

US Energy Policy: Development and Challenges - Introduction

Martin Jirušek, PhD.

Course Content

- Introduction to US energy sector
- Policy aspects
- Historic and cultural background
- Emphasis on oil sector
 - history
 - structure
 - milestones and key determinants
- Contemporary issues and trends
- Ramifications for IR

Course Content

- Pay attention to deadlines and course requirements
 - Papers
 - Mid-term test
 - Final exam
- **Follow the course syllabus (available in the Information System), not the timetable**
- `jirusek.martin@mail.muni.cz`

M U N I
F S S

Role of Oil in the Global Economy

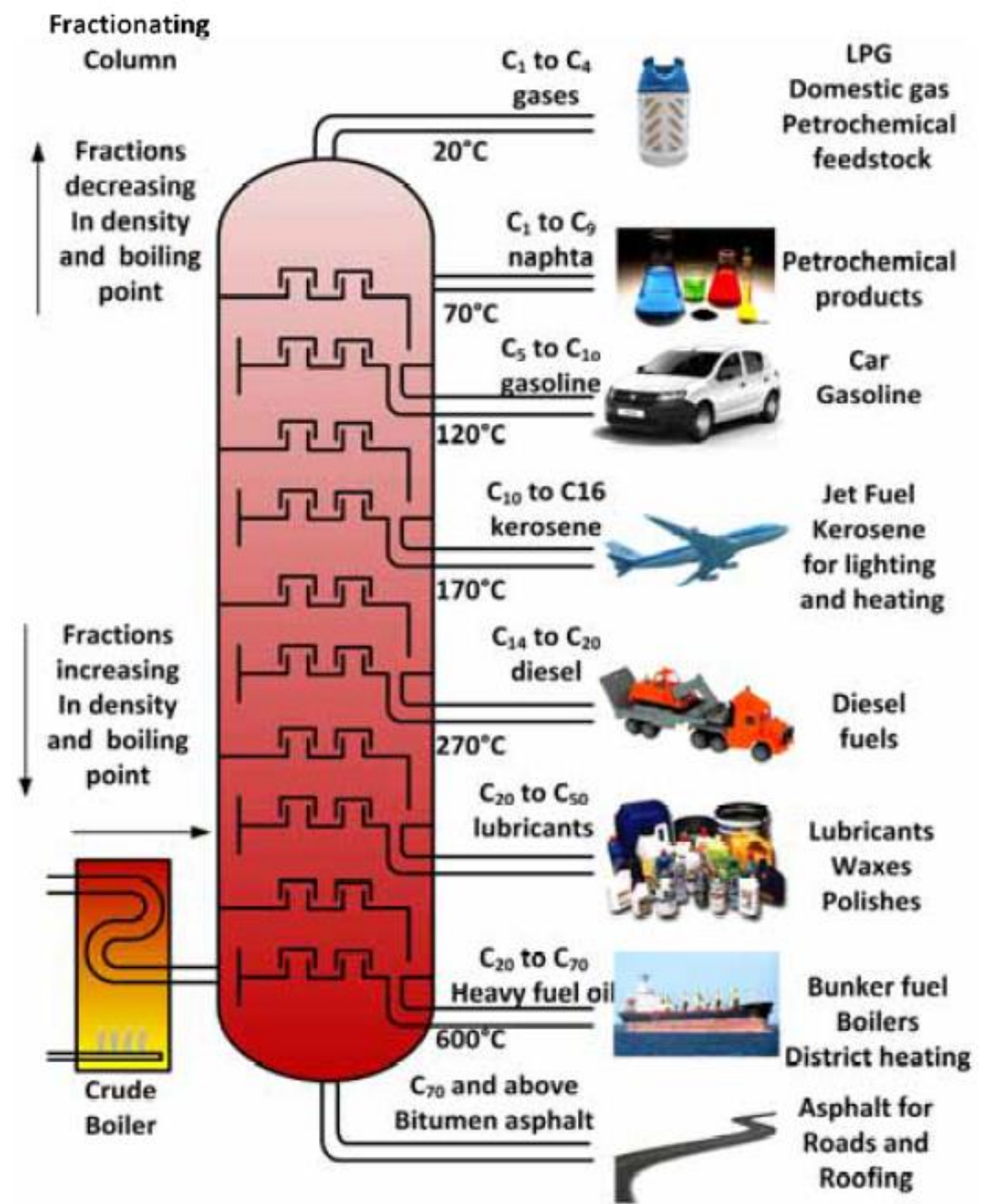
Prominent role of oil

- Crucial for transportation and chemical industry
- Prominent position of oil in the global economy
- Determining factor of economic development
 - Economic power as ‘universal power’ – can be transformed into any other type of power
 - A litmus test of the economic performance – shifts in oil consumption as signals of economic growth/stagnation

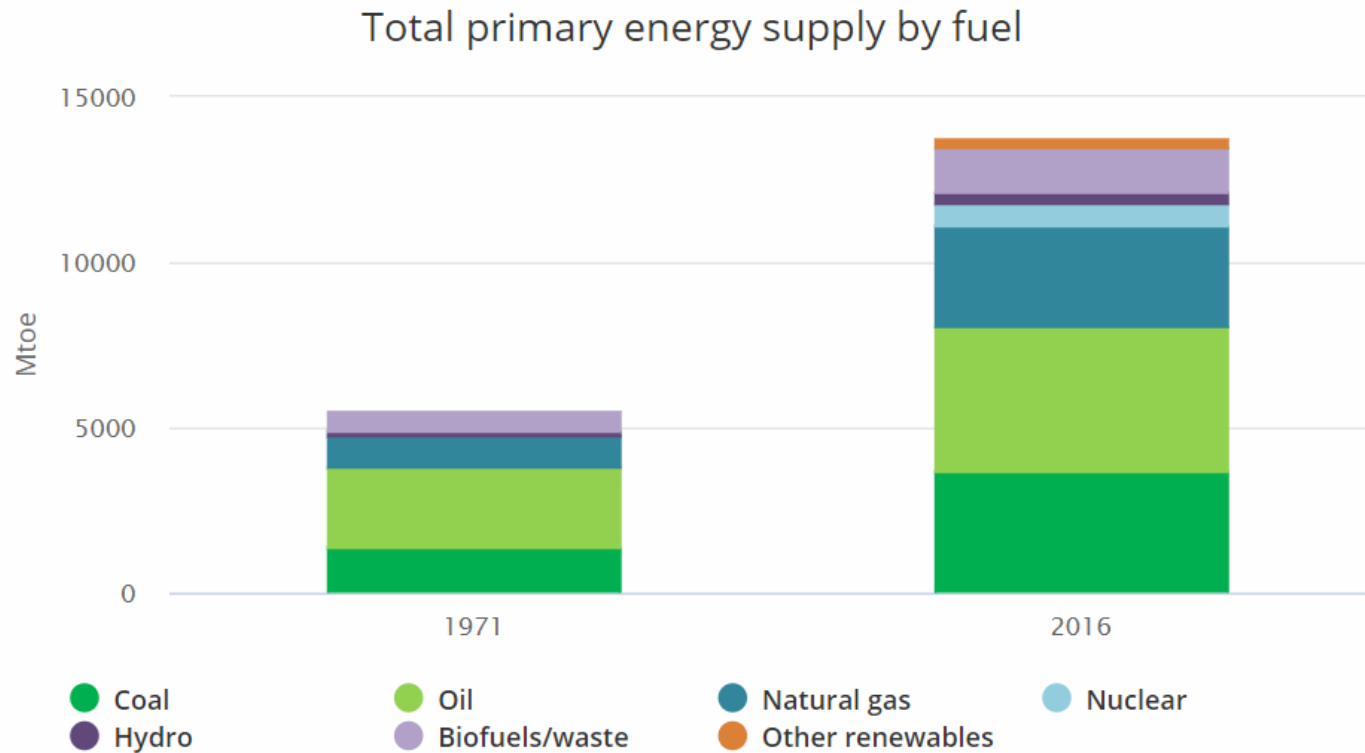
Prominent role of oil

- Easy to store and deliver
- Positive EROEI
- Relatively easy to process
- Versatile in terms of use
 - Used in transport – internal combustion engine, key for economic output
 - Used in chemical industry

Fractional Distillation

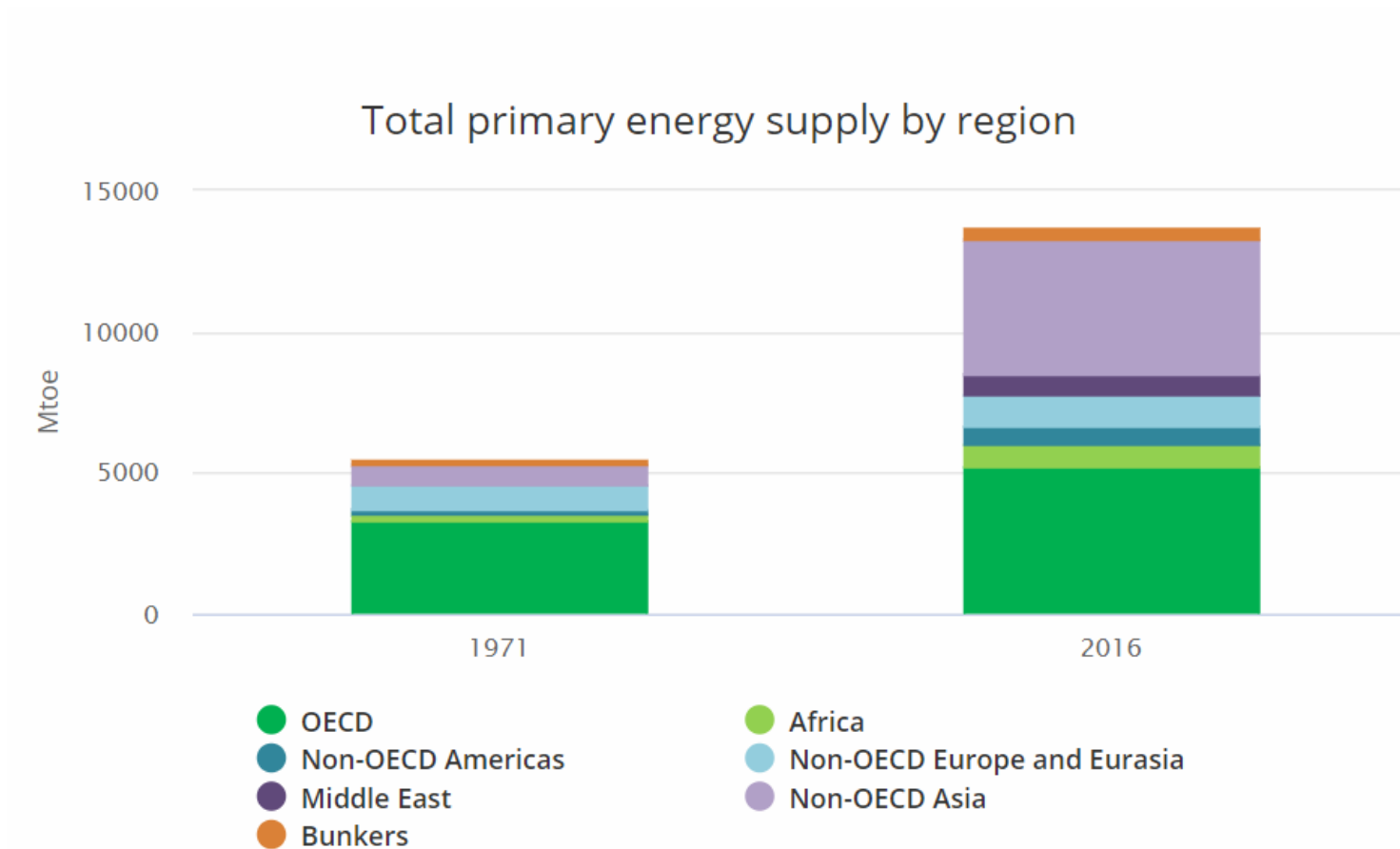


Dominant Role of Oil Among Energy Sources (World)



IEA. All rights reserved.

Non-OECD Asia Pushing the Consumption



IEA. All rights reserved.

Energy resources – tool or just an ordinary commodity?

Strategic approach

- based on realism
- state as the main player
- state interventions
- market seen as unreliable
- subordinated to a state's needs
- energy as a legitimate tool
- non-normalized commodities
- undesirable dependency

Market-based approach

- based on liberalism
- market as the main player
- state interventions limited
- energy commodities normalized
- dependency is not a problem
- cooperation is desirable
- cost/benefit sharing

Determining Factors, Trends & Concepts

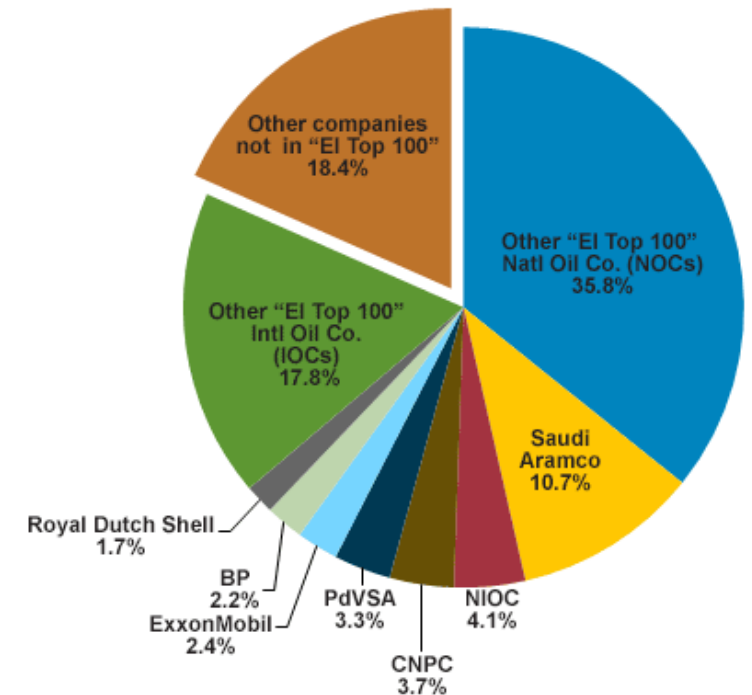
- Consumers vs. Producers
 - Supply security vs. Demand security
 - Strategic (state-centric) vs. Market-oriented approach
- Challenges to the market
 - Political
 - Technical
 - Logistical
 - Natural

...Political

- Nationalization of oil industry
- Non-market deals (exclusive access to resources)
- Unstable producers
- Oil weapon
- Wars on resources
- ‘Petrodollars’
- ‘New’ consumers (China 1990s vs. China 2019)



Share of world oil production by type of company, 2014



... Political

- Energy as a stable issue across different administrations
 - Key role in times of crises - Nixon, Carter
 - Policy changes (Dems vs. GOP)
 - differences in approaches and tools
 - emphasis on supply (GOP) – stability of supplies
- vs.
- emphasis on demand (Dems) - environmental aspects, conservation measures

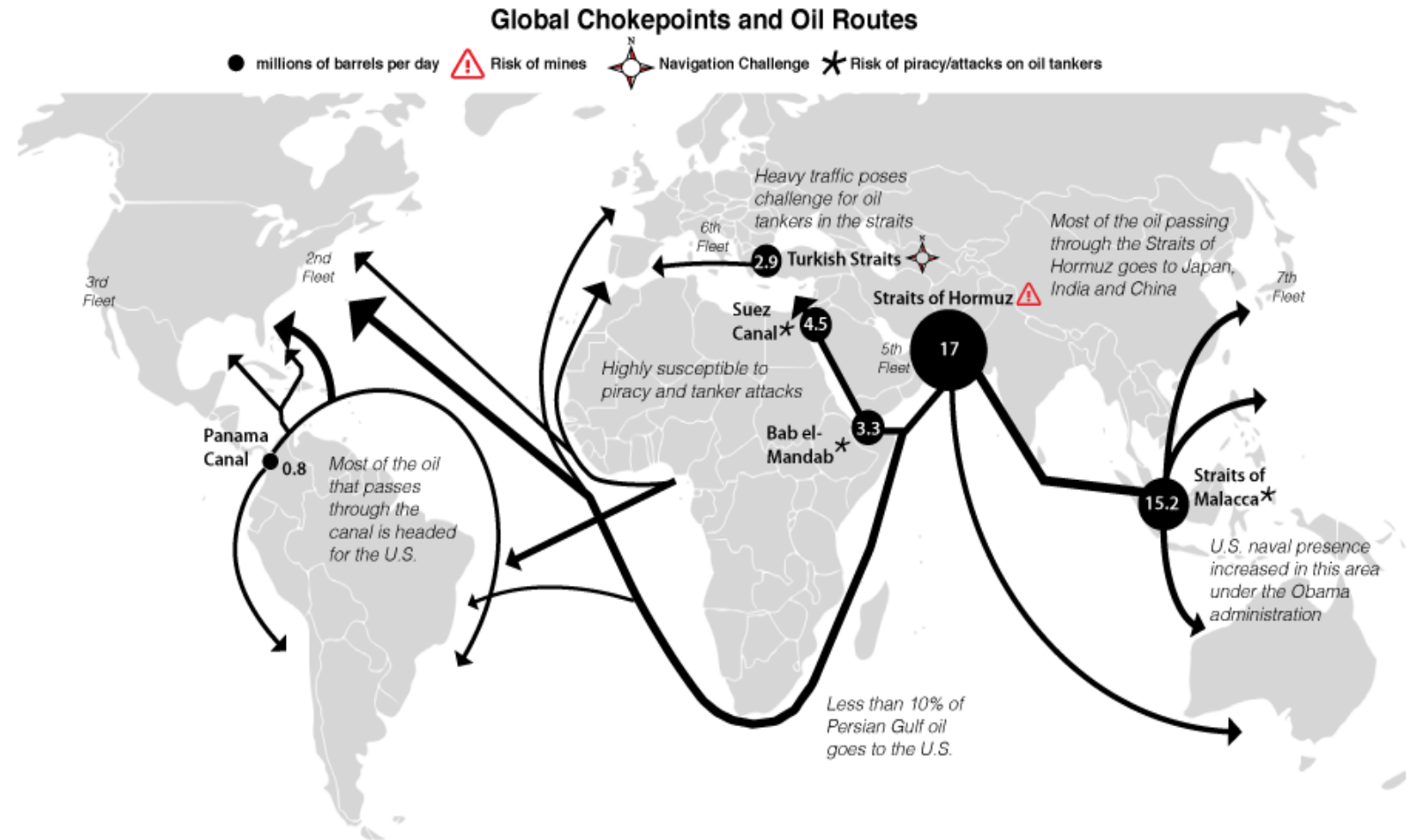
...Technical

- Unconventional sources
- New techniques
- Maturing fields



...Logistical

— Chokepoints

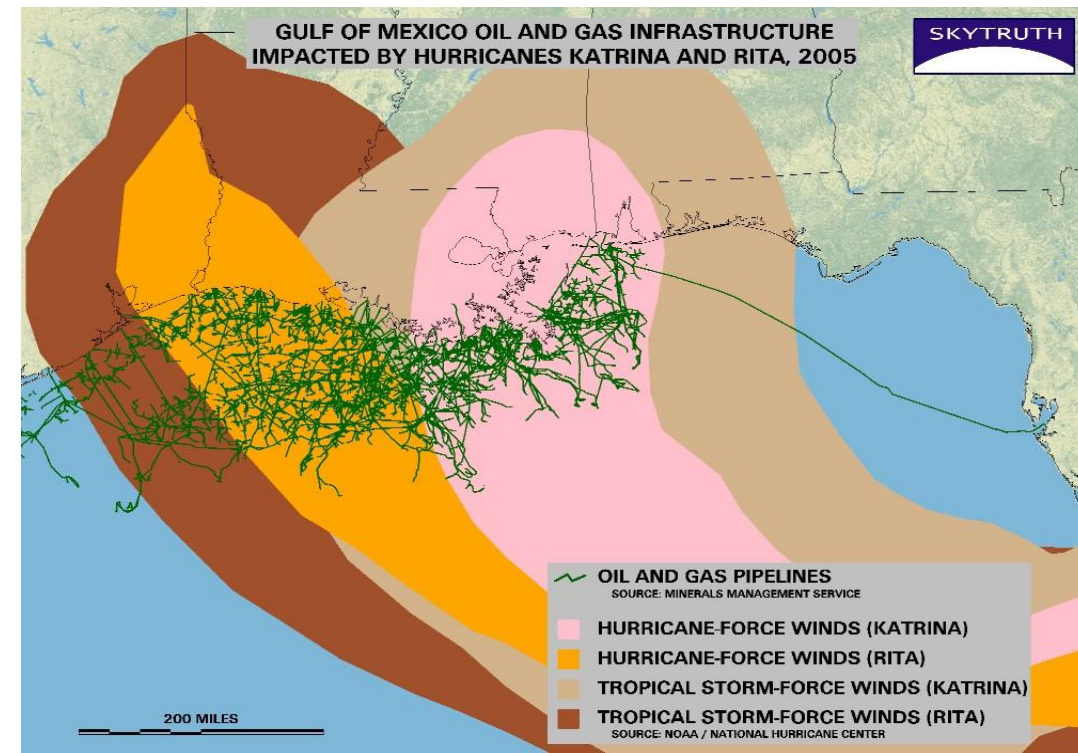
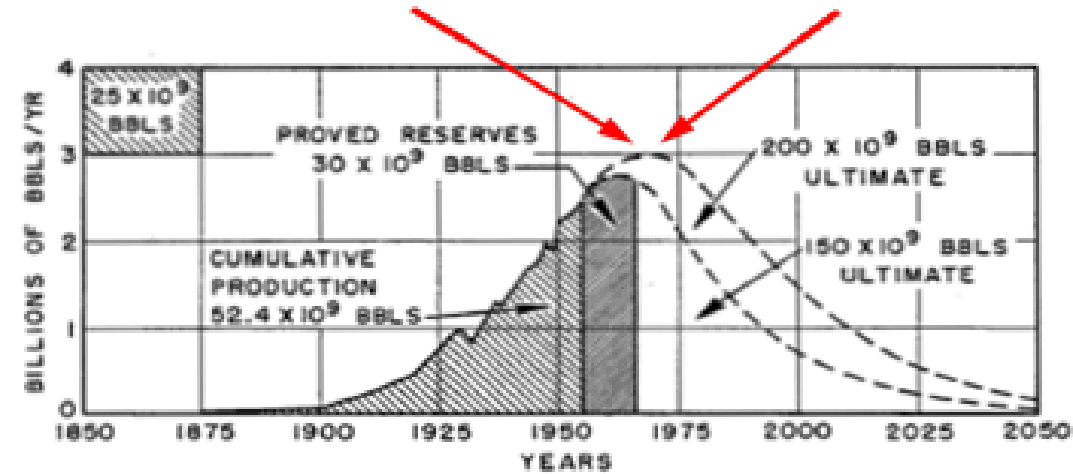


...Natural

- Non-renewables as a finite resources
 - Peak Oil
- Natural disasters
 - Environmental impact
 - Rita & Katrina (2005), 2017 hurricane season
 - Shut down 70% of US refining capacity

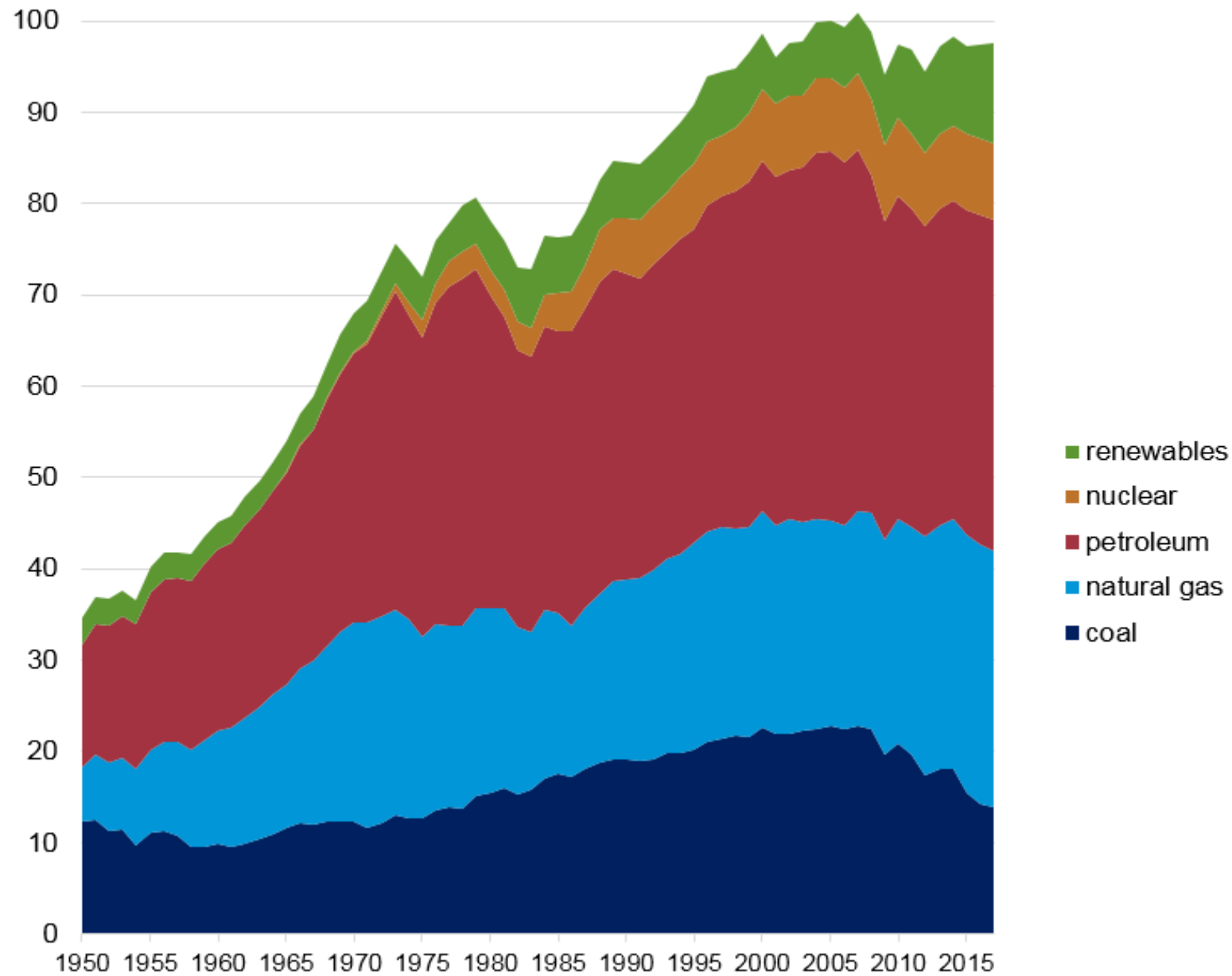
Hubbert's Prediction:
U.S. oil production peaks in 1970 at 3 billion barrels per year.

Reality:
Production peaked in December 1970 at 3.4 billion barrels per year.



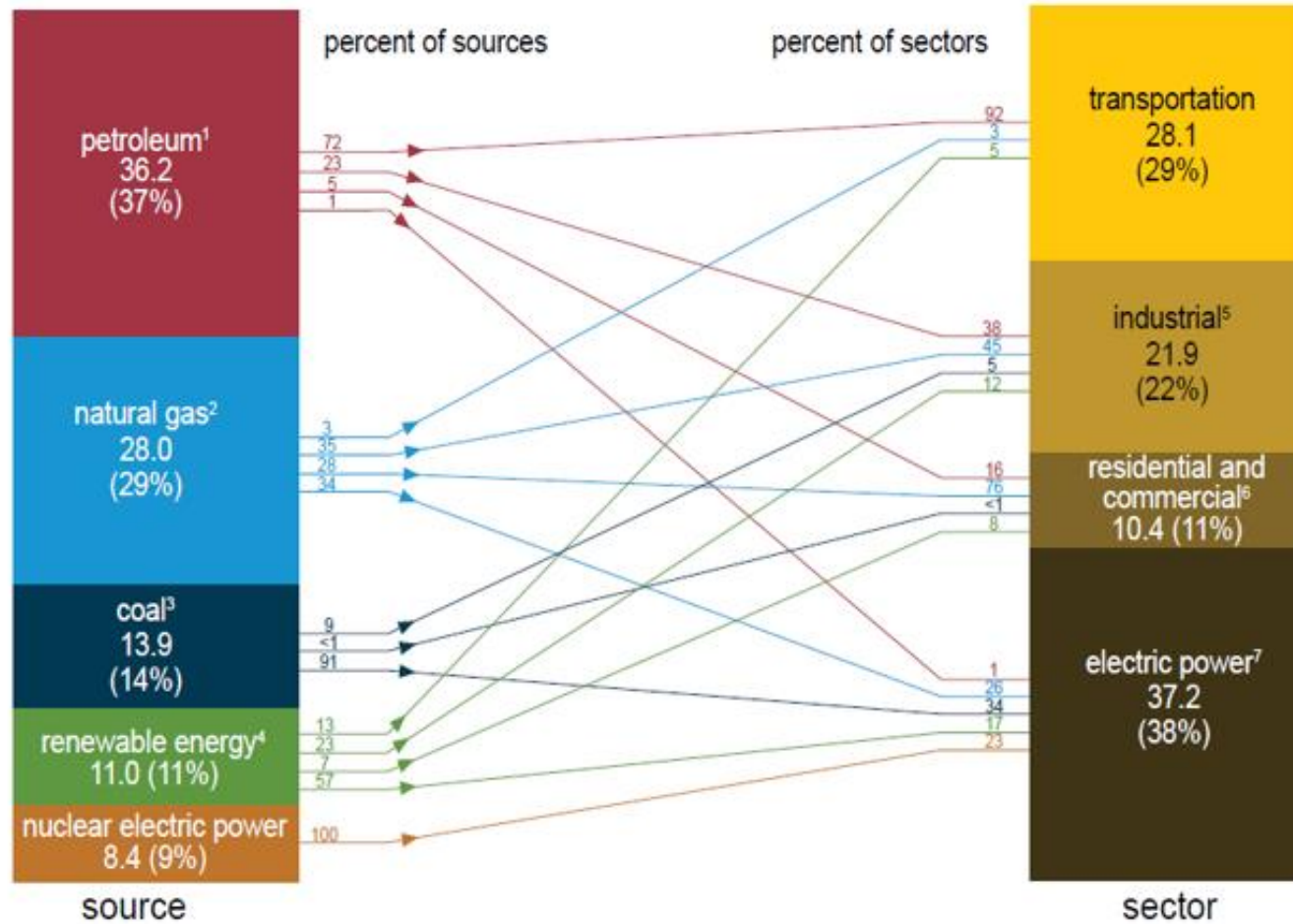
U.S. primary energy consumption by major sources, 1950–2017

quadrillion British thermal units



U.S. primary energy consumption by source and sector, 2017

Total = 97.7 quadrillion British thermal units (Btu)



¹ Does not include biofuels that have been blended with petroleum—biofuels are included in "Renewable Energy."
² Excludes supplemental gaseous fuels.
³ Includes -0.03 quadrillion Btu of coal coke net imports.
⁴ Conventional hydroelectric power, geothermal, solar, wind, and biomass.
⁵ Includes industrial combined-heat-and-power (CHP) and industrial electricity-only plants.
⁶ Includes commercial combined-heat-and-power (CHP) and commercial electricity-only plants.
⁷ Electricity-only and combined-heat-and-power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public. Includes 0.17 quadrillion Btu of electricity net imports not shown under "source."

Notes: • Primary energy is energy in the form that it is accounted for in a statistical energy balance, before any transformation to secondary or tertiary forms of energy occurs (for example, coal is used to generate electricity). • The source total may not equal the sector total because of differences in the heat contents of total, end-use, and electric power sector consumption of natural gas. • Data are preliminary. • Values are derived from source data prior to rounding. • Sum of components may not equal total due to independent rounding.
 Sources: U.S. Energy Information Administration, *Monthly Energy Review* (April 2018), Tables 1.3, 1.4a, 1.4b, and 2.1-2.6.