
Jean-Baptiste Fressoz
MORE
AND
MORE
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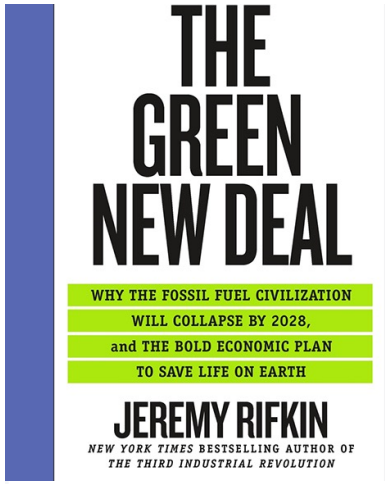
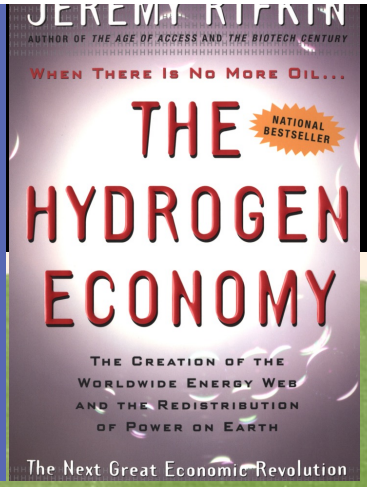
MORE
'Gobsmacking'
ECONOMIST
An All-Consuming History





Transition énergé
Runacher, « la trar
ampleur comparal
révolution industr

**La ministre de la transition énergétiq
la trajectoire à suivre pour permettre
énergies fossiles.**

Propos recueillis par Perrine Mouterde et Adrien
Publié le 01 novembre 2022 à 18h50, modifié le 0

John Kerry: Energy transition is the 'new industrial revolution'

US climate envoy is worried by 'lack of reality' in some countries about global warming but is confident the market will drive green energy shift

CHAPITRE 4

UNE MUTATION D'AMPLEUR COMPARABLE À UNE RÉVOLUTION INDUSTRIELLE, MAIS PLUS RAPIDE ET ORIENTÉE PAR LES CHOIX PUBLICS

1. Les changements de système énergétique induisent des révolutions industrielles

La première révolution industrielle est indissociable de l'avènement de l'âge du charbon. Encore marginal au début du XIXe siècle (mais déjà dominant au Royaume-Uni), le charbon va conquérir le monde en moins de six décennies : il atteint 5 % du marché mondial de l'énergie primaire en 1840, 10 % en 1855, et 50 % quarante-cinq ans plus tard, en 1900[1]. Son âge d'or est cependant bref car il est bientôt supplanté par les hydrocarbures. Énergie caractéristique de la deuxième révolution industrielle, celle des voitures et des avions, les hydrocarbures atteignent la barre des 5 % en 1915, franchissent le seuil de 10 % dans les années 1920, et dépassent les 50 % dès les années 1970. C'est donc sensiblement au même rythme que s'est déroulée la conquête du marché mondial par ces deux énergies

Analysis

UK could be at forefront of green Industrial Revolution with carbon cluster plans - and here's why

The UK's detailed plans for how to fund, construct and run major carbon clusters in the Tees Valley, Scotland, the Humber, Black Country and South Wales are genuinely world leading, with Britain's clusters expertise admired far and wide, Ed Conway writes.

Ed Conway
Economics and data editor @EdConwaySky

Saturday 30 December 2023 15:22, UK

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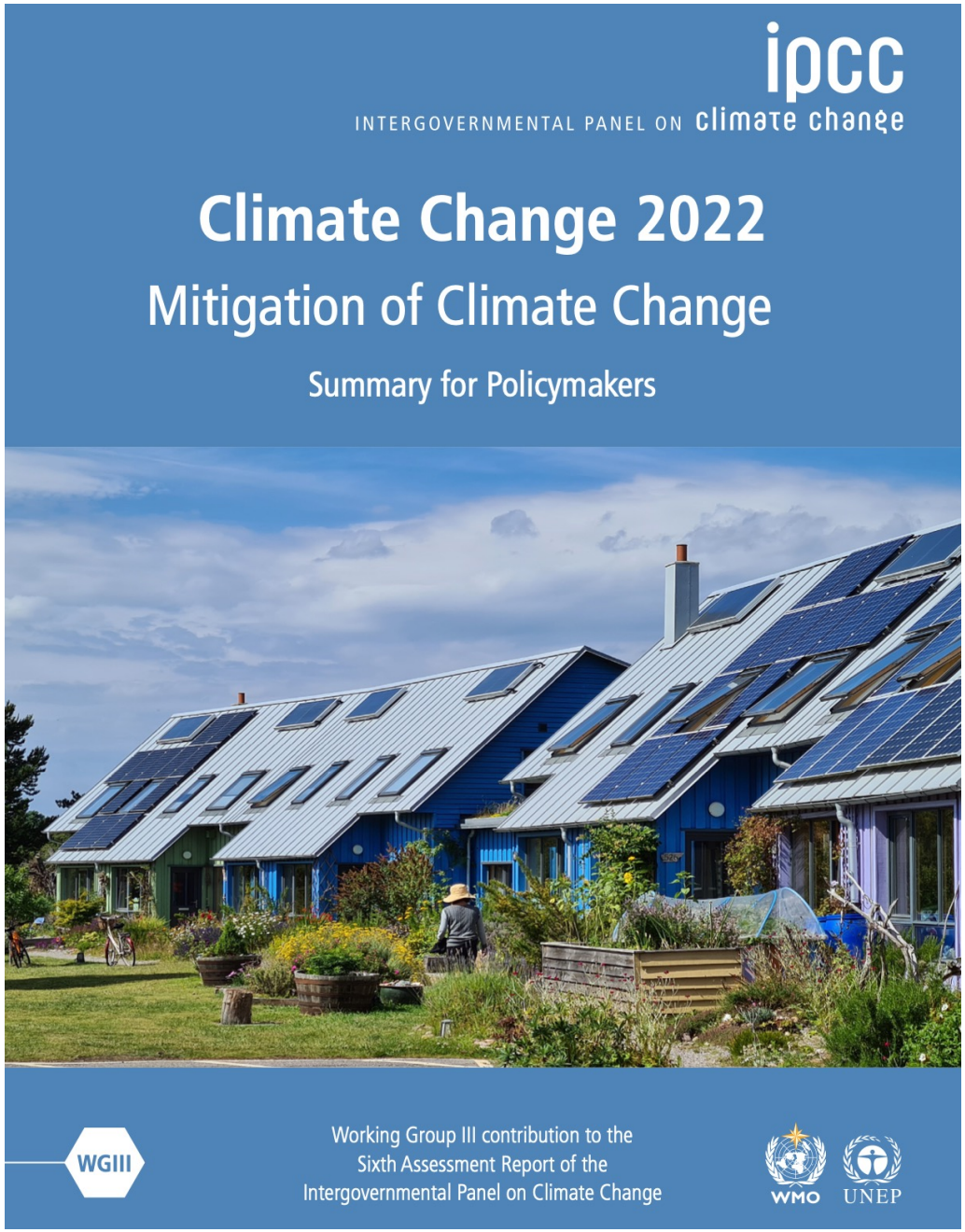
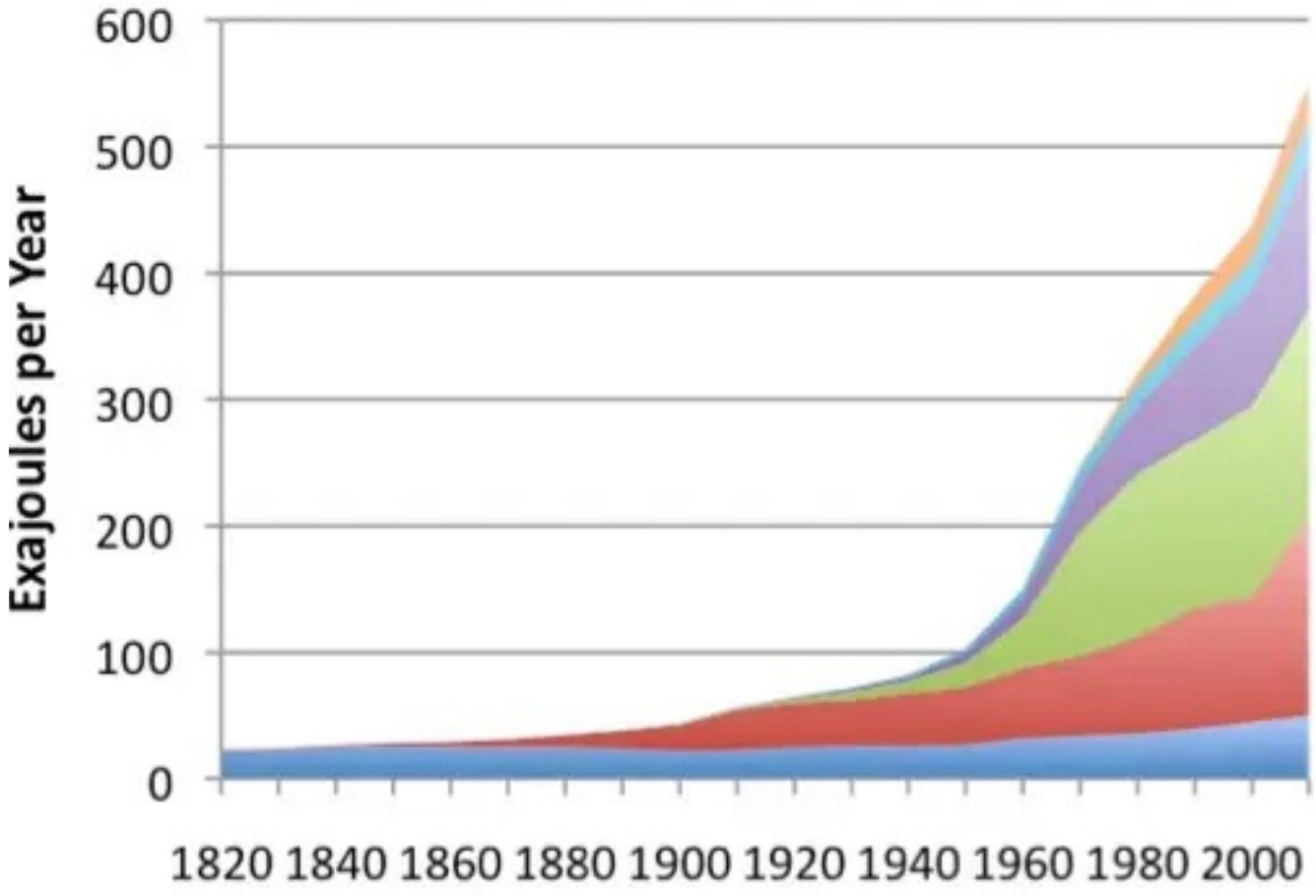


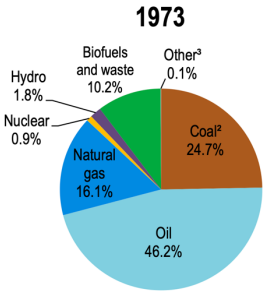
« Energy transitions can occur faster than in the past »

« A Low-Carbon Energy Transition Needs to Occur Faster Than Previous Transitions ».

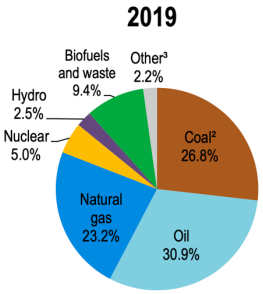
World Energy Consumption



Nuclear
Hydro-Elect
Nat Gas
Oil
Coal
Biofuels



254 EJ



606 EJ

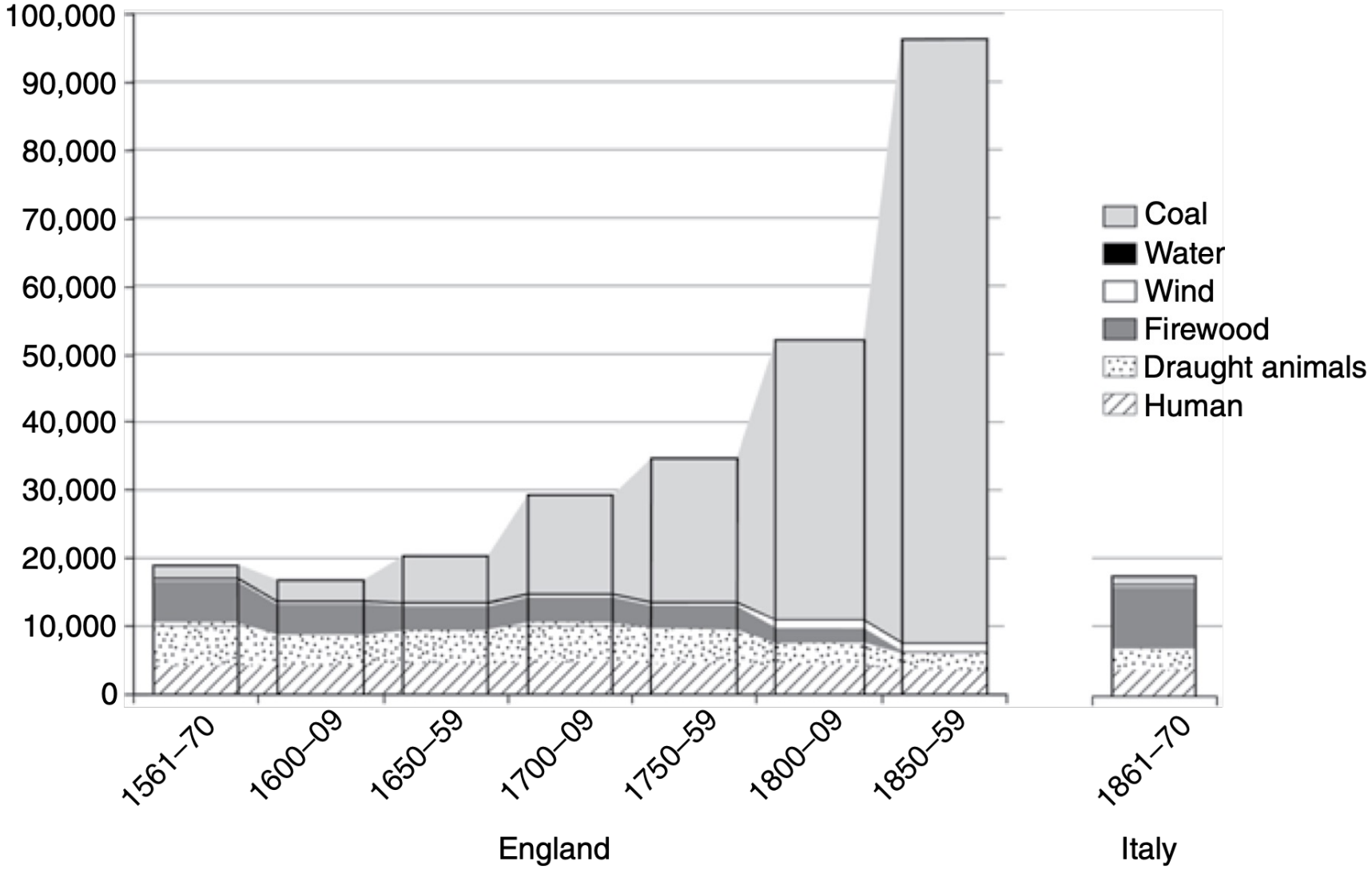


Figure 4.1 *Annual energy consumption per head (megajoules) in England and Wales 1561–70 to 1850–9 and in Italy 1861–70.*

Anthony Wrigley *Energy and the Industrial Revolution*
(based on the data collected by Paul Warde)

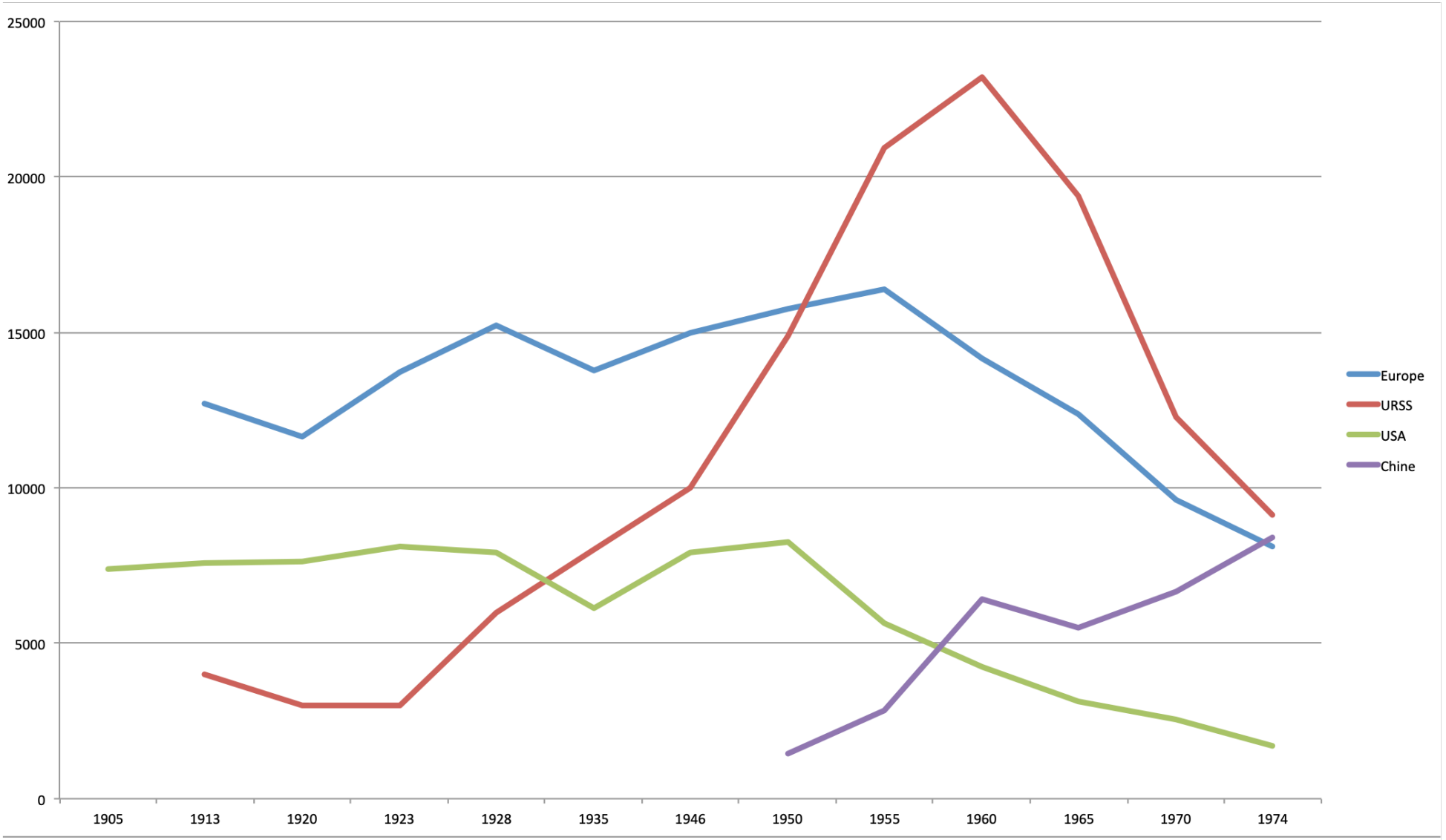
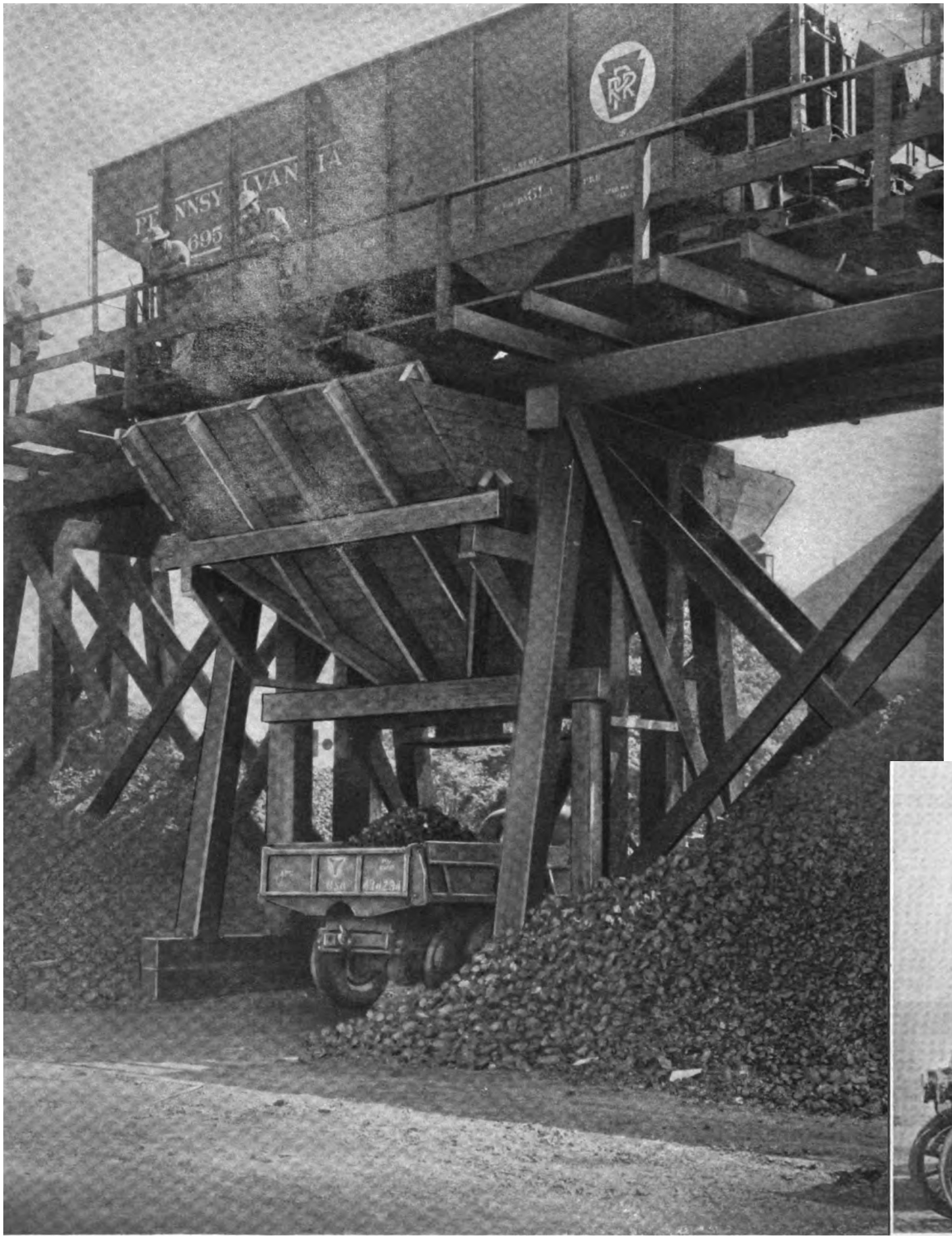
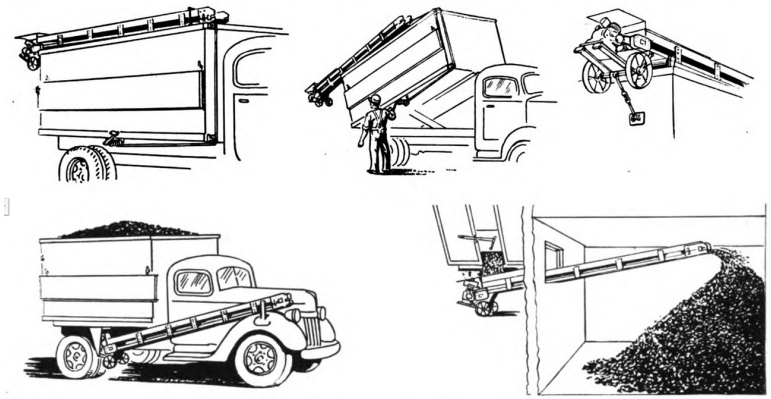
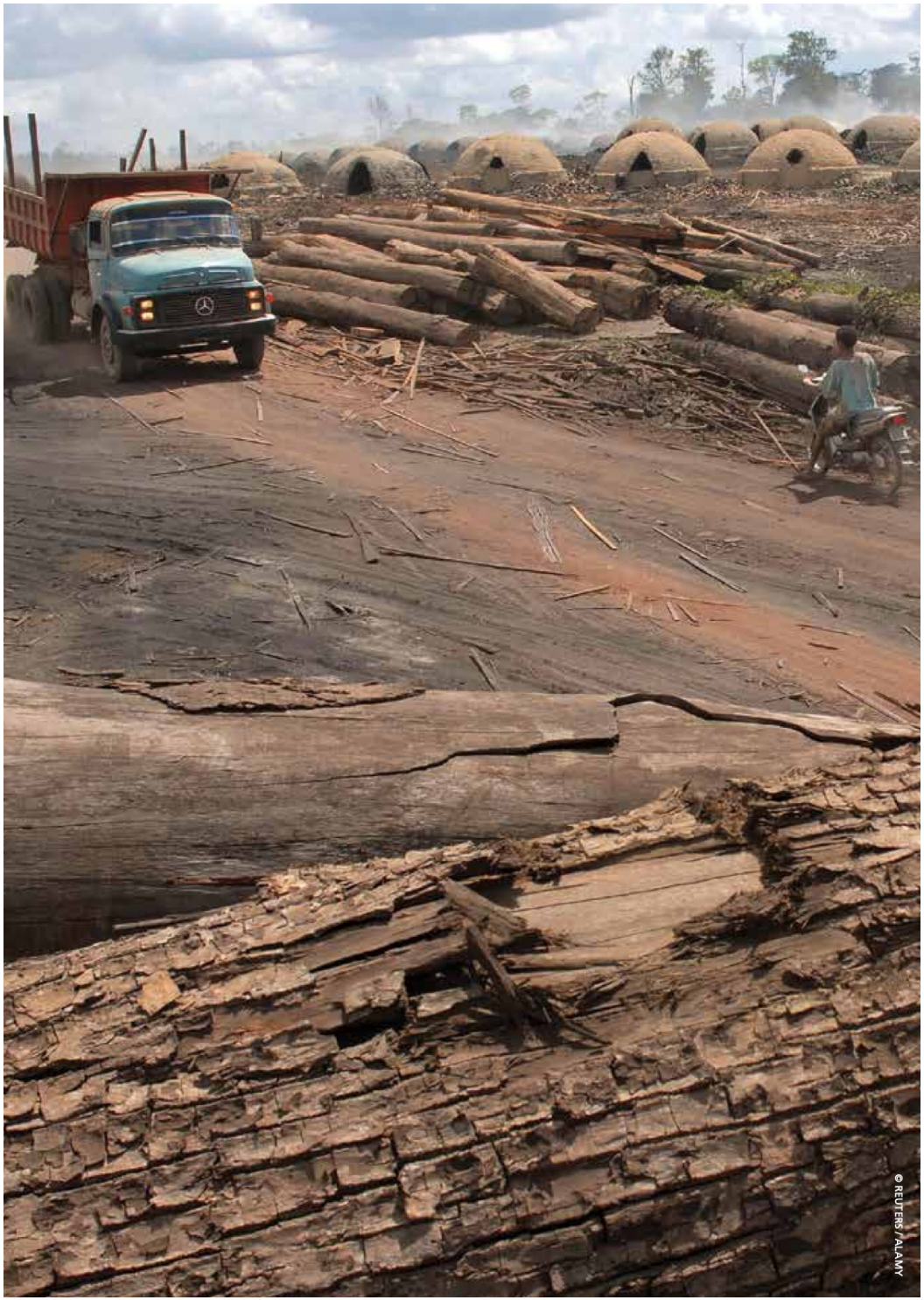


Figure 1. Consommation de bois de mines en milliers de mètres-cubes.
Sources : FAO, *European Timber Statistics*, 1913-1950, Genève 1953 ; FAO, Forest Products Statistics, Part II Apparent Consumption, 1950-1975, Rome, 1975 ; J.J. MacGregor, « Timber Statistics », *Journal of the Royal Statistical Society,* vol. 116, n°3, 1953, p. 298-322 ; Forest Service, US Department of Agriculture, *Timber Resources for America's Future*, 1958 ; Robert Stone, « Wood products used by coal mines », *Forest Products Journal*, vol. 35, n°6, p. 45-52 ; Richardson, *Forestry in Communist China*, Baltimore, Johns Hopkins, 1966 p. 164.


PENNSYLVANIA
695




MASSACHUSETTS WHARF COAL CO.
8



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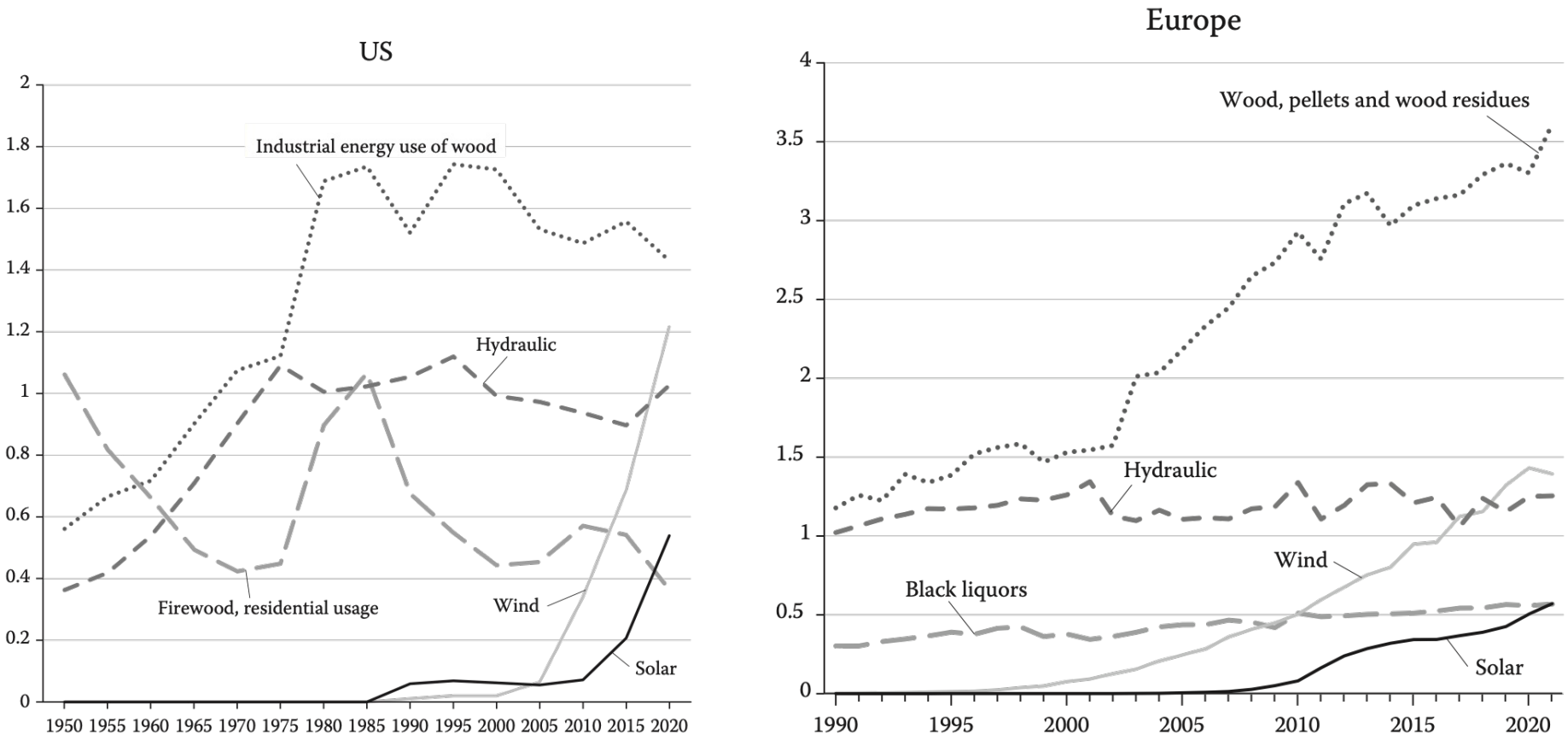
Renewable energies in millions of terajoules in the US and in Europe. (Data from IEA and Eurostat, primary energy.)




JCB
535

Energy transition : a genealogy

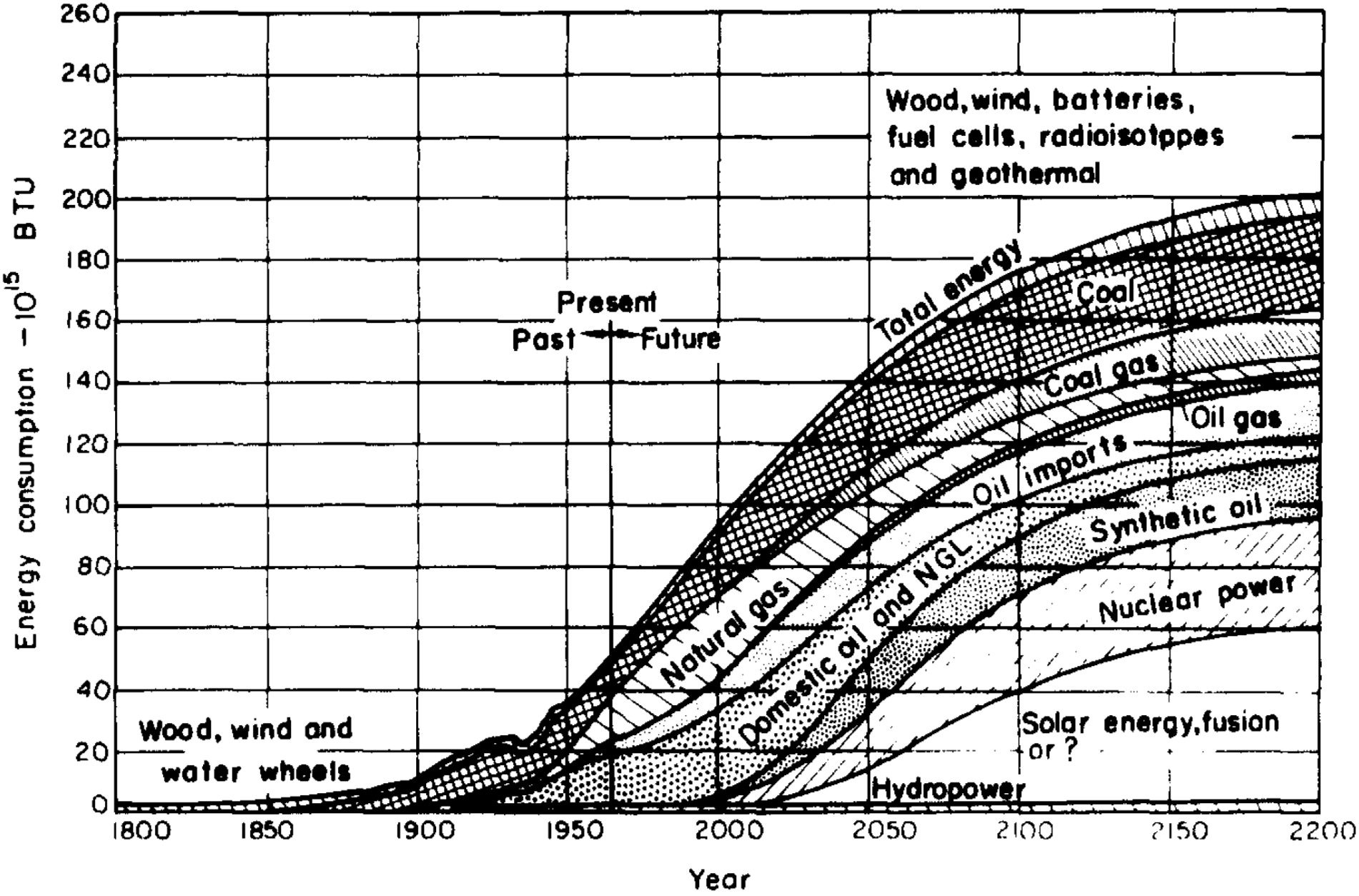
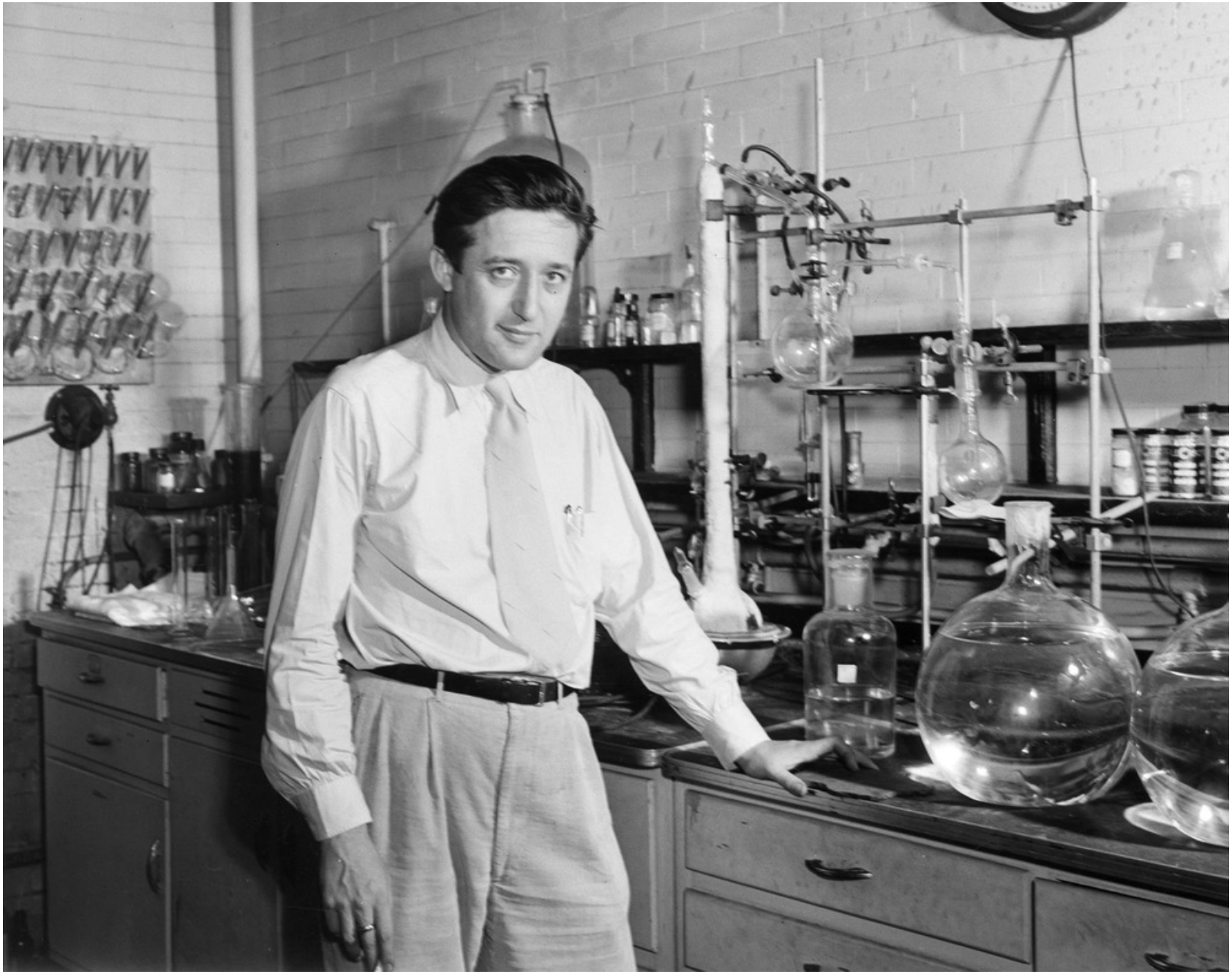


Fig. 1. Energy sources in the United States.

Leon P. Gaucher, « Energy Requirements of the future », *Solar Energy*, 1972, vol. 14, p. 5-10.



Harrison Brown

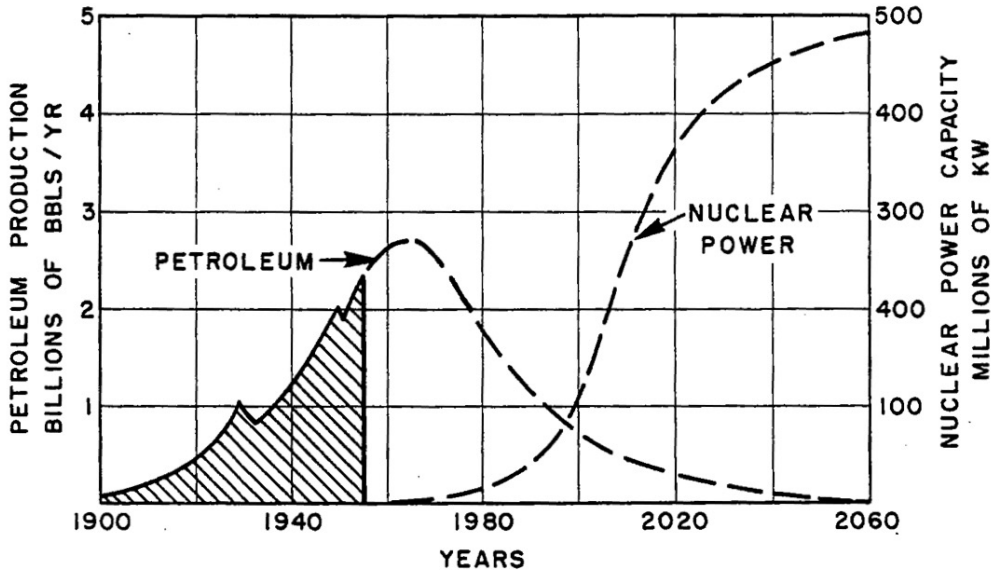
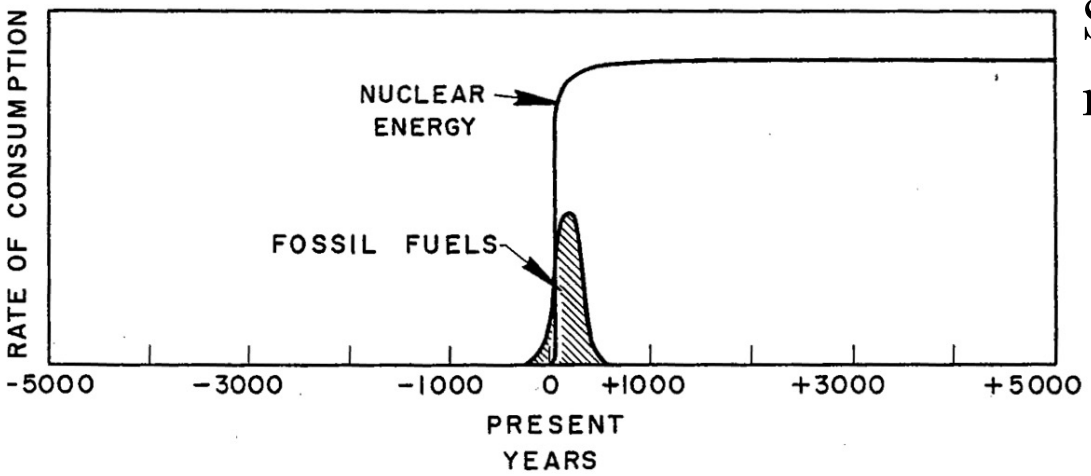


Figure 29 – Concurrent decline of petroleum production and rise of production of nuclear power in the United States. Growth rate of 10 percent per year for nuclear power is assumed; actual rate may be twice this amount.



gure 30 – Relative magnitudes of possible fossil-fuel and nuclear-ergy consumption seen in time perspective of minus to plus 5000 years.

Marion K. Hubbert, « Nuclear Energy and the Fossil Fuels », Shell Development Company, n°95, 1956.

FEW PEOPLE DOUBT THAT THE WORLD HAS ENTERED AN ENERGY TRANSITION AWAY FROM DEPENDENCE UPON FOSSIL FUELS AND TOWARD SOME MIX OF RENEWABLE RESOURCES THAT WILL NOT POSE PROBLEMS OF CO_2 ACCUMULATION. THE QUESTION IS HOW DO WE GET FROM HERE TO THERE WHILE PRESERVING THE HEALTH OF OUR POLITICAL, ECONOMIC, AND ENVIRONMENTAL SUPPORT SYSTEMS. WHAT I WILL DO IN THE REMAINDER

THE IIASA STUDY CONCLUDES THAT TO MAKE A SUCCESSFUL TRANSITION FROM FOSSIL FUELS TO AN ENERGY SYSTEM BASED ON RENEWABLE RESOURCES, THE WORLD ECONOMY MUST EXPAND ITS PRODUCTIVE POWERS. IT MUST EXPAND IN ALL DIMENSIONS, BUT, MOST IMPORTANTLY, IN THE NEW KNOWLEDGE AND HUMAN SKILL THAT ENLARGE THE TECHNOLOGICAL BASE. FOR SUCH KNOWLEDGE AND SKILL, MORE THAN BRUTE CAPITAL, IS WHAT ENABLES SOCIETIES IN THIS AGE TO USE THE SAME OR EVEN FEWER RESOURCES TO PRODUCE MORE.

THE IIASA STRATEGY FOR INVENTING THAT FUTURE RESEMBLES THE ONE I HAVE SUGGESTED: A STRATEGY FIRST, OF GRADUAL TRANSITION FROM CLEAN, HIGH QUALITY RESOURCES--NATURAL GAS AND OIL--TO DIRTIER UNCONVENTIONAL FOSSIL RESOURCES. THE STUDY ALSO TAKES NOTE OF THE CO_2 ISSUE, RECOMMENDING THAT SOCIETY INCORPORATE SUFFICIENT NON-FOSSIL OPTIONS IN THE ENERGY SUPPLY SYSTEM SO AS TO ALLOW EXPANSION OF THAT BASE, IF NECESSARY, AS THE EFFECTS OF CARBON DIOXIDE BECOME BETTER QUANTIFIABLE THROUGH FURTHER RESEARCH.

FUELS. FORTUNATELY, THESE CONDITIONS GIVE SCIENCE AND ENGINEERING A LOT OF ROOM TO MANEUVER. IT APPEARS WE STILL HAVE TIME TO GENERATE THE WEALTH AND KNOWLEDGE WE WILL NEED TO INVENT THE TRANSITION TO A STABLE ENERGY SYSTEM.

Edward David
« Inventing the future, Energy and the CO2 problem »,
Exxon, 1982.

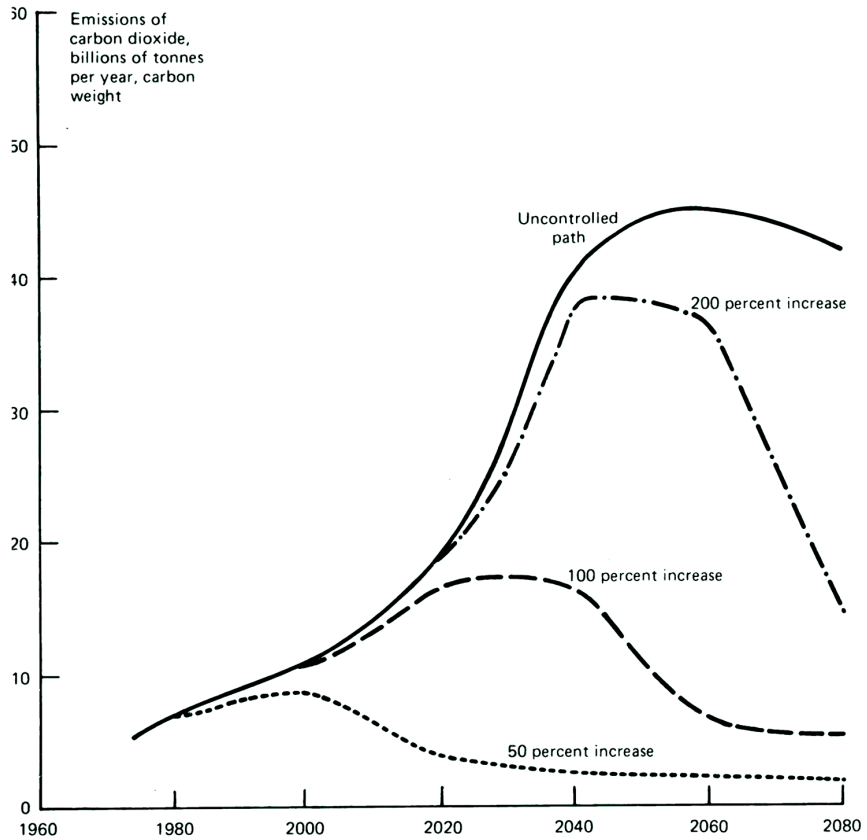
« We have to think climate as a resource »

Robert White, « Climate at the Millenium », World Climate Conference, 1979, p. 5.

William D. Nordhaus, « The Allocation of Energy Resources », *Brookings Papers on Economic Activity*, vol. 3, 1973, p. 529-576

William Nordhaus, « Can We Control Carbon Dioxide? », IIASA Working Paper, WP-75-63, 1975, p. 34

Alan S. Manne, « waiting for the breeder », IIASA Research Report, RR-74-5, 1974.

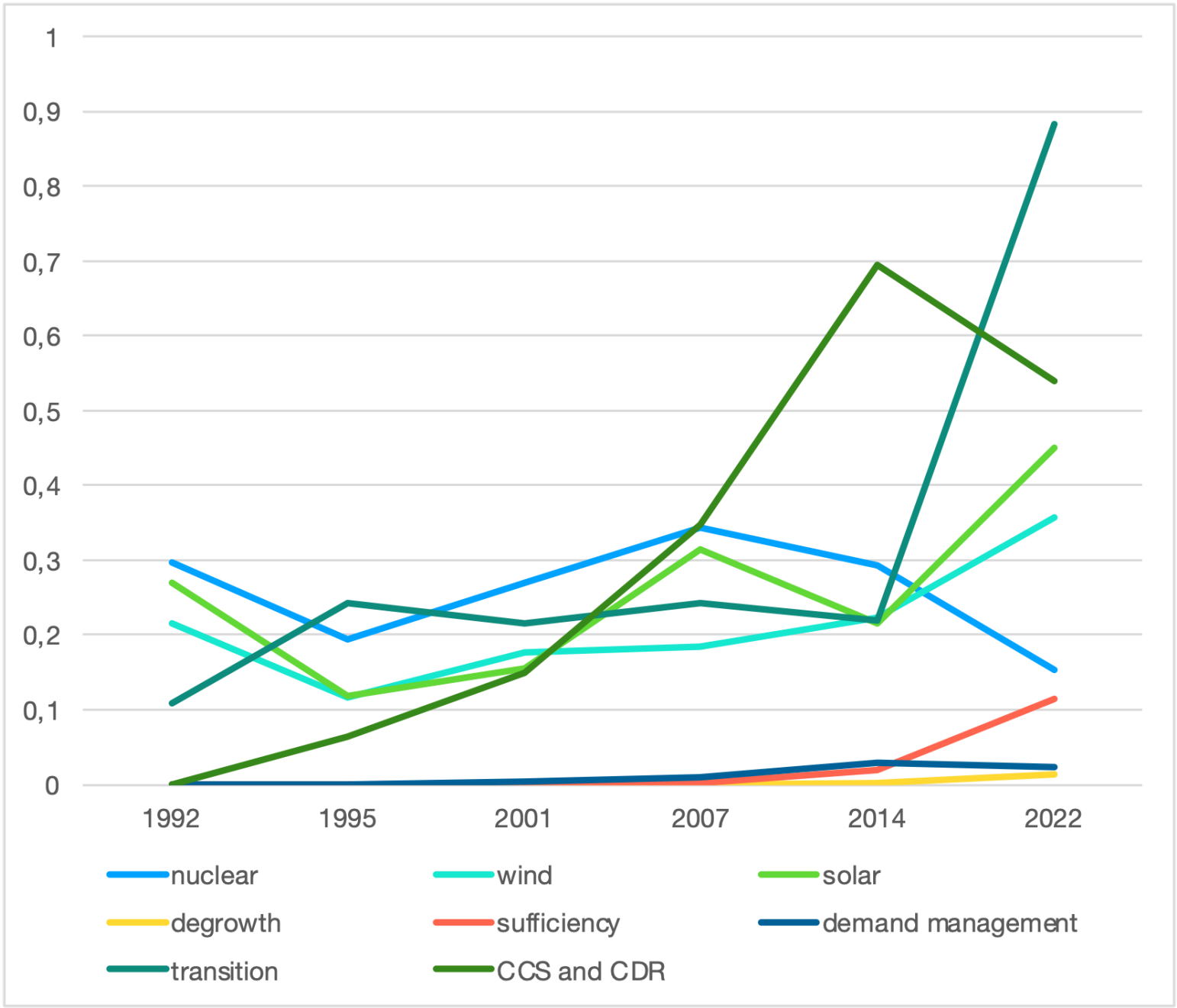


1988 creation of the IPCC

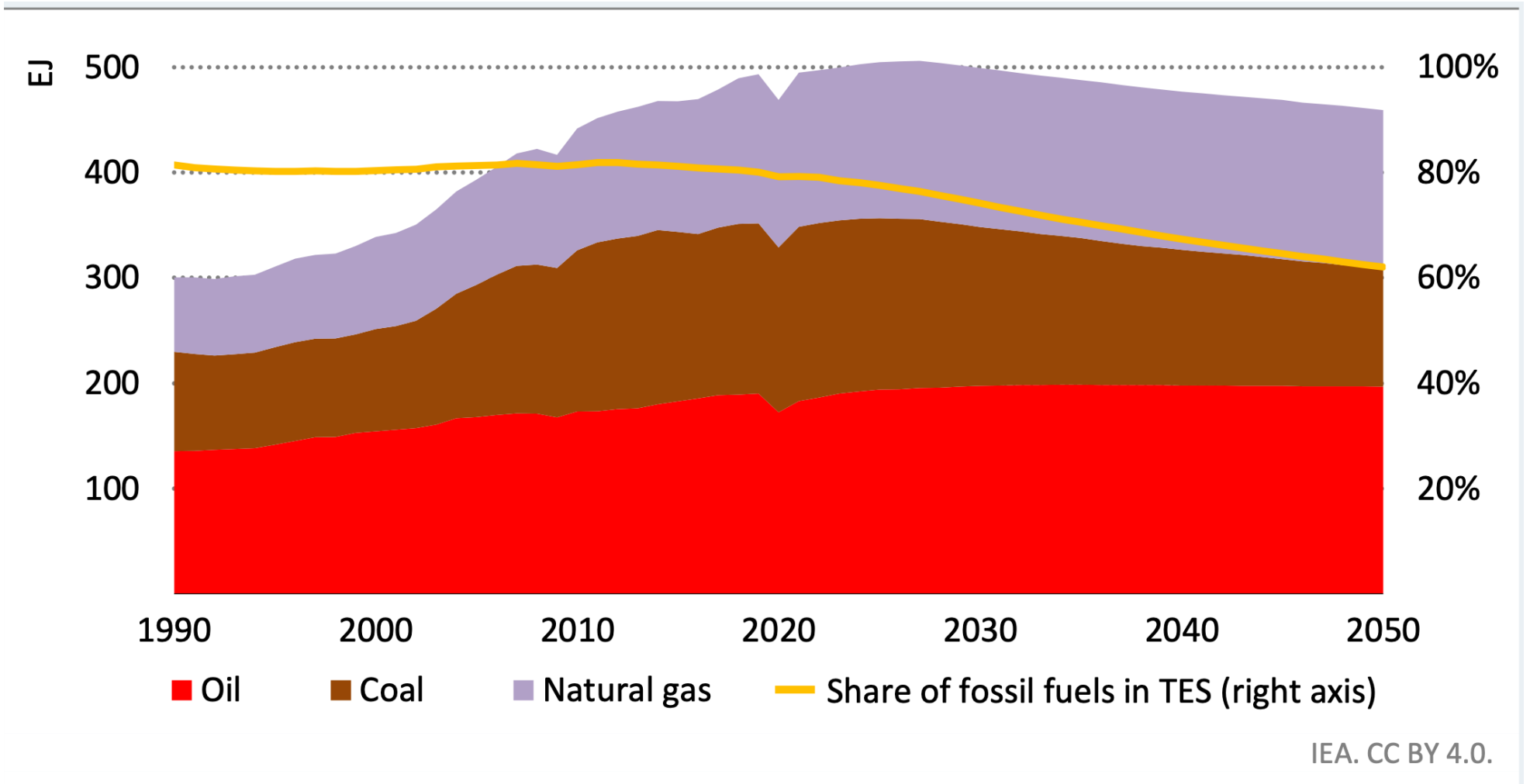
John Sununu
(George Bush's chief of staff)

Play the technology card!

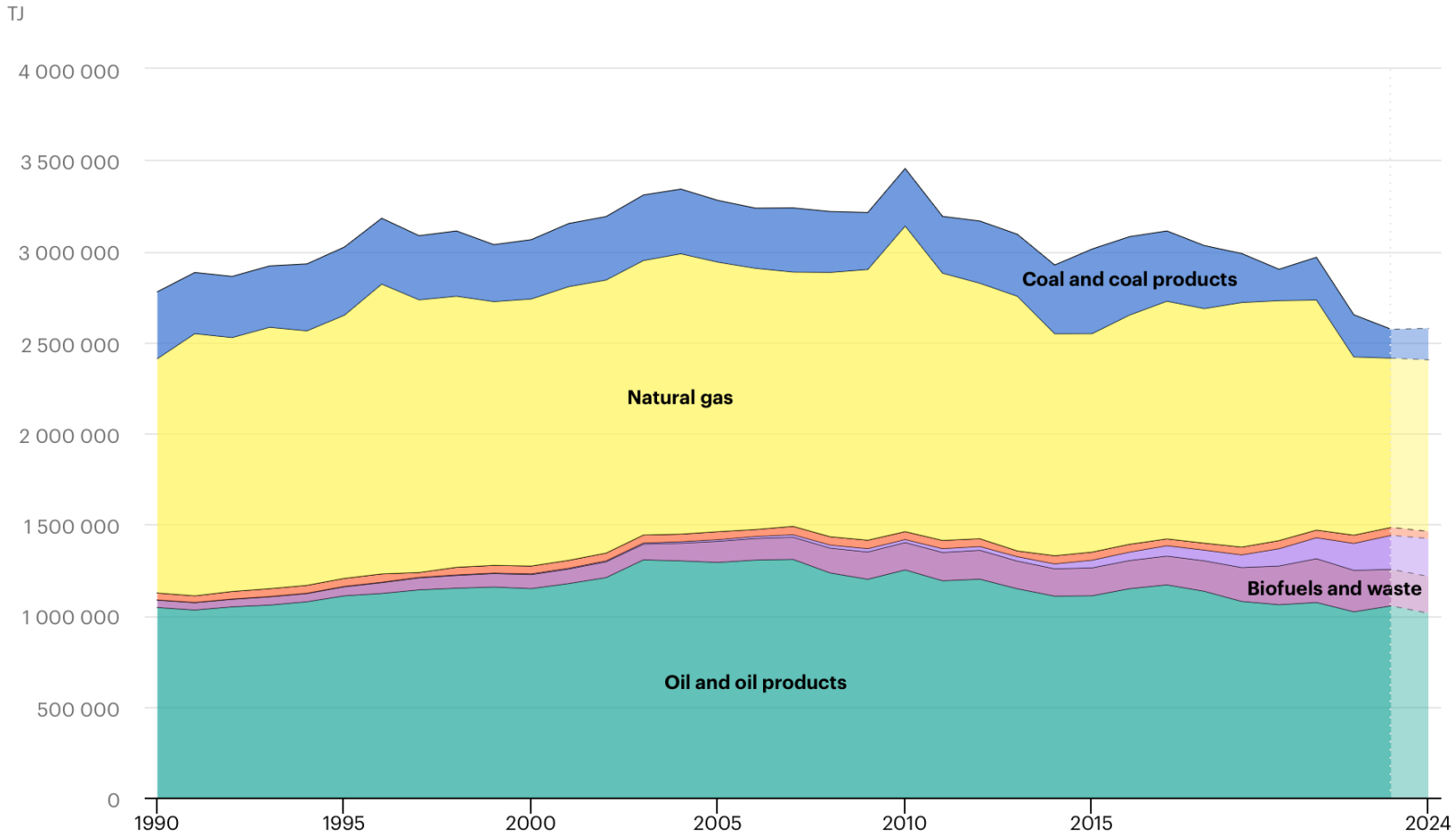
Robert Reinstein
(IPCC WG III president
chief negotiator for Rio 92



Frequency of occurrences per page in the 6 IPCC WG III reports


EJ
500
400
300
200
100
100%
80%
60%
40%
20%
1990
2000
2010
2020
2030
2040
2050
Oil
Coal
Natural gas
Share of fossil fuels in TES (right axis)

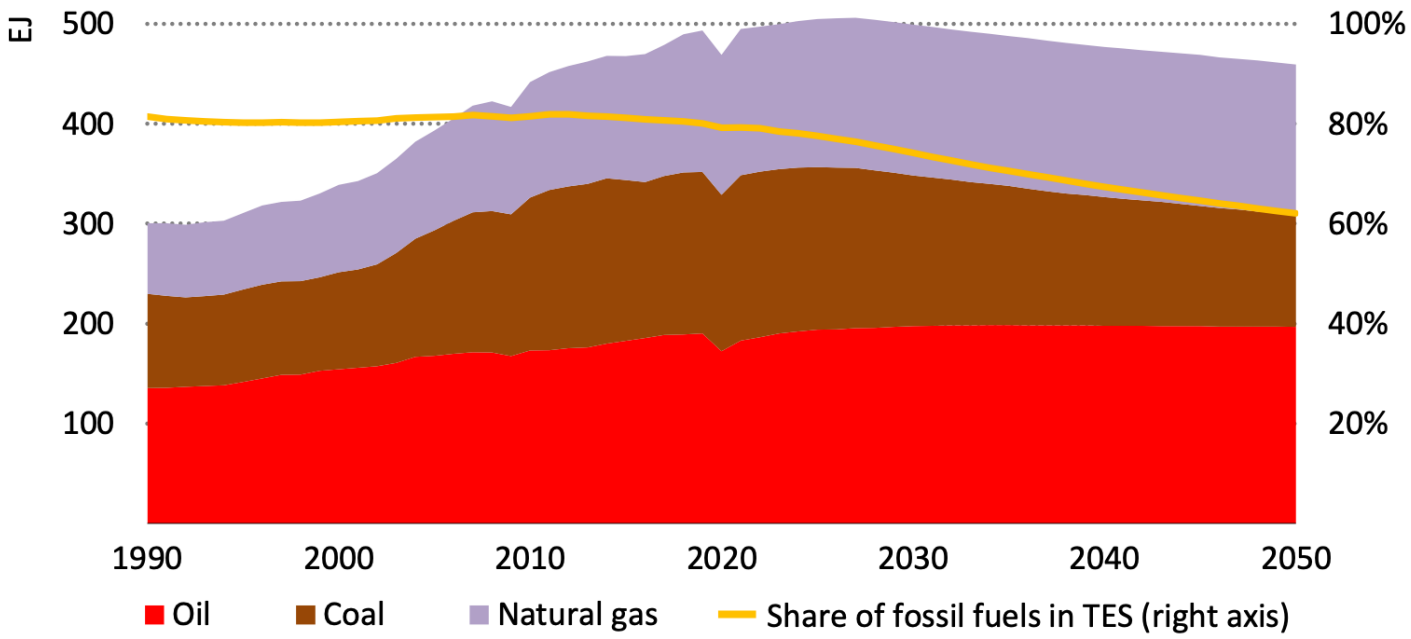
Total energy supply (TES) by source, Netherlands, 1990-2024



Box 1.2 ▷ Era of fossil fuel growth may soon be over

The Stated Policies Scenario in this *Outlook* is the first *WEO* scenario based on prevailing policy settings that sees global demand for each of the fossil fuels exhibit a peak or plateau. Coal demand peaks within the next few years, natural gas demand reaches a plateau by the end of the decade, and oil demand reaches a high point in the mid-2030s before falling. The result is that total demand for fossil fuels declines steadily from the mid-2020s by around 2 exajoules (EJ) (equivalent to 1 million barrels of oil equivalent per day [mboe/d]) every year on average to 2050 (Figure 1.9).

Figure 1.9 ▷ Fossil fuel demand in the STEPS, 1990-2050



Total fossil fuel use sees a definitive peak for the first time in this year's STEPS. The share of fossil fuels in the energy mix falls to around 60% in 2050, a clear break from past trends