA based on market prices
- Starting this year, countries are expected to individually track and report fossil-fuel subsidies and their economic impacts
- Historically difficult to track because of disagreement and ambiguity in definitions



US Subsidizing History

Costs of Energy-Related Tax Preferences, by Type of Fuel or Technology, 1985 to 2016

Billions of 2016 Dollars



Reference #5



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Recent Progress on “Wasteful Subsidies”

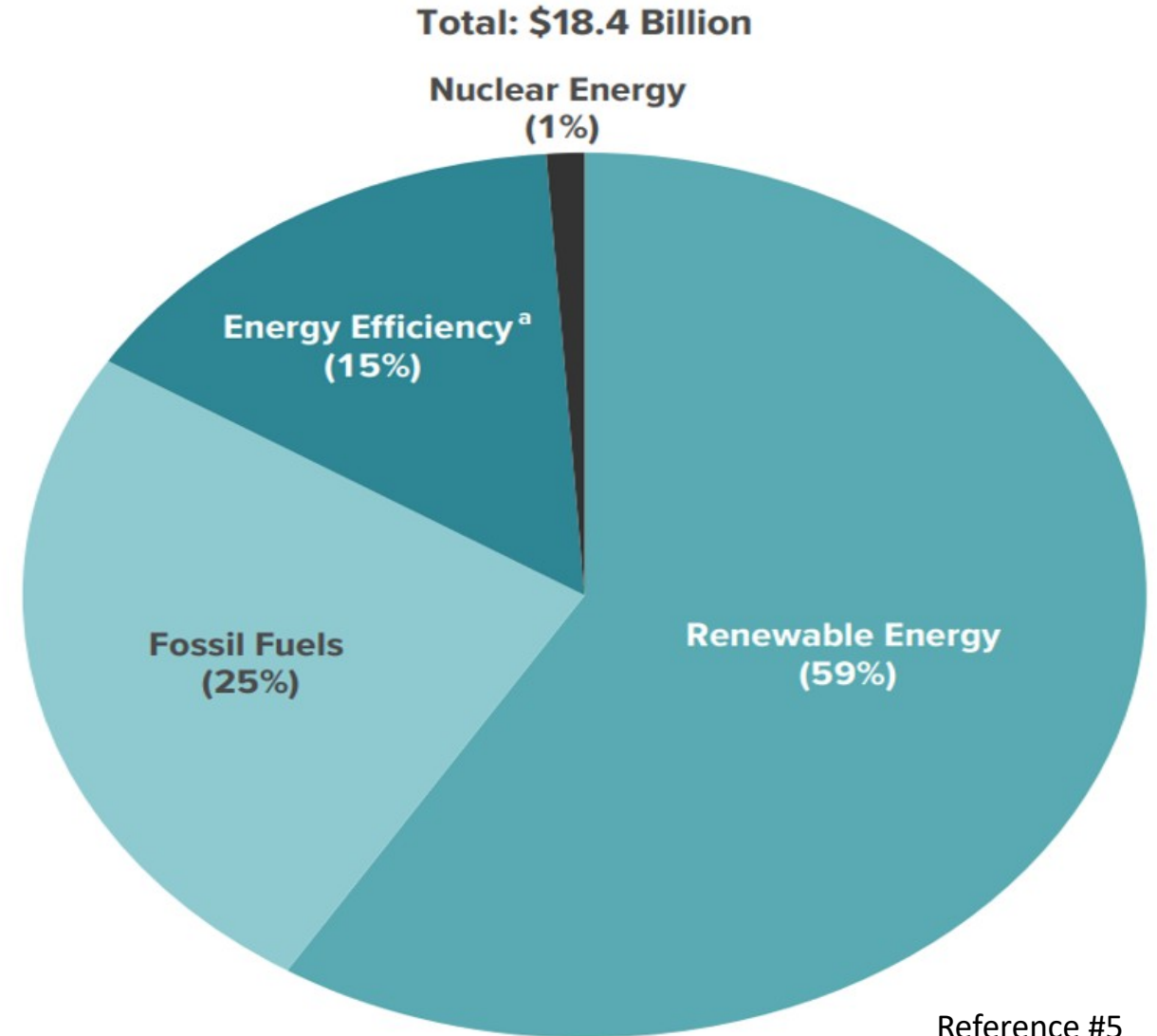
- Pittsburgh summit for G-20 in '09
 - “rationalize and phase out over the medium term inefficient fossil fuel subsidies that encourage wasteful consumption”
 - Similar statement in '09 from Asia-Pacific Economic Cooperation (APEC) forum
- Peer review starting with US & China in '14
 - Extended through many partnerships, outside of G-20 as well
- Paris Trade Agreement '15 ☹️
- G7 pledges to end fossil fuel subsidies by 2025 in '16
- Bureau of Land Management rules to reduce waste from production & replace 30 y/o policies



Recent US Subsidies

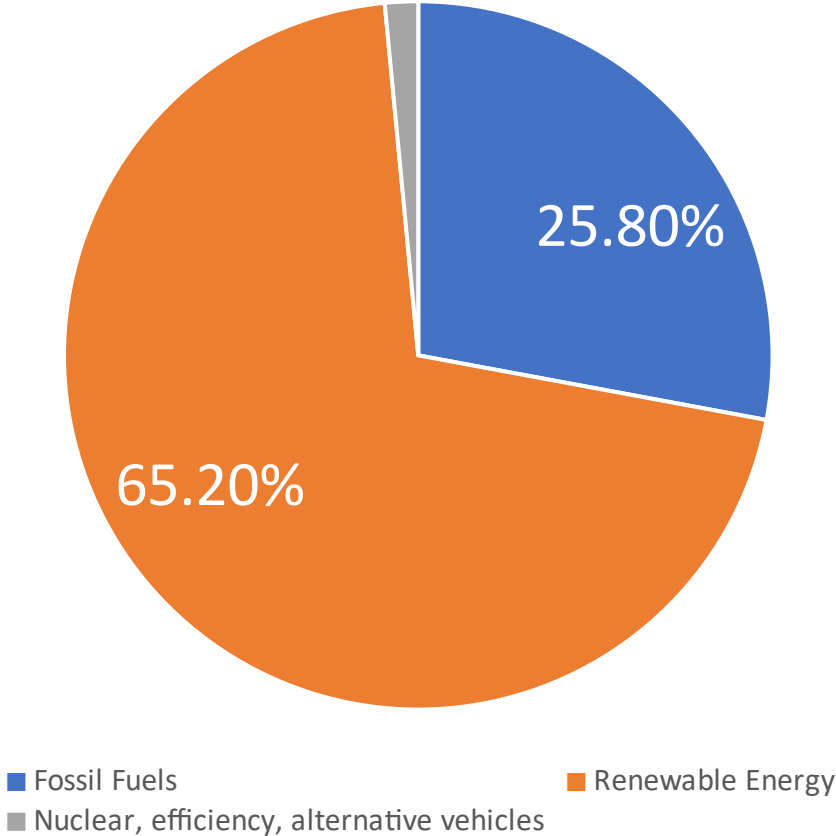
- Spends 2nd most in the world (likely historically)
 - 2010: Energy sector 2nd least of tax revenues (3% of total)
 - Correspondingly, had second lowest tax rate on gasoline and diesel
 - 2016: \$18.4 billion in tax preferences towards energy sector
 - See image to right ----->
 - For reference, total is in 100's of billions

Estimated Allocation of Energy-Related Tax Preferences, by Type of Fuel or Technology, 2016

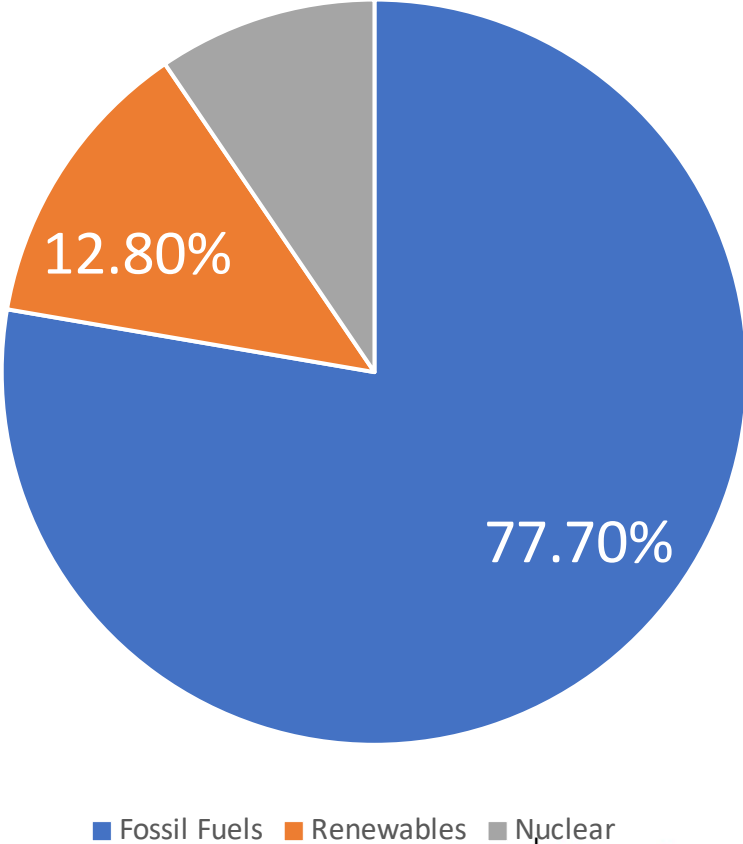


Recent US Subsidies & Usage

2017 Federal Tax Support for Energy
\$17.8 Billion Total



2017 Energy Production



Impacts of Federal Investments

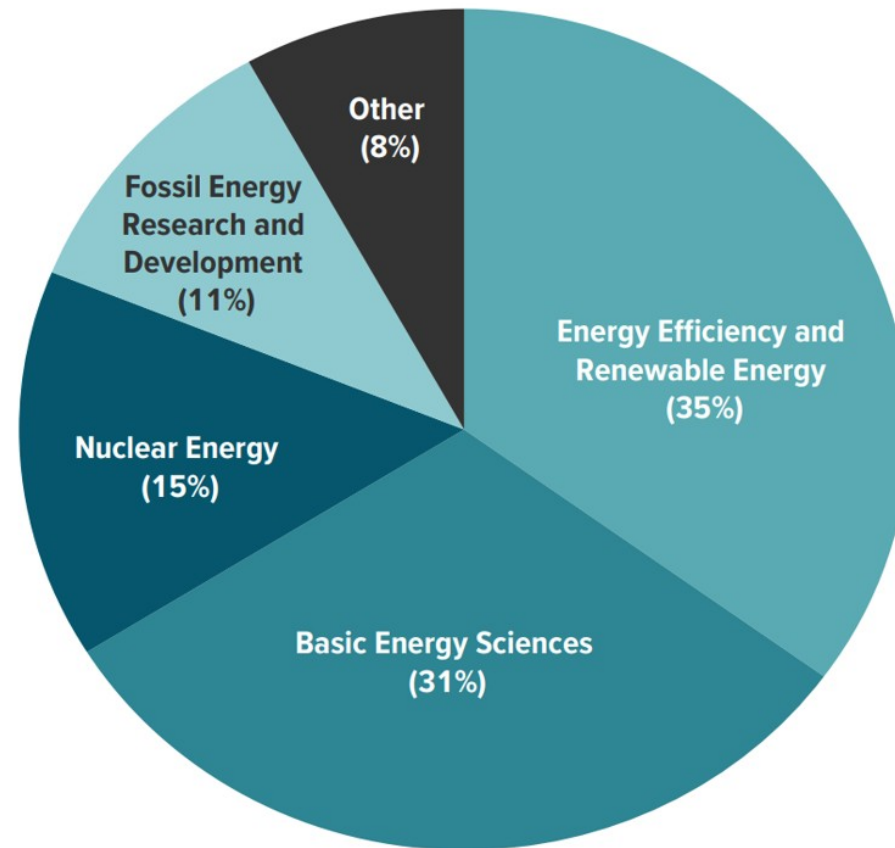
- Federal policy for domestic oil since 70's
- 2006: Production significantly increased, but not due to federal preferences
 - Simultaneously, carbon taxing proposed
 - NAS: renewables investments \$250 per ton CO₂; need \$45-60
- 2004-2014
 - Preferences increase oil production .4-.8 %, but cost \$90-200 per barrel before market price of barrel
 - NAS: No effect on production
- Overall, DOE investments in renewables -> higher rate of privatization
 - However, still no large returns



Impacts of Federal Investments

Allocation of DOE's Direct Investments in Energy Technologies and Energy Efficiency, 2016

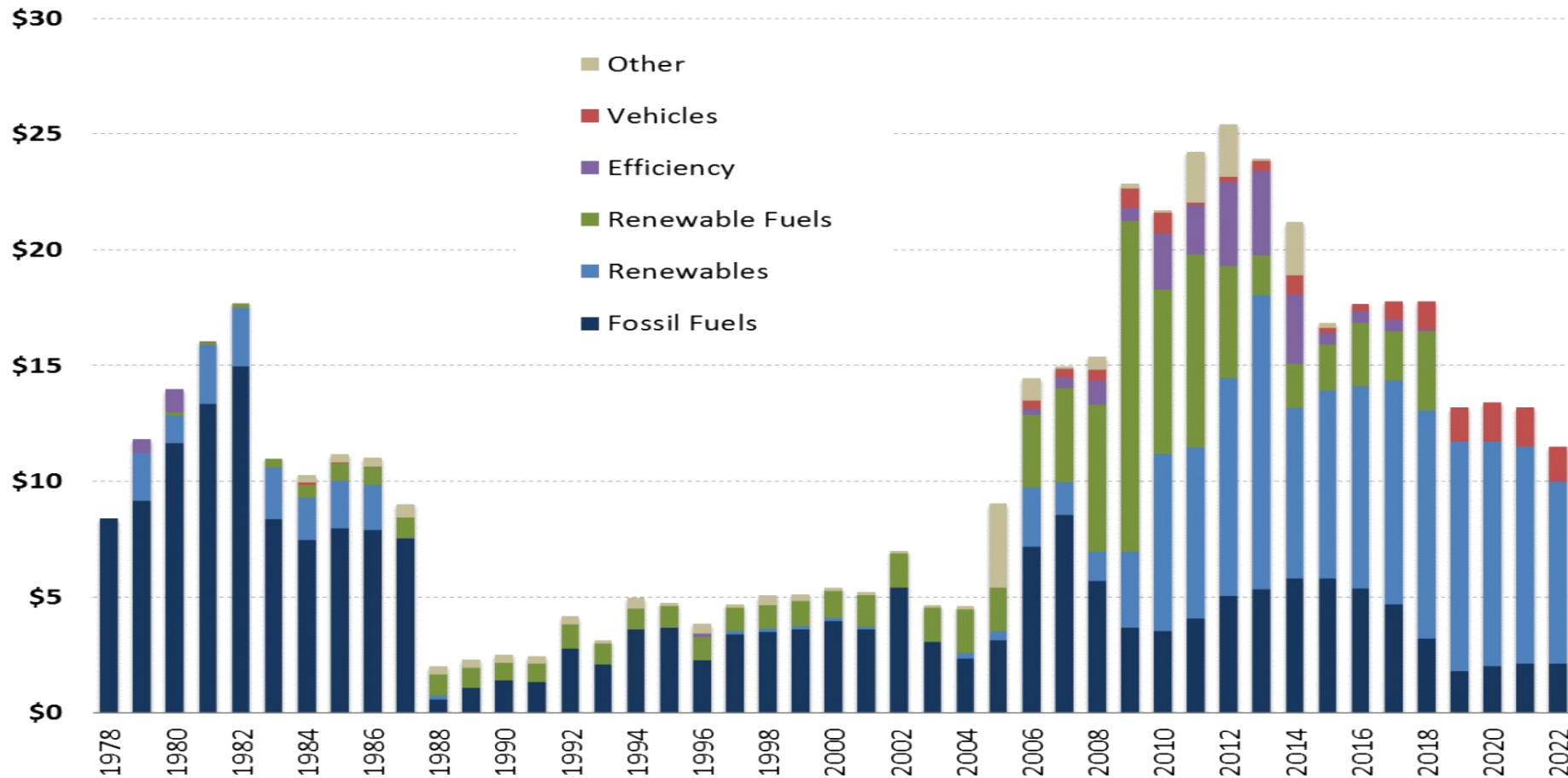
Total: \$5.9 Billion



Future of Subsidies

Figure I. Projected Annual Cost of Energy-Related Tax Incentives: FY1978-FY2022

Billions of 2018 Dollars



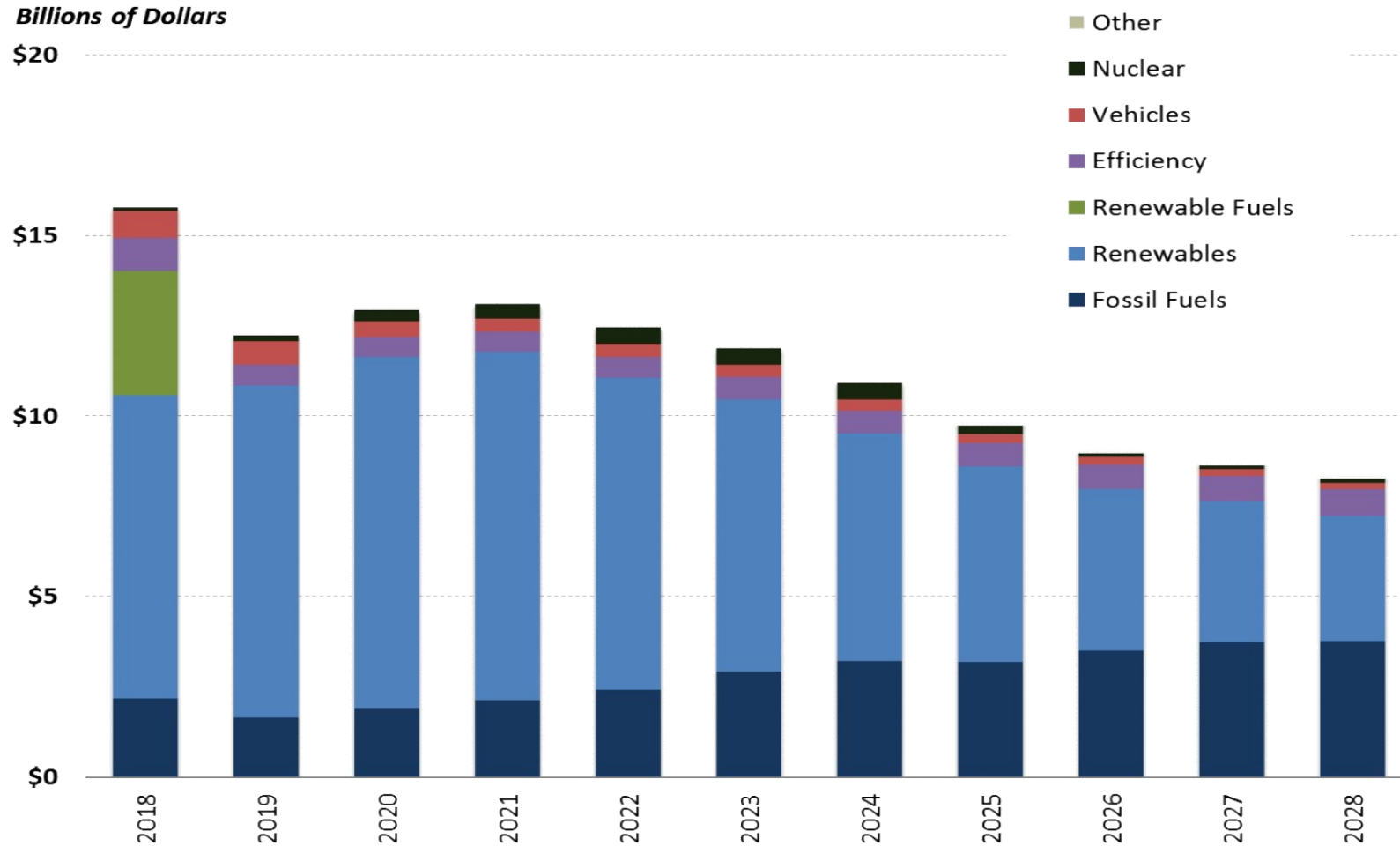
Source: CRS, using data from the Joint Committee on Taxation and Office of Management and Budget.



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Future of Subsidies

Figure 2. Projected Cost of Energy Tax Provisions: FY2018 – FY2028



Source: CRS, using data from U.S. Department of the Treasury, <https://home.treasury.gov/policy-issues/tax-policy/tax-expenditures>.



Future of Subsidies?

- Use Value Added tax
 - Can refund workers, but has economic risks
- Carbon tax
 - H.R. 6463 – MARKET CHOICE Act (2018)
- Remove guaranteed funding for fossil fuels
- Hopefully not needed at all



References

1. G. Metcalf. “On-the-Economics-of-a-Carbon-Tax-for-the-United-States.” Brookings Papers on Economic Activity Meeting (2019).
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3. D. Coady, I. Parry, L. Sears, B. Shang. “How Large Are Global Fossil Fuel Subsidies?” World Development 91: 11-27 (2017).
4. Parry, D. Heine, E. Lis, S. Li “Getting energy prices right: From principle to practice”. International Monetary Fund, Washington (2014)
5. “Testimony: Federal Support for Developing, Producing, and Using Fuels and Energy Technologies.” Before the Subcommittee on Energy - Committee on Energy and Commerce - U.S. House of Representatives. Congressional Budget Office (2017).
6. “The Value of Energy Tax Incentives for Different Types of Energy Resources.” Congressional Research Service (2019).
7. 115th Congress (2017-2018) H.R. 6463 – MARKET CHOICE Act

- For corresponding each fact to its source, please contact me for the comprehensive reference document at Jsosa@g.harvard.edu



THANK YOU



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